STATE OF FORESTRY IN THE REGION-2000

LATIN AMERICAN AND CARIBBEAN FORESTRY COMMISSION

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PROLOGUE

The Latin American and Caribbean Forestry Commission (LACFC) was established to advise and make appropriate recommendations to FAO on the formulation of forest policy, practices and actions in regard to forestry matters as well as to exchange information amongst the Member Nations.

The importance of the Regional Forestry Commission was emphasized anew during the Twenty First Session of the Commission held in Santa Fe de Bogotá, Colombia from 4 to 8 September, 2000 when a detailed analysis was made of the state of forestry in the Region and several recommendations were made to the countries and to FAO.

The present document provides information obtained from the national reports presented to the Twenty First LACFC Session and analyses the progress obtained since the previous Session of the Commission, the state of forest resources in the Region and the role of forests in sustainable development. In addition, the document summarizes recent developments, trends and prospects of the forestry sector in the Region.

FAO believes that this document, besides providing a vision of the forestry sector in Latin America and the Caribbean, contributes towards the preparation of the document “State of World’s Forests” which is published by FAO Headquarters every two years.

We are grateful for the collaboration of the Forestry Services of the Region in providing the necessary information to prepare this document.

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INTRODUCTION

According to FAO, some 1,435 million hectares of forests were recorded in the North and Central American, Caribbean and South American Region in the year 2000, representing approximately 37.1% of the world’s forests and 36.9% of the land area of said regions. (Table 1 of Annex 1). This figure alone, underlines the importance of forests and forest activities in the broadest sense, not only to the Region but also to the entire world.

The importance of the Region’s forests lies in the immense renewable resource they represent and their great environmental, social and economic importance, expressed by the increasing concern regarding the deforestation to which they are being subjected. The natural forest area continues decreasing in practically every country of the Region. The causes for this are usually associated with human development; adaptation of land for agriculture and livestock production, construction of infra-structural works, forest fires, overexploitation and illegal trade, amongst others.

In spite of this situation, important changes are taking place in Latin America and the Caribbean in connection with forests. First, changes of a social type, as a result of population growth, variations in the distribution of rural and urban populations and, most important, a change in the value that society assigns to forests and wild areas in general. There is increasing awareness and concern for the environmental, social and cultural values of forests.

As a result of this change, the countries are giving consideration to sustainable forest management in their development policies in accordance with the concepts approved in the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil, in 1992, and to another series of international agreements on forests that have arisen following same.

The concept of sustainable forest management and the agreements reached on the international level up to date, such as Programme 21, the Forest Principles and the Proposals for Action of the Intergovernmental Panel on Forests (IPF), the different processes on Criteria and Indicators for sustainable management, the proposals of the Intergovernmental Forum on Forests (IFF), and the recently established United Nations Forum on Forests (UNFF), are technical and political commitments that must affect the forest activity and the manner in which forests are managed, utilised and conserved. Management techniques which will produce the least environmental impact must be adopted, especially at the time of harvest, including environmental aspects such as the care of soil, water and biologic diversity. Forest health and productivity must be maintained, non wood products and services that forests can produce must be valued, and consideration must be given to social and cultural aspects, placing special emphasis on the participation of local communities in decisions relating to the use and conservation of forests. In searching for a balance between the production of wood and other forest goods and services forest management will necessarily become more complex.

Society requires not only wood, it also demands pure water, habitat for fauna, conservation of biodiversity, scenic beauty and many other goods and services, including those of a spiritual nature. Today’s society seeks means through which to have its points of view taken into account when establishing policies or making decisions involving forests and wild areas. A large number
of non-governmental organizations whose objective is environmental conservation, particularly forest conservation, have emerged in the Region.

As a result of this change, many countries have decided to reorient the forest policies that have governed the actions of the forest activity in the countries of the Region, and, what is more important, find mechanisms which will allow for their effective implementation. It is necessary to deepen knowledge on forest ecosystems and develop mechanisms which will permit making use of their productive capacity without endangering their ecologic structure over the long term and to understand the relationship of man with the forest in the broadest sense, as a source of raw material and food and a place for living and recreation.

The FAO Regional Office for Latin America and the Caribbean organises a meeting of the Latin American and Caribbean Forestry Commission (LACFC) every two years, in which forestry authorities of all the countries of the Region are invited to participate. In this meeting, an analysis is made of the state of forests and of the forestry sector in the countries, including an evaluation of their evolution; it also serves as a forum to exchange experiences in connection with the formulation, revision and implementation of forest policies at the regional, subregional or national level.

For the purpose of obtaining the necessary information to establish the bases for discussions, the FAO Regional Office sends a guideline to each country of the Region prior to the meeting, requesting updated information on the most relevant aspects of the forestry sector and on the major changes that have taken place in the period since the Commission’s previous meeting.

The present document has been prepared on the basis of the information contained in the country reports, complemented with information from other sources.

We wish to acknowledge the generous dedication for over a decade of Messrs. Kyran D. Thelen and Torsten Frisk, to the task of conducting and strengthening the Latin American and Caribbean Forestry Commission. The mentioned officers retired from the Food and Agriculture Organization of the United Nations, (FAO), during the year 2001.

FOREST POLICY, LEGISLATION AND PLANNING

National forest policy

In the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, 1992, emphasis was placed on one of the major challenges faced by mankind: the conservation and sustainable use of forest ecosystems. Many governments throughout the world have undertaken to orient their national forest policies towards the conservation and sustainable management of their forest resources. The countries of Latin America and the Caribbean are no exception and, all or most of them, have formulated policies, explicitly or implicitly in their legislation, which show concern for forest resources. In this respect it must be noted that many countries do not have enunciated forest policies, and therefore, it is necessary to deduce them from their legislation and norms.
Measures forbidding or limiting changes in the use of land covered by forests, incentives for forestation and natural forest management, the creation and maintenance of large protected wild areas, the promulgation of various legal standards aimed at protecting or regulating the use of resources, strengthening protection programmes against fires, studies on sustainable management indicators and forest certification, and the formulation of national forest programmes, among others, are nearly the common denominator in the forest policy of most of the countries of the Region.

Another important element of forest policies in the Region is the increasing incorporation of multiple groups of interest in their formulation. Including non-governmental institutions, ethnic groups, rural communities, ecologist groups, international organizations and others. This evolution has come about as a response to the growing interest of society in the state and use of natural resources and in all the environmental benefits associated with them. As a result, subjects such as payment for environmental services, the harnessing of carbon and oxygen production, which transcend the sphere of the traditional actors of the forestry sector by far, are becoming increasingly important.

Interesting advances may be appreciated in the Region. In the Southern Cone, Argentina, recently enforced an Investment Law for Cultivated Forests, duly regulated, creating a regime for promoting forestry investments, from the acquisition of seed to primary industrialization, and a target of an additional one million hectares has been established for the next ten years. Chile has reoriented incentives for forestation towards degraded soils and small holdings, and maintains plantation rates near 100,000 ha/yr. In addition, legislation for the creation of an Under-secretariat for Forestry Development and a National Forestry Service dependent on same, is being negotiated in the Ministry of Agriculture. This public service, will be oriented mainly towards standards, control and promotion. The present National Forestry Corporation (CONAF) is a private agency, and will continue managing the State forest patrimony and forest production programmes.

Uruguay has in operation incentives for forestation and natural forest management, and recently approved a Law declaring the creation and management of a National System of Protected Natural Areas of general interest. Paraguay maintains norms for the promotion of forestation and natural forest management, although without the expected results, and in 1999 it established the National Forestry Board in which various governmental and non governmental groups of interest participate and whose objectives are to achieve a national agreement regarding natural resources and the environment, define a national forest policy and update forest legislation.

In the Amazon countries, Brazil promulgated a Law on Environmental Crimes, which establishes penalties for all damages to nature; it establishes obligatory forest replacement and creates a National System of Conservation Units. The National Forest Programme created in the Ministry of Environment, constitutes the institutional framework for the incorporation of the principles and norms of sustainable forest management, and, through special programmes, ambitious targets are proposed for the next 3 years, including a forestation rate of 650,000 ha/yr., and increasing the public forest production area from 12 to 50 million hectares. It also considers the implementation of sustainable forest management criteria and indicators, the reversion of deforestation processes and the new Forest Code.
Bolivia, institutionalised the National Protected Area System in 1999, created in 1992 by the General Environment Law, putting into operation the National Protected Area Service within the Ministry of Sustainable Development and planning. In Colombia, the formulation of the National Forest Development plan was completed in the year 2000 and the Forest Policy promulgated in 1996, has been consolidated. Ecuador proposes as fundamental objectives of its forest policy, to stop the process of loss of natural forests, recover deforested forest land and ensure the participation of rural, indigenous and coloured populations in forest management. In 1999, forest management was incorporated in environmental management and the Ministry of Environment and the Ecuadorian Forestry and Natural and Wildlife Area Institute were merged, giving the forestry sector a new dimension. Complementing the forgoing a Forest Programme (PROFOR) was formulated as a natural evolution of the Plan on Forest Action of Ecuador.

