ASIA AND THE PACIFIC

national forest programmes

UPDATE

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Foreword

The publication *National Forest Programmes (NFP) UPDA TE 34* is produced as a regular NFP UPDATE. Initially planned as a biennial publication, it is issued as a supplement to the comprehensive information concerning forest and forestry aspects provided by *FAQ* in different formats, including electronic (such as web-sites) and hard copies.

The publication (English language version only), contains information on the progress of the National Forest Programmes (in the form of regional and country profiles) of 30 countries in the Asia-Pacific region. For the time being it was not achievable for this publication to cover all the countries in the region as recommended by the Commission on Sustainable Development *(C5b)* at its meeting in February 2000 that NFP cover all types of forests.

Due to various reasons such *as* limited information and time constraints, country profiles for some countries could not be presented. However, new country profiles for Maldives, Brunei Darussalam and the United States of America are included in the present document. The information presented in the document is brief, derived from several sources, such as electronic web-sites, project reports, other relevant publications, and the country reports presented at the l8~ *Asia* Pacific Forestry Commission meeting held in Australia in May 2000.

In line with the broad definition of national forest programmes as formulated by the Intergovernmental Panel on Forest at its Fourth Session in 1997, a variety of strategic frameworks are included in this publication, including the Forestry Sector Master Plan (FMP), the Tropical Forestry Action Plan/Programme *(TFAP),* the National Forestry Action Plan (NFAP), the Biodiversity Action Plan, the Environmental Action Programme, the Forestry Sector Review, the Desertification Control Plan, National Policies for the implementation of UNCED, etc.

Readers may note that the quality of information varies from country to country; some could not be updated in this *NFP LJPDA TE 34* due to a lack of newly available material, particularly regarding recent changes in forest and forestry development. We are fully aware of this situation, and are counting on all those involved in the forestry sector development and national forest programmes process to help us obtain additional information and re-define the format and content for the coming issues. Indeed, we depend on all partners to improve the information we can collect and disseminate. Please feel free to make any suggestions you may have for further enhancing this publication.

We are confident that the present edition will be useful, and for those who contributed to making this publication, we would like to express our appreciation and thanks and count on your continued co-operation in the future.

R.B. Singh
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and Regional Representative for Asia and the Pacific

Table of contents

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Country focal points

The country focal points for the national forest programmes are provided at the end of each country profile.

Acronyms and abbreviations

Most abbreviations used in this publication are preceded on first mention by the full name. However, those more frequently repeated are listed below for easy reference. Acronyms for country institutions are usually given in their original form for better comprehension

ADB	Asian Development Bank
AIDAB	Australian International Development Assistance Bureau
ASEAN	Association of South East Asian Nations
AusAID	Australian Aid
CIFOR	Centre for International Forestry Research
CIDA	Canadian Agency for International Development
CSD	Commission on Sustainable Development
^{0}C	Degree Celsius
DANIDA	Danish International Development Agency
DFID	Department of International Development, United Kingdom
EU	European Union (formerly European Economic Community)
FAO	Food and Agricultural Organisation of the United Nations
FINNIDA	Finnish International Development Agency
GATT	General Agreements on Trade and Tariff
GEF	Global Environment Facility
ha	hectare
ICRAF	International Centre for Research in Agroforestry
IDRC	International Development Research Centre (Canada)
IIED	International Institute for Environment and Development
IFF	International Forest Forum/ Commission on Sustainable Development
IPF	Inter Governmental Panel on Forest
ITTO	International Tropical Timber Organisation
IUCN	World Conservation Union
JICA	Japan International Co-operation Agency
m3	Cubic meter
KfW	Kredіranstalt fur Wiederaufbau (Germany)
Km2	Square kilometre
NEAP	National Environmental Action Plan
NFAP	National Forestry Action Plan/ Programme
NGO	Non-Governmental Organisation
ODA	Overseas Development Administration of the United Kingdom
%	Percent
RAP/RAPA	FAO Regional Office for Asia and the Pacific
SDC	Swiss Development Co-operation
TFAP	Tropical Forestry Action Plan/Programme
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development
WB	World Bank (International Bank for Reconstruction and Development)
WRI	World Resource Institute
WWF	World Wide Fund for Nature

Asia and the Pacific

Basic data			
Land area (thousand ha)		Total forest (thousand ha)	
Tropical Asia*	846,839	Tropical Asia	279,766
East Asia**	1,148,958	East Asia	181,671
Tropical Oceanea**	54,055	Tropical Oceanea	41,903
Temperate Oceanea**	791,243	Temperate Oceanea	48,792
Sub-total	2,841,095	Sub-total	552,132
Population 1995 (million)		Annual change (thousand ha/%)	
Tropical Asia	1,722.3	Tropical Asia	-3,055/ -1.1
East Asia	1,424.6	East Asia	-113/ -0.1
Tropical Oceanea	6.6	Tropical Oceanea	-151/ -0.4
Temperate Oceanea	21.4	Temperate Oceanea	60/ 0.1
Sub-total	3,174.9	Sub-total	n.a.

Source of data: FAO-State of the World's Forest, 1999

*= Total sum of south, continental and insular Southeast Asia

**= Followed the classification made in the FAO-State of the World's Forest, 1999

General information

Issues on forest and forestry in the Asia-Pacific Region are different, many, complex, heterogeneous, and wide, including tropics/ sub tropics; humid/ savannahs/ desert; low lands/ mangrove/ mountains; rich/ poor in forest resources; owned by the state and private individuals/ groups; very important sector toward socio-economic development of a country/ minor contribution to socio-economic development; some countries are exporters and some are importers; some countries are at the developed state that they have several socio-economic development alternatives and some belong to the developing countries and countries in economic transition; some countries are land locked/ small in size; some countries have very high and others have small populations; some countries have sufficient capacity in their National Forest Programmes (NFP) planning and implementation, including involvement of partners and partnership; in terms of biodiversity aspects, some countries contain megadiversity. Each country is unique. Each has its own peculiar combination of climate, geology, ecology, landscape, politics, economics, and social perspective.

However, there are also similar aspects for many countries. Thus, one country's experiences in certain aspects can be relevant to other countries. An in-depth study of the forestry sector on the status, progress and trends and outlook, within the framework of the forestry sector outlook study 2010, was carried out in 1997/98.

Major changes have emerged in forests and forestry policies in recent years. There has been a growing concern with national policy reform towards liberalisation, openness, land use, equal-sharing benefits, empowerment of partners in planning and implementation, decentralisation, sustainable forest management, law enforcement, detection and suppression of forest fires, suppression of illegal logging, and ties to the global economy and the environment and involvement of partners. Different international initiatives have been launched in the effort to implement the UNCED Agenda 21 in forest and forest-related matters. In regard to sustainable forest management, several efforts have been launched, including certification, the code of

practise for forest harvesting, criteria and indicators for sustainable forest management, reduced impact logging, logging bans in natural forests. Globalisation efforts have also been taken place, including liberalisation trade. In reality, many people in rural areas in developing countries, including women, children and people living in and close to forests, are still illiterate, which make it difficult to socialise the concept, modalities and principles of sustainable forest management. In several developing countries funds and human resources are limited, and sustainable is becoming dilemma. Sustainable forest management practices that have successfully been used in several countries are becoming polemic in some other countries.

Deforestation and forest degradation have been continuing in some developing countries, while forest plantations have successfully exceeded the deforestation rate in China, India, and the Republic of Korea. Taking into consideration the trees planted in agricultural land (agricultural tree crops) and for other land uses (roadsides, home gardens, etc), the tree crown cover has substantially contributed to the greening of the earth and as source of timber, fibre materials, and other products such as latex, fruits, barks, fodder, etc. In some countries, a policy of letting agricultural land revert back to forestland with compensation and incentives has taken place for example in Western China.

Preliminary analysis of more than 3000 satellite images show that the rate of deforestation in the tropical countries was at least 10% less in the past ten years compared to the 1980s. Half of the images show a reduced rate of deforestation and 20% showed an increase. The survey is part of FAO's Global Forest Resource Assessment 2000, which will be delivered by the end of 2000. The major causes of deforestation in the tropics were numerous the most easily visible being the conversion of forest into agricultural and other land uses. Over-harvesting of industrial wood and fuel wood, overgrazing, fire, insect, pest and diseases, storms, and air pollution also cause forest degradation.

Human intervention was the main factor causing the change. According to the World Population Prospects, the Economic and Social Affairs (ECOSOC) of the United Nations, the 1998 Revision, the population in the Region was 3,360 million in 1997 (medium variant, excluding Western Asia), and increased to 3,450 million in 1999, or by about 90 million within two years. In 2050, the population in the Region will reach 5,268 million, an increase of 1,818 million, or almost double of the population of India in 1995 (the second biggest population in the world). In this respect, some people are of the view that the carrying capacity of the forest and agriculture lands in the Region, particularly in densely populated developing countries, is limited and would not be adequate to support the demand for food and agriculture products in the future.

Recent development and new realities have necessitated major changes in strategic approach, planning, and execution with focused emphasis on a proactive instead of reactive management approach. The call of the day is management by results rather than management by mere objectives, since too often, attainment of set objectives do not actually yield desired results.

In the past few years, several countries in the Asia-Pacific Region, with or without support from their external partners, have embarked on reforms of their forest policy. The major criticism of forest policies is in their implementation and their relevance. In addition, several countries have crafted nice and ambitious objectives that do not actually yield desired results. Therefore, some countries have adopted a management approach by results rather than by mere objectives. To be effective, the management by results should be "SMART" (specific, measurable, attainable, relevant, and time-bounded).

In regard to fulfilling the demand for forest products, particularly timber, forest and tree plantations have been established intensively in several countries in the form of industrial/ large scale tree plantations, small community plantations, mixed-planting between

trees and cash crops, tree plantings along land boundary lines, in schools and office compounds, and along road sides. However, pests, diseases, and forest fires will most likely occur more frequently and cause more damage in the near future, due to intensive global trade (with less precaution in plant quarantine), more mass biomes, climatological disturbances (with long dry seasons), and low people's awareness.

During the Intergovernmental Panel on Forests (IPF) and Intergovernmental Forum on Forests (IFF) deliberations (1995-2000), it was noted that there was no disagreement on the importance of national forest programmes (NFP) to national forestry sector development of all types of forests. The IFF at its fourth session (IFF-4) held in February 2000, concluded that NFP, as defined in the IPF, is a viable framework for addressing forest sector issues. In regard to international arrangements on forests, IFF-4 recommended establishing an intergovernmental body which may be called the United Nations Forum on Forests (UNFF) with the objective of promoting the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment.

In its resumed session on 18 October 2000, ECOSOC adopted the Resolution entitled "Report of the forth session of the IFF". This Resolution established the United Nations Forum on Forests (UNFF) as a subsidiary body of ECOSOC. The UNFF provides a high-level forest policy forum. Among its major functions are the promotion of the implementation of the already agreed actions, enhancement of co-ordination of forest related issues, and strengthening political commitment to sustainable management of all types of forests. Within five years, the UNFF will recommend the parameters of a mandate for developing a legal framework on all types of forests.

Although in the past three decades many countries in the Region achieved high rates of economic and agricultural growth, some countries were severely affected by the Asia financial and economic crisis with different degree of impacts during 1997-2000. ITTO reported that timber trade in Japan, the biggest importer of timber in the Region, had not recovered by the end of 1999. However, exports of furniture from China had been increasing significantly.

In addition to the economic crisis, during 1997-98, forest fires burned across many regions of the world causing severe economic and environment impacts in a certain sub-regions and countries, effecting eco-tourism, causing loss of biodiversity, destroying valuable forests, creating problems in transportation, and having a bad impact on health. In response to the series of devastating forest fires, several meetings to overcome the problems were convened at international, regional and sub-regional levels.

In regard to partners participation and involvement, at a substantial number of talks through meetings and workshops, several conclusions, promises and commitments have been achieved, said and agreed. But, few of them have been translated into actual actions in the field. It was reported that the Overseas Development Assistance (ODA) has been decreasing significantly during the past few years. In this respect, the Asia Pacific Forestry Commission, in its 18th Session held in Australia, 15-19 May 2000, stressed that the new international body, UNFF, should be action -oriented and transparent and should avoid debate on issues for which decisions have previously been reached.

National Forest Programmes

It was realised that since 1994, there has been no systematic approach to taking stock and drawing lessons from the implementation on NFPs world wide, although several auto evaluation and stock taking exercise were conducted on several occasions between 1985-1994. Bearing in mind this situation, FAO, in collaboration with all partners, launched out a world-wide survey on the status and progress in the implementation of NFPs in November 1998. The important results of the survey include the following:

- Most of the on-going NFP exercises had a good start in the pre-UNCED period.
- Most countries implemented their NFPs by incorporating them into their five-year, ten-year or long-term national development plans;
- The lack of institutional capacity and adequate human resources is the major constraints in the NFP implementation. The decision making is hampered by the lack of data and information. Institutional capacity in the NFP planning and implementation is still weak, including participation of stakeholders, decentralisation, and empowerment of local/ community organisations.
- The NFP exercise has been internalised and sometimes institutionalised. The NFP process has been blended into the country's socio-economic planning and programming;
- People's participation is one of the new directions in managing the resources to achieve sustainable forest management. Community forestry, joint forest management, lease-hold forestry, and promotion of agro-forestry systems have been introduced in the region. The involvement of the private sector and related investment has been significant in some countries; and
- The NFP exercise has been stalled in some countries due to dependency on external support, low awareness of partners, lack of internalisation and institutionalisation of the process, and weak institutional capacity.

The "Second Ministerial Meeting on Sustainability Issues in Forestry, the National and International Challenges" was held in Rome, from 8-9 March 1999. One of the declarations stated that the Ministers welcomed the progress made to date on sustainable forest management, including FAO's role in the assessment of forest resources, and the significant achievements at national, regional and international levels, including the development and implementation of criteria and indicators for sustainable forest management and of national forest programmes. At the meeting, the Ministers pledged to bring their political will to bear on improving forest management in their respective countries and to promote effective international co-operation to achieve sustainable forest management world-wide.

The International Forestry Advisers Group (IFAG) have carried out intensive discussions concerning NFP issues. Its meeting held in Finland on 25-29 August 1999 discussed the following issues: a) the NFP concept; b) financing NFP implementation; c) sector support programme; and d) international modalities to support NFP processes. Detailed information could be obtained from the following E-mail: *knowhow@metsa.fi*

It was reported that several countries have reviewed the NFP exercise and made revisions in the approaches and strategies, including Australia, Indonesia, Lao PDR, Nepal, New Zealand, Papua New Guinea, the Philippines, and Sri Lanka.

The South Pacific countries have also been active in the NFP exercise. A session on the CSD/IPF/IFF/NFP process was organised during the Sub-Regional Consultation on Implementation of Codes of Logging Practice and Directions for the Future, held in Port Villa, Vanuatu, 12-17 July 1999. Important recommendations include: co-ordination amongst partners is important issue in sustainable forest management, which needs strengthening in most countries; forestry agencies should take a lead role in strengthening co-ordination at the national level and involve all stakeholders, including industry, landowners, NGOs and relevant government agencies.

In addition to the meetings and activities mentioned above, several other international initiatives and meetings discussed the NFP approach, including the fifth Conference of the Parties (COP-5) to the Convention on Biological Diversity (CBD) held on 15-26 May 2000. The results provide a clearer linkage of CBD forest work programme to the implementation of the IPF/IFF Proposals for Action. It was recommended that NFP be used as a framework to integrate donor support.

There were substantial debates and activities that discussed the NFP framework at the international, regional and national levels. Several decisions, agreements, and proposals for action have been reached. However, it is widely recognised that the results of discussions have not sufficiently been translated into achieving real actions in the field. Several people expressed the view that it is time to take actions as expressed in the UNCED decisions. Several people also expressed the view that if the cost of meetings on forest and forestry were used for real actions in the field in some countries, the deforestation rate in those countries would have been arrested several years ago. Several people also expressed the view that meetings and talks are important process in involving partners and part of the NFP advocacy i.e. to improve partners awareness; the cost of involvement partners is really high, though. It should be noted that the delegates attending the 18th Session of the Asia Pacific Forestry Commission held in Australia on 15-19 May 2000, also expressed the same opinion.

Forest fires

Wildfires have been present in nature from time immemorial. Since 1960, there have been several fire events, which attracted world attention. In Brazil, wildfires burned 2 million ha and destroyed more than 5,000 houses and took 110 lives. During the Ice Age, extended periods of minimal rainfall occurred in Southeast Asia, making large areas of the region vulnerable to fire. More recently the recurring ENSO climatological disturbance has regularly created conditions that enable large-scale wildfires to occur in the region. It was reported that wild fires destroyed 2 million ha of forest per year on the average in the United States of America in the last decade.

The underlying causes of wildfires are several, including availability of dry fuel to feed a conflagration, a source of ignition to set the fire, and a transport mechanism such as wind. Most fires are set off by human and natural factors, including lightning. The foremost cause of forest fires in Southeast Asia in 1997/98 was land clearing practice.

A meeting was convened at FAO Rome attended by representatives from 33 countries and 13 international organisations, on 28-30 October 1998. The objectives of the meeting were to: a) identify, analyse, and discuss the public policies that contribute to forest fires; b) collate information from institutions dealing with forest fires; c) produce recommendations on planning and policies for fire prevention, control, mitigation, rehabilitation measures; d) provide a strong message to member countries through FAO (as neutral forum) on policy issues related to fire; and e) suggest actions to be taken by countries through a statement to the forestry ministers who will meet in Rome in March 1999. The meeting concluded that no single formula could cover the wide range of ecological, socio-economic, and cultural conditions that exist between and within regions, nor the different objectives that different societies will decide. But there are certain broad principles common to all situations and objectives.

In regard to policy aspects, the meeting produced the following general recommendations: policies on land use are required that do not further contribute to deforestation; a policy on forest fires should be formulated as an integral component of land use policies, flexibility in implementing, reviewing, and revising fire related policy; clear and measurable policy objectives and implementation strategies are needed; all stakeholders should be involved in developing a fire policy, reconsideration of policies that tend to increase of forest fires, incentives and subsidies to promote fire prevention.

In the wake of the 1997 forest fire, the ASEAN member countries discussed the trans-boundary atmospheric pollution. One of the important results was the approval for implementation of the Regional Haze Action Plan (RHAP) in December 1997.

The objectives of RHAP are to: a) prevent forest fires through better management

policies and enforcement; b) establish operational mechanisms to monitor land and forest fires; and c) strengthen regional land and forest fire-fighting capacity, along with other mitigation measures. Specific countries have been designated to spearhead the activities in line with the RHAP programmes (prevention, mitigation, and monitoring) i.e. Malaysia takes the lead in prevention, Indonesia in mitigation, and Singapore in monitoring of fire and haze events. A considerable amount of donor assistance is forthcoming for this crucial initiative. To translate the Plan into action, an operationalised RHAP was approved for implementation in September 1999.

Subsequent to the efforts to overcome the issues on forest fires, an International Cross sectoral Forum on Forest Fire Management (FFM) in South East Asia was convened in Jakarta, Indonesia, on 7-8 December 1998. The Government of Indonesia, ITTO, and JICA sponsored the Forum. The Forum discussed prevention, control, rehabilitation and trans-boundary issues of the tropical forest fire. The goals of the Forum were, among others, to: a) gather information concerning the causes of forest fires and their impacts, b) review existing land use conditions and consider land use management reforms, c) integrate the current efforts to overcome the impacts caused by forest fires, d) develop technology for forest fire prevention and management, e) improve regional efforts to anticipate and address the trans-boundary impacts of forest fires, f) develop guidelines for the drawing up of a national action plan for the management of forest fires and their associated impacts.

Important areas that the Forum concluded action was needed to fill the gaps or to strengthen the existing capability are as follows: capacity building, pilot demonstration (model forest for IFFM, fire suppression training, participatory methodologies), community participation (through incentives, income earning activities, involvement in production enterprises), rehabilitation of burned areas (through sanitary operations, salvage felling and replanting), rationalisation of shifting cultivation (incorporating agroforestry, skill development, crafts), optimising the size of forest concessionaires (to ensure scientific management), formulation of national forest fire plans, establishment of regional and international co-operation on trans-boundary issues related to forest fires.

In addition to the above, one of the important subject matters discussed at the Second Ministerial Meeting on Sustainability Issues in Forestry, Rome, 8-9 March 1999 was forest fires. In this matter, the meeting called on FAO and other international organisations, donor agencies and interested countries to work together to address the underlying causes of forest fires, to improve the co-ordination of their efforts to prevent and combat forest fires, and to rehabilitate affected areas with a view to providing assistance requested by governments.

Investment in forestry

The NFP exercise has attracted investment in forestry sector development in some countries. In some countries, funds exceeded the needs for some programmes of the NFP exercise. In other countries, country capacity is the main issue in the NFP implementation. However, some NFP exercises were heavily criticised for its project listing instead of as process toward the achievement of sustainable forest management. According to the NFP reports, priority of investment in forestry has been given to several programmes/ activities, including protection (watershed, biodiversity, natural unique ecosystem), institutional capacity (policy, organisational, research, and manpower development), resource development, production, utilisation and trade. In some countries, due to constraints in financial resources and lack of the private sector involvement in the forestry sector development, investment on production, utilisation and trade had been minimal. In other countries, loans have been used for conservation of forest resources, including watershed and biodiversity conservation, and protected area

development. The amount of loans amounted to about 60-70 % of the investment in the forestry sector development in some countries.

Since forestry development is long-term process in nature, a number of observations were raised by some partners, including whether overseas loans for forestry sector development are profitable and sound, particularly concerning investment for conservation (excluding utilisation), institutional development, and protected areas development. Due to bad performance, some partners raised also criticism on using overseas loan for plantation development.

From the point of view of the private sector, the context for decisions of investment is based on market prices and on considerations of risk, uncertainty, profits, and losses. Debates on the value of forest have been taking place, including the value of forest to produce direct benefits such as timber. Recently, indirect benefits and non-wood products have been given substantially important value. Details concerning valuing forest have been provided in the FAO Forestry Paper No. 127 entitled "Valuing Forest: context, issues and guidelines". The willingness of consumers to pay the real value of forest products, including certified timber, is another factor that should be taken into consideration for forestry investment. It should be noted that timber and forest products could be easily substituted in several uses by plastics, aluminium, and steel, and also by lesser known species and new products.

The economic crisis that occurred in Asia started in Thailand in 1997. The impacts were mild in some countries, but had serious negative impacts in several other countries. It was reported that the crisis has been gradually overcome in some countries lately. Due to inflation, including the lower exchange rate, investments using overseas loans have been reduced substantially. Mobilisation of local market funds has been used as an alternative source of funds in some countries, including green lottery.

The crisis has indirectly affected the forestry sector development in some developed countries, including Australia, New Zealand, and Japan. In late 1999, it was reported that the forestry sector development in some countries has been improving, including increasing timber production in New Zealand. ITTO reported that timber trade in Japan, the biggest importer of tropical timber in the Region, was not recovering at the end of 1999. The plywood market had hit bottom and the demand was sluggish. The overall trend of consumption of tropical timber in Japan had decreased in the past few years, i.e. logs consumption was 22.897 million m3 in 1995 and reached 13.556 million m3 in 1999, and sawn timber consumption was 24.493 million in 1995 and decreased to 18.000 m3 million in 1999. The overall trend of timber consumption in Japan is presented in Table 1.

A similar situation occurred in PNG as reported by the Papua New Guinea Forest Industries Association. In PNG, 41 timber operations ceased with the downturn of wood prices in the world market in September 1999. In contrast, ITTO reported that exports of furniture from China have been increasing significantly. Its export was US$ 1.297 billion in 1996, and reached US$ 2.193 billion in 1998.

Table 1: Timber consumption in Japan (1,000 m3)

	1995	1996	1997	1998	1999
All types					
Logs	22,897	22,469	15,631	13,556	13,556
Sawn	24,493	23,884	21,709	18,625	18,000
Veneer	242	242	173	116	116
Plywood	3,896	4,626	4,257	3,267	3,176
Tropical timber					
Logs	6,536	6,172	5,854	3,427	3,577
Sawn	2,178	1,875	1,701	1,260	1,241
Veneer	297	259	243	127	123
Plywood	7,443	8,287	7,765	5,283	6,636

Source: ITTO

For more detailed information concerning tropical timber trade, visit the ITTO web-site at: http://www.itto.or.jp/market/recent/mns120199.

It seems that investment in the forestry sector in some countries, which had a the lower priority in the past, will continue in the near future, unless the advocacy efforts concerning the important role of the forestry sector development to the sustainable development successfully give positive results. In fact, the revenue generated from the forestry sector had been invested in other sectors, and in relatively very small amount of the revenue had been invested back to the forestry sector.

It was reported that forestry in India has continuously suffered net disinvestment (i.e. loss due to deforestation and forest degradation being in excess of the investment in resource creation and enhancement). In some countries that have more alternative income and job opportunities, investment in the forestry sector will see a steady growth, including investment in protection and conservation programmes.

With respect to involving partners in investment, some countries have adopted different approaches toward a wider involvement of local communities by adopting several approaches such as: joint forest management, social forestry, community forestry, leasehold forestry (including leasehold forestry for the poor), forest land allocation and utilisation by formers, community-based forest management, social benefit-oriented forestry.

However, the approaches were mostly social instead of commercial. It was reported that the internal rate of return (IRR) of an investment for fuel wood plantations was 1.0-1.5% in the Republic of Korea if the cost of labour was included. It is most likely that the investment by farmers and poor farmers in social forestry activities (in marginal land, poor soil, and inaccessible areas) as mentioned above would be similar to those in the Republic of Korea.

Several people expressed the view that to alleviate the poverty, commercialisation of the social forestry should be emphasised. Several studies show that the major food crops in some developing countries in the Asia Pacific Region, which are planted in fertile soil, accessible areas, and better market, are not profitable. However, it should be noted that ecological impacts should be included in judging investment in the forest and forestry sector development.

In regard to mobilisation and co-ordination of partners, several countries have adopted different approaches. However, a partnership arrangement as defined by IPF/IFF has been used as reference by several countries. Examples of the partnership approach at country level can be found in the country profiles for Indonesia, Lao PDR, Nepal, and Vietnam; and for the intergovernmental and sub-regional levels in the ASEAN RHAP.

Processing

Some timber and non-wood producer countries have successfully enhanced their primary wood processing industries over the past few years. These industries have been creating jobs and providing more income, including for rural people compared to exporting raw materials. In some countries, foreign exchange earnings from processed timber exports that are badly needed to develop the country have been increasing. Due to the decreasing raw material supply, the new established primary timber processing was halted in some countries, including in Indonesia.

To create more job opportunities and income generation, more producer countries in the Region have been crafting and implementing policy on in-country further processing of timber and non-wood forest products.

The revenue derived from manufacturing mouldings is approximately double (per m3) the revenue derived from lumber. Secondary processing that has been selected includes furniture (including knock down furniture), mouldings, pulp and paper, and woodcarvings.

In regard to the wood panel industry, the trend have been toward producing special grades and properties, including moisture resistance, fire retardant, exterior grades, and laminating to make the panel attractive to consumers. Many issues hamper the development of secondary processing, including design, quality of processing, skilled manpower, knowledge of marketing and trade, competition, packaging and transportation, and banning the use of tropical timber products in certain countries.

Concern about the environmental impact of forest industries has been increasing in several countries. In some countries, pulp and paper productions are facing stricter environmental regulations regarding effluent discharge. In this regard, a pulp and paper factory was closed down in Indonesia in 1999 and some pulp and paper factories that are not environmentally friendly were closed down in China PR several years ago. Since the pulp and paper factory is the main market for the fast growing species plantations in the surrounding areas, the closing down of this factory directly affected the reforestation and tree plantation activities, including people's participation in tree plantings. To ensure sustainable forest management, the development of this type of factory should be well planned and an environmental impact assessment should be carried out scientifically and rigorously.

Regional/Sub-regional programmes/ projects

In regard to the management of programmes/ projects, FAO is in the process of implementing new management arrangements, which will be put in place by end of 2001. The following are the on-going regional FAO executed programmes/ projects in the Asia-Pacific Region in 2000 (all of the offices are located at the FAO Regional Office for Asia and the Pacific):

1. GCP/RAS/173/EC - Information and analysis for sustainable forest management: linking national and international efforts in South Asia and Southeast Asia

The idea behind the project is to provide available and accurate information on forest resources and their utilisation as a precondition for sustainable forest management based on economically, environmentally, and socially balanced forest policies. The present coverage and quality of forestry information in the region is insufficient for national forest policy decisions and those data are inadequate to serve as a basis for private sector investments.

The total budget will be US$ 1,842,280, of which EC contribution amounts to US$ 977,320, with project duration of three years. The project will have three main components: a) problem oriented data collection and updating of information; b) pilot studies concerning gathering new data not earlier commonly

collected, and training and capacity building to be carried out in a number of selected countries; and c) forest policy review based on reliable and updated information as a foundation to formulate appropriate forest policies.

The specific objectives of the project are to strengthen national capacity to collect, compile and disseminate reliable and up-to-date information on forestry, to analyse the forest sector, and to make that information available to the policy decision makers.

The expected results of the projects are as follows:

- For all target countries, an improved and more in-depth coverage of forestry data and more reliable problem oriented data needed for sustainable forest management;
- For the selected pilot countries, a proven, cost effective methodology to collect and analyse forestry data for sustainable forest management, which is essential but not yet commonly available at the national level, and to carry out policy/ institutional analysis for each of the selected countries;
- For the forestry departments, local staff and forestry officers, improved institutional and technical capacity obtained through the project's activities;
- For the highest levels of policy makers, improved analytical tools to review and formulate appropriate forestry policies for sustainable forest management;
- For EC, FAO, international communities and the general public, access to data, information, and analysis of the forestry sector in the target countries.

The CTA of the project is Thomas Enters, Phone 281-7844 ext. 220, E-mail: Enters.Thomas@fao.org.

2. GCP/RAS/177/JPN - Regional project on assistance for the implementation of the model forest approach for sustainable forest management

The idea behind the model forest is to provide a forum where all stakeholders (including government agencies) can meet to discuss their concerns and agree on possible courses of action. The concept of the model forest is not about ownership, but it is a mechanism which opens the decision making process to all stakeholders. One of the primary tasks of the model forest will be to develop, implement, and monitor mechanisms to effect partnerships among the stakeholders that will enable their many and diverse needs, priorities and values to be heard and considered.

The project aims to assist China, Myanmar, the Philippines, and Thailand strengthen national and community level capacities in the development and implementation of field level model forests. The field level model forest will incorporate partnerships among stakeholders, the best practices for sustainable forest management, taking into account the multiple uses and functions of forests, the many diverse demands placed on the forests and forest lands by various stakeholders, the need to balance economic, social and environmental considerations, and the special needs and priorities of each country. Particular emphasis will be given to the development of mechanisms for the effective participation of all stakeholders, including local and forest dependent communities, in the planning and implementation of model forests, the sustainability of the activities, monitored through the development and implementation of local level criteria and indicators for SFM, the replicability of the model forests to other parts of the country, providing continuos feedback on policy, and identifying and assessing new or additional technology and resources to further implement SFM activities.

The Government of Japan provides funding support to cover the salary of the experts, travel and per diem cost. The project duration will be for 30 months starting in early 2000. The total budget of the project will be US$ 1,580,145.

Tang Hon Tat is the CTA of the project, Phone 281-7844 ext. 220, E-mail: hontat.tang@fao.org

3. GCP/RAS/163/NET - Forestry research support for Asia-Pacific (FORSPA)

This project was initiated in 1991 to enhance the forestry research capability in the Region. Its main objectives are to enhance collective self reliance of forest research institutions through networking, to promote technology transfer through effective dissemination of research results to users, and to increase the access to updated and comprehensive information services. Dissemination of information is the main concern of FORSPA. Officially this project will terminate in the year 2000. However, it will continue for several months in 2001 utilising unspent funds. Extension of the programme is still under consideration by the concerned governments.

The CTA of the project is Appanah Simmathiri, Phone 281-7844 ext. 136, E-mail: Appanah.Simmathiri@fao.org

4. GCP/RAS/1545/NET - Regional wood energy development programme in Asia (RWEDP)

This project was launched in 1985. It covered a broad range of subjects, including wood fuel flows, production, processing and conversion, helping key personnel of Energy and Forest Departments, NGOs and research institutions to initiate and strengthen their own activities in wood energy related issues. The development objective of the programme is to contribute to a sustainable production of wood fuels, their efficient processing and marketing, and their rational use for the benefit of households, industries and other enterprises. The programme also helps develop the capability of member countries in generating and assessing wood energy related data and using this information for the development and implementation of wood energy policies and strategies. Officially, it will terminate in the year 2000; however, it will continue several months in 2001 utilising unspent funds. Most likely, the Programme will be extended, but will be smaller in size and scope.

The CTA of the project is Auke Koopmans, Phone: 281-7844 ext. 259, E-mail: Koopmans.Auke@fao.org

Terminated Projects

The following were the FAO executed programmes/projects that terminated in 1999:

- Watershed Management in Tropics and Upper Himalayas;
- Support to the Reorientation of Forestry Policies and Institutions of Countries of Asia in Reform to Market Economy; and
- South Pacific Forest and Trees Support Programme (SPC/UNDP/AusAID/FAO) (note: the management of the Programme has been transferred to the sub-regional institution).

Information

Information concerning the forestry sector development in some countries in the Asia Pacific Region, including NFP, has been installed in some web-sites. FAO has established a web-site with the web-site code as follows: http://www.fao.org/forestry/.

This web-site provides information concerning the following: a) general forests and forestry; b) country profile, in brief, which covers several fields of information, including geographic information, forest resources (land cover, natural resources, total forest cover and protected areas), products, and trade.

In addition, FAO Regional Office Bangkok has also established a web site. In regard to forest and forestry visit http://www/fao.org.th/Technical_Groups/Forestry/forestry.htm.

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Australia

Country data	
Total land area 1999 (million ha) *	768
Total forest area 1997 (thousand ha)/ % of total land area **	156,877 / 20%
Natural forest 1995 (thousand ha)	155,835
Total change in forest cover 1990-95 (thousand ha) / annual change %	not available
Population total 1998 (million)	18.8
Rural population 1998 ***	2.8 (or 15%)
GDP per person total 1998 in AS$ ***	29,566

Source of data: * FAO - State of the World's Forest, 1999
** National Forest Inventory (1997)
***Australian Bureau of Statistics figures

General information

Australia, as a Federation, has a division of power between the Commonwealth Government, State and Territory governments ("State Governments"), and Local governments. State governments have control over most land in Australia and, together with Local governments, regulate land use.

The Australian economy increased by 4.4% in 1998-1999, but this rate is expected to come down to 4% in 1999-2000. Australia remains a net importer of forest products in value terms. In 1998-99, Australia imported forest products valued at $A3.26 billion, accounting for 3% of total merchandise imports. Imports for sawn timber, paper and paperboard accounted for 67% of the total value of forest product imports (54% paper and paperboard products and 13% sawn timber, mostly coniferous). Most sawn timber imported into Australia comes from New Zealand, Canada, and the United States of America, with radiata pine, Douglas fir and western red cedar forming the bulk of sawn wood imports. Malaysia is the main source of imported hardwood sawn timber.

After three years of rises, the value of exports of forest products from Australia fell by 2% to $A1.3 billion in 1998-99. This represents 1.5% of Australia's total merchandise exports. The main reasons for the drop were a fall in wood chip exports to Japan from the record level of exports in 1997-98 and in the volume of paper and paperboard exports to Asia. Partly offsetting these losses, exports of other forest products to several Asian countries increased significantly in 1998-99 to levels above export volumes prior to the downturn in these markets in the first half of 1998.

Forest resources

Most of Australia, particularly the interior, is arid; however, there is still a large forest area (about 20% of the continent). Areas suitable for forest growth are largely confined to the tropical north of Australia, the East Coast (including Tasmania), South Australia and south western Western Australia. The vast majority of the Australian forest resource is natural forest dominated by eucalypts (Eucalyptus spp) mixed with acacia (Acacia spp), cypress pine (Callitris spp), and paper bark (Melaleuca spp).

The total forest area of close to 157 million ha is made up of almost 156 million ha of native forests. The native forests can be divided into three classes by the density of crown cover namely woodlands (72% of the total forest

area), open forests (25%) and closed forests (3%).

Approximately 27% of native forests are privately owned and 72% are publicly owned (1% unclear due to a shortcoming in the databases). However, about 42% of the native forest estate are on public land held under lease by the private sector, predominantly the pastoral industry. Taking private and leasehold native forests together, almost 70% are on land managed by the private sector. The remaining 30% are public forests, as defined in the National Forest Policy Statement (NFPS), and are fairly equally divided across the three tenure types of conservation reserves (11%), multiple-use forest (9%) and other crown land (10%).

Criteria and indicators

Australia, as one of the twelve member countries of the Montreal Process, is making progress with the implementation of criteria and indicators (C&I) for the conservation and sustainable management of forests.

At the international level, Australia continues to contribute to the work of the Montreal Process Working Group and its Technical Advisory Committee as well as to other international C&I initiatives. At the domestic level, Australia has developed a framework of regional (sub-national) level criteria and indicators. This framework is Australia's first attempt at national agreement on a range of indicators that applies to all forests. The internationally agreed upon Montreal Process national level C&I have been used as a starting point in developing the framework. The framework is intended to provide a basis for identification of indicators for monitoring progress towards sustainable forest management at the regional (sub-national) level. The framework provides Australia with a co-ordinated approach to collection of data for forests, which ensures consistent reporting and avoids duplication.

The framework will also allow the aggregation of data from the regional level to State and national levels in a transparent and credible way in both RFA and non-RFA regions. A number of research and development priorities have been identified and the Commonwealth Government is funding several projects to support the further development and implementation of the regional indicators.

There has been agreement in Australia that it is not possible, practical or cost effective, to fully implement and monitor all indicators in the regional framework at this point in time. A first report will be produced in late 2000 on those indicators that can be measured immediately for most forests. To date all signed RFAs have included references to identification of sustainability indicators based on the regional framework.

Several key challenges exist for Australia, including collection of data from non-commercial forests on public land and from the large majority of privately managed forests. Despite these challenges, Australia considers that significant progress has been made in recent years, particularly, there is better co-ordination across activities at both the State/Territory and national levels and recognition that duplication needs to be avoided.

Policy, legislative and institutional

The principal national policy documents establishing priority actions for the management and use of Australian forests are:

- the National Forest Policy Statement (NFPS) (1992);
- the Wood and Paper Industry Strategy (WAPIS) (1995);
- the Vision 2020 Strategy document (Vision 2020) (1998);
- the Environment Protection and Biodiversity Conservation Act 1999;.

- the Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (known as the JANIS Criteria 1997); and
- an Action Agenda for the Forest and Wood Products Industry is being developed by the industry and governments, with a view to implementation in second half of 2000.

In addition, there are a range of policies and programmes at State and Commonwealth Government levels aimed at sustainably managing Australia's forest resources. These also include programmes promoting farm forestry and revegetation and the removal of government impediments to further investment in growing and processing forest products. There are numerous State and Territory Acts (legislation) covering conservation issues that have implications for forestry, including land use planning, and flora and fauna protection. There are also Acts or legislation that cover the establishment and administration of National Parks, and regulate water rights and use.

The new Environment Protection and Biodiversity Conservation Act 1999 is scheduled to come into force in July 2000. This Act represents the most fundamental reform of Australia's environmental law in 25 years and focuses Commonwealth involvement in development assessment and approval in six key areas of national environmental significance. They are the Commonwealth marine environment, World Heritage properties, Ramsar wetlands of international importance, national threatened species and ecological communities, migratory species and nuclear actions.

Forest operations in regions subject to Regional Forest Agreements are excluded from the operation of the above Act as the RFAs themselves contain agreement on ecologically sustainable forest management prescriptions and they have been fully assessed under existing environment legislation.

From the institutional point of view, five broad forms of land tenure exist, as follows:

- Conservation reserves: publicly owned forests reserved for conservation, including national parks and flora reserves;
- Multiple-use forests: publicly owned forests set aside for timber production, including State forests and timber reserves;
- Leasehold land: publicly owned forests on land leased from the crown;
- Other crown land: forest of crown land not covered by the previous three categories; and
- Private forests, includes native forests and plantations owned privately.

These broad forms of land tenure provide the basis for assigning the respective forest and departmental tasks, responsibilities and institutional models of the managing agencies in each State and Territory.

Policy statement

In 1992, the Commonwealth and State Governments developed a common policy position on forests, known as the National Forest Policy Statement (NFPS). The NFPS is the primary means by which the objectives of the National Strategy for the Conservation of Australia's Biodiversity will be accomplished in forest ecosystems. The NFPS sets out objectives concerning conservation, wood production and timber industries development, use of private native forests, development of plantations, water supply and catchment area management, tourism development, employment, workforce education, public awareness and involvement, research and development, and the further development of intergovernmental arrangements and the decision making process.

Under the National Forest Policy, the Government has agreed to maintain an extensive and permanent native forest estate, and to manage that estate in an ecologically sustainable manner so as to conserve the full range of values that forests can provide for current and future generations. Within the framework of the

NFPS, specific policies have been developed in relation to nature conservation and wilderness reserves, ecologically sustainable management and codes of practice, data collection and analysis, and the protection of forest from diseases, weeds, pests, pathogens, and wildfires.

Regional Forest Agreements (RFAs)

The key national goal in the NFPS is to ensure the community obtains a balanced return from all forest uses. This objective is being pursued through the development of Regional Forest Agreements (RFAs) following comprehensive assessments of forests for their conservation, heritage, economic and social values in a region.

The RFA process aims to provide certainty for forest-based industries, conservation and the community through the following:

- the establishment of a Comprehensive, Adequate and Representative (CAR) reserve system under nationally agreed criteria;
- ecologically sustainable forest management (ESFM) across the whole of the forest estate; and
- an internationally-competitive forest industry.

Once agreements are signed, they are in place for 20 years, subject to five-yearly reviews. A Forest Industry Structural Adjustment Package (FISAP), to assist native forest industry businesses and workers to adjust to variations in access to native forest resources and facilitate increased value-adding operations and downstream processing, was established to assist in retraining and relocating workers and to assist businesses exiting the industry.

The implementation of nationally agreed reserve criteria under this process will ensure the establishment of a world class reserve system. Broadly, these are as follows:

- 15% of the pre-European forest types (increasing further for rare, vulnerable and endangered ecosystems);
- 60% of existing old growth forests (increasing for rare old growth); and
- 90% of high quality wilderness forests.

Since our last update i.e. NFP UPDATE 33, six further Regional Forest Agreements have been completed bringing the number of RFAs in place to nine. The six new RFAs include that for Western Australia, the Eden region, the Upper North-east & Lower North-east regions of New South Wales and the North-East region, West and Gippsland of Victoria. The RFAs have delivered major gains for the environment and provided increased certainty for native forest industry and regional economies.

The Western Australia RFA increased the region's formal reserves by 151,000 ha to bring the total area of reserves to 1.04 million ha. This includes 67% of all remaining old-growth forests, with old-growth karri (Eucalyptus diversicolor) reserved by 71% and old-growth jarrah (E. marginata) by 70%.

The RFAs completed so far in New South Wales have established a Comprehensive, Adequate and Representative (CAR) Reserve System of about 2.4 million hectares, more than 60% of the total public land for these RFAs, with the one for the Southern region still to be completed. The completion of the five RFAs in the State of Victoria have seen the following outcomes:

- established a Comprehensive, Adequate and Representative (CAR) Reserve System of about 2.86 million ha, more than 50% of the total public land in the five regions;
- increased reserves by 36.5%;
- identified 1.08 million ha of old-growth forest in the first comprehensive old-growth assessment;
- protected 68% of the regions' old-growth forest;

- ensured protection either in reserves or through recovery plans and action statements of all Victoria's endangered fauna species, including Leadbeater's possum, the Baw Baw frog, the Powerful and Sooty Owls, the Spot-tailed Quoll and Long-footed Potoroo and Spotted Tree Frog;
- provided an additional $A20 million to fund industry development initiatives in regional Victoria; and
- involved the first social assessment of how the people and communities of Victoria use and value their forests, with in-depth consultation in 30 regional communities.

Australian forestry standard

Australia is developing an Australian Forestry Standard for the certification of forest management activities as part of a move to certification and labelling of Australian timber produced from sustainably managed forests. There is some concern about the proliferation of Certification and Labelling Schemes in the international arena because of the potential to lead to consumer confusion and market failure. The Australian Government is keen to explore the views of Governments on the way forward, particularly in the context of the role of Governments in pursuing a credible, international framework for comparability between schemes.

Wood and paper industry strategy (WAPIS)

In December 1995, the Commonwealth launched a four-year Wood and Paper Industry Strategy (WAPIS), aimed at developing the wood and paper industries, while protecting forests for future generations. Its focus is on industrial development, value adding, and new investment. WAPIS activities promote greater investment, research and downstream processing in Australian forest industries, expansion of farm forestry and the plantation sector, a skilled and flexible workforce and improved regional job opportunities. Improved information on plantation areas and wood flows was one of the key achievements of this Strategy, a major contribution to which was the National Plantation Inventory, completed in 1997.

Plantations 2020 vision

The Plantations 2020 Vision is a framework of actions designed to achieve an internationally competitive plantation growing and processing industry which is commercially focused, market driven and market oriented. The target of the Plantations 2020 Vision is to treble the effective area of Australia's plantation estate, from 1 million hectares to 3 million hectares, between 1996 and 2020. Recent trends indicate that the current expansion in plantations is on track to meet this target. The focus is on boosting the availability of suitable land, getting the commercial incentives right, establishing a commercial plantations culture and improving information flows.

In September 1999 Australia had 1.33 million ha of plantations. 71% of these are softwood plantations (mainly radiata pine) and the remaining 29% are made up of native hardwood species.

Aside from building an internationally competitive and environmentally sustainable plantation sector, other expected benefits of the Plantations 2020 Vision include reductions in Australia's net greenhouse gas emissions, a turnaround in the trade deficit for wood and wood products, rural development (including creation of up to 40 000 jobs), and improved land management outcomes.

In line with the increasing production of softwood, the hardwood saw millers have begun diversifying their mills into kiln-dried timber for furniture, flooring, mouldings, and other value-added products. As a result of increased domestic production, sawn timber imports are ex-

pected to decline, and may see a surplus in the next five years. A similar trend is projected for wood panel products, including particleboard and plywood.

Farm forestry programme

The aim of the Farm Forestry Programme is to encourage the incorporation of commercial tree growing and management into farming systems for the purpose of wood and non-wood production, increasing agricultural productivity and sustainable natural resource management. The program has four objectives:

- promote farm forestry on cleared agricultural land for a range of benefits, including wood and non-wood products, increased agricultural production and environmental benefits;
- promote commercial wood production on cleared agricultural land as an integral part of profitable wood-based industries;
- promote development of new tree-crop products and industries with an emphasis on native species; and
- promote sustainable management and use of private native forest and woodland.

The main activities supported by the farm forestry program include planning and co-ordination; extension, education and training; research and development; monitoring and evaluation; demonstrations, trials and investigations.

Forest tourism

Australian Governments have invested considerable resources in tourism activity in forests. State and Commonwealth Governments have provided tourist facilities in forests with the aim of making tourist experiences in forested areas more interesting and educational, while minimising impacts on the environment.

Australia's flora, fauna, and landscapes are a major attraction for international visitors to Australia, 50% of whom visit National / State Parks/ reserves / caves. Overseas tourists represent approximately 7% of the visitors to National Parks.

IPF/IFF proposals for action

A preliminary assessment in 1998 and a recent assessment in 1999 indicated that Australia has made good progress with the implementation of the proposals for action emanating from the completion of the Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF) process.

In some cases the actions will be ongoing for a number of years (such as Regional Forest Agreements) and in a few cases some further consideration may need to be given to ensure Australia's programs fully meet the intent of the IPF proposals.

Support towards sustainable forest management

Australia has considerable expertise in sustainable forest management techniques, and well regarded private consultancy firms working in forestry as well as good research and genetic improvement programs in the public and private spheres. Australia has Forestry schools in the Australian Capital Territory, New South Wales, Queensland and Victoria, which provide undergraduate and postgraduate training to Australian and international students. Well qualified Australian foresters, with tertiary qualifications and experience in forestry, supervise forest management and harvesting in Australia. All harvesting on public lands and some private lands is covered by comprehensive codes of forest practice.

The Australian aid program's support to the forestry sector provided by AusAID totalled around $A14 million in 1998/99. Most of this amount (about $A10million) comprised expenditure on bilateral projects, with another $A3 million being expended on forest-related

research through the Australian Centre for International Agricultural Research (ACIAR).

The program also covers the provision of seed funding for projects of Regional significance in the International Tropical Timber Organisation (ITTO), as well as the provision of one-off funding for initiatives such as the development of the Code of Practice for Forest Harvesting in Asia-Pacific, and more recently drafting the Strategy for the Implementation of this Code.

Research, extension and training

As a key initiative under the National Forest Policy Statement, the Federal Government established the Forest and Wood Products Research and Development Corporation (FWPRDC) in partnership with industry with the purpose of promoting effective research and development, which advances an internationally competitive, sustainable and environmentally responsible forest and wood products industry in Australia.

The Corporation invests in research for the forest and wood products industry and facilitates the dissemination, adoption and commercialisation of the results of research and development activities in which the Corporation invests. The Corporation achieves these goals through the following:

- Integration of forestry activities in farming operations as a way of achieving land rehabilitation and enhancing forest industries, regional development, and increasing farming incomes;
- Encouraging tree planting for environmental and development purposes through community programmes;
- Continuing to work toward greater efficiency and sustainability of the agriculture and forestry sectors, and to develop a more productive relationship between these two sectors;
- Increasing work on criteria and indicators for SFM in regions within Australia; and
- Integration of data at the national level to allow for meaningful analysis and interpretation given.
- the great diversity in forest ecosystems, the extensive nature of the forest estate and different data sets used by varying government agencies.

The Australian Centre for International Agricultural Research (ACIAR) is an Australian Government authority that operates within the Ministry of Foreign Affairs and Trade. It was established in June 1982 to assist and encourage Australia's agricultural scientists to use their skills for the benefit of developing countries, and at the same time, work to resolve Australia's own agricultural problems. ACIAR's Forestry Program has four components:

- domestication of trees and shrubs;
- development of low-cost technologies to improve establishment and productivity of selected trees;
- strengthening of institutional capability; and
- development and improvement of a forestry information network.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) was formed in 1949. Its Forestry and Forest Products Division has a lead role in Research and Development at the federal level.

The global competitive performance of Australia's Forestry, Wood and Paper Industries Sector over the next 20 years will be underpinned by R & D. It will facilitate resource development and sustainable management, improved wood and fibre performance, increased efficiency and environmental performance of wood and paper processing and increased value adding in wood and paper products.

CSIRO Forestry and Forest Products Division has extensive experience and capability through its expertise with Australian Tree Seed Centre; Entomological Services; Pulp and Paper

Testing; Scanning Electron Microscopy, Digital Imaging and Analysis Facility; Soil and Plant Nutrient Analysis; and Wood Identification.

CSIRO Division of Forestry and Forest products current research areas include:

- Forestry operations – their environmental and economic performance;
- Papermaking and paper quality;
- Risk management;
- Sustainable plantation forests;
- Sustainably managed native forests;
- Value enhancement in the forests; and
- Value-added wood products.

FWPRDC, ACIAR, CSIRO are the main research bodies at the federal level. State and Territory Governments also have such organisations working on forestry research issues.

Role of major groups and social aspects

These issues form an integral part of the RFA process, which aims to achieve a balance between conservation, economic and social interests in forests. It also helps to ensure co-ordinated action in a federal system where all levels of government have constitutional powers relevant to the NFPs goals. Community groups, industry organisations, unions, and other stakeholders are actively involved in contributing to forest resource use decision making and management issues in Australia. For example, stakeholder consultation has been a large part of the RFA processes as well as Australia's activities under the IPF / IFF.

Collaboration with partners and international conventions

Australia works to promote sustainable forest management and conservation through the various international agreements and conventions that impact on the management and use of forests to which it is a party. In particular, Australia endeavours to:

- promote the sustainable use and conservation of the world's forests through implementation of the agreed upon wide-ranging actions of IPF/IFF;
- foster mutually supportive trade and environment outcomes that do not provide perverse incentives for forest use;
- promote concrete actions to conserve and maintain biodiversity through the work programme of the Convention on Biological Diversity;
- ensure that forest dependent species listed under the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) are not commercially traded internationally contrary to the Convention;
- protect and conserve the forested areas in Australia inscribed under the Convention for the Protection of the World Cultural and Natural Heritage, namely the Kakadu National Park, the Tasmanian Wilderness Area, the Wet Tropics of Queensland and the Central Eastern Rainforest Reserves; and
- prevent forest degradation in Australia's dryland regions through the ratification and implementation of the Convention to Combat Desertification.

The possible contribution of carbon sinks to sustainable forest management and conservation is being widely discussed by the forest community even though the international negotiations on this issue have not yet concluded. In terms of the Climate Change Convention and the Kyoto Protocol, Australia wishes to promote a greater understanding of the potential role that carbon sinks could play in sustainable forest management and conservation. At the same time we also seek to identify needs and opportunities to promote forest reform actions that could contribute to a stable environment for and to operationalise future sinks investment.

Other matter

Information concerning government policies and programmes on forests are available on the Internet at: http://www.affa.gov.au/affa/subjects/forestry.html

Australia hosted the 18th session of Asia Pacific Forestry Commission (APFC) held in Noosaville, Queensland, 15-19 May 2000. A number of observers from intergovernmental organisations and international Non-governmental organisations, and participants from 25 member nations attended the Session. In 2000, there were 29 members of the Commission, in which United Kingdom is the Observer member.

Focal point

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Everyone has a will to win,
but very few have the will to prepare the win.
(Wince Lombardi)

Bangladesh

Country data	
Total land area (thousand ha)*	14,757
Total forest area (thousand ha) / % of total land*	2,580/ 17.4%
Population 1999 (millions)*	127
Rural population 1995 (%)**	81.7%
GNP per person 1995 (US$)**	289

Source of data: * Country Report, APFC 18th Session, 2000
**FAO - State of the World's Forest 1999

General information

Bangladesh is located at the lowest part of the Ganges-Brahmaputrap-Meghna (GBM) river systems with a long coastal belt along the Bay of Bengal. The country is endowed with diversified species of flora and fauna. Agriculture is the major economic activity. There are three broad physiographic regions in the country: a) flood plains, consisting generally of level alluvium, occupying about 80% of the country; b) terraces, comprising slightly uplifted blocks, accounting for 8%; and c) hills, which occupy about 12% of the land area.

The high population density and meagre and stressed resources have compounded the environmental problem, which is difficult to resolve. Nearly half of the population is living under the poverty line. In addition, the income gap is high and the distribution is unequal. Thus, the social environment is seriously unsustainable.

Bangladesh generally enjoy a sub-tropical monsoon climate. In winter, the temperature varies from minimum 7-12 °C to a maximum of 23-31 °C; in summer the maximum temperature is 36 °C (occasionally it may go up to 40 °C).

The arable land covers an area of 9.4 million ha, or 75% of the total land area; out of this, about 97%, or 9.1 million ha, are regularly cultivated. According to Government statistics, livestock and fisheries are marginally more important than forestry.

In agricultural production, Bangladesh has not been able to achieve the expected economic level due to the low level of technology, poor infrastructure and low labour productivity. Growth in the industrial sector has also been poor, with 80% of the industries being of the cottage type. In recent years, a garment industry has developed, mainly for export.

About 60% of the rural population are classified as functionally land less and 70% of the landholdings are small. In addition, over 80% of the poor population, estimated at over 50 million, are concentrated in the rural areas. Encroachment is increasing in forest and marginal lands and about 50% of the forestlands are being cultivated or occupied.

Forest resources and land use

The forestry sector accounts for only about 3% of the country's gross domestic product (GDP) and 2% of the labour force. However, these figures do not reflect the real importance of the sector. The GDP figure does not count the large quantities of fuel wood, fodder, small timber and poles, thatching grass, medicinal herbs, and the organised illicit felling. The low contribution of the forestry sector to the GDP is also explained by several other factors, e.g. value added from wood processing is counted under the industry

sector, rather than the forestry sector. In addition, the contribution of forest resources in protecting watershed and irrigation structures, reclaiming land from the sea, protecting coastal areas from storm damage, and in maintaining and upgrading the environmental quality, has not been quantified.

According to the country report submitted to the 18th Asia Pacific Forestry Commission, held in Australia, during May 2000, the total forest area was about 17,4% of the total land area. Details of the present forest, including village forests, social forestry plantations, garden, etc., are presented in Table 1 below.

Table 1: Forest area in Bangladesh

Kind of forest	Area (mill ha)
1. Forest managed by FD*	1.53
* Hill forest	0.675
* Natural mangrove forests	0.601
* Mangrove plantations	0.134
* Plain land sal forests	0.123
2. Unclassified State Forests	0.67
3. Village forests	0.27
4. Social forestry plantation	0.04
5. Plantation in tea & rubber garden	0.07
Total	**2.58**

Note: * FD = Forestry Department of the Ministry of Environment and Forests

There are 12 established protected areas under the jurisdiction of the FD, but most of these are degraded due to illegal logging, land clearing, and poaching. The areas are poorly protected due to inadequate staff, poor facilities, and the lack of management plans. In addition, there are three wildlife sanctuaries in the Sundarbans (mangrove area) that were established to protect the habitat of tigers and other wildlife as an integral part of forest management. However, these sanctuaries also suffered in the past from neglect and inadequate staff and infrastructure facilities.

Ecologically, there are four main types of forests in Bangladesh as follows:

- Tropical wet evergreen forests
  These forests usually occur in hills and moist shady areas in Rangamati, Bandarban, Khagrachari, Chittagong, Cox's Bazar and Sylhet. They are rich in floristic composition. A few semi-evergreens of deciduous species may occur, but they do not essentially change the evergreen characters of the forest. The forest is rich in epiphytes, orchids, and woody climbers, particularly in shady moist places.
- Tropical semi-evergreen forests
  These forests occur in Cox's Bazar, Chittagong, Rangamati, Khagrachari, Bandarban, and Sylhet in less dry and hotter localities.
- Tropical moist deciduous forests
  These forest occur in Dhaka, Mymensingh, Tangail, Dinajpur, Rangpur, Naogaon and Comilla. The principal species is Sal (Shorea robusta)
- Mangrove forest (tidal forests).

The natural mangrove forests is the Sunderban in Khulna, Bagerhat and Satkhira districts. Sunderbans constitutes the world's largest contiguous mangrove forest ecosystem. The total area of the Sunderban forest is about 0.601 million ha. Besides natural mangroves in Sunderbans, there are a number of man-made mangrove forests along the coast of the Bay of Bengal. The total area of mangrove plantations in the country is 135,992 ha. These coastal mangrove forests play an important role in the reclamation of land, protection of coastal habitats from cyclones and tidal surges, and to uplift the socio-economic conditions of coastal people. The country is known to be the pioneer of innovative coastal afforestation technology in the world, which was started in the late sixties. These forests have had been established in Barguna, Patuakhali, Bhola, Laksmipur, Noakhali, Feni, Chittagong and Cox' Bazar Districts.

For the last few years, specific end use oriented plantations have been raised in Chittagong, Syllet, Cox's Bazar, Chittaging Hill Tracts, the coastal regions and northern districts. These include fuel wood, pole and industrial plantations. Different species of both local and exotic trees have been identi-

fied and planted in different end-use oriented plantations.

In the Sundarban Forest Division, forests have been harvested according to a selection system where exploitable sizes were fixed and trees above certain diameters were extracted. The clear felling system is applied for the management of plain land Sal forests, with either coppice or artificial regeneration. However, because of serious degradation of the forests, a moratorium on the felling of trees in the Sal forests has been in force since 1972. At present, the degraded Sal forests are managed on the basis of participatory concept.

In order to conserve the natural forests, a moratorium on logging has been imposed since 1989 in all natural forests and will continue until the year 2005.

In line with the 1992 Earth Summit, the Government is committed to the in-situ conservation of biological diversity. Protected areas play a prime role in the country's national plan for biodiversity conservation. The Bangladesh Wildlife (Preservation Amendment) Act of 1974 provides the basic framework or guidelines for the conservation of wild animals. The same Act has provisions for the establishment and management of three categories of protected areas, i.e. national park, wildlife sanctuary and game reserve. At present there are seven wildlife sanctuaries, five national parks, and one game reserve. It is noted that the protected areas are home to about 500 species of wild vascular plants and around 840 species of wild animals.

To promote and implement a system of biodiversity conservation and sustainable management, and to strengthen the environment capability, the Forest Department has set up an Environmental Management wing under the overall supervision of a Deputy Chief Conservator of Forest.

At present, all the management plans for the protected areas have been finalised. They have been divided into several management zones and buffer zones. The plans took into consideration the type of conservation management system compatible to the ecosystem, the biophysical attributes, the climatic features, the socio-economic setting, present wildlife management practices, and the issues/ problems and management considerations of the protected areas.

FAO web-site, i.e. www.fao.org/forestry (click forestry, subject, forest resources assessment, and publications), provides details information concerning forest resources in Bangladesh.

Production and processing

Annual wood production is estimated at about 9.5 million m3, of which 80% is used for fuel, and the remainder is converted to sawn wood. About 80% of the production comes from private sources, mainly homestead wood lots. In recent years, the annual production from State forests averaged 440,000 m3 of timber, 800,000 m3 of fuel wood and 90 million pieces of bamboo, representing only about 20% of the total wood production. Annual per capita wood consumption is about 0.1 m3, one of the lowest in the world. With Bangladesh's population projected to increase to 145 million by the year 2000, the consumption per capita is likely to decline further.

Biomass fuels, including fuel wood, agricultural residues and dung, dominate energy consumption in rural areas. Other fuels account for only a small fraction of the total rural fuel consumption. Wood is not available in most rural areas, as a result of which the rural population depends on agricultural residues and dung for 90% of their fuel needs.

The primary processing industries in the sector include approximately 1,600 sawmills, 4 pulp and paper mills, 13 board mills, 2 timber treatment plants and 22 match factories. The privately owned factories include 8 board mills, 18 match factories, and 1,632 sawmills. The industries suffer from a shortage of raw materials, old and outdated equipment, and lack of trained personnel.

Institutions

The MOEF has overall responsibility for the development of the forestry sector. It has jurisdiction over the FD, the Department of Environment (DE), the Bangladesh Forest Research Institute (BFRI), and Bangladesh Forest Industries Development Corporation (BFIDC). The FD is the primary Government agency responsible for the day-to-day management of forest resources. Its field operations consist of six Circles concerned with territorial forestry and 37 Forest Divisions under the Circles. The Divisions are further divided into Forest Ranges and Beats.

The field staffs are responsible for the establishment and maintenance of plantations, supervision of State forestlands, provision of industrial wood supplies, and extension and public relations at the local level. The FD is also responsible for training all technical forestry staff through its forest colleges and schools in Chittagong, Sylhet, and Rajshahi, while the Institute of Forestry at the Chittagong University provides professional forestry education. BFRI is located in Chittagong. It has two research branches for forest management and forest products and a general services branch.

In addition to the above project, FAO/ UNDP and the Forest Department completed the Project BGD/84/056: Integrated Resource Development of the Sundarbands Reserved Forests. The objectives of the project were as follows: to produce a plan for integrated resource management designed to enhance the supply of wood and non-wood products, to conserve and manage aquatic and terrestrial wildlife resources, to study the potential for mobilising and assisting people to participate in income and employment generating activities in the area (with particular focus on disadvantaged groups), to develop the tourism and recreational potential, and to enhance the protective role of forests against cyclones, soil erosion and total surges. The report of the project consists of three volumes: The past and current situation and future management; Appendices giving further details; and Maps prepared from GIS and Hydraulics data bases. The documents have been used by the Government as references for further implementation.

Master Plan for Forestry Development

In response to the request from the Government for sustainable development of the forest resources and to arrest deforestation, the Asian Development Bank, UNDP, and FAO provided support for the preparation of the Master Plan for the Forestry Development (MFD). The exercise begun in June 1989 and the planning document was available in September 1993. It envisages bringing 25% of the land area under tree cover by the year 2005 through, among others things, people's participation.