Guyana is in a similar situation, the National Forest Policy has been applied since 1977 and the formulation of the National Forest Plan is being completed. In Venezuela the new Constitution of the Republic was promulgated in 1990, in which the State assumes the commitment of protecting the environment, biologic and genetic diversity, ecologic processes and areas of special ecologic importance. In that same year a process was initiated for the formulation of the Organic Environmental Code. This Draft Law is intended to compile in one legal body all existing environmental-forest standards. It is also planned to establish a high level committee for the participative formulation of the National Forest Policy.

Most Central American and Caribbean countries are in the process of either formulating or revising their National Forestry Programmes. Considerable concern is noted regarding the loss of natural forests, protected wild areas, forest fires, forest cadastres or inventories and restructuring of forest institutions, in order to upgrade the forestry sector to a level of national priority. In general, incentives exist for plantations and natural forest management. An outstanding case is that of Costa Rica where payment for environmental services is being applied.

The policies of all the countries of these subregions reflect concern regarding conservation and sustainable management and, some countries, such as Saint Lucia and Saint Vincent and the Grenadines assign greater importance to goods associated with natural forests such as soil conservation, water, wildlife and tourism. Panama recently created the National Environment Authority whose main function will be the formulation of environmental policies. Nicaragua has just formulated a Forest Policy aimed at obtaining greater benefits from forests, under sustainable terms and in a manner shared by society, and a National Forest Plan is under study.

Honduras had to postpone forest policy measures that had been reformulated for the 1998-2000 period, due to the damages caused by recent hurricanes, which made it necessary to change priorities. A proposal for a sole Forest Law was prepared in 1999, to avoid dispersion of the legal framework, which is being revised and is expected to be approved by Congress soon.

Mexico has a Forestry Programme up to 2020, whose main objectives are integral sustainable management including goods and services for the community and increased participation of the forestry sector in the national economy. Consideration is being given to productive diversification with wood and non-wood forest products, incentives to commercial plantations and valuation of environmental services of forest ecosystems. Recently, the country signed an agreement with Finland for the formulation of a Strategic Forestry Plan for 2000-2020, and created a National Forestry Commission.
Subjects that emerged during the discussion on forests

The present concerns of forest agencies, non governmental organizations, forestry professionals and other groups of interest in the Region aim at decreasing the loss of natural forests, incrementing plantations, sustainable management of natural formations and plantations, consolidation of protected area systems, generation of increased production from forests including all their benefits and greater participation of society in the field of forestry. These concerns are reflected in policies, legislation and institutional restructuring, the formulation of national forest plans and programmes, the participation of most of the countries in processes on sustainable forest management criteria and indicators and in the maintenance of large protected areas. Both international discussion on forests as well as processes on criteria and indicators for sustainable forest management, have been included, although gradually, in discussions on forestry in the countries of the Region.

Relevant subjects in Chile, are forestation of degraded soils, forest development in small holdings, promotion of small and medium forest enterprises and effective integration of native forests in sustainable forest management. Also of concern at present is the consolidation of a new public forest institutionality with which it is expected to place the forestry sector within a new hierarchical dimension, considering its weight in the country’s economy and, strengthening the state’s functions as promoter, controller and formulator of forest standards.

Paraguay is assigning priority to aspects such as native forest management; detection of illegal traffic of wood; consolidation of a forest policy and promotion of forestation.

Ecuador, which proposes the payment of environmental services for sustainable forest management, established a Forest Management System, in which control and technical assistance activities are transferred from the State to independent forest engineers, endorsed by the Ministry of Environment and, complementarily, it is proposed to create regional instances to decentralise the activities of the forest authority and increase the participation of society. Another emergent aspect in Ecuador is the allocation of State forest property to indigenous, afro-Ecuadorians and settlers communities ancestrally occupying them.

A similar situation exists in Venezuela, where it is considered desirable to develop experiences on Community Forest Management, initiating a process for granting the use and usufruct of occupied Forest Reserves, as long as the forest cover and their condition as reserves are maintained, in other words, sustainable forest extraction is proposed to the benefit of the communities occupying them. Belize also recognises the need to involve local communities in forest management.

Costa Rica shows greater concern for aspects of industrial reconversion, markets and product marketing; payment of environmental services; forest certification and an ecosystemic approach to forest management. Cuba concentrates interest on mechanisms leading to the participation of the private sector in the implementation of recent forest legislation, promoting the establishment of commercial and protection plantations and, in general terms, forest/agriculture balance.
A subject that has been reviewed in different countries is that of forest grants. While some countries are open to this type of public forest utilization in order to increment forest areas under management and permit the participation of the private sector, as in the case of Belize, Bolivia, Brazil, Guatemala, Guyana and Venezuela; others, such as Ecuador and Nicaragua eliminated the system of grants, because they believe that they do not ensure sustainable forest management.

Strategies or mechanisms to promote the forest policy

One of the great problems encountered by the countries of the Region, is the difficulty to put their forest policies into practice. Efforts have been made in the last few years to close this gap by seeking support through an increased participation of society in the processes generating forest and environmental policies, especially of the people living in the forest or forests.

The countries are making efforts to create adequate legal and economic conditions to achieve the objectives of their policies. For this purpose most of the countries are reviewing their National Forest Programmes, restructuring their institutionality and using different legal and financial instruments to enable them to place larger forest areas under sustainable management and production, ensure protected area systems, put a stop to deforestation, increment planted forest areas and recover deforested areas. The strategies are based on general standards, promotion and incentive systems, and specific projects.

Argentina has applied the Regime for Promoting Plantations since 1992, giving continuity to previous promotion systems, and in 1995, funds were secured until the year 2000, subsequently, this line of action was complemented with the Investment Law for Cultivated Forests, aimed at expanding the forested area and improving its products. This Law includes subsidies for all investments in plantations, starting with the seed up to the primary transformation of the wood, including the necessary research. A target of 1 million additional hectares in 10 years is proposed with this legal instrument. An intensive National Forestation Programme has also been implemented recently to absorb unemployment.

Chile maintains tax incentives for native forests and plantations, subsidies for small holder plantations or plantations on degraded soil, and is considering a subsidy for natural forest management. A management plan is a requirement for any forest intervention and if it is on an industrial scale, in accordance with the established norm, a study on environmental impact is also required.

Brazil recently created a National Forest Programme, which constitutes an institutional framework for the incorporation of the sustainable management principles and standards, whose main objective is to consolidate a national forest policy with three priority programmes: expansion of the forest base (FLORESTAR), aimed at enlarging the planted area with emphasis on degraded areas and the expansion of public forests under management and production; Sustainable Forests (SUSTENTAR), aimed at the promotion of sustainable management of natural forests, an action of special importance for the Amazon Region which concentrates the major areas, and which is intended to conciliate, commercial interest with conservation needs. This involves the assignment of grants in public production forests. Decrease deforestation
(FLORESCER), is a programme aimed at strengthening the prevention and control of forest fires, decrease the conversion of land use and avoid illegal exploitation.

Ecuador proposes its strategy for sustainable forest development on the basis of the valuation of national forests and plantations, promotion and financing of sustainable management strengthening of participation and management by society, and modernization of the institutional and legal framework. Venezuela emphasises the importance of the management plan and community forest management, and has designed a national plan for territorial management, and is preparing an Organic Environmental Code intended to prepare a résumé of all the forestry and environmental legislation in one legal body.

Costa Rica is in a consultation stage with all national interest groups to define the strategies for the execution of the National Plan on Forest Development, and has prepared some norms on sustainable management criteria and indicators and procedures for the accreditation of certifiers.

**Forest legislation promulgated or processed during the period**

Most of the countries are making efforts to modernise legislation, bringing all norms into single legal bodies, so as to adjust their institutional structures and, in general, provide an adequate and stable legal and economic framework that will make it possible to achieve the objectives of their policies.

In the Southern Cone, Argentina promulgated the Law on Investments for Cultivated Forests, N° 25.080, which was approved in 1998, and regulated by decree in 1999. In Uruguay, Law N° 17.234 was approved in February 2000, declaring the Creation and Management of a National Protected Natural Area System of general interest. In Chile, the Draft Law on the Promotion and Management of Native Forests which has been under study since 1992, is being reviewed in order to send it to the legislature again. Also, in an advanced stage of negotiation in the National Congress is the Draft Law to create the Under-secretariat of Forest Development within the Ministry of Agriculture and the National Forest Service dependent on same.