The aims of the MFD were to:

- identify policy issues and recommend policy and institutional sector reforms, which will lead to more rational development and use of forest resources;
- incorporate environmental concerns into forest management practices;
- develop a framework which will promote balanced and sustainable land-use practices, focusing on the basic needs of the rural population; and
- prepare programmes and projects intended to reverse the deterioration of the forest resource base, improve the supply of forest products, and contribute to better land-use practices.

The MFD identified the following major issues:

- the lack of Government attention to the sector, as a result of which policies, legislation, research, forest institutions and management practices are inappropriate and redundant;
- the current exploitation of State forests beyond the land's natural productive capacity, rapid deterioration of forest resources and land degradation occurring from misuse, and forest resources largely remaining unproductive;

- the increasing population and landlessness, and the resultant tremendous pressure of land fragmentation and land-use conflicts which continue to erode resources in the sector;
- the continuing pressure on forest reserves and homestead forests which results in reduced tree cover, encroachment, unsustainable exploitation levels, permanent loss of biodiversity with extinction of wildlife, and a growing list of threatened species of flora and fauna; and
- the forest products supply/demand imbalances and the lack of community consultation and participation which is undermining development efforts in the sector.

The MFD presents a comprehensive 20-year plan (1993-2013) to preserve and develop the nation's forest resources and addresses the critical issues confronting the sector. It recommends a new strategy and changes in forest policy, legislation, land tenure, marketing technology, and industrial processing.

The principal strategy includes:

- enhancing environmental preservation and conservation;
- introducing rational forest land use;
- increasing public participation and benefits from resource management;
- expanding the resource base;
- improving management practices; and
- undertaking efficient resource utilisation.

The document was submitted to the National Economic Council - the Executive Committee of the Planning Commission in the Ministry of Finance and was endorsed in July 1995 for integration into the five year development plan (1996-2000).

As the first step in the implementation of the MFD, the Government approved a new forest policy. The Ministry of Environment and Forests published the new policy in November 1995. To have legal and institutional reforms needed for the development of the forestry sector and to be in line with the new forest policy and the MFD, FAO provided a TCP/BGD/4553 project aimed to help with the preparation of investment and technical assistance projects related to institutional and legal reform within the framework of the new policy.

The TCP project was operational from September 1996 through 8 May 1998. The FAO project TCP/BGD/4533 recommended that the FD be reoriented toward sustainable forest development with the emphasis on people's participation. The Government is still considering the recommendation and thus the time bound plan as recommended by the TCP project could not be followed. The recommendations and outcomes of the project include the following:

- All staff should be paid from the Revenue Budget and the cost of reorganisation of the Forest Department should be met from the revenue budget and not from the development budget;
- The Government should cease to be project driven and return to managing its own long term programmes. Loans for capital development should only be sought if recurrent expenses can be met from the revenue budget;
- Inclusion of a Publicity Cell in the new set-up of the Forest Department;
- A Monitoring and Evaluation cell in the Headquarters of the Forest Department and in both wings will be established;
- The staffing of Forest Management and Wildlife Conservation and Social Forestry wings will be 50:50 of the existing strength;
- All reforms should be completed according to a time bound plan. It was decided that the institutional reforms will be completed within 12 months from May 1998;
- The requirement of the Government to produce forest inventories, management plans, Forest Department annual reports and five year reports has been accepted.

The National Environmental Management Plan (NEMAP)

At the end of 1994, UNDP (supported by the World Bank) took the initiative in the preparation of a national environmental

management plan (NEMAP). Participatory management of both natural forest and plantations is the main recommendation to combat deforestation. The approach was based on an extensive survey. Two questions were asked of the people surveyed: "What are your main environmental concerns?" and "What solutions/actions do you propose? ".

A conservation strategy is under preparation with the support of NORAD (Norwegian Aid). It is concerned with the biodiversity of the remaining forests (in particular the mangroves).

A number of policy decisions have been formulated and declared including:

- a moratorium on all exploitation of Government forests until the year 2000;
- a ban on the use of fuel wood for brick making (which consumes about 23% of fuel wood);
- the amendment in 1990 of the Forest Act, substantially increasing the Act's penal provisions.
- launching a participatory forestry programme on non-government forest land, as well as a massive forest extension programme;
- the establishment of a new Social Forestry Department.

Aside from forestry, the Government has continuously accorded high priority to the environment. Three committees have been set up: the commissions on legislation and institutions are led by the secretary of MOEF, while the commission for donors' co-ordination is led by the planning commission.

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Kindness is a language the deaf can hear
and the blind can see.
(Shiv Khera – You can win)

Bhutan

Country data	
Total land area 1996 (thousand ha)	4,700
Total forest area 1995 (thousand ha) / % of total land	2,756/ 58.6
Natural forest 1995	2,748
Change in forest cover 1990-95 (thousand ha)/ annual change (thousand ha/%)	-47/ -9 (-0.3)
Population 1997 (millions)/ Annual rate of change 1995-2000 (%)	1.9/ 2.8%
Rural population 1997(%)	93.5%

Source of data: FAO - State of the World's Forests 1999

General information

The Kingdom of Bhutan is a land-locked country situated in the eastern Himalayas and is one of the ecological wonders of the world. The terrain is among the most rugged and mountainous in the world. The climate is extremely varied, ranging from sub-tropical in the lower southern foothills, to temperate in the central belt, to permanent ice and tundra conditions in the north. Water resources are abundant in Bhutan and provide many possibilities for hydropower generation. As local requirements are still quite modest, the major share of the energy produced will be exported, representing a large part of Bhutan's total export revenue.

The economy of Bhutan is predominantly rural. The area suitable for agriculture production is limited, mainly by the very steep terrain and the altitude. Most rural households own livestock, which are grazed in the forest areas and pastures. The majority, about 85%, of the population derive a living from agriculture and other traditional activities in the rural sector. National fuel wood requirements are very high due to the lack of alternative energy sources. The production of fuel wood can meet about 83% of the total energy demand.

The flora and fauna of Bhutan are diverse; 72% of the country is covered by forests of fir, mixed coniferous, temperate, chir pine, and broadleaf species. The declared nature parks and reserves cover 26% of the country's land area. Much of the flora has remained undisturbed, so Bhutan most likely has the richest flora in the Himalayan region. The Government is determined to conserve the flora and has set a national policy to maintain at least 60% of the land permanently under forest cover. Moreover, a number of rare animals can still be found since the flora has remained undisturbed. Rare animals such as the golden langur, takin, and blue sheep are found widely. Tigers, leopards, snow leopards, red panda, gaur, serow, Himalayan black bears, brown bears, wild pigs, musk deer, and other types of deer are commonly found in many parts of the country.

Bhutan's potential for developing Non-Wood Forest Products (NWFPs) is quite considerable. Several commodities are classified under NWFPs, including: fodder, bamboo, medicinal plants, natural dyes, pine resin, lemon grass, and forest foods. But, several constraints hinder this development, including:

- little is known about the resources, management strategies, best harvesting practices, and marketing opportunities;
- professionals are too few, there is limited knowledge of practical management and the prospects for future development; and
- a weak institutional base.

Policy and planning

All the forests in the country are state owned and have been declared as Government Reserved Forests by the Forest and Nature Conservation Act 1969. The forests have been classified into three categories namely: Government Reserved Forest, Community Forest, and Private Forest. Community Forests had been handed over to the people for management purposes, while the land, minerals, and wildlife are still owned by the Government; meaning that the trees and the plants belong to the communities residing in and around the forests. In regard to management, the reserved forest is divided into protected areas for national parks, sanctuaries and nature reserves, and forest management units for harvesting of timber.

The country has set aside 26% of the land area as national parks, sanctuaries and reserved areas for special wildlife habitats. There are four national parks, four wildlife sanctuaries and one nature reserve. On 2 November 1999, the Government declared 382,800 ha of forest areas as a Bhutan's "Gift to the Earth". These areas are set aside as biological corridors for the movement of wildlife or as safe passages from one location to another without any disturbance from human activities. The areas selected as corridors are mostly unsuitable for human habitation and use. Therefore, there will be negligible impact on the local population.

The country has 0.33 million ha of degraded areas. Plantation activities are carried out on these lands and in logged over areas. It was reported that there were 43,974 acres of plantations, including the community plantations, plantations by the industries, and plantations in logged over areas.

An approved Forest Management Plan should be obtained prior to forestry operations in the reserved forest. At present, there are 13 forest management units covering an area of 88,788 ha. In addition, three working schemes have been prepared. The total annual allowable cut of these units and schemes is 133,251 m3 standing volume. The total timber harvested was 52,574.18 m3 in 1999. These units had been inventoried and their growing stock had been assessed. The management plan of the unit is crafted for a period of 10 years. For sustainability of the resources, timber production of each unit area should be less than its annual allowable cut. All the management units have forest roads constructed for timber transportation.

The Forest Master Plan exercise began in June 1989 and the strategic plan document was available in October 1991. The Master Plan proposes eight programmes as follows:

- conservation;
- forest management;
- non-wood products;
- human resources development;
- watershed management
- social forestry;
- institutional development; and
- industries development

The total financial requirements for the implementation of the forestry programmes for the period 1992/93 - 1996/97 was US$ 64.4 million. The Ministry of Agriculture has incorporated the Master Plan process into the formulation of a Forestry Programme Framework (FPF). The elements of the forestry sector strategy of this FPF are:

- Sustainable forestry development resources and self-sufficiency in wood products;
- Contribution to improvements in income, living and nutritional standards; and
- Environmental conservation, emphasising integrated and comprehensive management of watersheds.

The structure of the forestry programme elements and strategic issues is as follows:

- Supporting programme elements composed of Strategic planning; Human resource development; Land use planning; Monitoring and evaluation; Policy and legislation; and Institutional development.
- Functional programme elements composed of Forest resource information; Management planning; Environmental conservation and

natural area protection; Forestry research; and Forestry extension.
- Operational programme elements composed of Nature conservation and natural area protection; Sustainable forest management and utilisation for multiple uses; and Forestry for community development.

The important achievement of the Forestry Master Plan was the formulation of a Forestry Programme Framework (FPF). The FPF serves as a conceptual and logical means of relating the goals and priorities of the forestry sub-sector to identify programme elements. It links together on-going donor assisted projects and Government activities that contribute towards achieving the 8th Fiscal Year Plan national goals. It is felt that the framework will help in organising the government's planning efforts and provide a means of monitoring and assessing progress.

In addition, donor support to forestry development and the allocation of Government funds have been considered substantial. Support was given in the following areas:
- Land use planning;
- Industrial forestry development;
- Natural resources training;
- Nature conservation and wildlife;
- Institutional strengthening
- Forest management;
- Integrated forestry development;
- Afforestation;
- Human resource development; and
- Forest management/ conservation

Moreover, an environment and biodiversity conservation project has been in place supported by the Global Environment Facility (GEF), WWF, and Austria. A project proposal to provide support for country capacity for forestry development has been formulated. This project should assist the Government in the co-ordination, evaluation, and planning of donor assisted support in terms of strategic planning, policy, legislation, and institutional development.

Recently, the Third Forestry Development Project became operational. The long-term aim of the project is to promote national and regional conservation and management of the forest resources to benefit national, regional, and local well being of the people of Bhutan, consistent with the 1991 Forest Policy. In the short- and medium-terms, it is designed to:
- address critical issues arising from the deterioration of forest resources in a fragile mountain ecosystem resulting from exogenous pressures to meet the increasing needs of the human and livestock population for various categories of forest produce, and
- develop and test a pragmatic approach to sustainable forestry development which can be applied nation-wide within the concept of an approved Renewable Natural Resources sector strategy.

Fiscal Year Plan (FYP) on forestry

Since embarking on its socio-economic development planning, the Government has kept the policy to ensure that the process of development of all aspects should be consistent with maintaining the environmental and cultural integrity of the country. In this regard, His Majesty the King Jigme Singye Wangchuck stated that:

> "Throughout the centuries, the Bhutanese have treasured their natural environment and have looked upon it as the source of all life. This traditional reverence for nature has delivered us into the twentieth century with our environment still richly intact. We wish to continue living in harmony with nature and to pass on this rich heritage to our future generations".

Under the Seventh Fiscal Year Plan (7FYP), aimed at sustainable economic development and commencing in mid-1992, the Government adopted a programme of development planning. The renewable natural resources sector, which includes agriculture, animal husbandry and forestry, was given priority under the 7FYP.

The major objectives of forestry development under the 7FYP include:

- integration and co-ordination of land use;
- transfer of control of forest used by local populations in order to arrest the degradation process in certain critical regions;
- assign priority to providing the basic needs of the rural population;
- assign priority to natural forest management;
- increase co-ordination of environmental conservation activities.

It was reported that in the 7FYP, significant progress towards the development of a forest policy and strategy that balances requirements for conservation with the needs of local communities was made. In line with the decentralisation policy, implementation of almost all activities has been decentralised to the Dzongkhags. Therefore, the sectoral review of the 7FYP was mainly based on the implementation at Dzongkhag level. During the 7FYP, 5,000 acres of new and 15,000 acres of maintenance plantations were achieved. This indicated that substantial funds were allocated for the forestry sub-sector. Other important achievements include the preparation and implementation of a Management Plan in collaboration with the Bhutan Logging Corporation, and more than 500,000 trees planted through the Social Forestry Programmes.

In the 8FYP, starting in 1996, the theme is a mustering of efforts towards achieving self-reliance as expressed by His Majesty the King:

> "National self-reliance in the Bhutanese context means ultimately to be able to stand on one's own feet, have the power of decision in one's own hands, and not be dependent on others".

The development of hydropower and industries is considered to be an important development strategy for enhancing the goal of self-reliance and sustainability. Hydropower is one of the major renewable resources of the country, which is still not yet harnessed to any great extent in the economic development. The largest resources share has been allocated to this sector in the 8FYP.

In the 8FYP, an effective programme of impact monitoring and evaluation will be established, the results of which will feed back into programme review and design. The land use activities will be broadened, with work focusing on land policy analysis, farming systems analysis, and the strengthening of planning capacities at the Dzongkhag level.

In the 8FYP, forest management activities will focus on three major programme areas as follows:

1. Sustainable forest management.

This programme will involve the following main activities:

- Forest protection, covering both protection of forests against encroachment and illegal felling, fire protection measures, and surveillance and preventive measures against pests and diseases;
- sustainable management for multiple use, involving strengthening forest management and placing it on a more scientific basis; and
- commercial forest operations, bringing commercial logging operations under forest management concessions, ensuring better linkages between forest logging operations and forest management, and considerably reducing budgetary demands on the government.

2. Nature conservation and protected area development

During the 7FYP, management plans were prepared for the Royal Manas National Park, the Jigme Dorji National Park, and the Black Mountain National Park. During the 8FYP, management plans will be completed for four areas: Bomdelling, Thrumshingla, Khaling, and Sakteng. Priority will be given to protected areas in the south that include endangered species such as tiger, one-horned Indian rhinoceros and elephant, and where wildlife populations are most threatened.

3. Social forestry and extension

This programme aims to address the demands of the rural population for forest products and involving rural communities in the

management of forest resources. The programme has three main aspects:

- designation of community forest areas to be managed by village forest management units;
- community afforestation/ reforestation initiatives in degraded areas; and
- agro-forestry and private forestry on privately owned agricultural land.

To ensure the sustainable management of the state forests and protected areas, the 8FYP has set-up a forestry strategy through which the costs to the government are minimised. Therefore, revenues from forest utilisation will be recycled to finance forest conservation and management, while the costs of managing the protected areas are increasingly being covered from the Bhutan Trust Fund. The Trust Fund was established in 1991 as an innovative financing mechanism, which will help the Bhutanese to carry out conservation activities on continuous basis. At the beginning of 1996, six donors contributed US$ 17.4 million to the Trust Fund, i.e. GEF, Switzerland, the Netherlands, Norway, WWF, and Finland.

In addition, Bhutan and the Netherlands have identified certain areas, namely environmental management, energy, climate change, biodiversity, sustainable agriculture, culture, and tourism, as most embodying the concept of reciprocity.

The objective of the forestry research programme in the 8FYP is to enhance the productive and regenerative capacity of forest resources by safeguarding against any degradation of forest and water resources and loss of biodiversity. The research policy emphasises the following:

- contributing policy advice;
- managing linkages both with those outside the research system and with the farming community;
- co-ordination with other agencies involved in research, or the introduction of new technology;
- managing and making available information;
- avoiding inappropriate or harmful introductions of technology.

Policy, regulation and institutions

A revision of the Forest Act is under consideration by the Government. This revision will ensure consistency and reflect linkages between the draft Forest Policy, draft Forest Act, and draft Social Forestry Rules.

Bhutan was a participatory country in the Gender Analysis and Forestry Training of Trainers Programme of 1992-93, and two staff members of the Ministry of Agriculture participated. A focal point on gender issues was established in the Ministry of Agriculture and the training of planning staff in obtaining better information for planning is envisioned.

With support from the FAO project: Strengthening Re-Afforestation Programmes in Asia (STRAP), a workshop was held on 12-14 December 1995 to finalise a national re-afforestation strategy, in which involvement of the private sector, including industry and communities, was recommended as one of the strategies to solve the problems of limited financial and human resources, and the cost effectiveness of re-afforestation.

The Bhutan Forest Act of 1969 was replaced by the approved Forest and Nature Conservation Act of 1995 during the 73rd session of the National Assembly. A review has been commissioned to redress the rapidly emerging policy issues associated with land distribution, tenure and controls. Given the dramatic increase in orchards and plantation crops, with subsequent encroachment onto restricted forest lands and the displacement of poorer farmers onto marginal lands, the Land Act has been revised to include orchards as well as wetlands, dry lands, and shifting cultivation sites within the 25 acre ceiling.

Forest fire

The most important issue in forestry is forest fires. The area damaged by forest fires from 1992-2000 was 94,928.18 ha. In 1999,

112 cases of forest fires were recorded destroying 11,600 ha of forests with an estimated value loss of US$ 3,363,636.

The Government has seriously considered this problem. Overseas assistance for remedial measures and advice concerning the types of equipment has been requested. The terrain is so rugged so that it is difficult and sometimes impossible to reach the fire spots.

Harvesting and marketing

The forest management units have been fully mechanised. The two sets of cable cranes, namely gravity cable crane and all terrain cable crane, are presently used for long distance cable logging with a capacity of lifting 2.5 tones. No manual logging is permitted inside the forest management units. The power chainsaws have replaced the traditional axes.

In some forest road constructions, excavators have replaced bulldozers for constructing environmentally friendly roads. The used of bulldozers will also be replaced by excavators for road construction within the forest management units.

The new policy to enforce the ban on the export of logs came into force in 1999. The policy was adopted to ensure the development of the local based industries and to create job opportunities for the Bhutanese people. This policy is also directed toward reducing forest harvesting, thereby contributing to conservation.

Non-wood forest products that have been harvested and provide substantial income and employment include lemon grass oil, medicinal plants and mushrooms. These products have markets within and outside the country. The most commonly known mushroom with a high price is the “Sangay Shamu” or Matsutaki (Tricholoma masutaki) and is widely harvested from the forests. A total of 9,028 kg of raw mushrooms and 300 kg of processed mushrooms were exported in 1999. The Mushroom Centre at Thimphu teaches the collectors about the sustainable harvesting of the mush-room. This mushroom has not been cultivated to day.

Collaboration with partners

Many donor agencies have assisted the country in the forestry sector development. They include the following:

a). The Third Forestry Development Project assisted by World Bank/ SDC, duration of 1994-2002, costing US$ 6.8 million;
b). Bhutan – German Sustainable RNR Development Programme; supported by Germany; duration of 1997-2000; costing US$ 2.6 million.
c). Integrated Forestry Management; assisted by Austria; duration 1999-2001; costing US$ 2.3 million.
d). Jigme Dorji Wangchuck National Park; supported by UNDP/GEF; duration 1997-2001; costing US$1.6 million.
e). Royal Manas National Park, supported by WWF; costing US$ 0.9 million.
f). Biodiversity Conservation; supported by the Netherlands; duration 1997-2002; costing US$ 1.7 million.
g). Wang Watershed Development; supported by EU; costing US$ 8.4 million.
h). Institutional Development Initiative; supported by IDF; duration 2000-2002; costing US$ 0.5 million.

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Brunei Darussalam

Country data	
Total land area (thousand ha in 1998)	576
Total forest area 1998 (thousand ha)/ % of total area **	448/78
Natural forest 1998 (thousand ha)**	434
Total change in forest cover 1995-98 (thousand ha)/ Annual change (%)**	-23/-0.36
Population in 1998 (million)/ Annual rate of change 1990-98 (%)*	0.3/3
Rural population 1998 in %*	33.9
GNP per person total 1998 in US$	14,935

Source of data: * Brunei Darussalam Statistical Yearbook
** Information submitted to FAO – input for FRA 2000

General information

Brunei Darussalam is situated on the north-west coast of the island of Borneo with a coastline of about 130 km. The country is endowed with extensive forests. Even though the proportion of forest cover of the country is large, the forest resource available for the development of timber industry is limited, as the actual area of the country is exceedingly small.

Brunei Darussalam has a tropical climate with high humidity and rainfall. The average daily temperature is about 28°C and the annual rainfall ranges from 2,790 mm in lowland areas to more than 3,810 mm in many parts of the interior, particularly from November to March.

Economically, Brunei Darussalam is still heavily dependent on the production of crude oil and natural gas. The country is known to be the third largest oil producer in Southeast Asia with a production of 163,000 barrels per day. It is also the fourth largest producer of liquefied natural gas in the world. Apart from crude oil and natural gas revenues, rents, royalties, taxes and investment dividends also support the country's economy.

Due to the non-renewable nature of oil and gas, measures have been taken to diversify the economy by encouraging development in other fields through a series of Five-Year National Development Plans (NDP). The current Plan, covering the period 1996-2000, is the 7th in the series and primarily aims at giving an all-around enhancement to all facets of life of the people, with emphasis on economic diversification through the development of export-oriented and non-oil based industries. For this current plan the Government has allocated a total of B$ 7.2 billion for the implementation of various development projects and programmes, with social services taking the biggest share at B$ 1.98 billion. The rest is divided amongst the following: public utilities, B$ 1.58 billion; transport and communications, B$ 1.40 billion; industry and commerce, B$ 907.66 million; public buildings, B$ 623.83 million; security, B$ 528.10 million; and miscellaneous, B$ 173.30 million.

Forest resources

Brunei's forests are classified into two types: 1) gazetted forest reserves, which cover an area of about 235,520 ha, or approximately 40% of the total land area; and 2) State-land Forests. The management of the forest reserves is under the jurisdiction of the Forestry Department, one of the arms of the Ministry of Industry and Primary Resources. Most of the forest reserves are made up of primary forest, which is divided into 6 categories, namely: 1)

mangrove, 2) freshwater swamp, 3) peat swamp, 4) kerangas or tropical heath, 5) mixed dipterocarp, and 6) montane. The rest are mixtures, i.e. plantation and secondary forests.

The forests are managed on an optimal, sustainable and ecologically sound basis. The main economic forestry objectives are as follows: attaining long-term self-sufficiency in timber production and the supply of other essential forest products; promoting down-stream processing for high value-added products; tapping forest biodiversity for industrial biotechnology; boosting ecotourism; and developing a competitive forestry niche in the international market. All of these are geared toward maximising the contribution of the forestry sector in the Government's national economic diversification programme.

But more importantly, the forests are managed for their inherent protection and conservation values. These include the protection of the natural life-support systems, maintenance of environmental amenities, promotion of scientific endeavours and nature education, and perpetuation of the national patrimony.

Policy and strategy

The preamble of the 1989 National Forestry Policy of Brunei states as follows:

> "In pursuance of national development objectives and consistent with global strategies on biogeocology in which the forests play a vital role, the government commits itself to conserve, develop, and manage its forest resources for the preservation and improvement of the quality of life; the promotion of social, political, and economic well-being of the people, and technological progress of the country; and for bringing about environmental amenity and ecological equilibrium over a time continuum".

Within this policy context, the Forestry Department, in facing the new challenges and opportunities in the new millennium, has redirected its focus in carrying out its long-term development goals. The recent developments and new realities have necessitated major changes in strategic approach, planning, and execution with directed emphasis on a proactive instead of reactive style. In doing so, the Forestry Department has spelled out its specific vision and mission as a set of objectives that need to be achieved.

Hence, the vision of the Forestry Department in going into the next millennium is excellent regarding tropical forestry. Its mission is to manage the forests of the country in an efficient and effective manner towards attaining this vision. Specifically, the Forestry Department is committed to:

1. dedicating at least 55% of the total land area as permanent forest estates or forest reserves;.
2. rational natural resource allocation and sustainable multiple-use forest utilisation;
3. developing a 3-pronged National Forestry Strategic Plan, consisting of Environmental Forestry, Industrial Forestry, and Excellence in Tropical Forestry;
4. streamlining the organisation of forest administration;
5. formulating and executing a forest development programme for industrial forest involving silvicultural management of natural and man-made forests and dynamic forest management regimes;
6. formulating and undertaking a programme of rehabilitation of degraded lands in the country;
7. formulating and implementing a conservation programme for environmental forests, involving preservation of ecosystems, establishment of resource conservation, documentation centres, etc.;
8. developing and implementing a management, exploitation, and development plan for the production forests and remaining forests on state lands;
9. formulating and carrying out a development plan for recreational forests and national parks, including remote eco-tourism and scientific undertaking;
10. formulating and putting into action a programme of forestry extension and education;
11. formulating and enforcing a national forest protection plan;

12. formulating and executing a programme on generation and transfer of forest technology; and

13. establishing international linkages and putting Brunei on the map of global forestry.

In order to implement the forestry strategic plan, the following policies, with respect to the management and utilisation of forest resources and the development of the forest-based industries of the country, have been enunciated:

1. Local citizen participation in private companies

Private companies intending to get involved with forest industries and related activities must have local citizen participation, to the extent of at least 51% of equity.

2. No export of logs

In order to achieve sustainability of forests, including sufficient supply of forest products for future domestic requirements, the Government has not allowed any export of logs. This policy is apart from the cut in the logging rate. To offset shortfalls in log supply, the Government has permitted saw millers to import their log input or sawn timber needs.

3. Import of raw materials for local processing encouraged

Aside from the import of sawlogs for the sawmills, the Government has also encouraged the import of other raw or semi-processed materials for processing in the country. This is expected to further spur the development of the forest-based industry. These include pre-worked or pre-fabricated components, e.g. for furniture making.

4. Export of value-added products encouraged

A further step to the above is the Government-initiated stimulation for export of finished products, particularly high value-added items resulting from downstream processing.

In anticipation of the state of forestry in the 21st century and bearing in mind the strengths, weaknesses, opportunities and threats, the Forest Department has crafted a "5-star excellent strategy" as follows:

Star 1: Forest for Posterity and Prosperity

Perpetuate our forests; they are our heritage and the key to our prosperity.

Strategy/Objectives:

- manage and protect at least 55% of the country's total land area as permanent forest reserves;
- complete the Brunei National Herbarium and make it fully operational (target: 30,000 specimens);
- establish the Brunei Tropical Biodiversity Centre and later, the Royal Brunei Botanic Gardens;
- publish the flora and fauna of Brunei.

Star 2: Forest for Sustainable Production

Make and keep our forest resources productive in a sustainable, optimal and environmentally friendly way.

Strategies/Objectives:

- revise and effectively enforce forestry laws and regulations;
- develop and maintain a natural production forest stock as a strategic reserve;
- increase the productivity of natural production forests through inventory and silvicultural treatments (long-term target – 50,000 ha);
- develop timber plantations (long-term target – 30,000 ha) in order to supply the domestic wood requirements of the country on a sustainable basis;
- develop rattan and bamboo plantations (target 10,000 ha and 1,000 ha respectively);
- prevent and control forest fires.

Star 3: Forest for Economic Strength

Maximise the contribution of the forestry sector in our national economic diversification programme

Strategies/Objectives:

- rationalise the primary forest industries;
- facilitate and support the development of downstream, value-added, export, and non-traditional industries (e.g. biotechnology, eco-tourism);
- develop private forestry industries;
- facilitate and increase the forestry sector's contribution to the GDP.

Star 4: Forest for Public Involvement and Enjoyment
Provide recreational opportunities and foster nature education for our people.

Strategies/ Objectives:

- complete the establishment of the national park, designated ecoparks and forest recreation parks;
- efficient implementation of the social and community forestry projects;
- undertake an effective forestry extension and education programme.

Star 5: Forest for International Prestige
Achieve "world-class" stature for Brunei Darussalam in the field of tropical forestry.

In addition to the above, the Forestry Department has entered a new era facing the new challenges in a rapidly changing world. The emphasis focuses on a pro-active instead of reactive management approach. The call of the day is management of results rather than management by mere objectives (since attainment of set objectives does not actually yield desired results). Management results should be specific, measurable, attainable, relevant, and time-bounded (SMART).

Planning and forest management

The rapid development of the forestry sector in Brunei Darussalam commenced under the 5th National Development Plan (NDP) of 1986-1990. Within this period, the National Forestry Policy was adopted in 1989, followed by the Forestry Strategic Plan. Several projects were initiated, including establishment of the forest nursery, recreational parks, and a pilot timber plantation in Sg. Liang.

During the 6th NDP (1991-1995), more projects were implemented. These included expansion or development of the forestry nursery, recreational parks, wood preservation, timber plantations, rattan plantations, herbarium, ex-situ conservation centre, inventory of natural rattan resources, wood-working workshop, pilot bamboo plantations, forest road network, Ulu Temburong National Park, and waste land rehabilitation. Under the 7th NDP (1996-2000), the Forestry Department has adopted a result-oriented approach to project planning and implementation. The budget allocated to support projects in the 7th NDP is more than double that of the 6th NDP, i.e. $40.3 million in the 6th and $105.2 million in the 7th NDP.

As stated in the 1986 National Master Plan, the land is apportioned as follows: gazetted forest reserves - 40%; proposed forest reserves - 15%; other conservation areas - 2%; agriculture farms - 2%; uncommitted state land - 37%; resettlement areas - 1%; urban and residential zones - 2%; and gravel and white sand deposits - 1%.

The tropical forests of Brunei are divided into five functional categories: a) protection forest (for critical watersheds and ecological preserves); b) conservation forest (for natural habitats, wildlife sanctuaries, as well as for specific areas of scientific and education values); c) recreation forest (for outdoor recreation); d) national park (for large ecological and biological representation promoting nature research, education, eco-tourism and cultural preservation; and e) production forest (for supply of timber and other essential forest products).

The Forestry Department, established in 1933, was one of the pioneer government agencies in Brunei. The Forest Act was first promulgated in 1934. In the early years, forestry administration was concerned mainly with the collection of revenue; a minimal volume of timber and non-wood forest products was harvested, including latex of jelutong for domestic and export purposes. In the past few years, most of the development activities have been focused on the rational exploitation and management of the commercial natural forest, particularly the mixed dipterocarp forests.

Previously, the silviculture system that was adopted for the mixed dipterocarp forest was the Malayan Uniform System (MUS), patterned after the practice in Peninsular Malaysia. However, the local site conditions are distinctly different from those in Peninsular

Malaysia. In hilly dipterocarps, the trees are not evenly distributed. There is sparse and poorly distributed regeneration with low tolerance to heavy damage to soil and residual stands during harvesting. The condition of logged over dipterocarps in Andulau and Ladan Hill forest reserves, to which MUS had been applied, is poor and unproductive even after 30 years. Due to these results, the Brunei Selective Felling System (BSFS), which is equivalent to selective felling practised in Malaysia, Indonesia and in the Philippines, was introduced in 1986. However, the BSFS adopts a longer cutting cycle of 60-70 years.

The peat swamp and mangrove forests have no established or prescribed silviculture system as yet. In view of the importance of mangrove forests for the fishery and aquaculture industries, their conservation will be given a higher priority. Because of this, the Pulau Selirong mangrove forest ecopark, that was once a production forest, has been re-classified as a conservation ecotourism re-serve.

In regard to the heath forest (kerangas), due to their unique characteristics and the rapid developments taken place surrounding this forest ecosystem, conservation of this forest is also accorded high importance. One measure has been to rehabilitate degraded areas with the same species i.e. Agathis boornensis.