Brazil has promulgated, or is processing, a number of norms related with limitations on felling, conversion of land use, prevention of forest fires and other aspects, but possibly the most relevant are Law N° 9.605 of 1998, on Environmental Crimes, which penalises environmental damages and Law Decree N° 3.420, of April, 2000, which creates the National Forest Programme. In Ecuador, a Draft Law for Sustainable Forest Development is being processed and includes promotional mechanisms, penalties for the destruction of natural forests and other important aspects to achieve policy objectives. In Venezuela, in accordance with its Constitution, the State assumes responsibility for the environment, biodiversity and ecology, and an Organic Environmental Code is being prepared for the purpose of preparing a résumé of all environmental and forest norms in one legal body.

Ecuador has understudy a Draft Law for Sustainable Forest Development in which the Ministry of Environment is recognised as the forest authority which also includes the allocation of State forest property to communities living in the area, in addition to which promotional mechanisms are included, such as payment for environmental services and incentives for forestation. The legal body also establishes general criteria for sustainable forest development,
recognises the integral management plan as a mechanism for territorial management and penalises the destruction of the native forest with fines equivalent to 100% of the cost of restoration. It also establishes the system of forest management, through which state functions of technical assistance and control are transferred to private forest professionals with ministerial endorsement.

Several other countries reported having new proposals on forest legislation or amendments to same, which are being processed or revised in different instances, without providing more information regarding contents and terms.

**Incidence of international agreements in national policies**

Most of the countries of the Region have participated in the international discussions on forests and have played an active role in processes on Criteria and Indicators for sustainable forest management, which arose after Rio 1992. However, only some of them mention international agreements on forests in their reports.

Brazil emphasises, in its report, that its position has been, that forest management is framed within its national sovereignty and that the problem of deforestation affects not only tropical humid forests but every type of forest. This is how it was proposed in Rio de Janeiro 1992, where the Declaration of Principles on Sustainable Management for Every Type of Forest and Programme 21 were formulated. In the United Nations Commission on Sustainable Development, Brazil proposed the creation of the Intergovernmental Panel on Forests (IPF) and this avoided a premature initiation of negotiations for an International Convention on Forests and eased international pressure on the Amazon forests.

Brazil led the creation of the Tarapoto Process, within the scope of the Amazon Cooperation Treaty, in which the criteria and principles for sustainable management of the Amazon forests were discussed and defined, and now is in the phase of national trial.

Also important is the consolidation and institutionalization of the Directives for Sustainable Development of the Brazilian Tropical Forests, defined following the studies supported by the National Environment Programme and by the Green Protocol. The latter requires environmental evaluations for any project needing financial resources from credit institutions.

Ecuador, as a member country of the International Tropical Timber Organization (ITTO), has promised to establish the guidelines and strategies for sustainable forest management, promulgated legislation in this respect and acquired a firm and continuous political commitment at the highest level to achieve this in the country (ITTO Principle 1). Furthermore, the Ministry of Environment has incorporated the ITTO principles and directives in the national strategy, through a wildly participative process of the national community, and the Law for Sustainable Forest Development is being prepared and harmonises with other laws governing the other sectors of the economy, complying with Principle 2 of the ITTO. The participative process for the formulation of the strategy and of the Law, represents a democratic mechanism for the formulation of policies (Principle 3 of the ITTO).

The proposals for action agreed to by the countries in the Intergovernmental Panel on Forests (IPF) and the Intergovernmental forum on forests (IFF), Have been incorporated in
Ecuador’s policy, in the sense of creating a political, legal and institutional framework aimed at sustainable development, strengthening the participation of indigenous rural and settlers communities, detaining the deforestation process, promoting forestation and applying innovating mechanisms to finance forest development.

In relation with the United Nations Framework Convention on Climate Change, the preparation of the Law in Ecuador and other countries, considers for its financing, the sale of certificates for harnessing carbon or others, within a mechanism for clean development.

Guyana has participated in the development of sustainable management criteria for the Amazon forests in the framework of the Amazon Cooperation Treaty. These criteria and indicators, together with those produced by the International Forest Research Centre (IFRC) and by the ITTO, have been reviewed by the Forest Commission of Guyana and incorporated in the National Forest Plan.

Costa Rica is in the process of updating its forest legislation, participative definition of national forest policies, detention of deforestation, payment for environmental services and other aspects related with the different international agreements. Concrete measures taken during the period include some Decrees of the Ministry of Environment and Energy related with principles, criteria and indicators for forest management and certification in the country and procedures to accredit the certifier.

NATURAL FORESTS

Forest areas and conversion of forests to other land uses and deforestation

FAO (2001) estimates that in 2000 the North, Central American, Caribbean and South American Region, had a total area of natural forests of 1,407 million hectares or 98% of the total area, natural forests and plantations, representing 36.2% of the land area of the mentioned Region. (Table N°1 of Annex 1).

As regards deforestation, FAO (2001) estimates that the yearly variation of the forest cover for the period 1990-2000 reached a figure of -4,281,000 ha/yr., for the above mentioned Region, corresponding to approximately 45.6% of yearly deforestation in the world. Table N° 2 of Annex 1.

Most countries of the Region have recently carried out vegetational cadastres, are conducting them, or are seeking funds to do so. The great need for information and periodical follow up is generally recognised. In many cases, cadastres have been carried out in some regions of countries, but not nationally (Ecuador, Paraguay). Uruguay expects to have forest cartography by the end of the year 2000. Chile recently carried out a cadastre, and plantation inventories are periodically updated. Argentina will conclude its cadastre in 2001. Guyana and Venezuela are negotiating international financing for their national inventories. Belize has no inventory and considers it an urgent need. Mexico already has a programme for implementing a national inventory in the year 2000 and for making a cartographic comparison, 1992-2000.
Promotion of sustainable management of natural forests

Most the countries of the Region have provided incentives for the management of their native forests, either through territorial tax exemptions (Chile, Ecuador, Uruguay), technical assistance (Ecuador), subsidies (Argentina, Mexico, Colombia) or recognition of environmental services (Costa Rica). In addition, most countries require a management plan for interventions and are limiting or forbidding changes in the use of forest land with forests.

Some countries require environmental impact studies prior to any important forest project (Chile, Guyana), others are applying forest certification (Costa Rica, Belize). A positive trend may be expected in relation with forest management, which is manifest in the policies, norms, and participation of the countries in international forums, the development of sustainable management criteria and indicators and the demands of society through their organizations.

A positive initiative undertaken by some countries (Argentina, Chile, Paraguay, Costa Rica, Mexico) is the establishment of model forests, to demonstrate the application of sustainable management, considering productive and environmental aspects and ample participation of society.

Regarding forest management, various actions are reported. The promulgation of the Law to Promote the Native Forest, currently under legislative processing in Chile, may incorporate a significant area of this resource into management. In Uruguay, 16,600 hectares (2.5% of the total) were placed under sustainable management during the period, thus completing a total of 98,600 hectares (16.3% of the total) and it is planned to place 20% of the national native forests under management in the short term. Paraguay has placed 90,000 hectares under management during the period and has a total of 3 million hectares under management. Brazil has 4 million hectares under management and plans to increase this area to 11.5 million hectares in the next three years. Costa Rica incorporates over 100,000 hectares under management. Guatemala incorporated 8,000 hectares under management in 1999, totalling 54,000 ha. Honduras currently has 821,000 ha., and Mexico has 1.7 million ha. under management. Belize has 1 million hectares under management (55% of the total). Guyana has 360,000 hectares, Colombia 85,000 hectares, Nicaragua 237,000 hectares, Venezuela 1.6 millions hectares and, Cuba has 720,000 hectares under management, 36% of its total natural forest area.

Although progress is observed in several countries of the Region the percentage of forests under management is still very low.

Progress in the development and implementation of sustainable forest management criteria and indicators

Sustainable management has become a common concern and is expressed in the active participation of all the countries of the Region in processes to establish sustainable forest management criteria and indicators, among these the ITTO Process, the Lepaterique Process, which groups the Central American countries; the Tarapoto Process which groups the countries of the Amazon Treaty and, the Montreal Process to which Argentina, Chile, Mexico and Uruguay adhered.

Only some countries provided information regarding progress achieved in implementing the criteria and indicators for sustainable forest management. Ecuador, has incorporated some
general principles for sustainable management in the legal framework through amendments to
existing forest legislation: utilization rate not exceeding natural regeneration; maintenance of the
forest cover; conservation of flora and fauna, as well as of their habitats; shared responsibility
for forest management between the person in charge of implementing management and the
owner; and reduction of environmental and social impact. Guyana reports having incorporated
the appropriate indicators in its National Forest Plan. Furthermore, the Guyana Forest
Commission has obtained the support of the United Nations Development Programme (UNDP)
to develop national certification standards. Venezuela obtained approval from the ITTO in 1999,
for the Project on Criteria and Indicators for the Management of the Venezuelan forests, for the
purpose of homologating the criteria and indicators of the Tarapoto Process and the ITTO, and
defining measurement techniques, methods and models for follow up activities in the field.

In Costa Rica, the Criteria and Indicators were included in Decrees of the Ministry of
Environment and Energy at the end of 1998, and there will be a three year validation period
through evaluation and follow up in forests under management, complemented with training and
dissemination of the potential benefits of forest certification. Cuba reported that progress has
been made and that criteria and indicators will be extended in order to establish them at the level
of all owners, from large enterprises to individual peasants. Guatemala reported that there is a
proposal of the National Forest Institute in this respect, which is being validated in the field.
Nicaragua has a standard of principles including 5 principles, 21 criteria and 40 indicators, and
efforts are being made to apply them in model units in pine and broadleaved forests.

Mexico adhered to the Montreal Process and has presented two reports on the subject up to
date, and expects that it may report on 17 of the 67 indicators immediately, on 32 after some
development and, on the remaining 18, through long term research.

Forest research on sustainable management

The countries consider that progress towards sustainable forest management, taking into
account all the aspects involved in this concept, will require an enormous effort in the field of
research, especially on subjects related with the functioning of the complex forest ecosystems in
the Region. Strengthening capacity in forest research is a basic condition in order to advance
towards sustainable forest management in the Region.

Forest research in the Region is clearly lacking, especially in subjects relating to natural
forests. This is partly due to the lack of clear and explicit policies recognising the importance of
forests and forest research, not only as important elements of development, but also as
fundamental elements for the well being of the community in general.

Many countries recognise the need for making changes in their forest institutionality to
correct these deficiencies. Most countries of the Region have a large number of institutions
connected with forest research, giving rise to coordination problems and lack of collaboration.
This situation leads to the duplication of efforts; the existence of weak institutions and a limited
possibility for developing multidisciplinary research.

A large number of the countries of the Region have concentrated their research efforts on
subjects connected with the establishment, management and utilization of forest plantations,
generally made with introduced species. Although this situation has produced important benefits
in several countries, it has been detrimental to native forests, which have been scarcely studied, reducing the possibility for sustainable management.

Not enough resources are allocated to forest research in the Region. The State continues to be the main source of resources, but there is a tendency to reduce funds for forest research in state institutions, in the understanding that the gap they leave would be filled by the private sector, which in not always the case. This has forced institutions to commercialise research, though financing, which is feasible in the measure that research is aimed at productive and marketing aspects. Sustainable forest management, as it is defined at present, imposes other priorities.

Financing with funds obtained through bidding is a mechanism which has gradually taken hold in several countries of the Region. This mechanism, which has the advantage of allowing for a good selection of projects and opens important channels of collaboration with the private sector, generates serious problems in the stability of forest research institutions, which do not have permanent budgets to maintain stable high level research teams nor to carry out long term research, which are fundamental for the forest activity. The participation of the private sector in financing forest research is still limited.

International cooperation has played an important role in forest research in the Region. This should be incremented in the future, as the extent and complexity of forest ecosystems existing in the Region constitute a challenge which clearly exceeds the technical and economic capacity of most of the countries. Without the cooperation of the developed countries and international organizations, progress towards sustainable forest management in may countries of the Region is seen as a very far off target.

The above is clearly reflected in the country reports which practically do not mention the subject of research, or make brief comments on subjects such as criteria and indicators and vegetational cadastres or national forest inventories.

Cuba reports on research being conducted on genetic improvement, natural forest management, forest protection, management of Meliaceas and teak, non wood forest products, wood preservation, forest residues, obtaining bioactive substances, energy and agrosylviculture.

Argentina and Chile are implementing various research projects in connection with the management of southern natural forests, where there are important investments and investment projects in extractive activities, mainly in lenga (Nothofagus pumilio) formations. Chile has conducted research projects on temperate forest management and improvement, mainly with species of the Nothofagus genus.

Honduras mentions ongoing research on the properties and potential uses of non traditional or secondary hardwood species and on natural resource management in different areas of the country, including mangrove areas.

Forest concessions

Several countries of the Region use the system of forest concessions in state forests. However, they provide scarce information regarding area and conditions. In Ecuador, it has ceased to be an important mechanism because there was no real interest among beneficiaries to
implement sustainable management and, because at present there are no important forest areas to be allocated through concessions. Nevertheless, the Draft Law on the country’s Sustainable Forest Development considers the possibility of allocating state forests through concessions.

Since the decade of the 70’s Venezuela has made long term concessions, through administrative contracts with the beneficiaries for the development of management plans for 30-40 year terms, with a maximum extraction of 6 m$^3$/ha, without having reported major damages in the forests.

Belize approved over 150 concessions each year in 1998 and 1999, in different categories. In Guatemala, the National Protected Areas Council is in charge of concessions, and most of the country’s forest concessions are located in the multiple use zone of the Maya biosphere reserve, with 570,000 hectares, which benefit 1,950 families in 13 communities. Concessions in Nicaragua are prohibited by Law since 1997. Panama reports the existence of two grants and eight are under consideration.

In Guyana there are three categories of grants according to area and term, and there is a code of practices for responsible forest operations. Yearly forest permits are given for areas up to 8,000 ha. And, different terms are established for larger areas. An exploratory period has been established for the latter to prepare environmental and social studies and to plan management, which must be approved by the Forestry Commission of Guyana. Of the 13.6 million hectares of state forests 4.8 million are under concessions in different categories.

Brazil is considering the establishment of concessions for public production forests in order to expand the area under management.

**FOREST PLANTATIONS**

**Forestation areas and rates**

According to FAO (2001) the total area of forest plantations in the year 2000 in the North American, Central American, Caribbean and South American Region amounted to 28 million hectares. (Table N° 1, Annex N° 1).

Although this area represents only 2% of the Region’s forests, planted forests constitute an important component of regional forest resources, as they contribute a high percentage of the supplies for the main forest industries. An important part of these resources (104 million hectares) is in South America.

Most of the countries include in their forest policies and legislation, mechanisms to promote the establishment of forest plantations. Argentina, Brazil, Chile and Uruguay in South America have been the most successful countries in implementing these mechanisms.

Brazil is the principal country in South America with an area of approximately 4.9 million hectares and a yearly forestation rate of some 160,000 ha/yr. The main species correspond to the *Eucalyptus* genus followed in second place by the *Pinus* genus. Chile appears with a planted area
of 2 million hectares and an average yearly forestation rate of 97,000 hectares for the 1998 and 1999 period. Plantations in Chile are mainly *Pinus radiata*, although in recent years the participation of *Eucalyptus*, mainly *E. globulus* has increased progressively and, more recently, that of *E. nitens*. Forestation in these countries is carried out mainly by private enterprise. The case of Venezuela is different, here the main forestation effort continues to be made by the State through its institutions. The country has a plantation area of 863,000 hectares and is planted at a rate of 33,000 ha/yr.

Brazil shows an important projected deficit of raw material from plantations for the year 2010, and this projection indicates that a substantial increase in the yearly forestation rate would be necessary, 557,000 ha/yr. On the other hand, Chile is planting at a rate amply exceeding the yearly exploitation rate of close to 40,000 ha/yr.

Argentine and Uruguay have increased their yearly forestation rates considerably in recent years as a result of government programmes on incentives and subsides. According to FAO, Argentina records 926,000 hectares and is increasing at a rate of more than 40,000 ha/yr. Uruguay, totals 622,000 hectares and is incrementing this resource by an average for the period of approximately 72,000 ha/yr. In both cases the participation of the species of the *Eucalyptus* genus has increased considerably.

It is important to point out that most of the plantations in the South American countries have been made with introduced species. Plantations with species of the *Eucalyptus* and *Pinus* genuses are predominant, and have proved to adapt very well to the different conditions present in the Region. In Central America and Mexico, on the other hand, plantations with species originating in Region itself are predominant, although some species of the *Eucalyptus* genus are also being planted.

**Fires, pests and diseases**

Forest fires constitute a serious problem in the Region. Even though there is scarce information, it is estimated that in the Southern Cone alone some 43,000 hectares of plantations may have been lost because of fires. There are no data on the effect of forest fires in the total loss of forests in the Region. Apparently, only Argentina and Chile have information systems that record the effect of forest fires quite accurately.