To support forest management and development strategies, the operations and research facilities at the Brunei Forestry Centre at Sungai Liang are being upgraded into a dynamic field operations and R&D centre. Technical and support personnel are being trained to carry out its functions more efficiently and effectively.

Advantages of the plan

There are a number of advantages that can be cited to favour effective implementation of the Plan, such as:

1. Large portion of forest cover

The predominant forest cover of the country provides great potential for forestry to be developed as a major primary resource. With proper planning, efficient management of its forest resources, and appropriate research support, the forestry sector can play a vital role in the country's programme for economic diversification.

2. Availability of financial resources

The financial crisis that has adversely affected the region appears to be abating. With the increasing trend in the price of oil – up to B$ 26 per barrel lately, the economy of the country will soon again rise up to its former healthy level. Hence, the strong financial position of the country can adequately support the development of the forestry sector in the future. This normally requires substantial investments that would extend for a period of time before significant returns can be obtained. Thus, steady and adequate financial support from the government is essential to ensure the success of the plan.

3. Low logging rate

There is less pressure for large-scale exploitation of the forest resources of Brunei. In fact, a logging cut policy has been imposed since 1990. The logging rate from the natural production forest has been reduced from 200,000 m^3 to 100,000 m^3 annually. This has contributed significantly to the conservation of the country's forest resources.

4. Favourable social and political situation in the country

Common problems in forest protection such as shifting cultivation and illegal logging, which have been identified as major culprits of forest destruction in most tropical countries, are minimal if not negligible in the country. This can be attributed to the fact that socio-economic, as well as political problems, which are perennial problems, particularly in the developing countries, are non-existent in Brunei Darussalam.

5. Accessibility of operations

The country's forest operation areas are limited and easily accessible, which can ensure a high standard of planning and effective

execution of such plans. There are only 24 sawmills operating in the country with their concession areas within 15-25 km from the mills. Supervision and monitoring of their operations can be satisfactorily done with appropriate staff allocation.

6. Parallel technical information available as a base

There is a wealth of technical information on tropical forest management available, including in its neighbouring ASEAN countries, which Brunei Darussalam can easily access. However, the country should study it with caution and note not only their successes and strengths, but their weaknesses and failures as well.

7. Resources/strategic planning study

Brunei Darussalam has undertaken a national forest resource and strategic planning study that will provide valuable reference and guidance in the preparation of a detailed strategic plan.

8. Vast biological potential existing in Brunei Darussalam

The high diversity and richness of Brunei Darussalam's forests equals a vast storehouse of genetic materials that can be conserved and investigated for their potential socio-economic values. Examples include the many wild relatives of useful crop plants and fruit trees that may be suitable in the agricultural industries for crop improvement, a rich variety of rattans that could be exploited, and potentially valuable medicinal and ornamental plant species. The intrinsic richness and well-preserved condition of Brunei Darussalam's forests are attractive to scientists, conservationists and tourists alike, and favour the development of research centres and natural areas of international repute.

Constraints

Although there are a number of advantages that can be cited to favour effective implementation of the plan, there are also some limitations and constraints, which have to be resolved, including the following:

1. Shortage of trained manpower

The local timber industry will continue to rely on expatriates for expertise, including non-skilled labour, until such time when locals are encouraged and trained to assume the job.

2. High Labour cost

The cost of labour is considerably high and makes forestry endeavour expensive and thus less economical.

3. Relatively small forest/country area

The forest resource would just be ideal and adequate enough to sustain the local demand, if managed wisely. Any attempt to introduce large-scale exploitation of the forest resource could endanger the future of the entire forestry industry and influence the fragile environmental balance of the country.

Focal point

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Cambodia

Country data	
Total land area 1966 (thousand ha)	17 652
Total forest area 1995 (thousand ha)/ % of total land area	9,830/ 55.7
Natural forest 1995 (thousand ha)	9,823
Total change in forest cover 1990-95 (thousand ha)/ annual change (%)	-819/ -1.6
Population total 1997 (millions)/ annual rate of change 1995-2000 (%)	10.5/ 2.2
Rural population 1997 (%)	78.43
GNP per person 1995 in US$	270

Source of data: FAO - State of the World's Forest, 1999
The State of Forestry in Cambodia, 18th APFC, 2000

General information

The rural economy is dominant in Cambodia, where 85% of the people are engaged in agriculture for their livelihood. They also pursue with supplementary economic activities. Those living adjacent to forests, cut trees, collect fuel wood, and non-wood forest products as part of their customary rights. During droughts and flooding, these activities are vital for securing the survival of these people. The country exports rice, rubber, timber and non-wood forest products, and precious stones. The agricultural sector employs 80% of the country's labour force and accounts for some 50% of the GNP. Fuel, machinery and spare parts are the main import commodities.

Within the natural resources sector, forestry remains one of the most important sectors contributing to the socio-economic development of the country. Cambodia's forests also attract international tourists, particularly in the Sien Reap region where Angkor Wat and the surrounding temples are located.

The Government has taken a number of policy and legal reforms to address problems in the forestry sector in the past several years, particularly concerning legal and illegal forest harvesting. The Prime Minister issued a declaration in 1999 regarding the following matters: a) declaring the Department of Forestry and Wildlife (DFW) of the Ministry of Agriculture, Forestry and Fisheries, the sole agency responsible for the forest estate; b) cracking down on illegal logging; c) ordering the military and police to assist the DFW to combat illegal logging; d) banning conversion of forest land, making a review of all concessions and formulation and adoption of a new forest law.

The important results of the above policy and legal reforms include cancellation of 12 concession agreements, reduction of illegal logging, the closure of hundreds of illegal saw-mills, seizure of equipment and illegally harvested logs and wildlife. The Government, with assistance from donors, established some forest crime monitoring units and began reviewing and checking the contractual compliance of the concessionaires.

Forest resources

The forest type varies considerably from province to province. The forests in the west and north west are mostly evergreen, while those in the north-east are mainly deciduous forests. The southern and central regions have less forest cover, and thus the wood supply, particularly for fuel, is not adequate to meet the people's needs.

Under the National Programme to Rehabilitate and Develop Cambodia and the First Socio-Economic Development Plan, a transition in land allocation to private companies and group emerged in the early 1990s. Emphasis was given to commercially-based development by leasing large land areas to investors. This was the interpretation of a market-oriented economy at that period.

During 1990-98, 6.5 million ha, or 60% of the forestlands, were officially allocated to forest concessions. There were other types of land concessions granted by the Government such as: agriculture concessions for the private sector development of rubber, cashew and oil palm plantations.

Since 1999, the Royal Government of Cambodia has cancelled 9 forest concession agreements covering an area of 2 million ha. At present, the total forest concession areas cover an area of 4.7 million ha, or 44% of the total forests in the country.

According to the recent survey undertaken by the GTZ Forest Cover Monitoring Project, which was based on the 1996/97 satellite imagery, the forest cover was 10.6 million ha, or 58% of the total area, and large areas of forests were degraded and no longer amenable to sustainable forest management. The forests are increasingly at risk because of the expanding demand for agriculture lands, timber and fuel wood. The trend is accelerated by the increase of population.

Due to the climate conditions, natural regeneration is uncertain. Artificial regeneration had been carried out from 1915 through 1972 in some poor forest areas on small scale i.e. 300 – 400 ha per year using the following species: Hopea odorata, Dipterocarpus, Tectona grandis, Pinus merkusii, and other fast-growing species for fuel wood such as Peltophorum ferugineum and Combretum quadrangulare.

Since 1985, the Department of Forestry and Wildlife (DFW) has planted an additional 2,000 ha of plantations. Presently, there are a total 7,494 ha of tree plantations. Fires have damaged some of these plantations.

In addition, DFW is co-operating with JICA to establish a Reforestation and Training Centre and a training and experimental forest. The purpose of this project is to provide training in stand inventory, tree measurement, and establish a tree nursery and conduct several forest plantation trials. DFW is also participating in the Indochina Tree Seed Project funded by DANIDA (Denmark) for a period of 3 years. Some forestry officers have been trained in seed collection and breeding techniques.

Policy and legislation

The National Forest Policy Statement and Guidelines have been revised several times to reflect the interests and needs of different groups. The document clearly states the commitment of the Government to sustainable forest management assessment and optimal allocation of land resources and the importance of local communities in the protection and management of forest resources.

The strategy of implementing the National Forest Policy is based on the following:

- Allocating appropriate forest lands as permanent forest estates;
- Maintaining sustainable management for prosperity with particular reference to conservation of biodiversity, soil, and water;
- Assuring the traditional resource use rights and privileges of communities;
- Enhancing the contribution of forestry for the welfare of the population;
- Strengthening the national economy with special attention given to equity and economic development consistent with the government policy;
- Promoting a greater participation of local communities and the private sector in forest protection, management and improvement;
- Supporting a community forestry programme.

In 1995, FAO offered technical support to draft new forestry legislation. Several missions were fielded, and a draft provisional document was prepared and submitted to the Ministry of Agriculture. In July 1996, an Inter-Ministerial National Committee for Forestry Policy was

established, under the auspices of the country's two Co-Premiers. This committee is managed by a Permanent Secretariat under an Executive Secretary, who is responsible to the Ministry of Agriculture, Forestry, Hunting, and Fisheries. The Director of the Forestry and Wildlife Department is appointed as the Executive Secretary.

The National Committee is responsible for devising, monitoring, and assessing forestry policy. This Committee co-ordinates dialogue between the Government and international aid agencies, enlists and supervises technical assistance, draws up investment programmes for the sector, and presents action reports to national authorities and donors. The Committee is also responsible for proposing any necessary measures or plans of action regarding the country's forestry policy.

On 16 January 1997, a Consultative Group meeting (as the follow-up to the Consultative Group Meeting held in Tokyo, July 1996) was organised by the Council for Development of Cambodia. The main issues discussed included the following issues: the budgetary and tax reforms; the forestry sector; the administrative reform programme; the election legislation and organisation; and the project of reintegration of army defectors. Concerning forest and forestry related matters the meeting noted several important issues including:

- The Royal Government of Cambodia (RGC) remains strongly committed to putting in place, as soon as possible, an effective control and monitoring system for forest exploitation and the trade in processed wood products over the whole country;
- An independent monitoring system is being established (SGS - a Switzerland firm was selected in December 1996, but withdrew in January 1997);
- The export of logs and sawn timber was entirely prohibited after 31 December 1996;
- The RGC decided to form a National Committee to manage and execute forest management policy, which was called the Steering Committee on Forest Policy Reform. The long-term objective of the Committee is to manage efficiently and effectively the national forest resources in environmentally and economically sustainable ways. The Committee has a mandate to conceive, follow-up, and evaluate the forestry policy;
- Since 1 January 1995, all tenders of annual permits have been suspended;
- The RGC is a member of ITTO;
- In 1995, the RGC requested the group of WB/FAO/UNDP to assess the forest policy and to propose recommendations. The re-port of the study, published in April 1996, confirmed the objectives and the strategies defined by the RGC, including:
    - Limit the forest exploitation to the level of its annual increment, which was estimated at 300,000 to 350,000 m3 per year;
    - Improve the revenue of the national budget by the full collection of all related taxes from wood;
    - Intensify the actions against illegal cutting and exportation;
    - Develop measures in favour of environmental protection and conservation of biodiversity.

Both Houses of the Parliament approved the Forestry Law. The Law provides the legal foundation for, among others: a) establishing the role and power of Government agencies in forestry administration and enforcement; b) forestland classification, including the establishment of a permanent forest estate; c) the rights and obligations of all parties involved in forest exploitation; d) conservation and protection of forests and wildlife; and e) forestry crime and penalties.

A Sub-Decree on "Forest Concession Management" was adopted on 7 February 2000 by the head of the Royal Government of Cambodia after intensive consultation with NGOs, concessionaires, and experts from WB, ADB and FAO/UNDP. The Sub-Decree provides rights and privileges to local communities and related government institutions and the private sector to participate in the process of granting a new forest concession, establishing forest concession management plans, and the

monitoring of harvesting operations. The Sub-Decree also stipulates that a permanent consultative communal committee has to be established as a mechanism to facilitate discussions and comments on all issues involving concessionaires and local communities living near and inside forest concessionaire area. The Sub-Decree lays the foundation for improved industry performance by establishing a competitive bidding process for the future concession management and planning.

The Minister of Agriculture, Forestry and Fisheries officially declared the Code of Practice for Forest Harvesting on 26 July 1999. The document was prepared under a loan from the World Bank and with assistance from a consulting firm.

The Minister of Agriculture, Forestry, and Fisheries decided to reassess all the concession contracts to better adapt the felling permits. The concession holder has the obligation to present a forest inventory, a master plan, and an environmental impact assessment.

With assistance from ADB, the Government undertook a comprehensive review of all 20 concessionaires. The review commenced in

July 1999 and was finished in April 2000. It concluded that without dramatic and immediate changes the current system could not ensure the implementation of the sustainable management of the forest resources.

To curtail illegal logging and other breaches of laws, a forest crime monitoring and reporting project has been established to build the capacity and infrastructure for proper monitoring and reporting of violations. UNDP/FAO and the WB provided technical assistance and the United Kingdom and Australia provided funds for the first year's operation. The Government has created a Focal Point for monitoring and reports. The Government endorsed the use of the Global Witness for independent monitoring to ensure the achievement of the project's goals and objectives. The systems are comprised of three major elements, as follows: a) prevention, b) detection, and c) suppression.

Community forestry

The important role and contribution of the community forestry programmes and activities toward rural development have been fully recognised by the Government. The Government has received support from several international institutions for community forestry development in some provinces, including ADB, FAO/UNDP, GTZ, and IDRC/ RECOFT. From the results of these supports, the Government was able to formulate a guideline for community forestry, which is intended to provide practical strategies and operational guidance to community forestry programmes and activities.

However, the implementation of the community programme throughout the country would require huge financial resources, for which the Government could not consider taking loans as an alternative for funding. Therefore, the size and scope of the community forestry programmes will solely depended on donor assistance.

Planning and programming

In 1992, a Provisional Authority of the United Nations in Cambodia was established with the task of paving the way to free elections and providing the new government with as much information as possible concerning the country's situation in all economic and social development sectors, as well as prospects of international co-operation. A seminar concerning the best use of Cambodian forests within a sustainable development framework was organised on 12-14 July 1993, and concluded the following:

1. Protection and development of the forest heritage

The basis of any policy ensuring sustainable development of the forest heritage for the sake of future generations lies in forest protection. Protection and conservation are the keystones for maintenance of the environmental, social, cultural, and economic value of forests.

The rapid degradation of Cambodia's forests is mainly caused by a growing demand for fuel wood and increasing illegal cutting of trees

for other uses from natural forests. Forest protection entails reformation of forestry legislation, improving manpower skills, a properly equipped forestry service, and increasing people's participation and involvement.

People's participation must be officially recognised and encouraged through appropriate incentives, so that it will be ensured throughout the process, from the initial drafting of plans and programmes, through to their implementation. Priority should be given to the need for immediate measures to protect the most threatened forest ecosystems, especially the Tonle Sap flood forests, the Kirirom Plateau pine (Pinus merkusii) forests, and mangroves around the Angkor archaeological area.

2. Sustainable management

Sound and sustainable management of forest resources requires a well-trained and professional forestry service, and a strong sense of duty and responsibility to the country's present and future generations.

To ensure that the forest exploitation is properly conducted, a plan must be drawn up specifying the annual allowable cut, including post-harvest forest operations.

Some immediate political, administrative, and technical measures should be implemented, particularly the following:

- illegal cutting should be abolished;
- an inventory of all wood-processing facilities, and the closure of those illegally established;
- harvesting areas should be defined;
- medium- and long-term harvesting zones administered by a properly established policy should be defined;
- precise rules for the allocation of cutting rights and industrial processing should be established;
- the people's role in both operations and benefits in forest management should be specified.

3. Enforcement of forestry policy

The log export ban declared by the CNS on 22 September 1992 and the adoption of quotas for exports of processed-wood in February 1993 were positively judged as conservation measures.

The participants strongly recommended that these conservation measures be maintained so long as the Cambodian forestry service does not have clear guidelines regarding the implementation of the forest legislation and regulations, land-use plans for production forests, and the means to implement such guidelines. If the rules are to be strictly applied, collaboration and co-operation with the relevant services involved in forestry sector development are essential.

4. International co-operation

To achieve the forestry sector development goals, international assistance and support are needed and various actions are under way. Financial support will be essential in the immediate future. Although the Cambodian government is responsible for choosing priorities for action and identifying which areas need technical and financial assistance, the seminar appealed to international and bilateral development aid agencies to provide immediate technical and financial support to initiate a national strategic planning process.

A July 1994 seminar recommended that a strategic planning process within the Cambodian National Forestry Programme process should be adopted. Within the process, the following actions were recommended to be carried out as soon as possible:

- Revision and refinement of forestry legislation in order to ensure the protection of the natural heritage for its social, cultural, and economic development for today and the future generations;
- Formulation of a national forestry policy based on the principles of social justice, sustainable development, people's participation, and transparency;
- Adoption of a forest land-use plan, as part of a more comprehensive land-use plan covering all sectors (agriculture, fisheries, industry, energy, etc.), including protected areas (natural parks, biological reserves, watershed

protection forests, etc.), recreational forests, and production forests;
- Formulation of short- and medium-term action plans including defining the objectives of programmes and projects based on the national forestry policy;
- Reorganisation of the forestry service to ensure its capability to implement the national forestry policy;
- Renewal and intensification of forestry education in order to produce qualified field staff having a sense of public service, and skilled senior staff;
- Resumption of applied forestry research through rehabilitation of various trial facilities, and dissemination of technical results;
- Rationalisation of timber industries development for the benefit of the people of the country as a whole;
- Development of schemes to improve the quality of urban life through planting trees, especially along the road sides and other areas;
- Encouragement of participatory rural development so that agricultural production can be intensified, taking into account various socio-economic factors, particularly poverty, population growth, lack of education, and poor infrastructure;
- Development of community forestry, which includes agriculture, livestock, aquaculture, and fisheries;
- Women's participation in the process of formulating and implementing projects;
- Awareness campaigns and grassroots education on the important role of forests and the value of the natural heritage, and why everyone should commit to safeguard it;
- Explore appropriate technical and financial assistance support from international and bilateral aid agencies.

The NFAP Basic Principles and Operational Guidelines document was translated into the Khmer language in June 1994, and the First National Seminar on the Cambodian National Forestry Programme was organised in August 1994. Ninety people attended the Seminar, including representatives from the Ministry of Agriculture, Ministry of Environment, Ministry of Social Welfare and Labour, Ministry of Women's Affairs, Ministry of the Interior and Defence, and representatives from several international organisations and NGOs.

The Government approved an NFAP Project Document (of two-year duration) at the end of 1994, but in early 1995 UNDP decided to restrict its action to preliminary assistance in getting the process under way.

In October 1995, following consultations between FAO, UNDP, and the World Bank, it was decided that a joint policy evaluation mission should study the forest conditions and timber harvesting operations, and analyse how forestry concessions were fielded. This policy analysis was carried out in November 1995, and the provisional report was submitted to the government in early 1996. The final report was ready in June 1996. The report recommended several policy options for forestry concessions, harvesting, and timber exports, and proposed four immediate actions:
- Identification of possible forms of legislation on forestry concessions;
- Definition of criteria and procedures for analysing harvesting proposals;
- Development and use of survey techniques to establish initial inventories prior to the issuance of a concession licence;
- Inception of a comprehensive strategic planning process laid down by the Intergovernmental Panel on Forests of the Commission for Sustainable Development covering the development of (a) a forestry policy, (b) implementation strategies for the policy, and (c) investment programmes.

Conservation

Wildlife in Cambodia is increasingly threatened by loss of habitat caused by increasing population pressure, deforestation, hunting, trade and landmines. Deforestation and forest degradation are threatening many valuable plants and wildlife species with extinction. Removal of a few commercial species in the appropriately selective cutting

implementation will impoverish genetic resources.

The Prime Minister officially opened the Zoological Park and the Wildlife Rescue Centre covering an area of 1,200 ha. The Park has conserved 500 wildlife, including 86 species of birds, mammals and reptiles.

A Royal Decree designating a conservation reserve for Sarus Crane habitat covering an area of 12,650 ha at Trapaing Thmar, Phnom Srok district, Banteay Meanchey province was issued on 22 February 2000. In addition, the Department of Forestry and Wildlife discovered the central Cardamom-mountains to be a national treasure due to the richness in diversity of plants and animals, including elephants, tigers, and wild Siamese crocodiles. These mountains are now considered to be one of Indochina's most important areas for biodiversity conservation.

Utilisation and marketing

The Government cancelled all permits to set up sawmills in order to eliminate the use of illegal wood supplies. This was carried out after the issuance of Declaration No. 1 concerning "Measures to Management of Forests and the Elimination of Illegal Forest Activities" of 25 January 1999. However, the forest concessionaires have been authorised to install veneer, sawmill and furniture plants and they have the right to export their products.

Fuel wood is the biggest wood product, and is the principal source of fuel in the country. It was estimated that 6 million m3 of fuel wood are collected every year to meet the need for cooking and industrial kilns.

Timber and timber products, which are mainly dipterocarps, are exported to Singapore, Taiwan, Hong Kong, Thailand, Japan, Lao PDR, United States of America, China, India, Korea PR, the Philippines, Vietnam, Malaysia, and Russia. The export of logs was prohibited in 1997 and since then the local processing of logs has been promoted. Table 1 shows the trend of exports of timber and timber products of the country. The Table shows that the government policy on promoting local processing and prohibiting exports of logs took effect in 1997.

All the edaphic forests and about 2.8 million ha of other forests, which are part of the National Protected Areas System (established in 1993 and comprised of 23 parks), were allocated for biodiversity preservation. A total of 3,568,000 ha (19.7% of the country's land area) is under legal protection.

Theoretically, the timber stock available for commercial harvesting (above 40 cm in diameter) varies from 30 m3/ha in deciduous forests, to 80 m3/ha in evergreen forests. However, for sustainable selective harvesting, the volume available for commercial harvesting is only 10 m3 in deciduous forests and 20 m3/ha in evergreen forests.

Local consumption of wood and forest products is high. The total annual consumption for fuel wood is about 6 million m3, and for construction timber it varies from 1.0 to 1.5 million m3.

Table 1: Export of Timber 1993-1999 in m3

Year	Logs	Sawn timber	Veneer	Plywood
1993	80,835	150,839		
1994	300,635	295,555		
1995	459,085	99,449		
1996	161,673	69,042	28,489	
1997		71,662	188,667	
1998		55,983	179,909	16,418
1999		9,828	68,320	14,865

Collaboration with Partners and International Agreements

Several international institutions and NGOs have been providing support to the forestry sector development in Cambodia. International institutions and donors include WB, UNDP, UNCHR, FAO, ITTO, ADB, GTZ, EU, JICA, AusAID, SIDA, DANIDA, DFID-UK. Those from NGOs include CARE, CONCERN, IUCN, WWF, APAFRI. These NGOs assist the country mostly in the field of community participation in planning, management and monitoring in the rural development, protected areas and forest resource development.

The country receives support from the Indochina Seed Tree Project executed in Cambodia, Lao PDR and Vietnam with assistance from DANIDA (Danish International Aid Agency). In addition, the country also receives support from a regional project entitled "Sustainable Management of Natural Resources in the Lower Mekong Basin" funded by Germany and implemented by the Mekong River Commission and GTZ. The main aim of the project is to support upland farming and hill tribe minorities and build a network of information exchange of successful land use concepts via the internet.

The Royal Government of Cambodia is signatory to several international conventions, including wetland protection under RAMSAR; monitoring and protection of endangered plant and animal species under CITES; the Convention on Combating Desertification; and Biodiversity Convention. DFW will be signing an agreement with a University representing the US Cancer Research Institute under the Ministry of Health concerning the right of the University to collect plant material and information on traditional medicine for screening of a cancer reducing chemical compound.

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China People's Republic

Country data	
Total land area (thousand ha)	932, 740
Total forest 1995 (thousand ha)/ percentage of total land area (%)	133,323/ `14. 3
Natural forest 1995 (thousand ha)	99,523
Total change in forest cover 1990-95 (thousand ha)/annual change %)	-433/-0.1
Population total 1997 (millions)/ annual rate of change 1995-2000(%)	1,249.9/ 0.9
Rural population 1997 (%)	68.2
GNP per person 1995 in US$	620

Source of data: The FAO State of the World's Forest 1999

General information

In the winter of 1978, the Chinese Government adopted a new policy for reform and opening up to the outside world to promote social and economic development. Some of the systems developed prior to reform were, in fact, useful. Under the Soviet economic model, China established a good agricultural base, formed a commune system that provided a good social infrastructure, and successfully developed certain heavy industries. However, the Soviet model also generated serious economic distortions, such as low incomes within the agricultural sector and the decline of the private sector.

In consideration of China's uniquely large population and landmass, the underlying approach to reform employed in China was a gradualist one. The reform process in China began in the agricultural sector, where three quarters of the population earn their living. As the first step in the reform process, the country liberalised the price of agricultural products. By 1989, 60% of the prices were liberalised, allowing a more efficient allocation of resources, At present, 97 % of the prices have been liberalised. In 1984, a policy of "invigorating enterprises" was adopted and the focus of reform shifted from rural to urban areas. In 1992, a socialist market economy was developed that requires greater decentralisation and the consolidation of the contract system.

However, despite the success of the reform process, the country faced some failures and constraints, including: a) the disparity between the rich and the poor and among the regions has been widening over the past 20 years, which recently prompted the government to launch the western development programme; b) the reforms have not responded to social concerns in a timely manner; c) the country export-based growth and high domestic savings rate has led to idle money in the economy; d) there is a lack of institutions that support entrepreneurs; e) the country is facing an uncertain and changing value system; f) there is a gap between economic reform and political reform; g) natural resources management and environmental/ industrial pollution are emerging as big challenges in the country.

Progress has been made in the implementation of the reform policy with the total value of imports and exports exceeding US$ 200 billion and China's foreign exchange reserves was totalling over US$ 100 billion in 1996.

China is a major agricultural country. The development of agriculture, the rural areas and the wellbeing of the rural population are of crucial importance to the country's socialist modernisation drive, the success of China's reform, development, and stability. Rural prosperity is essential to making the whole country prosperous.

The country has been highly committed to sustainable development. Therefore, the Government attaches great importance to the protection and development of the ecological environment. Environmental protection is now

designated as one of the fundamental policies of the State, which is closely associated with the survival and development of the nation.

The Chinese Government attaches great importance to forestry development. Afforestation and territory greening have been defined as the common duty of the society as a whole. Key ecological programmes such as the Three-North Shelterbelt Development Programme, the Programme for Shelterbelt Development along the Middle and Upper Reaches of the Yangtze river, the Coastal Shelterbelt Development Programme, and the Taihang Mountain Afforestation Programme have been carried out with remarkable achievements in the ecological and social benefits.

Soon after UNCED, the Chinese Government put forward ten policy measures to promote environmental protection and development. With support and assistance from UNDP, China's Agenda 21 and its Priority programmes were formulated. In addition, the forest-related aspects have been formulated by the Ministry of Forestry, including: the Forestry Action Plan for China's Agenda 21 (FAPCA), China Biodiversity Conservation Action Plan, China Wetland Conservation Action Plan, and China National Action Plan to Implement the United Nations Convention to Combat Desertification.

China Agenda 21 will be one of the key documents guiding the formulation of China's mid-term and long-term forestry development plans. The implementation of the FAPCA will enable forestry development to proceed along the lines of global environmental conservation and promote the shift from conventional to modern forestry. The goals of the FAPCA are the following:

1. By 2010: lay the foundation for the establishment of a relatively complete forestry ecological system and a fully developed forestry industrial system;
2. By the mid-21st century: establish a relatively complete forestry ecological system and a fully developed forestry industrial system; establish a modern administrative system and social service system for forestry.

To achieve the above goals, enhancing the awareness of and capabilities for sustainable forest development has been given high priority. The means to accomplish this are as follows:

- Educate the decision-makers and advisors of the forestry sector at all levels to enhance their awareness of sustainable forestry development;
- Raise public awareness about the paramount significance of sustainable forestry development through extensive publicity to facilitate social involvement and public participation;
- Work out the assessment criteria and indicators for sustainable forestry development;
- Set up a forest resource management system that combines market mechanisms and macro-government control;
- Develop and improve the policy and legal framework for sustainable forestry development;
- Set up a forest disaster pre-warning system to enhance disaster prevention and emergency handling capabilities;
- Rationalise and improve the plan for an educational and scientific research system in the forestry sector; and
- Establish a multi-source investment framework in the forestry sector.

In March 1998, it was announced that the Ministry of Forestry had been renamed as the State Forestry Administration. The change will reorient the task of the institution. It was also announced that the State Forestry Administration would tighten control over logging quotas. This will be in line with the forest policy on preservation of forest resources and protecting the environment. The policy was announced at the beginning of 1998 entitled: "Protecting Natural Forest Programme". The Administration will put forward a scheme to tighten annual checks over the implementation of logging quotas.

Being a large developing country, with a population of 1.2 billion, China is still confronted with serious problems in its ecological environment, including water pollution/ soil erosion, desertification, water resource shortages, frequent natural disasters like floods, droughts and winds. The most serious challenge for China's forest is the pressure from its enormous population and the state of its increasing trend.

Due to the heterogeneity and the size of China, the Government decided that the National Forestry Programmes (NFP) should be

implemented in stages at the district level. The first strategic planning process was therefore initiated in Simao District, Province of Yunnan (Simao Forestry Action Programme/ SFAP). The SFAP planning exercise was completed in 1995.

The SFAP exercise has been extended to Qinzhou and Fancheng Districts of Guangxi Autonomous Region (Qinfang Forestry Action Programme/ QFAP). The QFAP planning exercise began in the second half of 1996. The Issues Paper was produced in the middle of 1997. The in-depth study of the forestry sector was carried out in the third quarter of 1997. The QFAP strategic plan document was finalised in early 1999.

In addition, the Development Strategy of Western China was crafted in June 2000, in which the forestry sector development strategy is one of the sub-systems of the Strat-egy.

Forest resources

In 1981, the late Mr. Deng Xiaoping launched a grand campaign for compulsory tree planting that has had a positive response from the whole population of the country. As a result, afforestation has become a common practice for the improvement of the ecological environment. Over the past 18 years, 30 billion trees had been planted.

The total forest area was approximately 133.3 million ha, or less than 14.3% forest cover in 1995. The available forest area was 0.11 ha/head or 11.7% of the world average making it a "low forest cover country" according to these criteria. However, the country has for a long time had a high rate of reforestation of about 4-5 million ha annually. Tree planting by the rural population accounts for 90% of the reforestation.

With regard to resources development, putting water and soil erosion under control and improving the ecological environment, the ten key ecological programmes have been approved and implemented. By the end of 1998, an accumulated 37.71 million ha of forests had been established.

In addition, several small-scale ecological programmes, such as the Nature Reserves or Forest Parks Programme will be implemented at local levels to supplement the ten key programmes. These will be the foundation for conserving biodiversity and improving the living condition of the people.

In regard to afforestation, the Government has launched several programmes, including the following:

- National compulsory tree planting programme. The programme has helped strengthen the people's awareness of the importance of afforestation and environmental protection. In 1994 alone, 2.52 billion trees were planted.
- Development of a fast growing and high yielding timber base. At present 3.4 million ha of plantations have been established. It is planned that 20 million ha of fast growing timber plantations will be established over the next 30 years. It is expected that 43.8 million m3 of timber will be produced by 2010.
- The three-north shelterbelt development programme, known as "China's Green Great Wall". A total of 35.08 million ha of plantations are expected to be established by the year 2050. By 1994, 13 million ha of plantations had been established, 11 million ha of farmlands had been protected by shelterbelts, and 8.93 million ha of pasturelands had been conserved and reclaimed.
- Programme on soil and water conservation forest along the upper and middle reaches of Yangtze river. The first master plan was approved in 1989. About 5.46 million ha of plantations had been established by 1994.
- The coastal shelterbelt development programme. The programme commence in 1991. About 324,000 ha were afforested by 1994. About 6.17 million ha of farmlands are under effective protection.
- Plain farmland shelterbelt development programme. The farmland areas under shelterbelt protection reached 33.33 million ha by 1994.
- The national programme to combat desertification. A total of 3,670 million ha of sandy land, sand fixation plantations, and aerial seeded forests were reclaimed and developed by 1994.
- The Taihang mountain afforestation programme. By 1994, about 1.28 million ha of forests had been established and 245,000 ha of barren lands were afforested.
- The state-owned state farm. About 8.0 million ha of plantations were established by 1994.
- The collectively owned forest farms at township and village levels. By 1994, 16.66 million ha of forest farms were established.