Countries in general show increasing concern about these problems, as in the years 1997, and 1998 climatic disturbances of the “Niño Phenomenon” created conditions that were particularly favourable for the occurrence of fires. In the 1997-1998 season fire affected 2.5 million hectares in Central America alone. Important losses were also sustained in the Amazon and Southern Cone countries.

Argentina, Brazil, Colombia, Costa Rica, Chile and Mexico have vigorous fire prevention, detection and control programmes and even though important losses have been sustained, in general they have been decreasing, in terms of number of fires and burned area in each case, thanks to an adequate sensitization of society, early detection systems and efficient and equipped fire fighting teams.

Regarding pests and diseases, the countries do not report important problems with the exception of Mexico, which informed about extensive control in forests of the temperate-cold
zone, and, the countries of the Southern Cone which are studying and controlling some insects which attack pines and eucalyptus. In the last few years there has been an important increment in the number of pests and diseases entering these countries in spite of vigilance systems and early detection of pests and diseases. The greatest concerns are related with planted forests, being affected by insects which attack the sprouts (e.i. *Rhyacionia buoliana*) or wood (e.i. *Sirex noctilio*) in the case of pines and, some borer insects (*Phoracantha semipunctata*) in the case of the *Eucalyptus* species. Argentina, Chile and Uruguay are conducting permanent follow up on the behaviour of these pests. In Chile, important efforts are being made to keep *Sirex noctilio* from entering and to control the Sprout Moth (*Rhyacionia buoliana*), mainly through a biologic control programme.

In the case of Argentina there is special concern about some insects which attack the *Salix*ceas. *Nematus oligospilus* and *Platypus sulcatus*, which cause defoliation in species of the *Salix* genus and bore the wood in species of the *Populus* genus, respectively. Chemical control is being applied and biologic control methods are being studied.

**Genetic improvement programmes**

The countries with greatest development in the field of forest plantations, have vigorous genetic improvement programmes with an important participation of forest enterprises. Argentina, Brazil and Chile are working intensively with species of the *Pinus* and *Eucalyptus* genuses. Other countries, such as Colombia, Costa Rica, Mexico, Venezuela and Uruguay, started genetic improvement programmes in recent years.

In Brazil, work has been done with various species of the *Eucalyptus* genus, especially *Eucalyptus grandis*, and their yearly growth rate has nearly doubled through use of adequate provenances and spontaneous hybrids, and resistance to pests and diseases and the pulp yield also have been incremented. Hybrids of *Eucalyptus grandis* x *Eucalyptus urophylla* have reached growth rates of 70 m$^3$/ha/yr., in some areas.

Argentina is working on the improvement of different species of *Pinus* and *Eucalyptus* in different areas of the country. They include *Pinus elliottii*, *P. taeda*, *P. patula*, *P radiata* and *Eucalyptus globulus* spp. *Globulus*, *E globulus* spp *maidenii*, *E dunnii*, *E viminalis*, *E grandis*, and *E grandis* x cloeziana. In adition, in the Southern Zone work is being done with *Pinus ponderosa* and *Pseudotsuga menziessii*.

In the case of Chile, the experience of a genetic improvement cooperative has been very successful, as it brings together different state institutions, enterprises and universities. Important progress has been made in the improvement of *Pinus radiata* and various species of *Eucalyptus*. In the case of *Pinus radiata*, for some years now, practically all plantations have been made with improved seed. Genetic improvement of native species is incipient.

Colombia started trials on provenance-progeny with *Cordia alliodora* and *Tabebuia rosea*, which are tropical species of high commercial value. Work has also been done with *Pinus patula*, and trials have been conducted on species selection for colder high zones with various species of different genuses.
Costa Rica has established seed nurseries in different areas of the country with *Gmelina arborea* and *Tectona grandis* and is already providing improved seed for forestation.

**Forest plantation inventories or cadastres**

The countries with the largest planted areas have inventories, but the figures they provide are only partial, do not include the year to which they refer nor details regarding species. Some countries do not have inventories, only estimates, and in other countries plantations are not of major importance.

Some countries, among them Chile and Uruguay, maintain permanent information systems and periodical updating according to species.

Argentina is currently completing a national plantation inventory, and therefore figures are not available as yet.

Among the countries of the Amazon Region, Brazil records separate information for each State, however species are not identified nor is the year of the figures shown.

**FORESTRY INSTITUTIONS**

**Forestry institutions and institutional restructuring**

The institutional structure of the forestry sector has been a dominant concern in the countries of the Region over the last decade. Most of the countries have introduced important reforms in the institutional structures, producing a change of dependence of forest activities in several of them, from the ministries of agriculture to the ministries in charge of environmental matters. This is the case of Brazil, where, as a result of increasing concern about environmental matters and, consequently, for the conservation of renewable natural resources, important changes were made in the institutional field. The Ministry of Environment was created in 1992, to which the forest, fauna and fishing authority was assigned, and all policy and standards responsibilities on forests and forest resources have been transferred from IBAMA to this Ministry.

This change caused the importance of the forestry sector to decrease in political discussions, and the management of forest resources and activities was integrally subordinated to the environmental policy. In 1999, the Secretariat on Biodiversity and Forests was created, as a response to this situation, recovering the importance of the sector in the government structure was, especially as regards the design of policies and implementation of programmes and projects.

A similar change took place in Ecuador, with the creation in 1998, of a Ministry of Environment, which became the rector of the forest policy and was assigned responsibility for enforcing forest legislation. The National Forestry Department was created as an operative institution, directly in charge of government management for sustainable forest development. The Ministry of Agriculture and Livestock which was responsible for the administration of forest
resources until 1998, continued with several offices which “share functions” with the Ministry of Environment.

A situation of this kind also exists in Venezuela. The responsibility for forests which was assigned to the Ministry of Agriculture and Animal Husbandry, was transferred to the Ministry of Environment and Renewable Natural Resources, where the Autonomous Venezuelan Forestry Service was created in 1989. In 1994, a new institutional change took place and the General Sectorial Department for Forest Resources was created. In 1999, the structure of the Ministry of Environment and Renewable Natural Resources was revised, and it was converted into the Ministry of Environment and Natural Resources and the agency in charge of forest management was restored to its rank of Autonomous Forestry Service.

In Argentina and Colombia changes also took place in the government structures related with the forestry sector, except that in these countries, it was decided to separate responsibility for forest activities depending on whether they were related with native forests or plantations. In the case of Bolivia, forestry institutions are also separate according to forest type.

In Argentina, the Secretariat of Agriculture, Livestock, Fisheries and Food depend on the Ministry of Economics, Public Works and Services. The Secretariat depends on the Forestation Department which is in charge of activities related with planted forests and a series of decentralised agencies (that is, of an autarchic nature) which include the National Agricultural Technology Institute (INTA), in charge of forest research at the national level, the National Seed Institute (INASE) and the National Agrofood Health Service (SENASA).

Dependent on the Nation’s Presidency is the Secretariat of Natural Resources and Sustainable Development, on which the Department of Natives Forest Resources is dependent. Last, the new National Government, transferred the Administration of National Parks to the Secretariat of Tourism of the Presidency of the Nation.

It is inferred that this system has not functioned well, as the private sector hopes for a modification, to bring forestry activities back together under a sole agency.

In Colombia, deep changes were also made in the structures of the forestry sector. In 1993, the National Environmental System (SNA) was established including the Ministry of Environment, the Autonomous Regional Sustainable Development Corporations, environmental research institutes and centres, non governmental organizations, the Network on Civil Society Reserves and the Forest Policy Advisory Board. The administration and regulations pertaining to native forests are the responsibility of this National Environmental System, as a dependency of the Ministry of Environment.

On the other hand, as in Argentina, forest plantations and the administration of forest incentives depend on the Ministry of Agriculture and Rural Development, although the operative aspects are the responsibility of the Autonomous Regional Corporations, because this Ministry does not have regional offices and logistic support. In practice, all activities are carried out by institutions depending on the National Environmental System.

In Chile, Paraguay, Peru and Uruguay, the institutions responsible for forest activities still depend on the ministries of agriculture.
In Chile, the National Forestry Corporation (CONAF), which depends on the Ministry of Agriculture, in spite of being the state forest service, is a private institution. This has great advantages, but also limitations, especially as regards supervision. The fact of granting supervisory authority at the national level to a private institution has been questioned. Although it has been operating in this capacity for over 20 years, this legal condition imposes limitations on it and, consequently, changes in the State’s forest institutionality are being studied. The main change proposed is the creation of an Under-secretariat of Forest Development as a dependency of the Ministry of Agriculture, which would give the sector the level it deserves within the government structure, considering its economic, environmental and social importance. The National Forest Service, as a public service, would be created as a dependency of this Under-secretariat, whose main mission would be administration of regulations and supervision. CONAF would remain as a private institution in charge of forest protection and administration of the State’s forest patrimony.

At present a new institutional change is taking place. In 1999, the Executive, sent a Draft Law to the National Congress, creating the Environment System and the Secretariat of Environment as agencies responsible for the execution of the national environmental policy. The National Forest Service would no longer depend on the environmental authority and would be placed within the Ministry of Agriculture and Livestock, probably as an Under-secretariat of state, in charge of the productive aspects of the forestry sector, such as forest management, reforestation, agroforestry, forest industries, research and forest extension. Apparently aspects regarding environmental and social functions would be the responsibility of the National Environment System.

In the case of Peru, forest activities are the responsibility of the Ministry of Agriculture through the National Institute for Natural Resources (IRENA), on which the General Forestry Department is dependent, and is responsible for aspect related with forest management and reforestation.

In Uruguay, the maximum forest authority is the Forestry Division, under the Department of Natural Renewable Resources, dependent on the Ministry of Livestock, Agriculture and Fisheries.

In most countries, with the exception of Brazil, Chile and Colombia in which there is an under secretariat or where the forest services are directly dependent on the ministerial level, forest institutions are at the third or fourth level within the state organization, and their functions are generally operative, the responsibility for the establishment of policies remaining at the higher levels.

Centralism is another subject of concern in many countries of the Region. Forest services are generally centralised to a great extent, even when they have a national type of structure. Colombia has one of the most decentralised structures, through the Regional Autonomous Corporations, which are responsible for the administration of resources and control at the Regional level. In Brazil, it is pointed out that recent constitutional amendments transfer authority to the States and Municipalities for them to act directly in matters and natural resources. This should lead to real decentralization.

From this brief analysis of forest organizations, it is concluded that most the states have made efforts to solve the problems of administration in the forestry sector through changes in the
dependence of the activity within the state structure, by transferring the responsibility for forests, especially native forests, to the environmental authorities. This change has not always been favourable, as several countries are reverting the situation or thinking about doing so. Such are the cases of Brazil, where a forest under secretariat was created; Paraguay, where a law is being processed to create a new environmental authority, which does not include the forestry sector; and, Argentina, where a new institutionality is expected to unify or effectively coordinate the subjects of forestry.

The dependence of protected area systems is not always clearly stated. In several of the countries, for instance, Argentina, Paraguay, Peru and Venezuela, the administration of protected areas is in charge of institutions independent from the forest services and which generally have an equivalent rank.

There is a type of private institution in all the countries which are part of the forestry sector and carry out or finance research to a lower extent. The productive sector generally groups one or more organizations. For instance, in Brazil, the Brazilian Sylvicultural Society (SBS) which groups forest producers, the Brazilian Association on Renewable Forests, which groups charcoal producers and, the Brazilian Pulp and Paper Association, among others.

In Colombia the main producers’ organization is ACOFORE, Colombian of Reforestators and Wood Industrialists Association. In Chile there is the Wood Corporation (CORMA). In Uruguay, forest producers are grouped in the Forest Producers Association.

In Argentina the Argentine Forest Association (AFOA) groups the enterprises of the forest industry (particle board, plywood and fibre, pulp and paper, sawmills, nurseries, etc.), service enterprises, producers, professionals, technicians and other persons connected with the forestry sector. The Argentine Wood Industry Federation, groups chambers of sawmilling and furniture industries and, and the Pulp and Paper Producers Association (AFCP) groups enterprises of the paper pulp sector.

On the other hand, the countries have a number of non-governmental organizations, which generally are defenders of the environment, of the forests or of the rights of indigenous and local communities.

**Education, research and information systems**

Few countries provided information on these subjects in their national reports.

In Argentina five public and private universities offer high level training in forest engineering. The most important are the National University of Santiago del Estero, since 1956 and the National University of La Plata since 1960. There are technical training centres connected with the universities, in Neuquén, Corrientes and Entre Ríos. In Chile there are over fifteen public and private high level education centres which offer the career of forest engineering. The main and oldest are the University of Chile, the Austral University of Chile and the University of Concepción. Technical training is also exists and the main centre is the Catholic University of Talca.
Venezuela reports on three universities which teach the careers of engineering in natural resources, forest engineering and forest products technology. The most important being the University of Los Andes, which offers forest engineering and post graduate training. There is also a private university which trains mid level professionals. In Belize, the University College of Belize has been providing courses on national resources management. In Cuba, the University of Pinar del Rio has the career of forest engineering. In Guatemala, there are three universities which grant Masters Degrees in fields related to forestry and another that trains technicians.

Honduras has the Autonomous National University of Honduras, which through the Regional University Centre of the Atlantic Coast (CURLA), offers forest engineering; the National school of Forest Science (ESNACIFOR), which provides training in forest science and forest engineering; the private university Jose Cecilio del Valle and the Catholic University which also provides high level education. The Pan American Agricultural School (EAE) trains forest technicians.

The remaining countries did not provide information, but it is known that Brazil has a number of high level teaching institutions in the forest area, several of which offer post graduate programmes; Bolivia has three University Centres in forest education and one technical centre. Uruguay has three universities which offer education in forestry.

Most countries have some type of forest research institution within the State structure, but generally, a large number of institutions conduct forest research, including the universities, state or regional institutes, non governmental organizations and international projects, among others.

State institutions generally depend on the forest services or on the ministries on which the former depend. However, there are some exceptions. In the case of Colombia, the Corporation for Research and Forest Promotion (CONIF) is a private institution, established with the participation of several ministers and enterprizes of the private sector. The Brazilian Enterprise for Agricultural Research (EMBRAPA) in Brazil has a similar structure. In Chile the Forestry Institute (INFOR) is a private property institution, but without private participation, independent from the forest service. The case of the National Agricultural Institute (INIA), in Uruguay is similar.

Forest research in Brazil is coordinated by the National Centre for Forest Research (CNPF) of EMBRAPA, which has centres in different States of the country.

In Argentina the National Agricultural Technology Institute (INTA), which depends on the Secretariat of Agriculture, Livestock, Fisheries and Food (SAGPyA), has three regional centres which carry out forest research (Misiones, Entre Ríos and San Carlos de Bariloche). There is also the Patagonian Andean Forest Research and Extension Centre (CIEFAP) which depends on the National University of Patagonia. Mention must also be made of a private centre the Forest Research and Experimentation Centre (CIEF).

Costa Rica, forest research is conducted in the National University, the Technological Institute of Costa Rica, the Tropical Agricultural Research and Training Centre (CATIE); in Cuba the Forestry Institute; in Honduras the State Forest Administration-Honduran Forest Development Corporation (AFE-COHDEFOR), has different projects with international support (WB; FAO, ODA, IDB, ITTO, FINNIDA).
Financing for research continues to depend on governmental funds, in some cases biddable, and on external or international agencies.

As regards information and sectorial statistics systems, the countries in general do not have well developed systems. Chile is one of the countries with the most developed system, where the Forest Institute (INFOR) maintains a detailed system which is updated yearly in aspects such as macro economic indicators, resources, consumption and production, employment, and monthly, on subjects such as exports, inputs and prices.

Argentina has the Forestation Department of the SAGPyA which is charge of forest and industrial information; Colombia has the Institute of Hydrology, Meteorology and Environmental Studies, depending on the Ministry of Environment.

Cuba is developing a National Information System in the Forest Service, Belize has the Central Statistics Office in the Ministry of Finance, Costa Rica has a unit for this purpose in the National System of Conservation Areas, Guatemala has the Department of Information Systems in the National Forest Institute (INAB), Honduras created the Forest Information and Statistics Centre (CIEF) in the AFE-COHDEFOR.

**ECONOMIC ASPECTS OF FOREST UTILIZATION**

**Harvest**

According to FAO (2000) information total wood production in the Latin American and Caribbean Region amounted to 396.3 million cubic meters, in 1998, representing 11.3% of world wood production. Out of this total, 61.2% (226 million cubic meters) corresponds to fuel wood and charcoal consumption; the remainder is used for industrial purposes. In the Southern Cone production amounts to 57.4 million cubic meters, in the Amazon Countries to 241.7 million cubic meters, in Central America and Mexico to 60 million cubic meters and in the Caribbean to 9.7 million cubic meters. The percentage used for fuel wood and charcoal in these subregions is of 39.5%; 60.3%, 80.7%; and 91.2% respectively.