The trees planted included fruit trees. Due to its high value, the forest farms have become "green banks" in rural areas.

- Establishment of plantations in state forest area. By 1994, 9.6 million ha of regeneration areas had been completed, while 4.4 million ha of new plantations had also been established. In addition, 40 high quality seed orchards and 50 standardised nurseries were established.

The country has a great deal of experience in combating desertification through sand dune fixation, shelterbelts and wind-breaks and has developed a number of techniques. In addition, biomass (including wood and charcoal) represents almost 30% of the country's total energy consumption. Annual fuel wood consumption is valued at more than US$ 9 billion. The main users are households, commerce and traditional industries. Local shortages still exist.

Forest policy and planning

The State Forest Administration is responsible for matters concerning the forestry sector. The recent main issues include restructuring (downsizing) of the forestry institutions with about 50% reduction in staff size, and a logging ban on commercial logging in some areas. The logging ban has had a tremendous impact on the revenue collected; in some areas the revenues dropped up to 70%.

The key part of the forest development in the 21st Century will be the proper balance between the ecological function and economic function of forest. From the point of view of the ecological environment as the fundamental basis for economic development, the country will readjust its approaches for economic development to the implementation of sustainable development. In regard to the guidelines in forestry, the country will continue to highlight the improvement of the ecological environment as its top goal and primary task. For the implementation of diversified forest management, the country will adopt both the forest ecological system and the forest industrial system.

Development strategy for Western China

It was noted that the economic development achievement in the west region, which covers 56% of China's territory and account for 50% of the verified mineral resource deposits, has not enjoyed the same degree of success as the eastern region. It was estimated that an average of 2,460 km2 of land is subject to desertification annually in China. Disastrous sandstorms hit several major cities in 2000. It was decided that more investment should go to the west region to undertake a number of water conservation, transportation, and environmental protection projects. The priority has been given to improving food security, increasing the rural population's income, and strengthening the agricultural sustainable development.

Taking into consideration the rich resources, sparse population, and fragile ecological condition, and bearing in mind the experiences gained during the socio-economic development in the last two decade, the Government has formulated an economic development strategy for the western China that focuses on the following: a) infrastructure development; b) ecosystem protection; c) economic localisation and agricultural restructure; and d) introduction of new technology and education development.

In the process of implementing the development strategy, special efforts would be devoted to several aspects, including agriculture, forestry, water conservation, and environment a protection.

In regard to agriculture, special efforts would be focussed on the following: a) developing regional characterised agriculture, such as high quality cotton production base, sugar production base, fruit production base, vegetable production base, flower production base, medicinal herb production base, and tobacco production base; b) increasing grain and cotton production; c) reinforcing construction of grassland and eco-agriculture, in which there will be a programme to "barter grain for trees and grass" for the reversion of farmlands to forestry and grassland, in which

5.15 million ha of farmland that have suffered from erosion will be revert back into forests and grasslands.

In regard to forestry, emphasis would be given to ecological improvement. The Government has adopted the following policies and programmes:

- prohibiting logging in and building shelter belts along the upper and middle reaches of the Yangtse and Yellow Rivers, the closure of hills and forests, and individual contracts for reforestation and development of private forest ownership;
- establishing 6.48 million ha of forests and grasslands in the barren hills and on the wastelands, in addition to 5.15 million ha to revert back to forestry under the agricultural programme;
- establishing a forest ecology construction and control mode; 100 forest ecology constructions to guide afforestation have been established;
- creating conservation parks of 65.8 million ha in the middle and upper stream of the Yangtze and Pearl rivers; US$ 14.2 billion will be invested in 10 years;
- introducing alternative energy sources in the degraded areas to replace the traditional fuel wood.

In compliance with the actual situation and the state of its forest development, and in order to meet the State Strategy for Sustainable Development and Grand Development of the Western Part of the country, the future forest development will be focused on the following 4 strategies:

1) The Middle and Upper Reaches of the Yellow River and the Upper Reaches of the Yangtze River

In line with the principle of "returning barren farmlands to forest (pasture)" the overall guideline is to enclosure some mountains for afforestation, and ban natural forest harvesting, which will be accompanied by returning barren farmland to forest and the afforestation of barren hills. The focus of the programme is as follows: a ban on forest harvesting of the existing natural forests, followed by intensive conservation; regaining the vegetation coverage for all the barren hills and lands that are suitable for afforestation; well scheduled steps in returning the hilly farmlands to forest.

2) The sand threatened arid lands in North-western China, the Northern part of North China and the Western part of North-eastern China

These areas will be used for the public welfare-oriented ecological forests. The target is to stop the expansion of deserts. The approaches are: tree planting and pasture development and shelter belts; launching large scale projects in desertified areas; and the oases with human communities in the deserts will be expanded.

3) The key State-owned forest district in North-eastern China and the Inner Mongolia

At present, these areas are the largest bases for timber production in China. Forest development in these areas is closely associated with the sustainable development of the entire region in North eastern China and North China. However, over-harvesting in the past has seriously affected the quality of forests with the supplies of large diameter trees almost exhausted. The major problems faced are to reduce the volume of forest harvesting, to reallocate the people laid-off from forest industries, and to regenerate the resources.

Forests will be under intensive management, and a harvesting ban will be applied. For some areas with more favourable situations and less liable the water/ soil erosion, a commercial forest approach will be adopted.

4) The provinces or regions other than the provinces or regions mentioned in the first three

Most parts of these regions, in terms of the general economy, have relatively developed and better situations for forest development. The focus of development and reformation in these regions is to carry out feasibility studies for diversified forest management, and site designations for ecological forests and for

commercial timber forests.

Simao Forestry Action Programme (SFAP), Yunnan Province

Simao District is located in the southwest of Yunnan Province. Most of the land is mountainous with steep slopes. The climate is a south sub-tropical to warm-temperate, de-pending on the altitude which ranges from 500 to over 2000 meters. The forests cover an area of 2,628.7 million ha, or 59.2% of the total land area. In 1995, the total population of Simao District was 2.264 million, 60.4% of which represents minority nationalities.

The main economic activity is agriculture, mostly subsistence, with a range of products including: rice, maize, wheat, buckwheat, and sweet potato. Tree crops play a very im-portant role for cash income. Tea is the most important plantation, followed by fruit crops such as quince, pear, peach, mango, and pa-paya.

Various sources of energy are utilised, such as hydropower, petrol, coal, solar, and fuel wood. Fuel wood represents 86% of the total energy consumption. Forests and wastelands provide fuel wood, poles for housing and agriculture, grazing places, and various non-wood forest products (e.g. mushrooms, shellac, and bamboo shoots).

All arable land, including land for tree crops such as bamboo and fruit trees, is allocated to households for a period of fifty years under the Rural Households Responsibility System. The first allocation was made in 1980 on the basis of equal area per capita within natural villages.

Forests, ponds, canals, and wastelands belong to the collective under the village committees, which have authority over allocation and management. However, in most villages of Simao, the entire forest area is contracted to individual households on a per capita basis for management. In exchange for taking care of the trees, the households are allowed to collect branches for fuel wood as well as non- wood forest products. Timber cannot be cut without permission from the Township. If a family needs timber to build a new house, it may ask the village committee for permission to cut the necessary trees. Timber from the collective forest is seldom used to generate revenue and accumulate funds for the community.

Forest resources are deteriorating and decreasing. Forest resource depletion at present is about 4 million m3 per year, more than one-third of the annual increament. The growing stock is decreasing at about 0.5% annually. About 63.2% of the timber produced is used for fuel wood.

The SFAP exercise began in December 1992, technically supervised by the Chinese Academy of Forestry. FAO provided seed-money and backstopped the exercise. GTZ provided support for the overseas study tours and printing of the SFAP document, which was finalised in February 1995.

The SFAP exercise identified 11 programme areas as the following:

- watershed management;
- rural energy;
- social forestry;
- tending and utilisation technology;
- plantation base;
- forest protection
- protection of biodiversity;
- science, technology, and education;
- forestry management;
- utilisation of non-wood products;
- forestry information.

The SFAP document was submitted by the Forestry Department of Yunnan Province through appropriate channels to the Netherlands Embassy in Beijing in September 1995. At the end of 1995, discussions were held in Beijing. The Netherlands Government pledged to provide financial support of US$ 15 million to a programme for tropical forest conservation. In addition, an ITTO mission was fielded in early 1997, and the mission has identified a project to be funded by ITTO.

Qing Fang Forestry Action Programme (QFAP)

In line with the strategy that the NFAP in China will be implemented in stages, the QFAP (covering Qinzhou and Fengcheng Districts) exercise in Guangxi Autonomous Region was launched as an extension of the SFAP exercise in Yunnan Province.

Qinzhou and Fangcheng are located in the southern part of Guangxi Autonomous Region. The geographical features are high in the north and low in the south. The total area is 167.8 thousand ha. The climate belongs to the north tropical climate with plenty of sunshine and rainfall (more than 1,800 mm annually). The area is home for plants such as cinnamomum, anise, and litchi.

By the end of 1996, the population was 3.746 million and the GDP was RMB 12.459 billion yuan. There are 910,100 ha of forestland in total. The Fangcheng and Qinzhou harbours are open to international navigation. The roads can reach all the towns and 90% of the administrative villages.

The QFAP exercise began in the third quarter of 1996. The QFAP team was set up with the Deputy Mayor as the group leader and the Director of the Forestry Bureau as the vice leader. The exercise is technically supervised by the Institute of Forestry Scientech Information, Chinese Academy of Forestry. FAO provided seed money and backstopped the exercise. The QFAP Issues Paper was finalised in mid-1997. The principal issues in the forestry sector development are the following:

1. Decreasing forest resources, degradation of stands, and dwindling of unit-area yield. The major causes are:
- over cutting of fuel wood;
- harvesting surpassing the annual allowable cut;
- shifting cultivation;
- forest fires;
- deforestation caused by mining, forest conversion into agriculture, and other uses;
- unsatisfactory management of the resources.

2. Serious deterioration of biological environment. The overall symptoms are:
- soil erosion;
- environmental pollution;
- low efficiency of forest water conservation ability;
- windbreak and sand dune fixations;
- reduction of plants and wild animals;
- migration of birds and consequent reduction of enemy of pests; and
- frequent occurrences of disasters.

3. Diminishing of biodiversity. The major causes include wild animal hunting and destroying protected species.

4. Slow development of fuel wood forests.

5. Unsound proportional structure of forest resources, which include
- unbalanced structure of forest categories;
- unbalanced structure of forest species (at the moment pine accounts for 80% of the timber growing area and growing stock);
- unbalanced mode of forest resource management.

6. Imperfect coastal shelterbelt system.

7. Improper co-ordination between forest cultivation and industrial development.

8. Insufficient input for forest protection and forest fire control.

9. Unsound system for science and education.

10. Some minorities still live in poverty.

11. Lags behind the managerial system.

The QFAP planning exercise was finalised in 1999 and the QFAP document was printed in September 1999. The exercise identified 12 programmes as follows: environmental protection and community forestry development; the development of North Bay coastal shelterbelts; harnessing of the river valley; protection of tropical forest biodiversity; rural energy development; plantations development; development of tropical cash tree crops; processing of non wood forest products; forest protection; forest tourism; establishment of tropical forestry information centre; and development of science and technology and education. The Government is seeking support from international partners for the QFAP implementation.

Forest conservation

The Government is highly concerned about wild flora and fauna protection. As of 1998,

633 Nature Reserves have been established, covering an area of 61.5 million ha, or 6.41% of the total land area of the country. In addition, 810 Forest Parks have also been established, covering an area of 7.2 million ha, or about 0.75% of the total land area of the country.

Marketing and trade

The marketing and trade of forest products, particularly timber in China PR, was not affected by the economic and financial crisis in Asia. In contrast, imports of logs and sawn timber have been increasing in the past few years, partly because of a dwindling supply of domestic timber in line with the implementation of the policy on natural forest protection programme, which imposes restrictions on harvesting in natural forests of key watersheds, and partly because of a better socio-economic development in the country and competition in wood product exports. Most of the timber imports were coming from Russia.

In regard to exports, China has successfully increased it's furniture exports by 69.1% within two years from US$ 1.297 billion in 1996 to US$ 2.193 billion in 1998. In 1999, its furniture exports surpassed US$ 2.7 billion. Many issues hamper the development of secondary processing, including design, quality of processing, skilled manpower, knowledge of marketing and trade, competition, packaging and transportation, and banning the use of tropical timber in certain countries.

Focal points

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If you don't climb the high mountain, you can't view the plain
(Chinese proverb)

Fiji

Country data	
Total land area (thousand ha)	1,827
Total forest area 1995 (thousand ha)/ percentage of total land area(%)	835/ 45.7
Natural forest 1995 (thousand ha)	757
Total change in forest cover 1990-95 (thousand ha)/ annual change (%)	-18/-4 (-0.4)
Population total 1997 (millions)/Annual rate of change 1995-2000	0.8/ 1.6
Rural population 1997 (%)	58.7
GNP per person 1995 in US$	2,440

Source of data: FAO - State of the World's Forest 1999

General information

Fiji is made up of 300 islands, one-third of which are permanently inhabited. Most economic activities are concentrated on the two largest islands, Vita Levu and Vanua Levu, which together account for 87% of the entire land area and 90% of the total population. The islands are largely volcanic of varying goelogical age and of reasonably fertile soils with fairly steep dissected topography in the forest areas.

Arable land (13% of the land area and expanding) is mainly used for the planting of sugar cane, rice, cocoa, ginger and other crops. Over 80% of the land is covered by forests, tree crops and pastures. Gold production has expanded dramatically and is now the second largest export commodity. The tourism industry offers the most immediate prospect for investment. Forestry is currently in transition from plantation management to pulp chips and sawn timber exports, and is expected to become an industry in the next ten years.

The forestry sector is described as a "growth sector" in the economy. The sector at present ranks fifth in terms of foreign exchange earnings and provides direct employment to 3000 people. The forestry activities, which are mostly located in rural areas, can be seen as pioneering rural development by providing the necessary infrastructure for subsequent development.

Fiji has been self-sufficient in most timber products through the utilisation of its indigenous forest resources for more than ten years. A programme of resource development through large scale plantation of pine and hardwood was implemented after 1960. The afforestation has brought some 50,000 ha of deforested land back into production.

The Forestry Department continues to be part of the Ministry of Agriculture, Fisheries, and Forests, under the Agricultural Landlord and Tenant Act, following the March 1994 General Election, and is supported by six service divisions i.e. Silviculture Research, Timber Utilisation Research, Management Services, Logging School, and Environment and Mechanical Services Division. The Forestry Department has a plantation programme target of 4,500 ha per year with an end target of 80-85 thousand ha of hardwood plantations by the end of the century. Pine plantations have been undertaken by the Fiji Pine Limited company.

Forest resources, policy, planning and land use

The indigenous forest is largely tropical moist forest plus a small area of about 42,000 ha of mangrove forests. Extensive areas of the drier parts of the two larger islands (mainly western) and many of the smaller islands have suffered severe deforestation. Therefore, the

indigenous forest cover is actually much more than 50% in the wetter parts of the country. 84% of all Fijian forests are in communal ownership.

The recent GTZ re-inventory of the indigenous forests indicates a total volume of 20,0 million m3 is available in the production forests. About 75% of the production forests have average stocking of 45 m3 of commercial species per ha.

Fiji Pine Limited, which is a 99.8% government-owned company, has achieved a total stocked area of 40,730 ha of Pinus caribaea. In addition, Viti Levu plantations of about 27,200 ha provide approximately 300,000 tonnes of logs per year to sustain the Tropic Wood Mill, which produces sawn timber and chips. Currently, Fiji has a total hardwood plantation estate of about 50,000 ha, of which 37,300 ha are planted with mahagony.

A provisional GTZ re-inventory indicated that indigenous forests occupy 857,577 ha, and estimated that unexploited forests total 253,000 ha. Eighty-nine percent of the unexploited production forests and 84% of all Fijian Forests are in communal ownership.

By the end of 1995, 44,978 ha had been planted (mostly mahagony), and there are plans to extend the planting area to 52,000 ha by the year 2006. Plantations have been established in two major areas in Western Viti Levu and in Vanua Levu. The current planting rate is 3,000 ha per annum.

Through out the 1970s and early 1980s, several attempts were made to establish a National Body that could effectively deal with co-ordination and proper use of land resources in Fiji. The Ministry of Agriculture, Fisheries and Forests (MAFGF) played a major role in the formation of committees whose objectives included land development, land use planning and co-ordination.

In 1993, the National Environment Strategy of Fiji recognised that Fiji needed a National Land Use Plan that was based on the capacity of the land, to assist in determining appropriate land use resource allocation for the sustainable development of Fiji's Natural Resources. In 1995, the Cabinet approved the concept of a comprehensive and integrated new Sustainable Bill, which would revise and consolidate existing environmental and resource management legislation and create new legal framework for integrated resource management.

In 1996, a proposal for Land Use Planning requesting FAO assistance was approved. In 1997, the Pacific German Regional Forestry Project co-ordinated an Agro-forestry Policy Working Group comprising extension officers, researchers and farmers. The group discussed and prepared a two-part draft Agroforestry Policy Paper for Fiji. After further discussions and review of the draft policy, the group realised that there was a vital need for a natural land use plan and policy as an umbrella to ensure adoption of the Agro-forestry policy. A national land use policy was deemed necessary to advance the sustainable development of Fiji's land and water resources.

The National Forests Action Plan prepared in 1989 under the Tropical Forestry Action Programme framework, was a classic investment plan. The exercise led to the identification of 29 projects, which were presented to donors in May 1990.

Although the NFAP document has not been formally approved by the Government, it has received tacit approval and is now being implemented: 25 of the 29 project proposals have been implemented or are currently under execution, either individually or grouped together. The preparation of project proposals mainly aimed at institutional building (e.g.: reviews of the royalty and pulpwood system, forestry legislation) has been completed or is under way. A project for the establishment of a national park system is being planned for 1998. Background work is under way.

Harvesting

The major factor determining allocation of timber cutting rights in Fiji, as else-

where in the South Pacific Islands, is the pattern of land ownership. The bulk of the land, including productive forest land, is owned by Fijian communal groups called "mataqali". Fijian mataqali do not have any corporate authority to deal in land, and all negotiations for the use of the indigenous timber growing on their land have to be conducted through the Native Lands Trust Board (NLTB). To harvest timber on native land, a Forestry Right Licence is required under law.

There are four categories of tenure for timber cutting rights in the natural forests:

- Timber concessions (15-30 years period);
- Long-term licences (10 years);
- Annual licences; and
- Other licences and prepayment licences (usually for land clearing).

The Government has continued to promote the development of sustainable forest management, both through domestic policy development and at international fora. Fiji has signed and ratified the International Convention on Biological Diversity and the UN Framework Convention on Climate Change. Recently, the Government became a member of ITTO.

The Sustainable Forest Management Model developed in collaboration with the GTZ Pacific-German Forestry Project on a 300 ha block forest, is now being tried out at an operational level on a 6,300 ha block of forest involving a concessionaire. The pre-harvesting inventory data collection work is complete and harvesting prescriptions are currently being worked out. Depending upon the outcome of the operational level trial, it is proposed to adopt the Sustainable Forest Management System Fiji-wide as a matter of policy by the year 2003.

In order to make the landowners aware of the long-term benefits of the Sustainable Forest Management System, ITTO has supported a two-year project, of approximately US$0.5 million, for landowners' education and awareness on the sustainable use of their forests. The project will be completed by the end of 2000.

Fiji's own National Code of Logging Practice was launched in 1990 and has been in operation for approximately 10 years. All logging licences are subject to compliance with the Fiji National Code of Logging Practice. It is felt that environmental issues are not being fully addressed and need to be considered and incorporated in the next review. Operator training and certification of operators, particularly in timber harvesting and the proposed mahagony harvesting, are the main priority activities.

Biodiversity conservation

Fiji is a signatory of the Convention on Biodiversity and therefore a Contracting Party of the Convention. The Fiji Biodiversity Strategy and Action Plan is Fiji's initial response to this obligation. It was crafted in 1989 with UNDP funding.

To date there is one declared Protected Forest, namely Batiwai Forest, with a Gulubia microcarpa palm population, of approximately 15,749 ha. There are 17 proclaimed Forest Reserves covering an area of 26,203 ha. There are 7 Nature Reserves in the country covering an area of 5,740 ha. In addition, the sand dunes in Sigatoka with an area of 650 ha have been declared as a National Heritage Park. The Forest Department, in collaboration with other organisations, is identifying and developing eco-tourism areas and other areas of special interest, including Bouma and Lavena Parks in Taveuni, Abaca Parks in Viti Levu, and Natavuni Port in Sigatoka Valley.

Collaboration with partners

The Department of Forestry has been collaborating with foreign partners and several memorandums of understanding have been signed, including: a) GTZ support and assistance in sustainable forest management system and practice, and agroforestry and sustainable land use plans; b) AusAid support for nutritional aspects of plantation species; c) ACIAR/ CSIRO support for the biological control programme; d) ITTO funds for a land owner

awareness programme; and e) SPC/UNDP/FAO/ AusAid/GTZ support to the Pacific Island Forest and Tress Programme.

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Ask, and you will receive; seek and you will find; knock, and the door will be opened to you.
For those who ask will receive, and those who seek will find, and
the door will be opened to anyone who knocks.

India

Country data	
Total land area (thousand ha)	297,319
Total forest area 1995 (thousand ha)/ % of total land area	65,005/ 21.9
Natural forest 1995 (thousand ha)	50,385
Total change in forest cover 1990-95 (thousand ha)/annual change (%)	36/ 0
Population total 1997 (million)/ Annual rate of change 1995-2000 (%)	960.2/ 1.6
Rural population 1997 (%)	72.6
GNP per person 1995 in US$	340

Source of data: FAO - State of the World's Forest 1999

General information

India is the seventh largest country in the world and has the second largest population. There is much diversity in the geographical features: the towering Himalayas and the extensive river plains in the north, the Thar desert in the west, the Deccan Plateau in the centre and the south, the coastal plains to the east and west and the numerous islands. The country has 26 states and 6 union territories. It has a Union Government having its centre in New Delhi.

The rising population has forced the rural poor to borrow against the future by depleting the natural resources. It was reported that the population reached one billion people in 2000, comprising about 16% of the world's population. The problem is further compounded by the high cattle population, estimated to be 450 million; most of these animals have a very low productivity but are allowed to graze freely in forest areas, causing the degradation of forests. It was estimated that the cattle population was 18% of the cattle population in the world. This has led to severe erosion, loss of soil, and floods in the lower plains, in addition to the destruction caused by shifting cultivation. As a result, the demographic and economic landscape of the country is plagued with poverty and underemployment. Agricultural productivity is only 1 ton per ha against the actual capability of 4 ton per ha. How to achieve the optimum land use, including soil and moisture conservation measures, are the main challenges confronting the policy and decision-makers. To reverse the process of degradation and for the sustainable development of forests, the Government has prepared the National Forestry Action Programme (NFAP).

Sixty percent of the forests are located in ecologically sensitive zones. These forests need to be managed in a way to ensure that they are ecologically protected and maintained, as well as sustained at the highest productivity level to meet the growing population's burgeoning demands for fuel, food, fodder, and timber.

India is one of the 12 mega diversity countries, commanding 7% of the world's biodiversity and supporting 16% of the major forest types, varying from alpine pastures in the Himalayas to temperate, sub-tropical, tropical forests, and mangroves in the coastal areas. But nearly half of the country's area is degraded, affected by the problems of soil degradation and erosion. The most common forms of degradation are wind and water erosion, and salinity. About 146 million ha are affected by wind and water erosion, and 7 million ha have become degraded due to excessive salts. About 8.5 million ha are under water logging and about 10 million ha are affected by shifting cultivation.

According to the Government statistics, nearly 22%, or 65 million ha, of the country's

land have been recorded as forests, but only 19.5% have forest or tree cover, which is much less than the goal of 33% set by the National Forest Policy, 1988.

A large number of India's livestock population, dis-proportionate to the carrying capacity of the forests, have been grazing in forests causing serious damage to regeneration and productivity. Since the livestock population is not likely to be reduced due to social factors, a realistic grazing management alternative has to be evolved.

As a result of the National Forest Policy, 1988, the mechanism of Joint Forest Management (JFM) was legalised in 1990. Its principal aim is to ensure environmental stability and maintenance of the ecological balance through the preservation and rehabilitation of forests, while providing for fuel wood, fodder, Non-Wood Forest Products (NWFPs), and small timber needs. The JFM has since been institutionalised by most of the States. The emphasis has been on the formation of Village Forest Committees and empowering them for participatory management of degraded forests on a benefit-sharing basis.

Forest resources

India has a large and diverse forest resource. Its forest types vary from tropical rainforest in the north-east, to desert and thorn forests in Gujarat and Rajasthan; mangrove forest in West Bengal, Orissa and other coastal areas; and dry alpine forests in the western Himalaya. The most common forest types are tropical moist deciduous forests, tropical dry deciduous forests, and wet tropical evergreen forests.

According to the Forest Survey of 1997, the country has 76.5 million ha of forest. The degraded area was 26.13 million ha and there was another 5.72 million ha of scrub; thus, in total 31.85 million ha of forests were degraded or open.

The land use outside for habitations (rural and urban), industries and infrastructure, such as roads, rivers, canals, railways lines, under permanent snow, rocks, desert, or not available for other reasons amounted to 264 million ha. It consists of cultivated land of 142 million ha, forestland of 67 million ha, fallows of 24 million ha, pastures of 12 million ha, tree groves of 3 million ha, and cultural waste of 16 million ha. Thus, in order to achieve the national goal of one third of the country under forest/ tree cover, an area of 29.7 million ha has to be brought under plantations.

It was reported that the country's achievement in raising forest plantations, in terms of area, has been impressive. Up to 1998, the total area of tree plantations was 28.38 million ha, of which about 17 million ha were planted before 1990's. The current annual rate of plantation is 1.2 million. The quality of these plantations varies considerably. It should be noted that forest plantations are a means to meet the increasing demand for industrial raw material or for direct consumption, i.e. fuel wood, but not to justify deforestation or claim restoration of biodiversity and other environmental services.

There are other woodlands established in small blocks on non-forestry lands, which are not included in the forest survey because of limitations of interpretation of satellite data.

The performance of forest plantations, in terms of survival, growth and yield, has been poor caused by several factors, including inadequacies in site selection and site-species matching, poor planting stock, lack of proper maintenance and protection (from fire, grazing, pests and diseases), lack of timely tending/thinnings, delays in fund allocation, and inadequately trained staff. In this regard, some people are of the opinion that a master plan for tree plantations should be developed specifying categories, management regimes, utilisation and investment needs; and emphasis should be given to enhancing qualitative and quantitative productions.

Involvement of the private sector in plantation development has not been substantial and are not adequately supported by the government through relevant research, extension, technological packages, input delivery, market information or credit facilities. This sector is dominant in the area of harvesting and processing. It was noted that the needs and problems relating to this area are different from those producers of wood in rural areas.

According to the latest State of Forest Report, 1999, the total forest cover was 633.73 million ha or 19.39% of the geographical area, with dense forest accounting for 11%. The Report stated that the forest cover has increased by 4,000 km2 since the last survey in

1997. Thus, the overall decline in the forest cover has been halted. In this regard, the Minister of Environment and Forests stated that a major constraint facing the afforestation programmes is funding, which requires Rs 66.95 billion per year (1US$ approximately equal to Rs 43.5 in September 2000) in order to achieve one-third forest cover within the next 20 years. Rs 16 billion per year is available from both the central and state budget together to be allocated for afforestation. Involvement and investment from various NGOs, corporate, public and private sectors to fund this sector is being approached. In this connection, consultation with several donor agencies, including international and bilateral banks, for possible support have also been carried out. In this regard, WB and EU have provided substantial support to several forestry programmes in some states.

In regard to national parks, sanctuaries and other reserves, the country's achievement in terms of area is substantial. The Protected Areas (PA) cover about 14.8 million ha, or about 14% of the forest area, consisting of 80 national parks, 441 wildlife sanctuaries and 8 biosphere reserves. However, the condition of several PAs is poor because of fire, grazing and inadequate management. The Management plans of some PAs are not comprehensive. Some are below the minimum size required to be effective.

Non-wood forest products (NWFPs) have a great potential to support the socio-economic development of the country and also the principles of sustainable forest management. These products are essential to local communities. Some products have great potential for export. Some products have also provided employment and income earning.

Forest policy and planning

India has a long tradition of professional forestry and a nation wide concern for forest resources. Contemporary forestry legislation and policy date to at least 1864, at which time forests became almost exclusively State property under the then British rule. The first forest policy of 1894 was revised in 1952. The present guiding legislation dates back to the Indian Forestry Act of 1927. The National Commission of Agriculture (NCA) studied the forestry planning in the country in 1976 and made recommendations for future action. This led to the emergence of social forestry and the establishment of Forest Development Corporations (FDCs). The new policy accords highest priority to the environmental role of forests, and the derivation of direct economic benefit must be subordinated to this priority.

The forest policy has been updated, most recently through the National Forest Policy (1988). Other supplementary legislation has been enacted to explicitly provide for control and regulations covering non-forest resources, wildlife protection and environmental protection, together with other broad directives in substantive areas of national policy which have an impact on forestry, including land use. A Wildlife Action Plan was formulated in 1983, a National Conservation Strategy in 1992, followed by a National Environmental Action Plan in 1993.

Despite the enactment of the above legislation, clear symptoms of degradation and a declining capacity in meeting the various needs of the population (particularly the rural poor and tribals) are evident. Efforts to enlarge the forest estate as set forth in the National Forest Policy (from the present 19 percent to 33 percent of the total national land area) would require a substantial increase in fund allocation to the forestry sector.

The first national level planning exercise in the forestry sector took place two decades ago when the National Commission of Agriculture studied the situation in the country and made recommendations for future action. In forestry, this led to the emergence of the concept of social forestry and the establishment of Forest Development Corporations (FDC). The main aim of establishing FDCs was to enable the Forest Department to retain earnings from the sale of products for investment in plantations. However, this policy had two undesirable effects, namely:

- Given the realities of budgetary allocations, external aid for social forestry resulted in the earmarking of 70 to 80% of the funds

for social forestry. As a result natural forests received little attention.

- The establishment of high value plantations at the expense of natural forests resulted in the loss of biodiversity and non-wood forest products. As a result, there was opposition to the practice from the people, and the Government had to revise the plantation programme strategy.

The Indian Forest Act, 1927 is being reviewed and a Committee has been established. The first meeting was held in January 1997 and the last in January 1999. Experts and NGOs had been involved in the process of reviewing the Forest Act, 1927. The final draft has been made available and has been submitted to the concerned authority for approval.

National Forestry Action Programme (NFAP)

In 1993, the Government decided to start a new strategic planning process following the National Forestry Action Programme (NFAP) concept. The preparation of an NFAP was decided with the goal of addressing the issues underlying the major problems of the forestry sector in line with the National Forest Policy, 1988. The NFAP is to evolve as a development process by integrating forestry development in the country within the framework of the national five-year plans. The exercise was supported by the UNDP project: IND/93/021. The project was finalised in February 1998.

The objective of the NFAP is to enhance the contribution of forestry and tree resources to ecological stability and people-centred development through qualitative and quantitative improvement in investment on sustainable conservation and development of forest resources.

The basic purpose of the NFAP is to establish a direct linkage between the national forest policy and the national five-year plans. In the past, there has not been a comprehensive and constant programme structure, so it was difficult to get linkages and establish trends.

In order to ensure that the exercise be country-driven, close co-ordination was maintained with State and Union Territories Governments by the Union Government. State Forest Departments were assigned the task of preparing State Forestry Action Plans (SFAP) and for this purpose detailed guidelines were issued. The NFAP document was prepared by the Ministry of Environment and Forests with the help of various reports prepared by national and international consultants.