The information provided by the countries for the 1998-1999 period, is incomplete in general and this makes it difficult to define felling or production levels. In the Southern Cone, Argentina indicates extractions of 5.76 million tons of wood from cultivated forests in 1998, of which 92% was used for round wood. There is no information on natural forests and it must be assumed that a large part of the fuel wood and charcoal come from these forests. In 1999, Chile increased extraction for industrial use to 23.2 million cubic meters, mostly obtained from plantations. Uruguay indicates an extraction of 3.0 million cubic meters and 39% of this volume is used industrially. Paraguay reports 3.75 and 2.55 million tons for fuel wood and logs respectively.

Among the Amazon countries, Brazil reported a harvest of 283 million cubic meters, 108 million from plantations and 175 million from natural forests. 52 million cubic metres from the plantations are used for charcoal and fuel wood and 56 million cubic metres for sawmilling and pulp. Bolivia estimates an extraction of 1.38 million cubic meters in 1999, authorised felling of 6
million hectares of native forest. Since there are no accurate records, it is likely that wood extraction is greater. Venezuela reported 1.2 million cubic meters of wood in round wood for 1998.

Total production of Central America and Mexico and the Caribbean represents only 12.6% of regional production, and participation in production for industrial purposes, is below 9%. The reason for this is that wood consumption for energy is high in countries such as Mexico, where it reaches 15.9 million cubic meters a year, 66.5% of its production, in accordance with FAO information. With the exception of Nicaragua (4.7 million tons in 1999 an 94% of its production) the countries of this subregion did not provide information on fuel wood and charcoal or have provided incomplete information. This is so because their information systems do not control this variable or only do so in managed forests or in plantations. In Central America, countries such as Guatemala (12.8 million tons and 98.5% of its production), Haiti (6.2 million cubic meters) and Honduras (6.4 million cubic meters), volumes used for fuel wood and charcoal represent nearly the total amount extracted from the forests.

**Forest production and industry**

In spite of the enormous extension of forests and the favourable conditions for their growth in the Region, wood production for industrial purposes is quite low and represents only 9.5% of world production, with 143.3 million cubic meters. Sawnwood production represents 8.5%, boards 4%; pulp 6.3% and paper and cardboards 4.8%, with respect to world totals per product. A large part of regional industrial production is concentrated in South America. The Amazon countries produce 66.9% of the round wood volume for industrial use and the southern Cone countries 24.2%. These two subregions together represent 91.9% of the total volume.

Mexico, all the Caribbean countries, except Cuba; and several Central American countries (El Salvador, Guatemala and Panama) have deficits in their round wood production for industrial use and, consequently, also for more elaborate products, due to which they are wood importing countries.

All the countries of the Region, except Venezuela, present deficits in their paper and cardboard production and part of their consumption must be imported.

Argentina, Venezuela, the Central American and Caribbean countries (except Belize, Honduras, Nicaragua and Guatemala), and Mexico do not produce enough sawnwood to meet their needs. The greatest deficit is shown by Mexico, amounting to 1.4 million cubic meters.

In the measure that progress is made in the degree of elaboration of the products, the number of countries that must import an important a part of, or their total requirements, increases.

The highest yearly rates of extraction for industrial purposes correspond to Brazil, Chile, Mexico, Argentina and Ecuador, which jointly account for 88.4% of the total for the Region, which is reflected by high apparent consumption percentages of industrial logs and high levels of development of the primary transformation industry. As a result sawnwood production volumes amount to 18.6; 4.6; 3.3; 1.7 and 2.1 million cubic meters, in Brazil, Chile, Mexico, Argentina and Ecuador respectively. The highest pulp production levels are recorded in Brazil and Chile with 6.7 and 2.2 million tons. The same countries are the main board producers with 3.1 and 1.0
In the case of papers and cardboards the main producers are Brazil, Mexico and Argentina with 6.5; 3.7 and 1.2 million tons respectively.

The national reports do not include information on the installed capacities of the forest industries.

**Domestic and international markets**

In the Region, with the exception of Brazil and Chile, forest activities are basically oriented towards the domestic markets. The future development of the sector must be concurrent with greater industrial development, the opening of new market and with policies to facilitate and increment the action of the private sector, which is recognised as a fundamental element in this activity.

With the exception of Brazil and Chile in South America, and Guatemala and Honduras in Central America, the contribution of the forest sector to the GNP of the countries is of little significance. In spite of this, forests play an important social and environmental role which is not reflected in the national accounts. It is important that countries include the goods and services from forests (fuel wood, charcoal fruit, protection, recreation and others) in their national accounts for the purpose of establishing the real contribution of forests to national economies.

In Brazil, forest exports totalled 3 billion dollars representing 8.5% of total exports, and the forestry sector has a participation in the GNP of 5%. In Chile, sectorial exports reached a little over 2 billion dollars, representing 13% of total exports and the sector contributes with 2.7% to the GNP, and, the balance of trade for forestry is positive by over 1,500 million dollars. Argentina exports around 600 million dollars but imports 1,620 million dollars and maintains a negative balance in its international forest trade. Uruguay exports near to 80 million dollars and managed to balance its forest trade in 1999. Other countries with positive balances are Ecuador, Paraguay, Cuba, Guatemala and Honduras. The main exporters are Brazil and Chile and the main products exported are logs, sawnwood, boards and pulp.

**SOCIAL ASPECTS OF FOREST UTILIZATION**

The Region is undergoing a positive change as regards the perception society has of the importance of forests, not only from the economic point of view, but also from the environmental and social perspective.

In many countries of the Region there is concern for the services generated by forests. Costa Rica was the first country to amend its legislation to include environmental services. At present, several countries of the Region are considering the inclusion of this subjects in their policy and legislation.

Most of the countries of the Region mention cases of participation of all interest groups in decision making on the use of forests, and several countries have found solutions for the controlled use of forest resources by the communities living in forest areas, including
indigenous, coloured, American Indian and rural communities in general (Ecuador, Guyana, Venezuela, Brazil, Bolivia, Costa Rica, Colombia, among others).

Interest groups have increased in all the countries, which is reflected in the high number of non governmental organizations related with forests in one way or another. In Brazil, there are over 2,000 NGO’s, 104 in Peru and 80 in Ecuador. Decision making, as reported by the countries is increasingly participative. In the case of Chile, for example, during the legislative proceedings on forestry norms, representatives of the public and private sector, of the research and promotion area, peasant associations, NGO’s concerned with the environment, NGO’s of a unionist nature, teachers, among others, are invited to participate in the sessions and express their opinions.

Several countries stress the social benefit of forests in terms of employment. For instance, Brazil points out that the forestry sector provides direct employment to 700,000 people and indirect employment to 2 million. Ecuador reports over 200,000 direct or indirect jobs. Argentina indicates that the promotion of cultivated forests has incorporated women into forest activities, increased the population of communities in the neighbourhood of forest areas and, is providing better paid employment than that offered by the livestock sector.

Different countries also emphasise the social function of national parks and protected areas. Colombia reports over 400,000 visitors a year, in spite of serious infrastructural limitations and problems connected with the lack of safety. Costa Rica, Guatemala and Chile also mention this important function of forests. Several countries have started ecotouristic programmes, tendering grants in parks and reserves and, are studying mechanisms for the creation of private protection areas. Similar activities are being implemented in Costa Rica.

**ENVIRONMENTAL ASPECTS OF FOREST UTILIZATION**

The environmental importance of forests is well recognised in all the countries of the Region. This is reflected in the structural changes in government organizations, the orientation of policies and in a greater participation of civil society in the subjects related with forest conservation and management.

In their reports to the 21st LACFC, the countries reported a little over 214 million hectares of protected areas, but information from some countries is lacking. Total protected areas represent 11% of the regional area. There are several outstanding cases of countries with a high percentage of their territory destined to protected areas. Among them mention may be made of Costa Rica (25.8%); Chile (18.7%); Guatemala (19.6) and Panama (29%).

The protected areas, in many countries of the Region, have serious administrative deficiencies, due to which they are not free from problems, such as illegal forest felling; illegal occupation, intentional fires. For different reasons, the countries do not provide enough resources for their proper protection and administration.

Forest fires have been one of the main environmental problems in the 1998-1999 period. The presence of the Niño current, in 1998, produced great droughts in Central and South America, favouring the occurrence of devastating fires, which it is estimated affected around 3.8
million hectares, although the situation reported to the 21st LACFC meeting leads to much lower figures. Preliminary SOFO 2001 information (State of World’s Forests of FAO) indicates that in 1998, in the State of Roraima in Brazil, close to 4 million hectares appear to have been burned and over 800,000 hectares in Mexico. During the same year, hurricane George caused great damage in the Caribbean area and hurricane Mitch caused disastrous damages, mainly in Honduras and Nicaragua.