In order to provide for inter-sectoral and intra-sectoral linkages, and to provide the NFAP with desired direction, Steering Committees were formed at the National and State levels, comprising related Government departments such as Agriculture, Animal Husbandry, Industry, Finance, and representatives from NGOs and Industry. One meeting of the National Level Steering Committee was held in August 1994, and several meetings of the State Committees were held in 1994. A workshop for Nodal officers of SFAPs was conducted at Dehra Dun by FAO on the subject "Project Formulation and Appraisal". A work-shop was also held for the North Eastern States at Shillong and two national level work-shops at New Delhi.

The NFAP has been formulated through the following process:

- State forestry sector reviews
  26 State Sector Review Reports (for 25 States and Andaman & Nicobar Island) were completed.
- National studies prepared by international consultants
  Four studies were completed and reviewed, namely: Forestry Planning, Forest Sector Review, Resource Economics, and Institutional Development.
- National studies prepared by national consultants
  Sixteen specific studies were conducted by consultants. All the reports were prepared and reviewed. These reports, along with the SFAPs, formed the basis for the formulation of the NFAP documents.
- Sub-contracts studies

Four studies were undertaken: Non-Timber Forest Products (NTFP), gender issues in forestry, common property resources management, and software development. All these reports were received and revised. One sub-contract was awarded in 1995 to critically analyse and identify gaps in draft NFAP documents. Three more sub-contracts were awarded for finalisation of NFAP documents.

- State Forestry Action Programme

  All of the 26 SFAP documents were prepared.

The NFAP document was available in June 1999 comprising 3 documents as follows:

- ✓ Executive Summary;
- ✓ Volume 1: Status of Forestry in India; and
- ✓ Volume 2: Issues and Programme.

It is clearly stated in the document that formulation of the NFAP is not a one-time process, but rather it is an evolving process. The state of forest resources and development in the country should be appraised periodically at regular intervals of 10 years, and the NFAP should be updated and extended for another 20 years.

The NFAP exercise decided that the NFAP consists of 5 programmes and 15 sub-programmes as follows:

- Protect existing resources with three sub-programmes:
  - * Forest protection;
  - * Soil and water conservation; and
  - * Protected areas and biodiversity conservation.
- Improve forest productivity with four sub-programmes:
  - * Rehabilitation of degraded forests;
  - * Research and technology development;
  - * Development of NWFPs;
  - * Assisting private initiatives with community participation.
- Reduce total demand with three sub-programmes:
  - * Fuel wood and fodder;
  - * Timber; and
  - * NWFPs.
- Strengthen policy & institutional framework:
  - * Central forestry administration;
  - * Central forestry institutions; and
  - * State forestry administration and institutions.
- Expanding forest area:
  - * Tree plantations on forest and non-forest lands; and
  - * People's participation in plantations and its protection.

A document concerning Concept Paper Projects containing a list of priority and essential projects for the smooth implementation of the NFAP exercise is being prepared. If the determination of holding a donor meeting, scheduled in Rome, March 2001, is positive, the Concept Paper document and the main NFAP documents will be discussed at this donor meeting.

Legislation and institutions

In view of the deteriorating forest resources and their importance to the national economy and environment, the Government has been emphasising the sustainable development of forest resources, as well as conservation of ecosystems. Since 1951 (commencement of the First Five-Year Plan), Rs 70 billion has been spent on forestry development in the country. Afforestation has been carried out over an area of 25.25 million ha during the period. Financial resources allocated to the forestry sector have increased from Rs. 76 million in the First Five-Year Plan (1951-55) to Rs. 40,818.7 million in the Eighth Five-Year Plan (1992-96).

Amendments to the Indian Forest Act 1927, which provides for the management of forests and forest resources of the country, are examined to remove existing anomalies and to bring about a uniformity of law throughout the country. The Forest Conservation Act 1980, amended in 1988, stipulates concurrence of the Union Government for diversion of forestlands for non-forestry purposes with provisions of compensatory afforestation. Implementation of this Act has reduced the rate of diversion of forestland from 150,000 ha to 39,000 ha per year.

The National Forest Policy, 1988 accords highest priority to the environmental role of the forests. The policy states that the principal aim

of the Forest Policy must be to ensure environmental stability and ecological balance, including atmospheric equilibrium, which are vital for the sustenance of all life forms, be they human, animal, or plant. The basic objectives of the National Forest Policy, 1988 are listed below:

- Maintenance of environmental stability through preservation and, where necessary, restoration of the ecological balance that has been disturbed by serious depletion of the forests of the country;
- Conserving the natural heritage of the country by preserving the remaining natural forest with the vast variety of flora and fauna, which represents the remarkable biological diversity and genetic resources of the country;
- Checking soil erosion and denudation in the catchment areas of rivers, lakes, reservoirs in the interest of soil and water conservation, for mitigating floods and droughts, and for the retardation of siltation of reservoirs;
- Increasing substantially the forest/ tree cover in the country through massive afforestation and social forestry programmes, especially on all denuded, degraded and unproductive lands;
- Meeting the requirements of fuel wood, fodder, and small timber;
- Increasing the productivity of forests to meet essential national needs;
- Encouraging efficient utilisation of forest produce and maximising substitution of the wood; and
- Creating a massive people's movement with the involvement of women, and minimising pressure on existing forests.

In one of the NFAP (main) documents it is spelled out that forest policy development is a process which follows a cycle of: evaluation and analysis; articulation; formation; formulation; instrumentation; further evaluation, etc. A forest policy should be dynamic; it should not, and cannot, stay the same over any long period of time. Accordingly, it is important that a forest policy is periodically evaluated to determine whether it should be maintained, modified or changed altogether.

In the context of sector policies, the NFAP exercise proposed that imperatives need to be identified which represent the absolute requirements to which all supporting objectives should contribute. For the forest policy in India, three imperatives are suggested: sustainability, efficiency, and people's participation. Sustainability should be the guiding factor for forest management. Neither conservation nor development can be achieved in isolation. Efficiency in production implies improving productivity, reducing wastes and indirect costs, and thus registering a higher economic rate of return compared to other alternatives. The philosophy of people-based development assumes that participation is not only a fundamental precondition for, and a tool of, any successful development strategy, but also is an end in itself.

Five-year plans

The basic purpose of the NFAP is to establish direct linkages between the National Forest Policy and the National Five-Year Plans (FYPs). In the past, there was no comprehensive and constant programme structure for forestry. Every FYP has had its own programme structure, so it was difficult to get linkages and establish trends. Although plans had specific objectives and programmes, the main activity under most of them was tree planting. The emphasis of different FYPs regarding forestry was as follows:

- First and Second FYPs: Rehabilitation of degraded forest, introduction of economic species, survey, and forest demarcation;
- Third and Fourth FYPs: Increasing productivity of forest through fast growing species plantations, scientific assessments, and modern logging;
- Fifth FYP: Social forestry and fuel wood reserves to save natural forests;
- Seventh FYP: Forest conservation, massive afforestation, and wasteland development; and

- Eight and Ninth FYP: Preservation of biological and genetic diversity (both flora and fauna), protection of forest against biotic interference, utilisation of wastelands, and promotion of people's participation through Joint Forest Management (JFM) schemes.

Joint Forest Management

The National Forest Policy, 1988 envisages people's involvement in the development and protection of forests to fulfil the objectives of providing fuel wood, fodder and small timber to local communities, as well as to develop the forests for improving the environment. As of September 1998, 21 States have issued their resolutions for JFM, of which 7 million ha of degraded forests are being managed and protected through approximately 35,000 villages Forest Protection Committees.

A JFM Monitoring Cell of the Ministry has been created to assess the impact of the JFM programme on the protection and development of forests. A JFM Standing Committee has been established to ensure the effective monitoring of the JFM activities. In regard to poverty alleviation and income generation, analysis of the impact of JFM toward these issues would be included.

Combating desertification

The Convention to Combat Desertifacation (UNCCD) was adopted on 17 June 1994 and entered into force on 26 December 1996. The Convention came into effect in India on 26 December 1996. At two international meetings to discuss the Thematic Programme Networking (TPN) in Asia, six areas have been identified namely (of which India is the focal point for TPN 2):

- TPN 1: Desertification monitoring and assessment;
- TPN 2: Agroforestry management & soil conservation in arid, semi-arid & dry zones;
- Range and pasture management in arid areas with particular emphasis in shifting sand dunes;
- Water resources management for agriculture in arid, semi arid and dry zones;
- Drought preparedness & mitigation in the context of climate change;
- Strengthening planning capacities for drought management & controlling.

Biodiversity conservation

To address the problems of environment and development holistically, the Ministry has enunciated several policies, including the National Conservation Strategy and the Policy Statement on Environment and Development, 1992. India is a signatory to the convention on wetlands of international importance especially as waterfowl habitat, generally referred to as the Ramsar Convention, 1971. India has designated 6 wetlands. India is also a party to the Convention on Biological Diversity (CBD), which was came into force in December 1993. The ratification of the CBD by India was on 18 February 1994.

A draft National Policy and Action Strategy on Biological Diversity has been drawn up. The draft identifies the basic goals and thrust areas and outlines action points for various subjects.

According to the State of Forest Report, 1997, the total area covered by mangroves in India was 4,872 km2. It had increased by about 600 km2 during 1991-1997. A National Committee on Conservation and Management of Mangroves and Coral Reefs has been constituted to advise the Government on policy and research related to conservation of these fragile ecosystems.

Research and extension

Several research activities have been carried out by several research institutions in India, including: a) environmental research; b) research under the National River Conservation Plan (NRCP), such as biodiversity and bio-monitoring the river Ganga; and c) forestry research, with emphasis given to increasing productivity through genetic and silvicultural improvement, treatment of wasteland, tribal development and social forestry, while the Indian Council of Forestry Research and Education (ICFRE) continues to co-ordinate, direct and oversee the research activities of the 11 research institutes/ centres; and d) wildlife research, such as ecological, biological, socio-economic and managerial aspects of wildlife conservation, research on biological diversity and forest productivity – a new perspective, research on the wild dog (Cuon alpinus) and ornithology.

Forestry research in the country has been upgraded with the formation of the India Council of Forestry Research and Education (ICFRE) to boost and integrate forestry research in the country. There are eight research institutes/centres under ICFRE. The National Afforestation and Eco-Development Board is carrying out the rehabilitation ofdegraded forests and wastelands through State forest departments and voluntary agencies by adopting an integrated approach developed through micro plans with people's participation.

Focal point

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I believe the real difference between success and failure in an organisation can very often be traced to the question of how well the organisation brings out the great energies and talents of its people.

(Thomas J. Watson Jnr, former Chairman, IBM)

There are two kind of people in this world i.e. takers and givers.
If you associate with givers, you will become one.
If you associate with complainers, you will be one.
(Shiv Khera – You Can Win)

Indonesia

Country data	
Total land area (thousand ha)	181,157
Total forest area 1995 (thousand ha)/ % of total land	109,791/ 60.6
Natural forest 1995 (thousand ha)	103,666
Total change in forest cover 1990-95 (thousand ha)/Annual change %	-5,422/ -1.1%
Totally protected areas (million ha)	49.5
Population total 1997 (million)/ annual rate of change 1995-2000 (%)	203.5/ 1.5
Rural population 1997 in %	62.7
GNP per person total 1995 in US$	980

Source of data: FAO - State of the World's Forest 1999

General information

Indonesia, the world's largest archipelago, is one of the most diverse countries in the world. The population is very unevenly distributed, with over 100 million people living in Java, which accounts for only 7% of the total land area. Indonesia is still an agricultural country but the agriculture sector's contribution to the GDP has declined due to the increased activity of the industrial and service sectors.

Forestry is the largest export earner within the agriculture sector, with plywood and sawn timber as the main commodities. In 1999, the forestry sector contributed less than 3% of the GDP in current prices, but the sector is much more important in export trade. In terms of national export earnings, forestry ranked second only to the oil and gas sector, and accounted for about 14% of the country's total export revenue for the last five years.

Wood-based panels are presently the major export commodities. Secondary processing products and the pulp and paper industry have been promoted so that rough sawn-wood exports will be limited in the near future.

To get a long-term perspective of the forestry sector, the Government, with assistance from FAO and WB launched a comprehensive analysis of the sector in 1989. The results were used to formulate the Indonesian Forestry Action Plan (IFAP) – a planning exercise. Some important results have been used as preconditions for the IMF loan for the restructuring of the Indonesian economy during the economic and financial crisis that started in Thailand 1997.

Indonesia has a rich in species composition. It occupies only 1.3% of the earth's land surface, but 10% of the world's plant species can be found in its territory, as well as 12% of all mammal species, 16% of all reptiles and amphibians, and 17% of all species of birds.

Traditionally, Indonesian households in rural areas have relied on fuel wood from home gardens or from agricultural estate crops. It is estimated that home gardens provide about 80-85% of the households' wood energy needs and timber for local construction.

Forestry is a strategic sector in creating job opportunities. According to Government statistics, during 1990-1995, it was estimated that about 2.5 million citizens were directly employed in the resources development and industries, and about 2 million workers in forestry-related industries and indirect activities. It was also reported that the forests and forestry in Indonesia have benefited at least one thousand expatriate workers and consultants, and also broadened the knowledge of young expatriate consultants and volunteers. With respect to unemployment caused by closing down some factories in urban areas as the direct impact of the 1977 economic and financial crises, forests and forestry have become like “shock absorbers”. However, due to several unforeseen reasons, encroachment

and illegal felling have been taking place that are beyond the capability of the existing management system to control. This situation has had serious affects on the degradation and deforestation of some forest resources, including protected areas and conservation forests.

In addition, according to the report of a study carried out by the Economy and Environment Programme for South East Asia (EEPSEA) and the World Wide Fund for Nature (WWF), in May 1998, the economic toll of the fire and haze in 1997 amounted to US$ 3.073 billion. The loss for Indonesia was US$ 2.787 billion, which was more than double the total foreign aid received annually. The fires affected about 5 million ha, of which 20% was in the forest areas.

Since August 1997, the Region's financial and economic turmoil has badly affected the financial and economic situation in Indonesia, including the forestry sector. A number of socio-economic reforms were institutionalised by the new Government in 1998, 1999, and 2000, including decentralisation. However, pulp production and the furniture industries were only slightly affected by the Region's economic turmoil. It was reported that in 1999, the exports of furniture were double compared to 1998.

Forest resources

Since 1992, the Spatial Plan has been used at the provincial level. It is the follow up action of Government Act No. 24 of 1992 concerning "Spatial Arrangement". The forestland use has also been harmonised in line with this arrangement, and as of April 1999, 121.1 million ha are recorded as forest areas. According to the recent satellite imagery interpretation, 92.4 million ha are covered by forest and 28.7 million ha are non-productive land, abandoned areas or secondary forests.

The functions of the permanent forestlands are as follows: conservation forests (20.6 million ha); protection forest (33,9 million ha); and production forest (58.5 million ha). Non permanent forestlands cover an area of 8.1 million ha.

By May 1995, aerial photography of forests and forest vegetation maps has been made for 81.0 million ha and 40.8 million ha respectively. For various purposes, the interpretation of satellite imagery was updated to cover 167.9 million ha (target for the year 2000 is to cover all country's land area of 193 million ha). The permanent natural forests have been demarcated in the field. As of September 1999, 273,160 km of boundaries had been established, of which 191,398 km were outer boundaries and 81,762 km were concession boundaries. As of 1990, the demarcated outer forest boundary was l51,019 km.

In the past ten years 3,870,520 ha of plantation forests were established, of which 1,258,391 ha were community forests and private owned forests covered 843,704 ha. These plantation activities provide substantial job opportunities, especially for the local people. Indirectly, it decreases their dependence on natural forests for their livelihood and income, and conserve biodiversity of the natural forests.

It is planned that within 10 years, 4.0 million ha of plantations will be established by the private sector, Government enterprises, nucleo-estate smallholders, and other institutions. To support the plantation programmes, the government established 8 modern nurseries and some seed centres, capable of producing 80 million seedlings per year.

Policy, legislation and institutional

Forests are owned and administered by the State, and responsibility for forestry development and management rests with the Ministry of Forestry. There are six Government State Enterprises and a number of private sector associations dealing with forest activities. Presently, there are about 700 NGOs active in the forestry and environmental sectors.

Since the economic and financial crises, which were started in 1997 in Thailand, it appears that small and medium businesses are capable of facing market upheavals. Therefore, the reform process in the field of forestry would be toward the strengthening the small, medium and village industries. These will become the second-force in national economic development. The strategy will be to give a role to small and medium sized businesses and co-operatives. Under the reform era several new policy and regulations

have been made to restructure forest management and utilisation, and to adopt new paradigms, e.g. from timber based management to resource based management, from sectoral to regional development, from conglomerates to community-based management, and towards sustainable security environmental management. In the same spirit, the Forest Act No. 5 of 1967 was revised, and a new Forest Act No. 41 of 1999 was adopted, which has the principles of utility and sustainability, is people oriented, and stresses justice, partnership, transparency and integration.

The Government recognises that not everything that has been done in the past was mistake. There are many acts that are good and need to be developed and followed up. However, the Government also admits that many matters have to be changed and improved.

Under the Local Government Act No. 22 of 1999, many forestry affairs will be delegated to local governments. Under the decentralisation schemes, the authority for the management of production forests would be partly handed over to provincial governments, district governments, state enterprises, and communities. The distribution of authority in details is still under process at the moment.

Forestry extension is an important subject in the Ministry of Forestry, for which around 6,000 extension workers have been recruited. Extension for forest industries is well served by the sector's associations, particularly with respect to market intelligence and new products. In line with the industrialisation programme, intensive deregulation in forestry and related aspects like revenue, incentives, processing, marketing, and trade, has been carried out in recent years.

In 1991, a Village Development Scheme (HPH Bina Desa) was introduced aimed at increasing the contribution of concessionaires to the welfare of the people living in and in the vicinity of forest areas. This scheme consists of five programmes: sedentary agriculture, income generation, infrastructure provision, socio-cultural activities, and forest resource development. By August 1995, 392 concessionaires had participated in this scheme, involving 37,378 households in 878 villages.

At the end of 1995, 49.5 million ha had been gazetted (about 25% of the land area) as totally protected areas (TPA) in order to conserve wildlife and ecosystem richness. The TPA consists of protection forests (30.8 million ha) and conservation areas (18.8 million ha), which include national parks, nature reserves, game reserves, hunting parks, recreation parks, and forest parks. During 1990-1995, 9 nature reserves were upgraded to national parks. To enrich the biodiversity within the conservation area, a minimum of 700 ha within each concession's area should be protected by the company as a biogenetic conservation area.

As a member of ITTO, the Government is committed to implementing sustainable forest management by the year 2000. The modalities are under preparation, supported by bilateral and multilateral agencies and institutional NGOs.

In 1993, the Ministry of Forestry declared Decrees No. 252 and No. 576 of 1993, concerning the Criteria and Indicators for Natural Production Forest Sustainability at National Level. These Decrees were followed by the promulgation of the Minister of Forestry Decree, No. 610 of 1993, concerning Sustainable Management of Natural Production Forests at Management Unit Level. Further, the Director General of Forest Utilisation proclaimed Decree No. 208 of 1993 concerning the Technical Guidance on Criteria and Indicators for Management Unit Level. The basic structure of these decrees is consistent with the ITTO criteria and indicators. These criteria and indicators have been used as a tool to assess the concession permits. In addition, the Timber Concession Guidance Committee was established by the Concessionaires' Association in 1994 to supervise the concessionaires on the application of the criteria and indicators of sustainable forest management in the field. In the last five years, 125 concessionaires' licenses were revoked due to unsatisfactory performance.

The policy concerning the log exports ban, which was imposed in 1985, was in non-

compliance with the GATT principles. In 1992, the ban was revoked, and replaced by a high export tax on log exports, which would be gradually reduced in accordance with the GATT scheme.

In March 1998, the task of the Ministry of Forestry was enlarged to include the Estate Crops, and it was renamed as the Ministry of Forestry and Estate Crops. However, it was changed back to the Ministry of Forestry in the late 2000.

Several changes in policy have been undertaken in 1998 in line with the reform policy made under pressure from the International Monetary Fund (IMF), including the following important forestry policy reforms:

- Reduced export taxes on logs and rattan;
- Eliminating the Indonesian Plywood Association's monopoly over plywood export;
- Transfering control of the Government-owned Commercial Forestry from the Ministry of Finance to the Special Ministry of Government Commercial Companies.
- Charging the Reforestation Fund in local currency instead of in US$; and
- Creation of a new resource (or land) rent tax on timber resources.

The Indonesian Forestry Action Plan (IFAP)

The Government initiated the IFAP process in December 1987. A Forestry Studies project supported by FAO/World Bank, initiated in early 1989, formed the basis of the IFAP process. The IFAP document was finalised in November 1991, and an International Round Table meeting was organised in February 1992. It predicted that Indonesia would need an investment of approximately US$ 20 billion in forestry development over the next ten years, of which less than 10% would come from donor support.

In line with the National Development Plan for Forestry in the Sixth Five-Year Development Plan 1994/95-1999/2000 (Repelita VI) and taking into consideration the progress of development, constraints, issues, and opportunities, the IFAP document had to be revised and updated. In addition, the First IFAP needed to be reviewed and revised due to the following:

- The Earth SUMMIT, Rio, 1992 and it's follow up;
- New Global initiatives and international conventions relating to forests and forestry including:
  - CITES, Convention on Biological Diversity, Convention on Climate Change, RAMSAR;
  - ITTO Guidelines on Sustainable Forest Management;
  - WTO of GATT;
  - APEC and AFTA;
  - Anti Tropical Timber Campaign;
  - Tariff and Non-tariff Barriers;
  - The Government Second Long-term National Development Plan and international, regional, and national commitments.

A team was established in late 1994, and a draft IFAP Updating document consisting of two parts, i.e. Country Brief and Project Profiles, was made available in the middle of 1995. After a long process of discussion and revisions, the final draft was adopted in November 1997. The programme structure of the First and the Second IFAP is presented in Table 1.

Notable important results of the IFAP exercise toward the forestry sector development include:

- Institutionalisation and strengthening of the IFAP implementation co-ordination;
- More NGO involvement in forestry sector development;
- Efforts and development activities have been made by some forest concessionaires through the establishment of concessionaire forestry village development (HPH bina desa hutan) within the context of people's participation, people's welfare, etc.;
- More efforts and resource allocations for plantations, critical land rehabilitation, watershed development, and forest conservation;

Table 1: Programme structure of the First and the Second IFAP

First IFAP	Second IFAP
1.Institutional and human resource development; 2. Forest resources inventory and land-use; 3. Improvement of forest land productivity and the establishment of industrial plantations; 4. Improvement of the efficiency of forest based industry; 5. Conservation of living natural resources and their ecosystem; 6. Improvement of natural production forest management; 7. Soil and water conservation; and 8. Forest protection.	1.Forest Resource Inventory and Land Use Planning 2. Management of Nature Production Forests; 3. Management of Forest Plantation; 4. Forest Based Industries and Marketing of Forest Products; 5. Social Forestry and People's Participation; 6. Biodiversity Conservation and Ecotourism; 7. Management of Watersheds, Protection Forests, Wetlands, Coastal Areas; and 8. Institutional Strengthening.

- Recognition of the importance of gender analysis in forestry development planning, and identification of gender issues in forestry;
- More transparency in information and management;
- Introduction of environmental impact assessments (EIA) for forestry activities;
- Strengthening of inter-sectoral linkages and a programme-oriented approach through transmigration programmes in plantation development;
- Promotion of GIS and remote sensing technology for forestry planning and operation by the private sector;
- Decentralisation of forestry management and planning;
- Linkages between the IFAP, the Environmental Action Plan, and the Biodiversity Action Plan;
- Indonesia was chosen as the location for the Headquarters of the Centre for International Forest Research (CIFOR);
- Rationalisation of forest industries development, marketing incentives, and trade deregulation;
- Establishment of the Biodiversity Conservation and Management Action Plan (BCMAP), complementary to the IFAP, to be supported by the Global Environment Facility (GEF). Some bilateral donors and international agencies have indicated their interest in participating in the BCMAP;
- Establishment of a Research Council to promote meaningful interaction with the users of the research findings;
- Sustainable forest management of the concessions through the implementation of the "accreditation and assessor approach"; and
- The Spatial Arrangement, Act No. 24 of 1992, has strengthened the legal status of forest area. It is also strengthened the Forestland Use by Consensus programme launched in 1984.

Consultative Group on Indonesian Forestry (CGIF)

In addressing the challenges by the forestry sector, Indonesia has been assisted by various bilateral donors and international agencies. During 1987-1992, there were about 70 donor-assisted projects with a total support of US$ 342 million. It was beyond the capacities of the Ministry to manage the projects. The biggest problems faced in implementing the projects were the following:

- Lack of co-ordination in sector planning and lack of information on projects;
- Little integration of foreign assistance projects into national forest development planning;
- Overlapping and duplication of efforts;
- Conflicting and contradictory approaches; and
- Lack of internalisation of innovations to a larger scale for the benefit of the sector and the population.

At the Donor Round Table Meeting in February 1992, it was recommended that a forum of consultation among the main actors should be created. The Ministry welcomed the recommendation, and established a Consultative Group on Indonesia Forestry (CGIF) in May 1993.

Initially, CGIF was established as a means to facilitate the IFAP implementation and to be a forum for the exchange of information between the Ministry and the representatives of the international partners, with limited involvement of other partners, such as the private sector, NGOs and scientists. Later, CGIF responded to the increasing need to discuss technical issues. Therefore, permanent CGIF Working Groups were formed. These Groups were separate from the initial CGIF forum, which is now called the "CGIF Assembly meeting".

CGIF was formalised by a Ministerial Decree in October 1994. The objective of the CGIF is to strengthen the communication, co-ordination and co-operation among all parties involved in the planning, implementation and evaluation of the forestry sector development efforts, thereby contributing to increased effectiveness, efficiency and sustainability of the forestry sector development in Indonesia. It is envisaged to cover all forestry development activities carried out by the private sector, NGOs and the projects assisted by international partners.

Four permanent technical working groups have been established, as follows:
- Sustainable forest management;
- Social forestry and people's participation;
- Conservation; and
- Policy and institutional development.

In addition to the above technical working groups, a number of small teams were established in 1997 to discuss the following subjects:
- Formal recognition of traditional land use rights;
- Setting-up permanent production forests;
- Supply and demand of timber and timber products;
- Social forestry; and
- Forest fires.

The CGIF Working Groups are designed to be a forum for the exchange of information among Indonesian and foreign professionals concerned with technical, organisational and scientific matters of forestry development. The rationale behind the need to promote the exchange of information between forestry experts is the observation that the know-how acquired through foreign co-operation projects seems to be insufficiently utilised for other projects and for the development of the forestry sector as a whole.

The following are among the important outcomes of the CGIF:
- CGIF has become an important tool for strategic planning in the Ministry of Forestry;
- CGIF is a multi-stakeholders forum to bring together representatives of the Ministry of Forestry, NGOs, donors, universities, researchers, and the private sector;
- CGIF has become a model for a national dialogue between the donor community and national partners;
- CGIF is fully in line with the idea of partnership as recommended in the IPF/CSD, 1997.

In the future, a number of actions need to be taken, including the following: a) strengthening the management of the overall process; b) updating the database and guaranteeing the accuracy of the data; c) standardisation of the format, terms and items used; d) improving the manpower skills; e) accommodating the increasing consequences of the many international commitments and initiatives as the follow up to Agenda 21 of UNCED on forestry.

It was reported that during the exercise to carry out a case study in implementing the IPF Proposals for Action, CGIF served as the forum for the execution of the case study. About 100 stakeholders from various disciplines participated in the case study, including: planners, decision makers, scientists, researchers, other concerned sectoral institutions, NGOs and donors. Six Working Groups based on the organisational structure of CGIF were set up.

Five-year plan

Indonesia's development strategies and policies are incorporated in three plans: the long-term plan (covering a period of 25 years), the medium or five-year development plan (the Repelita) and the annual plan. The long-term plan provides broad development goals and

guidelines, while most policy packages are associated with the five-year development plan. The second long-term development plan began in 1994/1995. The National Development Guidelines (GBHN) indicate in broad terms the national development plans, including the management of forest resources.

Inter-sectoral linkages for sectoral planning were developed by a Central Planning Board (BAPPENAS) at the central level and by the Provincial Planning Agency at the provincial level (BAPPEDA). Some State and Co-ordination Ministers were assigned to co-ordinate certain aspects of development, such as the State Ministry of Population, and Environment, and the State Ministry of Economics, Finance, and Industries.

The Sixth Five Year Development Plan (1994/95 - 1999/ 2000), as the first medium-term plan under the Second Long-term Development Plan (25-year plan - from 1994/95 to 2018/19), sets its priorities on: sustainability, conservation of biodiversity and people's participation, poverty alleviation, and economic and political stability. However, the plan could not be completed due to the change in the Government in 1998. Starting in 2001, the budget calendar will start on 1 January 2001; it previously ran from 1 April through 31 March of the following year.

Six-country initiative of the IPF/ CSD's proposals for action

Indonesia is participating in the "Putting the IPF Proposals for Action into Practice at the National Level Government-led Initiative in Support to IFF Work Programme Category I(a). Six countries are participating in the exercise (three each from developing and developed countries), i.e. United Kingdom, Finland, Germany, Indonesia, Uganda, and Honduras. The purpose of the Initiative is to support the implementation of the Proposals for Action of the IPF at the national level (as endorsed by UNGASS in June 1997), including development of guidance derived from country experiences for consideration by IFF.

The preparatory meeting was held in Bonn/ Germany, on 3-5 February 1998. Indonesia is using its Five Year Plan (the First up to the Seventh Plan) as the basis to assess the implementation of the IPF Proposals for Action. Five categories of relevance of the IPF Proposals for Action have been adopted to assess the progress of its implementation for Indonesia, i.e.: not relevant, low importance, important, very important, and priority.

Notable achievements have been reported; however, actions that have been carried out by the private sector, people's groups, NGOs, and other relevant institutions might not have been included in the exercise.

Forest management

Indonesia has adopted three silvicultural systems to manage its forests as follows: a) Indonesian Selective Cutting and Replanting System (TPTI); b) Clear Cutting with Artificial Regeneration.

The TPTI system has been applied for natural forests since 1989. The purpose of the system is as follows: to regulate the utilisation of the natural forest production; to increase the forest value in respect to the quantity and quality of residual stands for the next cutting cycle; and to ensure the continual supply of timber as a raw material for the wood processing industry. The TPTI system is a modification of the previous system, which was called "the Indonesian Selective Cutting". Since more fieldwork is needed, the new system needs a well-trained team with effective control to ensure implementation of the system toward sustainable forest management. The modification aims at a more efficient time frame in the implementation of activities of each step of the system.

Harvesting, marketing and trade

Log production had constantly increased from 24.0 million m3 to 29.5 million m3 during 1995/96 - 1997/98 period. But, it decreased to 19.2 million m3 in 1998/99 due to the economic and financial crises. Rattan, resin gum, turpentine, raw silk, and cayuput oil are among the important commodities of non-wood forest products.

As of the end 1999, the main export destinations of timber and wood products were

Japan, China PR, USA, Korea Republic, Norway, Singapore, India, Italy, the Netherlands, Iran, Saudi Arabia, Australia, and England. The export of wood products, which comprise mostly plywood, sawn timber, and wood based products, was around 8-9 million m3 during the last ten years; the revenue generated was around US$ 4 billion, except in 1998 during which it was US$ 2.5 billion.

Indonesia has published a practical Guide Book entitled "Principles and Practices of Forest Harvesting in Indonesia" which could be considered as the Indonesian Code of Practice for Forest Harvesting. The principles and practices are being socialised among the private concessionaires and states enterprises. In support of the implementation of the Code, some studies on Reduced Impact Logging (RIL) have been conducted involving some foreign co-operation projects and forest concessionaires. Some activities related to the promotion of RIL and sustainable forest management aspects include the following:

- Information collection and dissemination;
- Implementation of RIL training;
- Publication of technical procedures, manual, and training materials; and
- Co-operation with CIFOR in conducting research on RIL practices in Bulungan area of East Kalimantan.

A handy guidebook for tree harvesting in tropical forests, especially for the operators at the field level, has been published. The guidebook contains many illustrations that can help the operators in the field easily understand the instructions on how to harvest timber properly. It is printed with a plastic cover for waterproofing to make it last longer.

The Government is committed to taking measures against illegal logging. It was reported that illegal logging is likely to be more damaging to forests. This aspect has been reflected in the Letter of Intent to the IMF recently. Efforts have been made to strengthen the administrative and security control, including the application of fines for violations against logging operations. However, the issuing of permits for forest processing industries is under the authority of the Ministry of Industry and Trade. The installed capacity of the wood industries has been greater than the wood supply under sustainable forest management from forests, which could lead to an informal supply through illegal logging.

With regard to the implementation of sustainable forest management, the Government is expediting the rehabilitation of degraded forests. However, it needs huge funds that the Government expects to have support from global partnership. In addition, incentive mechanisms are being formulated for the involvement of the private sector in the forest rehabilitation and development, including providing a reward to well disciplined forest concessionaires to implement sustainable forest management.

The Indonesian Ecolabelling Institute (LEI) has been established to look into the adoption of the timber certification scheme. The

Institute has developed Criteria and Indicators for Sustainable Forest Management in Indonesia, in total 57 indicators, which consist of criteria on production, on environmental and on social aspects. LEI signed an MOU and Join Certification with the Forest Stewardship Council (FSC) in September 1999.

Information

As regard to CGIF, the Ministry of Forestry has established a web site e.g. http://www.cgif.com/

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The two great movers of the human mind are the desire of good,
and the fear of evil.
(Samuel Johnson)

Such is the state of life that none are happy but by the anticipation of change.
The change itself is nothing;
when we have made it, the next wish is to change again.
(Samuel Johnson)

The test of wanting is doing.
(John Adair)

Japan

Country data	
Total land area 1996 (thousand ha)	37,652
Total forest area (thousand ha)/ % of total area	25,146/ 66.8
Natural forest 1995 (thousand ha)	n.ap
Total change in forest cover 1990-95 (thousand ha)/ Annual change (%)	-66/ -0.1
Population total 1997 (million)/ Annual rate of change 1995-2000(%)	125.2/ 0.3
Rural population 1997 in %	22.4
GNP per person total 1995 in US$	31,450

*) Source of data: FAO - State of the World's Forest 1999

General information

The Japanese economic transition after World War II can be divided into the following phases:

- The restructuring period after the war in 1945 to 1955, followed by a high growth period until two oil crises occurred in 1973 and 1978;
- The low growth period which began in mid 1970 and continued until the appreciation of the yen in the mid 1980s;
- The domestic-economy oriented growth period which began in 1987; and
- The stagnant period, since the "bubble economy" which began in 1990.

The rapid economic growth and the rise of the secondary and tertiary industries in urban areas attracted labour from the countryside, which resulted in depopulation and changes in the age demographics among upstream villagers.

In response to the experiences of the past two oil crises, alternative energy sources to petroleum, such as nuclear and LNG energy have been developed and promoted. The results show that reliance on petroleum decreased from 71.9% to 55.8% in 1995, nuclear power use increased from 0.3% in 1970 to 12.0% in 1995, and use of LNG grew from 1.2% in 1970 to 12.8% in 1995. As the economic situation was sensitive to the reliance on petroleum as the main source of energy, the efforts to find alternative energy sources will be continued, particularly after the repeated oil crises caused by the Middle East Peace Crises between Israel and Palestinian in September/ October 2000.

Japan experienced a drastic land tenure system change in the late 19th century and after the devastation of its land during the Second World War. Forests cover 67% of the land area, where steep landforms are characteristic, and closely linked to the life of the Japanese people not only for wood production, but also for land and water conservation. This is the result of the people's efforts and experiences accumulated over a hundred years. 69% of the forests are privately owned and mostly managed by small-scale owners. The remaining 31% comprise national forests.

The total growing volume surpasses that of felling and is being adequately replenished. The man-made, or plantation, forests, covering about 10.398 million ha in 1995, are made up of stands in which 70% are less than 35 years old, and thus have not reached cutting age, and still need tending and thinning.

Nowadays, Japan is in a position to share its experiences and to financially contribute to forestry development in other countries. Japan

has contributed substantially to forest and forestry development in other countries through several channels, including bilateral forestry co-operation (providing technical and financial support through JICA and OECF) and multilateral forestry co-operation (contributing to the efforts to achieve sustainable forest management by providing support to FAO, ITTO, ICRAF, and CIFOR).

Forest resources

According to the 1995 survey, which is carried out in every five years, the forest area of 24.23 million ha consists of planted forests of 10.40 million ha (41%) and natural forests of 13.38 million ha (53%) of the total land area respectively. The growing stock of planted forests reaches 1,892 million m3 and natural forests 1,591 million m3.

According to ownership, the forests can be classified into the following: a) private forests (58%); b) public forests (11%); and c) national forests (31%). The private forests are owned by individuals, corporations, and temples or shrines. The total owners of the private forests are 2.9 million individuals. The Forest Agency manages most of the national forests.

In order to conserve scenic areas and their ecosystems, natural parks are established under the provisions of the Natural Parks Law. In the Special Protection Zones of 331,999 ha, cutting or damaging trees are strictly prohibited. In Class I of Special Zones of 473,040 ha, trees are protected to the highest degree. In addition, Wilderness Areas of 5,631 ha and Nature Conservation Areas of 21,593 ha have been established in line with the Nature Conservation Law.

The protected areas are mostly natural forests. As of April 1999, the total area of protected forests is 513,739 ha, including the Forest Biosphere Reserve Area of 320,000 ha and the Plant Community Reserve Forests of 350 locations.

Afforestation activities are focusing on the restoration of the devastated forests caused by over cutting during the World War II in the mid 1940s and the growing wood consumption. Since 1965, the newly planted area has tended to decrease because of a shortage of suitable places for afforestation, inclination toward natural forest management, and the recent decrease in the financial rate of return in the forestry sector. The area of afforestation was 40 thousand ha in 1998.

In regard to conducting forest improvement, the composition of the forests should be taken into account as to whether they are single or multi-storied forests. Three categories of forests have been defined as follows: a) Improved Single-Storied Forests; b) Improved Multi-Storied Forests; and c) Naturally Regenerated Forests.

Policy, planning and legislation

There are several important legal and institutional frameworks for sustainable forest management in Japan, including the following: a) Forest Law; b) Forestry Basic Law; c) the Law of Administrative and Management of National Forests; d) Forest Pest and Disease Control Law; e) Nature Conservation Law; and f) Natural Parks Law.

The Forest Law stipulates the basic provisions for the forest planning system, the protected forest system, and other forest related issues. This Law aims at the conservation of lands and their optimum contribution to the socio-economic development, including enforcing it, toward the achievement of the sustainable and proper development of the forest resources, and increasing the forest productivity.

The forest planning system in Japan sets a long-term and comprehensive policy direction and target for forest and forestry at national, prefecture, and local levels. It also provides guidelines for forest owners to plan their forest. The forest planning system aims at stabilising the forest products market and enhancing their various public benefit

functions through promoting their viability and productivity, taking into account the long growth period of forests. It ensures effective policy implementation by showing the basic direction of government policy on forests and forestry, and at the same time serving as a guideline for forest owners and managers in implementing forest management.

To maintain the public functions provided by forests, such as conserving water, preventing natural disasters, protecting/ improving the living environment and providing recreational opportunities, the Minister of Agriculture, Forestry and Fisheries, or the governors of individual prefectures designate some forest areas as "protection forest (17 types)" under the Protection Forest System. At present, one third of the forest areas, approximately 8.81 million ha, have been designated as Protection Forests.

Forests other than protection forests have certain public functions. The control of the development of the private forestland is carried out by the Forestland Development Control System.

Each of the prefectures has some forestry specialists and forestry extension agents who provide technical advice and knowledge concerning the forest management.

In order to promote the establishment and improvement of diverse forests as the primary sources of greenery and water, under the severe social and economic conditions currently faced by forests and forestry, national and non-national forests are managed in a harmonious and collaborative manner under common forest planning units based on river basins, in which management plans for both national and non-national forest are established at the same time, for the same period, and for similar management goals. The basic structure of forest plans in Japan is as follows:

- Basic Plan on Forest Resources and Long Range Demand and Supply Projection for Important Forest Products. The plan is formulated by the Government in accordance with the Forestry Basic Law;
- Nation-wide Forest Plan. The 15-year plan is provided every five years in accordance with the Forest Law. It is formulated by the Minister of Agriculture, Forestry, and Fisheries in compliance with the above Basic Plan and Projection and approved by the Cabinet Council;
- Regional Forest Plan. The 10-year plans are provided by every five years in accordance with the Forest Law. They are formulated in compliance with the Nation-wide Forest Plan by prefecture governors for non-national forests, and by regional foresters for national forests;
- Forest Management Plan. The Five-year plans are voluntarily provided by forest owners for their forests, and authorised by prefecture governors in compliance with the Regional Forest Plan; and
- Local Forest Improvement Plan. Ten-year plans for the management of non-national forests are provided every five years in accordance with the Forest Law. They are formulated by the municipal government designated by prefecture governors.

In order to respond to the recent changes, as well as the prospective development of social and economic conditions surrounding forests and forestry, the "Basic Plan on Forest Resources and Long Range Demand and Supply Projection on Important Forest Products" was revised in November 1996. In this plan, emphasis is put on the enhancement of qualitative values and the public benefit functions of forests in order to ensure sustainable forest management. Also in this Plan, it is projected that the domestic supply of timber would increase in the future, based on the assumption that utilisation of timber would be expanded as an environmentally and physiologically friendly material.

In relation to the revision mentioned above, a new Nation-wide Forest Plan was established in December 1996. The Plan sets forth the basic policy directions on various

aspects, including the management of planted forests and construction of forest roads, and also provides a set of guidelines for forest owners and managers. The Basic Plan on Forest Resources of 1996 classified forests into the following functions:

- Timber production 14.90 million ha
- Water conservation 14.67 million ha
- Disaster prevention in mountainous areas 5.89 million ha
- Conservation of living environment 4.32 million ha
- Cultural and recreational activities areas 5.82 million ha

The Forestry Basic Law came into effect in 1964 to set forth the policy objectives of forest management and basic measures for achieving these objectives in order to enhance the development of forestry and to improve the status of forestry workers, as well as to secure forest resources and conserve lands. The objectives set forth by this Basic Law include a) increasing production of forest products, b) achieving stable development of forestry by improving the productivity of forestry, and c) expanding the income base of forestry workers thereby improving their social/ economic status. Based on the Law, the Government establishes and announces a Basic Plan for Forest Resources and a Long-Range Demand and Supply Projection for important forest products.

National forest management objectives set by the Law of Administration and Management of National Forests are to maintain and promote public functions provided by National Forests such as conserving land as well as to achieve a sustainable and reliable supply of forest products. This will contribute to the promotion of the local industries and the welfare of the local people living in and near the forests by effectively using National Forest resources.

The Administrative Law specifies that the Minister of Agriculture, Forestry and Fisheries must present a 10-year basic management plan for the National Forests every five years. The Director General of the Regional Forest Office crafts a 5-year plan for the operation and management of the National Forest every 5 years based on the 10-year basic management plan.

The Government implements various measures for controlling and managing pests, diseases, and harmful vertebrates which would damage the soundness of the forests under the Forest Pest and Disease Control Law.

The Nature Conservation Law stipulates basic policies for nature conservation and provides measures for conservation. The Environment Agency responsible for the conservation of natural environment develops administrative measures for nature conservation in accordance with the purpose of the law.

The Natural Park Law aims at conserving scenic areas and their ecosystems, enhancing their sound utilisation, and promoting the health, recreation and the culture of the people. There are three types of natural parks in Japan, i.e. national parks, quasi-national parks, and prefecture natural parks. Areas with beautiful natural scenery are designated as natural parks, regardless of the type of ownership. Thus, many private and natural parks are included in this category.

Forestry in Japan has become stagnant due to an increase in imported wood products and the decline in the industry's profitability. These factors have lowered the management level and the wood supply will be obstructed. Hence, the public function of forests will be curtailed. With regard to the various functions of forests where emphasis is given to tourism and recreational aspects, water conservation, and the biological diversity, prevention of global warming, the Government has rearranged the forestry approaches as follows: a) to promote sustainable forest management; b) to strive for the maintenance of stability and dynamics of the forest ecosystem, and c) to

fulfil a variety of needs in co-operation with the public.

In order to make full use of the various public functions provided by the National Forests, its management purposes are divided into three categories as follows: a) forest for soil and water conservation; b) forest for coexistence between forests and humans, and c) forest for cyclic utilisation of resources. The forest for lumber production has been reduced from 54% to approximately 20%. The forests for full utilisation of public functions increased from 46% to 80%. Consultation with and the participation of the public, both at national and local levels, should be enhanced during the drafting and approval of the National Forest plan document.

Global warming

In regard to the Kyoto Protocol, the Government established a "Headquarters on Measures to Arrest Global Warning" for which the Prime Minister inaugurated the chief of the office. A Guideline for Promotion of Efforts to Prevent Global Warming was finalised in June 1998. Subsequently, the Central Forest Council recommended a comprehensive policy called "Future Direction of Forest Use: Forest Culture for the 21st Century and the Creation of a New Society". It gives directions toward the fostering of forests as one of the measures against arresting global warming, to protect foothill forests near villages with the help of local people, and to propel a national land afforestation movement with public participation.

In order to cope with various demands for forest functions from the public, the Government has undertaken the following measures: a) education for understanding the forest environment; b) activities that encourage people's visits to forests, such as woodlands near settlements and protecting the environment; c) direct public participation in planting trees and establishing forests; and d) development and active use of forest recreation sites and facilities to provide good physical and mental health.

Within the National Forests, 1,270 recreational forests have been delineated. These include the "Recreation in Nature Forests" where people can appreciate the natural beauty of forests throughout the four seasons, outdoor sports facilities where people can enjoy skiing and camping, and "Nature Observation and Education Forests" for observing nature and wild birds. In 1998, 160 million people visited these recreational forests.

Forest fires

In 1998, about 1,900 cases of forest fires occurred in Japan and approximately 800 ha of forests burned down. Most of the fires were caused by the imperfect extinction of bonfires and cigarettes butts. In regard to forest fires, several measures have been undertaken by the Government, including the following: a) forest fire prevention campaigns to make people more conscious of forest fires; b) arranging protection/ operation systems by establishing forest patrol teams and distributing forest fire prevention equipment; and c) developing fire break forests and forest roads.

Public participation in forest management

Several approaches/ schemes have been introduced to promote public participation in forest management including: a) profit sharing forests; b) a land afforestation campaign; and c) providing opportunities for voluntary participation in forest-related activities.

Within the profit sharing forest scheme, people under contract with the Government plant trees in National Forest sites. Profits gained from the sale of lumber is shared between the Government and the contractor. This system promotes co-operative efforts between the upstream and downstream communities such as improvement of headwater forests and the fishermen's forest system.

Through land afforestation campaigns such as the "Forestry Fund for Green and Water" and "Green Feather Fund Raising", the Government encourages the public to participate in afforestation activities, including National Arbor Days and silvicultural festivals. These activities will pave the way to a better understanding of coexistence between forests and humans, prevention of global warming, and the role of forests in the socio-economic and environmental development of the country.

Starting from 1999, one or two "encountering forests" are to be established in each Forest District Office so that people can voluntarily participate in fostering forests.

Wood production and trade

Japan is one of the worlds's largest importing countries of wood, where 70% of the domestic wood consumption is imported. The import of logs has decreased while the import of sawn wood has increased. Production of wood from domestic forests has tended to decrease.

Wood consumption was 117 million m3 in 1973. It reached only 92 million m3 in 1998. Japan was the biggest tropical wood importing country, amounting to 12% of the domestic consumption in 1998.

Wood production has gradually decreased; it was 52.741 m3 in 1967 and 19.33 million in 1998. The number of forestry employees was 140 thousand in 1985, but only 86 thousand in 1995.

Imports of timber have shifted from logs to processed wood products. In 1989, the import of logs was 35.192 million m3, sawn wood was 12.882 million m3, and plywood was 4.312 million m3. In 1998, the import of logs was only 18.597 million m3 (decreasing by 53% compared to imports in 1989), sawn wood was 10.582 million m3, and plywood was 6.082 million m3 (increased by 238%).

Under the Uruguay Round Agreement, Japan committed to reduce tariffs by approximately 50% of the base rate on trade-weighed averages, equivalent to an approximately 30% decline from the applied rate when the Agreement was made in 1994. It was implemented progressively every year from 1995 to 1999.

In regard to global environment issues, the next trade negotiations on wood products of Japan should be carried out as part of comprehensive negotiations and due consideration has to be given to the global environmental issues and sustainable resource use.

Wood prices increased in 1996 due to an increase in house building demand. But overall the trend continued to decrease. ITTO conducts a special monitoring of wood prices in Japan and elsewhere. The ITTO web site can be visited for more details.

International co-operation

In providing development assistance to developing countries, the environmental factor is the most important consideration. This was clearly stated at UNCED in 1992. In addition, Japan is implementing the ODA on forest and forestry matters through multilateral organisations, such as UNEP, FAO, CGIR, and ITTO.

At the UNGASS in 1997, Japan announced and introduced the "Kyoto Initiatives" and the Initiatives for Sustainable Development (ISD) which established that Japan would continue to actively support policy works on sustainable forest management and to assist the developing countries to undertake measures against the Global Warming. However, the Japanese Government is of the view that it is important for each country to make further efforts to achieve sustainable forest management.

In regard to bilateral co-operation, Japan is implementing different approaches, including project-type technical co-operations, development studies and yen loans. The amount of bilateral ODA in the field of forestry was Yen 15.8 billion in 1991, Yen 16.9 billion in 1993, Yen 25.2 billion in 1995 and Yen 22.3 billion in 1997. Recently, Japan has agreed to support

four countries in the Region, China, Myanmar, the Philippines and Thailand to launch a project on Model Forests.

In regard to criteria and indicators, Japan has been actively involved in the development of criteria and indicators (C&I) for sustainable forest management for the temperate and boreal forests (Montreal Process). One of the unique efforts carried out by Japan is a project in two watershed areas to develop criteria and indicators at the local level and the monitoring methodologies. In addition, a new nation wide Continuous Forest Inventory (CFI) has been initiated to monitor and assess forest resources and their dynamics using unified methodologies, taking into consideration of its compatibility with C&I of the Montreal Process.

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No man will find the best way to do a thing unless he loves to do that thing
(Japanese proverb)

Nothing great was ever achieved without enthusiasm.
(Emerson)

Korea, The Republic of

Country data	
Total land area 1996 (thousand ha)	9,873
Total forest area 1995 (thousand ha)/ % of total area	7,626/ 77.2
Natural forest 1995 (thousand ha)	6,226
Total change in forest cover 1990-95 (thousand ha)/ Annual change (%)	-65/ -0.2
Population total 1997 (million)/ Annual rate of change 1995-2000(%)	45.7/ 0.9
Rural population 1997 in %	16.8
GNP per person total 1995 in US$	9,700

Source of data: FAO – State of the World's Forest 1999

General information

By late 1961, the Republic of Korea was suffering from many difficulties commonly faced by developing countries. The population was growing by 3% annually, the nation had no notable exports, and it depended on imports for both raw materials and important manufactured goods. The economic planners found it necessary to adopt an export-oriented industrialisation strategy. In its five-year economic development plans, the Government has focused on specific key industries by providing incentives in the form of tax subsidies, low interest loans, and manpower training.

Since 1962, under the new economic development plan, and with the positive investment mood by the private sector, plus the implementation of tax-reform, the country's economy has grown substantially, and the GNP has grown by an average of more than 8% per year.

However, the forests were completely devastated at the end of the Korean War in 1953. Until the 1970s, barren and brown coloured mountains could be seen. People would walk for days to get woody fuel. Rivers were muddy carrying away the wealth of the land. According to ownership, the forest area can be divided into three categories: national forests (22%), public forests (8%), and private forests (70%).

The demand for timber products has been constantly increasing in line with continued population and economic growth. In 1994, the domestic timber supply was about 1 million m3, representing about 13% of the total demand, while imports were increasing, amounting to 8.9 million m3.

Korea has been a member of ITTO since 1986, in the consumers' group. Korea has also been supporting other developing countries by facilitating training and despatching experts. By 1996, 25 Korean companies had participated and invested in overseas forestry development in 15 countries, including forest concessionaires in seven countries; development of plywood, sawn wood, and wood chip industries; and nurseries and plantations.

In 1995, forest product imports amounted to US$ 2.779 billion, or 2.1% of the country's total import. These products included logs, sawn timber, plywood, and non-wood forest products such as oak mushroom. The share of conifers in total log imports has increased and is expected to continue to increase in the future. Imports of wood chips, sawn timber, wood pulp, plywood, paper and paperboard have also increased. The total export value of forest products was US$ 505 million, or 0.4% of the country's total exports.

The major forest products exports were chestnut, pine mushroom, oak mushroom, and plywood.

However, since August 1997, the regional financial and economic turmoil has affected the financial and economic situation in Korea, including the forestry sector. The rate of construction works has been declining, which has affected the domestic demand for timber and related products. Thus, the imports of timber and timber products from the countries in the Region have been declining. The Ministry of Finance and Economy expects that the economic growth will be around 8%, although its growth was 11.6%in the first half of 2000.

After completing greening operations all over the country, the Korea Forest Service switched its policy from reforestation to management of forest and initiated the Fourth 10-year Forest Plan in 1998. Its ultimate goal is to build the foundation and groundwork for sustainable forest management.

Since 1998, although the country has faced significant economic and social difficulties, including a high foreign exchange rate and high unemployment, the Korea Forest Service has continued implementing several important forest and forestry development projects and activities, including the following: making substantial progress in the implementation of a public works project for tending the forest (1998-2002); completed the construction of Forest Information System using GIS; establishment of several forest related NGOs; and putting in place a Green Lottery in 1999.

Several reports show that the area of national forest has been slowly increased as the result of several efforts launched by the country, including the Korea Forest Service by implementing the National Forest Extension Policy. The long term goal of this policy is to increase the size of national forests to up to 40% of the forest land in Korea.

Planning, policy and legislation

Before the 20th century, the country owned the majority of forests and village communities and individuals owned the rest. After 1910, according to the forest survey carried out by Japan to exploit Korean's forest, forest ownership was classified into national, public and private forests.

In the early 20th century, Japanese harvested about 500 million m3 of timber in the Korean Peninsula, far above the forest capacity. As a result, the average volume of timber per hectare decreased to 14 m3 in 1945 from 45 m3 in 1910. Old growth forests were deforested by over cutting and illegal harvesting throughout the colonial period of 1910-45 and during the Korean War of 1950-53. In order to establish and manage the forest resources efficiently, the Forest Law of 1961 required the Government to produce a national forest plan every ten years.

In 1973, the government embarked on an ambitious "first ten-year's forestry development plan". The plan was part of the "Saemaul Undong" or "New Community Movement", which aimed to enhance the quality of life. The plan was directed at building up a sound, broad-based community forestry programme at the village level for the whole country. A turning point in forestry was witnessed in 1973 with the initiation of the first ten year Forest Development Plan, during which 1.0 million ha of denuded land were to be replanted within 10 years.

The massive reforestation project can be accomplished through traditional culture of the village community, called "Sanrimgae", that has been practised in Korea for several hundred years. This involves the participation of forest owners, village residents and the government and other public organisations in community forest development.

In addition, one million ha of fuel wood forest plantations were established through the IBRD-assisted project in the 1970s by planting black lotus (Robinia pseudoaccacia L.). However, due to less demand for fuel wood, the black lotus plantations are now used in construction timber production and the bee

keeping industry. Loans for a period of 35 years had also been provided for planting conifer, for which the Internal Rate of Return (IRR) has dropped to about 1-2% due to the rapid increase in labour costs recently.

The objectives, targets, and accomplishments of each plan are as follows:

1. The first ten year forest development plan (1973-78)

Objectives

- To implement the national tree planting movement through people's participation in various reforestation projects;
- To develop new economic zones of forest lands in harmony with the goals of land conservation and income generation by reforestation and forest production;
- To achieve rapid reforestation of denuded forest land through the planting of fast growing species; and
- To accomplish the stabilisation of shifting cultivation, which uses fire as a tool for agricultural practises.

The Government chose April as the "National Tree Planting Period" for its tree planting campaign as this period is the best time to plant trees. The Government encouraged various groups such as farmers, families, and students to participate in the reforestation programme. Development of rural fuel wood forests and prohibiting access to the mountains substantially reduced the damage to forests. The reforestation target of 1.08 million originally planned in the First Ten-year Plan (to be completed in 1982), was accomplished in 1978, so the second Plan began in 1979. In addition, 120,000 ha of devastated forestland were rehabilitated by a comprehensive erosion control project for soil conservation.

2. The second ten year forest development plan (1979-89)

The basic objective of the plan was to build large scale commercial forest zones for timber production. To achieve this objective, several forest policies were crafted including:

- Strengthening the national reforestation plan;
- Expansion of forest protection activities;
- Enlargement of the forest development funds to support private forest management;
- Grouping and enlarging national forests; and
- Implementing forest conservation projects to improve public benefits from forests.

Major accomplishments in the Second Plan include: reforestation of 966 thousand ha and development of 80 large scale group commercial forest zones; forest fire prevention and aerial control of diseases through a helicopter purchasing project; establishment of a Forest Works Training Centre to train forest technicians.

3. The third forest development plan (1988-97)

The main objective of the Third Plan, which is also called "the Forest Resources Enhancement Plan", is to harmonise the economic development of the forest and the public benefits. The Plan's target is to improve log production to meet 51% of the country's log demand by the year 2030. To meet the objective, priority has been given to the following:

- Government investment will be concentrated on forestry development promotion zones of 1.52 million ha in private forests;
- Harmonisation between timber production and other functions of forests by introducing a new concept of multiple use management; and
- Enlarge urban forests in cities and recreation forests in urban areas to provide clean air, water, and recreation spaces.

4. The fourth forest development plan (1998-2007)

The ultimate objective of the Plan is to lay the foundation for sustainable forest management through the accomplishment of major programmes based on major strategies as follows:

- To accomplish the policy goal, target areas were established including establishment of more valuable forests resources, fostering of competitive forest industries, and mainte-

nance of healthy and sound forest environment; and
- To achieve these targets, several critical strategies will be devised and in each strategy will include more specific programmes encompassing various subjects.

At present, the country's most important forest policy is reforestation. However, it should be noted that it has not merely targeted industrial timber production, but emphasis has also been given to reforesting the devastated mountain areas. The objectives of the policy are: harmonisation of management between conservation and development, fostering competitiveness by improving the management and organisation structure, improving the living conditions of the local people, and preserving beautiful landscapes.

The Law on Wildlife and Hunting was enacted in 1967. At the end of 1997, 541 areas had been designated as wildlife protection areas, and 486 species of wildlife were under protection. To preserve the natural scenery and to provide a better environment for recreation, the Park Law was enacted in 1967, and revised again in February 1997. Parks are classified into three categories: national, provincial, and city parks. The number of national parks increased from 17 in 1985 to 20 in 1996.

The natural recreation forest project has been operated as part of a major forestry initiative to implement multiple use management of forests since 1988. As of 1996, 197.4 thousand ha had been designated as protection forests, out of which 157 thousand ha, or 80% was for water conservation, 30.0 thousand ha, or 15% for scenic beauty, and 5% for other functions.

Forestry associations are among the active institutions that carry out the forestry activities in Korea. They traditionally deal with forest protection, and are based on the rural people's self regulated organisation, called "Sanrimgae". The Sanrimgae was reorganised into a modern form in the 20th century, and has been reoriented toward the members' welfare. In 1993, they were converted into "Forestry Co-operatives". The goal of the Forestry Co-operatives is to manage their forests by enlarging the management scale to include: forest land, labour, capital, and improving the socio-economic position of the members. Simultaneously, the Forest Association Law was replaced by the Forestry Co-operatives Law.

Nowadays, Forestry Co-operatives are also involved in planning of reforestation, management and harvesting, storage, marketing and trade of forest products, and loans. Forestry co-operatives are also considering becoming involved in supplying drinking water produced in the mountain areas.

The Government is fully committed to implementing the Forest Principles and related forestry matters of Agenda 21. The government supports the Montreal process for sustainable forest management. In compliance with international agreements and the new global initiatives on forest and forestry, the Forest Law was revised in 1994.

The Government has actively expanded international co-operation on forestry matters. During the last ten years, about 100 junior foresters from tropical countries have been invited to visit Korea to share their experiences in silviculture and soil erosion control. The Korea International Co-operation Agency (KOICA) was established in 1990 to expand the co-operation and to improve the relationship with developing countries. Bilateral co-operation with Germany, Japan, and Indonesia has also been strengthened.

In regard to sustainable forest management, the Government has been actively involved in the Helsinki and Montreal processes to determine the criteria and indicators for sustainable forest management. In implementing sustainable forest management, several problems will have to be faced, including:

- Inefficient forest resources management for the present and future generations;
- Unbalanced forest ownership between public and private forest, which might hinder efficient forest land use;

- Not enough private forest owners participation, due to unattractive investment environment conditions such as low profits and long-term investment; and
- Land use conflicts due to the increasing demand for land by other sectors.

Important achievements in the last two years (1998-2000)

a. Implementation of public works Project for Tending the Forests

The forestry sector has been playing substantial role in promoting employment opportunities during the economic crisis. A Forest for Life Project which is called "Soop Kakoogi" in Korea, was launched in 1998 and will continue till 2002 to hire unemployed workers for silvicultural activities, including weeding, pruning, thinning and under-storey cutting. This project has had a positive impact, i.e. the perception and public awareness towards the importance of sustainable forest management has been significantly improved. In 1998, the Korea Forest Service (KFS) hired 2.8 million people with a total expenditure of US$ 45 million. This increased to 4.83 million people and US$ 147 million in 1989. This project was one of the most efficient projects among the 20 unemployed labour hiring projects.

b. Establishment of the 21st century forestry vision

In the late 20th century the socio-economic situation in the country was changing rapidly. Therefore, the 21st century forestry vision was crafted in 1999 to enable forest development in harmony with the socio-economic conditions and the environment.

c. Construction of a forest information system

A forest site survey project was started in 1995 and will be completed in 2000. A Forest Geographic Information System that will provide the basic information for scientific forest management will be completed in 2002. A National Arboretum Institute and a National Plants Resource Information Network for endemic plant management has been established.

d. Strengthening of forest fire prevention

Forests are under great risk from fire caused by careless human beings, which is increasing in proportion with the increasing number of people visiting forests for recreational activities. In 1998, it was reported that 265 forest fires occurred, destroying 1,014 ha of forests, 50% of which were caused by careless people. In collaboration with local governments, KFS established and maintained several ground and airborne fire squads and supporting teams. In 1999, KFS organised 656 ground forest fire squads and airborne fires squads involving about 19 thousand people and 40 people respectively.

e. Establishment of forest related NGOs

Three important NGOs have been established, i.e. Forest for Peace (FFP); Forest for Life (FFL); and Northeast Asian Forest Forum (NAFF). The main activity of FFL, which was established in 1988, is to lead people to plant trees around suburbs and in educational activities. While the main activity of FFP, which was established in March 1999, is to help the Government of Korea Democratic People's Republic to reforest lands that were destroyed by floods and drought.

The objectives of establishing NAFF are to promote the environmentally sound and sustainable management of the forest ecosystem in the Northeast Asian Region by strengthening the relevant networks. The main purpose of NAFF includes reforestation and afforestation, strengthening dialogues and environmental education for sustainable forest development, exchange of information on forest conservation and sustainable forestry management, and co-operation with FFP to solve food problems and to prevent natural disaster caused by deforestation in the Democratic People's Republic of Korea.

f. International co-operation

KFS invited and trained 19 forestry officials from 11 developing countries in 1999. KFS organised the Korea-Indonesia Forestry Commission and signed the Forestry Co-operation Agreement with Vietnam and Myanmar in 1999.

g. Green lottery

KFS invented a new lottery programme called the "green lottery". The funds collected will be used for the enhancement of forest environmental functions. The programme advocates that to purchase a green lottery is the same as planting a tree. Indirectly, it will strengthen the people's awareness of the important role of forests and trees and understanding the importance of public participation in this matter.

h. Reformation of forestry co-operatives

To improve the benefits of the forest owners and to promote sustainable forest management, the co-operative system was changed into an association system. Simultaneously, the Forestry Association Law was accepted by the National Assembly in 1999 to replace the Forestry Co-operative Law.