Most of the countries of the Region, if not all, are requiring management plans for any type of intervention in forests and are considering the corresponding penalties for illegal felling or transgression of management plans or felling authorizations. Also most of the countries are limiting or forbidding land use conversions and the advance of agricultural frontiers. Several countries are also requiring environmental impact studies prior to the execution of forest projects of some importance (Argentina, Chile, Uruguay, Guyana, and others).

Some countries have already evaluated their emissions of greenhouse effect gases (Belize, Panama), others are implementing or considering payment for environmental services to promote forest management and forestation.

INTERNATIONAL AND REGIONAL COOPERATION AND SUPPORT

International conventions and agreements

Preliminary information of FAO’s SOFO 2001, indicates that all the countries of the Region have adhered to the Convention on Biologic Diversity (CBD). Cartagena Protocol (2000), the United Nations Framework Convention on Climatic Change (UNFCC, New York, 1992) and the Vienna Convention for the Protection of the Ozone Layer (1985). On the other hand, this is not the case regarding the degree of ratification by the different countries of the Montreal Protocol on Substances that Reduce the Ozone Layer (1987) and its amendments: London (1990), Copenhagen (1992) Montreal (1997) and Beijing (1999); and the Kyoto Protocol (1997) for the UNFCC. Chile, for example, is the only country that has ratified the Montreal Protocol up to the Beijing Amendment.

All the countries of the Region, except Bahamas, have adhered to the United Nations Convention to Control Desertification (UNCCD) and all of them, except Haiti, have signed the Convention on International Trade of Endangered Wild Flora and Fauna Species (CITES). The Convention on Humid Areas of International Importance or the Ramsar Convention (1971) has been supported by most of the countries. Only a few countries of the Caribbean have not adhered, among them Cuba and the Dominican Republic, and of the Amazon Region, Guyana.

The United Nations Convention on the World’s Cultural and Natural Heritage has been signed by most of the countries, except some Caribbean countries (Bahamas, Barbados, Saint Vincent and Grenadines and Trinidad and Tobago).

Honduras and Panama in Central America; Trinidad and Tobago in the Caribbean and all the Amazon countries belong to the International Convention on Tropical Timber.
International cooperation

Most the countries of the Region are receiving support to strengthen public institutionality and for forest development projects from different external and international agencies.

FAO has supported the development of national forest programmes in all the countries of the Region through a regional project executed by the Regional Office of said agency.

In the Southern Cone, Argentina has the support of the Commission of European Communities (EU) and of the World Bank, mainly for its programme for the promotion of cultivated forests, increment of their area, improvement of the quality of their products and for the implementation of the national inventory of plantations, which is currently in its final phase.

Chile has ongoing forest development projects with the cooperation of the German Technical Cooperation Society (GTZ), the German Reconstruction Bank (KfW) and the National Forest Office of France (ONF), mainly for the management of natural forests. The International Cooperation Agency of Japan (JICA) supported watershed management and erosion control works, until 1998.

The World Environment Fund of the World Bank (GEF) finances activities related with the conservation of biodiversity. The European Community (EU) is supporting work connected with institutional strengthening and infrastructure for the National System of State Protected Wild Areas, and with the development of a forest certification system. In addition, it supports a regional project on forest information executed by the FAO Regional Office, in which 17 countries are participating.

Uruguay receives support from the World Bank for institutional strengthening and forest development and from JICA for the preparation of a Master Industrial Development Plan. In Paraguay a Project on Natural Resource Management is being implemented in the eastern region with KfW support; there also is a technical cooperation agreement with JICA for reforestation programmes in the same Region, and support is received from the FAO Regional Project and the Netherlands for the formulation of its national forestry board.

In the Amazon Region, Brazil is implementing Project UNDP/Bra/92/010, for the Promotion of Development and Sustainable Utilization. Colombia is implementing some forest projects and programmes with the support of the World Bank and the Interamerican Development Bank (IDB). Ecuador has the support of different agencies such as GTZ, UNDP, GEF and IDB, the International Union for the Conservation of Nature (IUCN) and the ITTO, on sustainable forest management in natives forests, forestation and reforestation programmes and programmes on community forest development. In addition, it receives support from FAO for the development of its National Forest Programme.

Guyana receives support from the Department for International Development of the United Kingdom, in connection with institutional strengthening of the Guyana Forest Commission (GFC), from the German Government in natural resource management, the Canadian International Development Agency (CIDA) to implement a national forest inventory, from the Environmental Protection Agency (EPA) for the conduction and monitoring of environmental impact studies prior to forest interventions and, from GEF for the selection and design of protected wild areas. In addition, the International Iwokrama Centre for the Development and
Conservation of Rain Forests, has 360,000 hectares of tropical rain forest under management, which the Government of Guyana offers to the international community as proof that sustainable intervention is possible in these forests. The UNDP is supporting the country in the development of national certification standards and improvement of exploitation and logging activities to reduce damage to regeneration and soils.

In Central America and the Caribbean, Honduras has the support of the UNDP and GEF in fields related with biodiversity, conservation and sustainable use, ITTO and the government of Japan in the conservation and management of mangroves, WB in institutional strengthening, from AFE-COHDEFOR and the IDB in watershed management. Nicaragua, receives support from the IDB and WB for similar activities and, from UNEP, UNDP and UNESCO for environmental projects, and from FAO to support the Honduran Forest Agenda and community forest development. Costa Rica receives support from GTZ, UNDP and DANIDA in the field of territorial management and, from UNDP in aspects of institutional strengthening. Cuba has developed some projects with financing from FAO, UNDP and the Netherlands, and Guatemala with support from WB, EU, Netherlands, KfW and GTZ.

Mexico maintains cooperation agreements with the United States (AID and the Forestry Service) mainly in connection with prevention and protection against forest fires and restoration of burned areas. It has various community forest development projects in different regions of the country with the collaboration of Germany, Canada the United Kingdom, Japan and the United States. Mexico also maintains bilateral agreements with countries of Central America and the Caribbean such as Guatemala, Belize and Cuba, to avoid smuggling of forest products, and on protected area management and technical-scientific exchange. In addition, there also is a subregional (Tuxtla II) cooperation agreement in the field of forestry and natural resources, with El Salvador, Honduras, Costa Rica and Panama. An IDB/Finland agreement provides support to the development of a forest strategy for Mexico. FAO executes a project for the implementation of a development strategy for mountain areas.
<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Land area ('000 ha)</th>
<th>Total forests ('000 ha)</th>
<th>Percentage of land area (%)</th>
<th>Area per caput (ha)</th>
<th>Forest plantations ('000 ha)</th>
<th>Wood volume in forests (m³/ha)</th>
<th>Wood biomass in forests (t/ha)</th>
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<td><strong>1.1</strong></td>
<td><strong>17 533</strong></td>
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Note: The regional breakdown reflects geographic rather than economic or political groupings.
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| Total North America, Central America, Caribbean and South America | 3,891,707 | 1,434,922 | 36.9 | 1.8 | 27,988.0 | 124.0 | 162.0 |

<p>| Total World       | 13,063,900 | 3,869,455 | 29.6 | 0.6 | 187,086.0 | 100.0 | 109.0 |</p>
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<th>Total forests 2000 ('000 ha)</th>
<th>Forest cover change 1990-2000</th>
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<td>n.s.</td>
<td>n.s.</td>
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<tr>
<td>Saint Kitts and Nevis</td>
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<td>4</td>
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<td>Saint Pierre and Miquelon</td>
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<td>-</td>
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<td>Saint Vincent and the Grenadines</td>
<td>7</td>
<td>6</td>
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<td>Trinidad and Tobago</td>
<td>281</td>
<td>259</td>
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<tr>
<td>United States</td>
<td>222 113</td>
<td>225 993</td>
<td>388</td>
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<tr>
<td>United States Virgin Islands</td>
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<td>14</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td><strong>Total North America, Central America and Caribbean</strong></td>
<td><strong>555 002</strong></td>
<td><strong>549 304</strong></td>
<td><strong>-570</strong></td>
<td><strong>-0.1</strong></td>
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</table>

Note: The regional breakdown reflects geographic rather than economic or political groupings.
<table>
<thead>
<tr>
<th>Country</th>
<th>1960</th>
<th>1970</th>
<th>Change</th>
<th>% Change</th>
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<td>Colombia</td>
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<td>n.s.</td>
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<td>Venezuela</td>
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<tr>
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<td>1,434,922</td>
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<td>3,869,455</td>
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