Constraints

- Structural deterioration in competitiveness caused by the growing inefficiency of the government-guided economic system, the dwindling supply of low cost skilled labour, restriction of log exports by tropical countries, increased prices of imported logs, and development of substitutes for timber.
- Problems of forest fires are gradually becoming larger with an increase in favourable conditions for fires such as the recovery of forest stands, the accumulation of ground surface material susceptible to forest fires, and the rapid increase in the number of outdoor recreations.
- Due to the rapid increase in demand for leisure activities in the forest and a large number of mountain climbers, there is a growing problem of accumulated waste and trash in the forests.

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Lao PDR

Country data	
Total land area 1996 (thousand ha)	23,080
Total forest area 1995 (thousand ha) / % of total land	12,435/ 53.9
Natural forests 1995 (thousand ha)	12,435
Total change in forest cover 1990-95 (million ha) / annual change (%)	-742/ -1.2
Population 1997 (millions)/ annual rate of change 1995-2000 (%)	5.2/ 3.1
Rural population 1997 (%)	78.2
GNP per person 1995 (US$)	700

Source of data: FAO - State of the World's Forest 1999

General information

Lao PDR is a land-locked country bordered by the Animate mountains on the eastern side. The elevation range from 80 m in the south to 2,820 m above the sea level. About 79% of the country are mountainous. The climate is dominated by monsoons with annual rainfall ranges from 1,000 mm in the north to 3,000 mm in the south. The dry season, from October to April, is characterised by wind from the north-east. Lowland areas are tropical and the high elevation and the mountains are sub-tropical. The Mekong River is the dominant drainage system. It demarcates some of the international borders with Myanmar, Thailand and Cambodia.

Approximately 65% of the GDP come from agriculture and forestry. About 250,000 families (1.5 million people) are engaged in slash and burn agriculture practices.

The forest cover has been reduced by shifting cultivation and uncontrolled fire. The pressure on forests is increasing due to the decreasing supply of forest products in neighbouring countries like Thailand, Malaysia, the Philippines and Indonesia. The level of harvesting is also increasing due to the need to generate revenue in the provinces.

Hydroelectric power is one of the commodities exported to neighbouring countries. Hydroelectric power development potential is estimated at about 10,000 MW. This commodity will be one of the priority sectors to be developed in the near future. Therefore, there is need for a clear policy for the protection of watersheds.

In 1986, the introduction of the New Economic Mechanism led the country to a more outward orientation. Progress was noted in the year 1994-1995. The growth in GDP was 8.1% for 1995. Industry led all sectors with a 9% growth, followed by agriculture with 8.3%. Timber products continued to be the top earner with US$ 96 million in exports.

1995 was a historically important year for Lao PDR. The following important events were noted:

- The 40 anniversary of the Lao People's Revolutionary Party;
- The final year of the implementation of the 3rd Five Year for Socio-Economic Development Plan of the Government.
- A more favourable foreign investment climate and increased aids has been achieved;
- The IMF released two "tranches" of US$ 8 million each under ESAF arrangement;
- The United States removed Lao from the prohibition imposed by the Foreign Assistance Act;
- Among the regional initiatives, the Government announced its intention to become a full member of the ASEAN by 1997 and officially

offered Vientiane as the headquarters of the Mekong River Commission, while actively promoting the participation of Myanmar and China as full member of the Commission;

- Agreement in principle was reached to develop new roads and bridges over the Mekong River. Japan has agreed to conduct a feasibility study.

With the substantial economic and infrastructure development, pressure on the natural resource base is increasing. This includes pressure on forests and forestry and also hydropower, particularly due to increase in intensive farming, general development and mineral extraction.

The National Forest Conference was held in May 1989 The strategic directives agreed upon during the Conference were as follows:

- Preservation of forests and improvement of management to increase production;
- Rational use of forests to increase their economic value;
- Permanent settlement by the year 2000 of 60% of the 1.5 million people currently engaged in shifting cultivation.

The Government signed the international Convention on the Conservation of Biodiversity. This has implications for the policy and regulatory framework for biodiversity conservation in the country. Draft regulations for governing harvesting operations, contracting and planning, village forestry, and national biodiversity conservation areas already exist. Regulations pertaining to forest management and biodiversity conservation are currently being drafted. As of now, the Government has established and declared 20 National Biodiversity Conservation Areas, covering about 30,000 km2, or about 12.5% of the country's total area.

In addition, the Ministry of Agriculture and Forestry has also crafted the "Strategic Vision for the Agricultural Sector". The document was released on 22 December 1999. Based on the achievement and opportunities of forestry sector development, a forestry strategic vision 2020 was initiated in 1997. A draft Framework of Strategic Vision on Forest Resources Management to the Year 2020 (FSV-2000) was discussed at a Policy Dialogue Meeting held in Luang Prabang on 8 and 9 September 2000.

In 1996, the Government introduced a new policy to promote forest plantation by allocating degraded forestland to households as well as the private sector for planting trees, and waiving the land tax.

The forestry sector is one of the main earners of export revenue. The share of forest products in total export value was about 40% in 1996. In principle, there is a log export ban, except of pine logs. Domestic paper demand is met solely through imports. Recently, the garment industry has generated substantial employment and income for several people and substantial revenue to the Government, which reduce pressure on forests as alternative source of income.

Land use and forest resources

At present, permanent agriculture lands are limited to flat areas and valley. Due to extensive upland agriculture, including shifting cultivation, and commercial logging, substantial forestland areas have been degraded in mountainous areas. The trend towards forest degradation will continue.

Based on the land use planning exercise, land for the different purposes will be allocated to farmers, households and communities. The villagers will determine the land allocation, and they will decide on how the land will be distributed. A map indicating the boundaries of the allocated land will be prepared. The land allocation exercise will be completed with a land tenure certificate for each participant. The certificate will be prepared by the district land management and land allocation committee.

Land allocation will be a key measure of land management. About 3,096 villages or 75,100 households had received their certificates.

In the past, Lao PDR possessed substantial large area of forests. However, some reports indicate that there has been a dramatic decline

in forestland in the past 20-30 years. The causes were enormous, including population pressure, shifting cultivation, agricultural expansion, bush fire, and unsound logging for commercial purposes.

According to the current survey, the most heavily forested areas are in the south, while the least are in the north. Most of the forests are mixed deciduous forests, which cover about 35% of the land area. The dry dipterocarp forests cover about 5%, and the evergreen forests are 5%. The forest areas in the country is presented in the Table 1.

In low and medium altitude (100-500 above the sea level), many species of dipterocarps and legumes are common, including hard wood and rose wood (Dipterocarpus spp., Hopea spp., Pterocarpus spp., Dalbergia spp.,Afzelia, Lagerstomia spp.). In higher up, tropical pinus are found commonly, such as Pinus merkusii, Pinus kasya, Araucaria spp., Cunninghamia spp.

A wide range of plant species and derivatives of Non-wood Forest Products exists in Lao PDR, such as bamboo, rattans, cardamons, benzoins, latex, resin and gums.

Table 1: Forest areas (ha)

category	area
Evergreen forests	3,400,000
Mixed deciduous forests	5,680,000
Deciduous forests	1,600,000
Others	480,000
Total	11,160,000

Source: Country Report- 18th APFC, May 2000

Since 1995, the Government has promoted reforestation and tree planting development programmes. In recent years, these programmes have been linked with the land management policy and land-forest allocation programme, investment promotion policy. Start from the launching of the programme, people's groups, private individual, and the private sector has been involved. The progress of the plantation forestry programme is presented in the Table 2.

Table 2: Progress of plantations

Year	Area (ha)
1990	716
1991	1,359
1992	901
1993	2,219.
1994	3,798
1995	8,828
1996	11,849
1997	12,290
1998	9,030
1999	6,353

Source: Country Report – 18th APFC, May 2000

Policy and planning

As the results of the First National Forest Conference held in 1989, the Government formulated the basic forest policy and guidelines. The salient features of the policy include:

- Biological resource of present forests should be protected emphasising people's participation;
- Resource use should be balanced with conservation;
- Afforestation, production and forest development must be linked to food production, provision of alternative for shifting cultivation;
- Increased forest cover up to 70% of the total land area through the application of natural regeneration system.

The Tropical Forestry Action Plan (TFAP) was launched in 1989. The draft strategic plan was produced in February 1990. At the International Round Table meeting held in December 1990, the Government proposed a development strategy and indicated the following priorities: rationalisation of the shifting cultivation system and sustainable watershed management and protection. The Government endorsed the draft document in 1991.

Within that TFAP framework, the Government decided that:

- Sustainable forestry programmes which support hydro-electric power development should be given high priority.
- Non-wood forest products development, particularly in water catchment areas, should contribute to employment creation and income

generation. This would reduce the pressure on forests from encroachment and illegal felling and contribute to biodiversity conservation.

- The harvesting of non-teak wood species should be promoted.
- The implementation of programmes for stabilisation of shifting cultivation and control of opium cultivation should contribute to sustainable harvesting in watershed management areas.

The first TFAP review meeting was held in Vientiane, on 14-15 October 1994. This meeting was attended by active donors, NGOs, forestry officials from the provinces, and key technicians of the department. The main objectives were to:

- Evaluate the implementation of the TFAP during the 1991-1994 period;
- Provide broad information on the TFAP and it's role in the Lao Forestry Policy, strategic plan and activities to provincial officials and get their active participation to draw up guidelines, methods and measures for more effective implementation of the 1995-2000 strategic plan in forestry activities;
- Draw lessons from the co-ordination between central and local levels in the application of the decentralisation directives, especially in the management of projects located in provinces and districts;
- Prepare facts and data for a round-table meeting with donor countries / organisations to be held at the end 1995.

Since its first review in 1994, the annual donor meeting has been held every year. In these meetings, progress of the TFAP implementation was reported on and the donors' community presented information on the status and future support to Lao forestry development. In addition, several technical working groups have been established. These groups discuss achievements, constraints, issues, policy reform, input for simplifying procedures, instructions and guidelines.

In the Fourth Donors Meeting held in April 1998, it was reported that donors support to the forestry sector development was coming from:

- Bilateral donors: SIDA, GTZ, and JICA;
- International Monetary Institutions: ADB, WB, EU, FINNIDA;
- International Institutions: Mekong River Commission, FAO, UNDP, UNCRD;
- NGOs international/ bilateral: WWF, JVC, CSIRO, CUSO, CANADA, IUCN, BMZ Germany, CARE, WCS, CESVI (Italy), DANIDA, and NORAD.

It was also reported at the meeting that recently, the Governments of Denmark, France, and Norway sent missions to Lao PR and identified some co-operation projects. They informed the meeting that financial support would be provided to implement the identified projects. The Ministry of Agriculture is currently implementing more than 70 projects and that there are more projects in the pipeline at various stages of identification and formulation.

About five years ago, some donors became concerned about an apparent lack of co-ordination among projects within the Department of Forestry. To respond to this, the Swedish International Development Co-operation Agency (SIDA) provided funding support through UNDP for a project to assist the Division of International Co-operation in fulfilling its mandate. The objective of the project is to achieve maximum impact from projects implemented in the upland agriculture and forestry sector by institutionalising an effective monitoring and co-ordination system. The immediate objectives are: 1) effective co-ordination of current development assistance; 2) effective planning of future development assistance; 3) effective training for planning, publishing, monitoring, and evaluating development assistance. The project began in 1997.

Based on the achievements and opportunities of forestry sector development seen in 1997, the Government drafted the forestry vision for the year 2020, which is composed of seven Frameworks. The priority strategies in

each Framework were outlined as the following:

- Develop viable alternatives to shifting cultivation and gradually decrease unsustainable upland farming;
- Allocate land to rural families and enterprises and encourage afforestation;
- Survey the national forest resource and set up appropriate systems for forest management;
- Implement management in the biodiversity conservation areas and protect priority watersheds;
- Develop an appropriate and competitive forest industry;
- Strengthening human resource development; and
- Strengthening forest research.

A revised draft Framework of the Strategic Vision for 2020 was discussed at a Policy Dialogue Meeting on the Forestry Sector, held in Luang Prabang, 8-9 September 2000. The meeting was organised as a consultative process for the 7th Round Table Meeting scheduled for 21-23 November 2000, which initially focus on four sectors, i.e. health, education, roads and macroeconomic management. The representative from donor agencies attended the meeting include UNDP, UNDCP, WB, ADB, AusAID, DANIDA, GTZ, FINIDA, JICA, and a number of international and national NGOs, such as IUCN.

Issue concerning year 2002 would be declared as the International Year of Mountains was discussed. Some donors, including SIDA, indicated its interest to be involved in the exercise.

It should be noted that due to population distribution, culture, geography, and general economic development, watershed protection and management are very crucial in the country. Recently, the Ministry of Agriculture and Forestry has developed a strategy that any watershed management activities or upland farming has to be linked with efforts to stabilise shifting cultivation and poverty alleviation.

Village forestry

The National Forestry Conference held in 1989 addressed the importance of participatory people's-oriented forestry toward sustainable forest development. In addition, the essential involvement of local people in natural resource management, protection, and conservation was clearly spelled out in the Sixth Party Congress in 1996, in the Forest Law of 1996, and in the Ministry of Agriculture and Forestry's strategy for the year 1996-2000. Village forestry is used to describe a process (but not a fixed management concept) and a range of approaches to people's oriented forest management with different intensities in the degree of participation. This term has been used as the Lao version of community forestry. There have been some important village forestry programmes, projects, activities in Lao PDR. Altogether there are 10 projects dealing with village forestry. The preliminary results show that no single resource management system can be applied in the same way throughout the country. In the future, specific systems should be developed that are applicable to different conditions such as: forest and biological resources, culture, economy, peoples/ tribes, and topography.

In line with the above, the Department of Forestry began developing a national village forestry strategy in 1997. The draft was discussed at a National Village Forestry Strategy Workshop in February 1998. It is planned that having a national strategy will help in putting the various projects into a unified framework, facilitate co-ordination, improve resource allocation, provide guidance to various on-going projects so that they conform to the national development objectives, and also help in identifying and formulating new projects.

The objective of the national village forestry strategy is to develop village forestry and promote its adoption as one of the major systems for the sustainable management of the forests. This objective can be attained in three phases of fifteen-year periods as follows:

1. The first five years phase (2000-2005 with a preparatory phase 1998-2000)

- Establish a strong policy and legal foundation;

- Strengthen the national co-ordination;
- Develop various models with their respective concepts, guidelines and procedures;
- Strengthen training capacity.

2. The second five years phase (2005-2010)

- Forestry institutions will be re-oriented toward village forestry;
- Integration of village forestry into university programmes and training systems;
- Training of staff at provincial and district levels;
- Development of models according to the situations and conditions.

3. The third five years phase (2010-2015**)**

- Strengthening field organisations;
- Consolidation and modification of models based on the results of field experiences;
- Adoption, adaptation, and application of village forestry in the country.

Shifting cultivation stabilisation

Concerning shifting cultivation stabilisation, all concerned institutions and officers are aware that this should be a rural integrated work. The approach should be multi-sectoral involving: agriculture, irrigation, livestock, agricultural banks/credits, transportation, education, and health. To be successful, sufficient funds, knowledge, and experiences are needed.

The Government gives high priority to this programme. It is one of the 8 top priority socio-economic development programmes of the country. The main objectives of the programme is to protect the natural resources and the environment in Lao PDR, to ensure that the resources are managed under sustainable way, to increase the living standard of the local people who are living adjacent to forest areas.

This programme has been put in place since 1986. There are substantial experimental activities adopting several methods and concepts supported by partners, including donors, such as Sweden and ADB.

Biodiversity conservation

In 1993, the Government issued the Prime Minister Decree No. 164, of which 20 forest sites as National Protected Areas. In regard to wildlife, the country has a high diversity of mammals, reptiles, birds, and probably other vertebrate and invertebrate groups. But, very few of the information have been published.

Lately, wildlife populations are continuously decreasing due to uncontrolled hunting, habitat destruction caused by shifting cultivation, agricultural expansion, and resettlement.

Harvesting

A draft National Code of Timber Harvesting Practice was made available in the middle of 1997. The purpose of the Code is to provide guidelines for carrying out timber harvesting consistent with the principles of sustainable development. This Code was drafted using experiences in the development of the Regional Timber Harvesting Code for the Asia Pacific Region.

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Malaysia

Country data	
Total land area (million ha)	32,97
Total forest 1998 (million ha)/ % of land area *	25,05 /76.0
Natural forest 1998 (million ha) **	20,02
Total change in forest cover 1995-98 (million ha)/ annual change (%)***	-0.34/ -0.48
Population total 1998 (millions)/annual rate of change 1995-98 (%)****	21.4/ 2.4

Source of data: Forest Department Headquarters, May 2000

* Inclusive of forest area and area under agricultural tree crops

** Dipterocarps, swamp forests and mangrove forests

*** Total changed on forested and tree crops area

**** According to the World Population Prospects, the 1998 Revision, ECOSOC - UN

General information

Malaysia is a tropical country which comprises Peninsular Malaysia (consisting of eleven states and the federal territory of Kuala Lumpur), Sabah (including federal territory of Labuan), and Sarawak. 79% of the population is located in Peninsular Malaysia. According to the World Bank, Malaysia is an upper-middle income country.

The manufacturing sector, including electronics, has emerged as the leading economic sector, followed by agriculture (agriculture, livestock, forestry and fisheries), and the retailing and hospitality sectors. The production and export of primary industries, such as crude oil, palm oil, tin, and rubber, have contributed significantly to the socio-economic development of the country. Malaysia leads the world in the production of rubber and is one of the biggest producers of cocoa, palm oil, tropical hardwoods, pepper and tin. In regard to socio-economic development, the forestry sector remains an important sector. This sector also makes a significant contribution to the conservation of genetic resources, to the climatic and environmental conditions of parks and recreational facilities, whilst providing for the needs of forest dwellers.

The year 1996-2000 is the period of the implementation of the Seventh Malaysia Plan. Like many other Asian countries, Malaysia's economy was also influenced by the Asian economic and financial crisis, which was felt in 1998. The Gross Domestic Product (GDP) growth declined by 6.7% after 12 years of uninterrupted growth averaging 7.8% per annum. This situation had a significant impact on the private sector spending, resulting in reduced consumption and investment that led to a build-up in stocks and excess capacity and further depressing the private sector investment.

The forestry sector remains an important sector in terms of its significant contribution to the socio-economic development of the country. Despite the regional financial crises, the total exports of timber and timber products in 1998 was impressive, the third highest among the commodities after petroleum oil and palm oil products. Exports of the major wood-based products have increased steadily over the last decade, rising from RM 8.9 billion in 1990 to RM 12.7 billion in 1998, an increase of 42.7%. However, the export value in 1998 of RM 13.5 billion declined by 3.4% compared to that in 1997 of RM 12.7 billion.

Forest resources

Under the Malaysian Constitution, land is defined as a state matter and is thus under the jurisdiction of the respective State Governments. Each State is empowered to enact laws on forestry and to formulate forest policy independently. The National Forestry Council (NFC) was established in 1971 to serve as a forum for the Federal and State Governments to discuss and resolve common problems and issues relating to forestry policy, administration and management. All the decisions of the NFC have to be endorsed by the National Council (NLC) which is empowered by the Malaysian Constitution to formulate a national policy for the promotion and control of the utilisation of land for mining, agriculture, and forestry.

The total forest area was 20.25 million ha, or 61.4% of the total land area in 1998. This is an increase of 0.83 million ha or 4.3% compared to 1990, due to the 1.55 million ha increase in forest area in Sarawak.

Taking into consideration the 4.8 million ha plantation under fast-growing agriculture tree crops such as rubber, oil palm, cocoa, and coconut, the total area under permanent tree cover amounted to 25.05 million ha or about 76.0% of the total land area in 1998. These agricultural tree crops, particularly rubber trees are of importance as sources of timber and fibre materials. Table 1 shows the trend of forest area from 1960-1998.

Table 1: Forested area and tree crops (million ha)

Year	Land area	Forested area	Tree crops	Total	%
1990	32.97	19.42	4.6	24.02	72.9
1991	32.97	19.42	4.6	23.84	72.3
1992	32.97	19.15	4.6	23.75	72.0
1993	32.97	20.75	4.8	25.55	77.5
1994	32.97	20.59	4.7	25.29	76.7
1995	32.97	20.59	4.8	25.39	77.0
1996	32.97	20.45	5.2	25.65	77.8
1997	32.97	20.57	4.8	25.37	76.9
1998	32.97	20.25	4.8	25.05	76.0

As of 1998, 14.33 million ha, or 43.5% of the total land area had been designated as Permanent Forest Estate (PFE) to be managed sustainably. These forestlands are gazetted as Permanent Reserved Forests in accordance with the National Forestry Act 1984 (amended in 1993). Approximately 3.49 million ha are classified as protection forests, with the remaining 10.84 million ha as production forests.

Besides the protection forest within the PFE, other protected areas that had been gazetted/ proposed as national parks and wildlife and bird sanctuaries amounted to 2.12 million ha. Of this 0.33 million ha are located within the PFE. These parks and sanctuaries are carefully selected to reflect the representatives of the biological diversity found in the country.

The Government has set aside pockets of virgin forest, known as Virgin Jungle Reserves (VJRs) throughout the country as ecological types of original conditions, particularly for studies. As of now, 120 VJRs had been established, covering an area of 111.800 ha representing several forest types, including: mangrove swamp forest, beach strand forest. heath forest, peat swamp forest, low land dipterocarp forest, hill and upper hill dipterocarp forests, and montane forest.

Forest plantations have been established since the 1950's. The species planted include tropical pines and fast-growing hardwood species. Other species planted include Tectona grandis, Shorea macrophylla and Durio zibethinus.

At the end of 1998, a total area of 227,863 ha of forest plantation was established in Malaysia, of which 73,735 ha were in Peninsular Malaysia. In view of the growing importance of forest plantations and to encourage greater private sector investment, a National Committee on Forest Plantation Development with full participation from the private sector was formed. The Committee's main role is to formulate a national strategy and action plan for the promotion and effective implementation of forest plantation programmes.

Forest plantation projects are viewed as strategic projects of national interest and the Government provides fiscal incentives as well as full tax

exemption under the Pioneer Status for 10 years or 100% tax exemption under the Investment Tax Allowance for 5 years, effective from 1993.

Policy and planning

The National Forestry Policy (NFP) was accepted by the NFC in 1977 and endorsed by the NLC in 1978 for the administration and management of its national forest. However, the NFP was revised in 1992 to take cognisance of current global concern on the conservation of biological diversity, sustainable utilisation of genetic resources and the participation of local communities in forestry.

To ensure effective forest management implementation in Malaysia, various forestry enactment and ordinances have been formulated and enforced by the respective State Authorities since 1910. These legislation were further strengthened in the areas of forest management planning and forest renewal operations with the endorsement of the National Forestry Act and the Wood-Based Industries Act by an act of the Parliament in 1984. These two Acts are currently being enforced by all the States, and especially in Peninsular Malaysia. In tandem with the revised National Forestry Policy and in order to further safeguard the forest resources from illegal logging and timber theft, the National Forestry Act, 1984 was amended in 1993 to include more stringent penalties for such forest offences, includinng a mandatory jail sentence of not least than one year. Actions are currently being undertaken to revise the Wood-Based Industries Act of 1984.

Forestry development in the country has been guided through a series of five-year national development plans. The strategy is based on the need to maintain sufficient areas of productive, protective and amenity forests while recognising at the same time that sustained efforts to promote economic activities in the form of secondary and tertiary processing, trading, and marketing are equally vital.

The forestry sector was analysed in four sections of Malaysia's Fifth Plan (1986-1990): Agriculture and Rural Development, Tourism, Environment and Manufacturing. In addition, the wood-based industry (WBI) was one of the 13 industrial sectors for which a sectoral development plan was compiled under the Industrial Master Plan 1986-1995 (IMP).

Under the Seventh Malaysia Plan (1996-2000), the following strategies for the forestry sector have been adopted:

- Consolidation of Permanent Forest Estates and formulation of long-term forest management plans;
- Management and development of forest resources based on sustainable forest management principles;
- Enhancement of forest regeneration through reforestation and silvicultural treatments on logged-over forest areas;
- Consideration of environmental impacts, importance of biodiversity and genetic resources;
- Modernisation of forest industries by upgrading of processes and through improved research and development;
- Integration of forestry with agriculture in rural development through an agro-forestry programme;
- Promotion of forestry for people's activities to improve socio-economic benefits and the quality of life;
- Promotion of training programme for human resource development to ensure an adequate supply of trained manpower to meet the requirements of forestry and wood-based industries; and
- Development of a forest information system based on timely and comprehensive data so as to improve the effectiveness of forestry planning, development, and management.

To ensure the sustainability of the forestry sector contribution to the overall socio-economic development, adequate funds have been allocated for the forest rehabilitation and development programme under normal expenditure and the five-year development plan. Moreover, a Forest Department Fund was created to facilitate the preparation and implementation of the State Forest Management and Reforestation Plans.

There are a number of complementary agencies to the Forestry Department including:

- Malaysian Timber Industry Board (MTIB), which is responsible for initiating appropriate development in the various sectors of the timber industry and for providing the necessary assistance to ensure its continued growth as a modern and thriving sector of the economy;
- The Forest Research Institute of Malaysia (FRIM) which is responsible for the implementation of research in all aspects of forestry and forest products;
- The University Putra Malaysia (UPM) which produces professional and semi-professional foresters; and
- The Malaysian Timber Council (MTC) which is committed to addressing issues such as the log supply situation, promoting the timber trade, promoting and participating in commercial forest plantations, and addressing issues undertaking projects of importance to the timber industry.

Since 1994, Malaysia has made considerable efforts in formulating the Malaysian Criteria and Indicators for Sustainable Forest Management (MC&I) based on the elaboration and operationalisation of the ITTO Guidelines for the Sustainable Management of Natural Tropical Forests and its Criteria for the Measurement of Sustainable Tropical Forest Management. This is in line with Malaysia's position as a producing country of ITTO, as well as her commitment to achieve sustainable forest management in tandem with the ITTO Year 2000 Objective. It is required that all timbers traded in the international markets shall come from sustainably managed sources by the year 2000.

The effort was spearheaded by the National Committee on Sustainable Forest Management, which was established in February 1994. The Committee is comprised of members from the Ministry of Primary Industries Malaysia, Forestry Department Sabah, Forestry Department Sarawak, Forest Research Institute Malaysia, Malaysian Timber Industry Board, Malaysian Timber Council, and Faculty of Forestry of Universiti Putra Malaysia. To further complement and support the work of the National Committee, the ten State Forestry Departments in Peninsular Malaysia formed a Working Party on Sustainable Forest Management based at the Forestry Department Headquarters, Kuala Lumpur in February, 1994. The main objective is to furnish all necessary technical details or inputs on forest management, operations, and administration needed for the formulation and implementation of the MC&I.

Further elaboration on the ITTO Guidelines and Criteria for the Measurement of Sustainable Tropical Forest Management is necessary to better reflect the local situation, as well as to ensure its applicability within the Malaysian context. To fully operationalise the ITTO's Criteria and Indicators, the National Committee had formulated relevant activities for each Indicator, as well as management specifications for each activity to ensure its effective monitoring and evaluation on the ground.

Based on the ITTO's Criteria and Measurement of Sustainable Tropical Forest Management, the National Committee formulated a total of 92 activities to operationalise its 5 Criteria and 27 Indicators at the National level, covering the forest resource base, continuity of flow, level of environmental control, socio-economic effects and institutional framework. At the Forest Management Unit (FMU) level, which is being defined as an individual state, the National Committee formulated a total of 84 activities to operationalise the 6 Criteria and 23 Indicators of the ITTO's Criteria for the Measurement of Sustainable Tropical Forest Management. Against each of the activities formulated at the National and FMU levels, the respective State Forestry Departments had also formulated management specifications (benchmark) for its effective monitoring and evaluation. Currently, a total of 201 and 191 management specifications have been formulated at the National and FMU levels respectively in Peninsular Malaysia. Of the 191 management specifications formulated at the FMU level, a total of 161 or 84% of them are identical to those formulated at the national level.

Based on feedback obtained from field evaluations, both through internal and independent assessment, and new knowledge

gained on sustainable forest management, the MC&I will be periodically reviewed and refined to ensure practicality, as well as to keep pace with the latest developments in forestry. The National Forest Policy was sanctioned by the Government in 1977. In cognisance with the current concern expressed by the world community on the importance of biological diversity conservation and the sustainable utilisation of genetic resources, as well as the role of local communities in forest development, this National Forest Policy was revised in November 1992. The salient points of the revised National Forest Policy are as follows:

- to designate as Permanent Forest Estates (PFE) sufficient areas strategically located throughout the country in accordance with the concept of rational landuse;
- to manage the PFE so that they maximise social, economic, and environmental benefits for the nation and its people in accordance with the principles of sustainable management;
- to implement a planned programme of forest development through forest regeneration and rehabilitation operations, as well as the establishment of forest plantations of indigenous and exotic species to supplement the timber supply from the natural forest;
- to promote sufficient harvesting and utilisation within the production forest for maximum economic benefits, to stimulate the development of appropriate forest industries, and to create employment opportunities;
- to increase the production of non-wood forest produce to supply local demands and the requirements of related industries;
- to undertake and support a comprehensive programme of forestry education and training at all levels;
- to undertake publicity and extension services in order to generate better understanding among the community of the multiple values of forests, and to encourage private sector investment through the establishment of forest plantations on private lands;
- to provide for the conservation of biological diversity and areas with unique species of flora and fauna;
- to develop a comprehensive programme in community forestry to cater for the needs of the rural and urban communities, and to promote active local community involvement in forestry development projects, including agroforestry projects; and
- to undertake and support intensive research programmes in forestry and forest products aimed at enhancing maximum benefits from the forest.

Harvesting and utilisation

In recent years, the forest industries have been rapidly moving away from the manufacture of low value primary products. The development of secondary and tertiary wood processing industries is being actively promoted. Steps are also being taken to encourage the setting up of small scale rural-based industries using forest produce such as rattan and bamboo as raw materials. It is the Government's objective to make Malaysia a major producer of high value added wood-based products in the world market as stipulated under the Second Outline Perspective Plan 1991-2000 and the Second Industrial Master Plan of 1996-2005.

Malaysia has succeeded in developing the utilisation of rubber wood for domestic and export markets, particularly for furniture. Currently, research on the possible utilisation of waste from oil palm trunk for moulded particle board, fibre board and furniture; palm kernel shell for activated carbon and carbon briquette; and palm fresh bunch for animal feed, energy, as well as its ash for potash are being conducted.

In the area of forest harvesting, the successful results of the low-impact logging study have been widely used in Sabah and Sarawak. The helicopter logging which was undertaken in Sarawak will continue to be used for harvesting as the damage to surrounding trees is found lower than under the conventional system. Moreover, land erosion caused by road construction is also minimised. To further mitigate the effects of timber harvesting, Reduced Impact Logging is also undertaken whereby the operations include controlling the number of trees to be felled, timber tagging, directional felling, leaving of

buffer zones and the controlling of road density.

Due to the impending shortage of raw material supplies, the realisation of the need to reduce wastage of forest residues is one of the main efforts toward the achievement of sustainable forest management. Efforts are currently being undertaken by the Government to increase the efficiency of timber utilisation in the country. This includes the revoking of operating licences for inefficient mills (which have ceased operation for at least 2 years), encouraging existing mills to replace their old machinery to improve mill efficiency, undertake studies to find means and ways to optimise the utilisation of forest and mill residues, as well as the promotion of trade of the lesser known species.

The Forestry Department of Peninsular Malaysia has undertaken a joint collaboration project with the Danish Corporation for Environment and Development (DANCED) with an aim to optimise the utilisation of forest residues, including small dimension logs and mill residues as raw materials.

Forest industries in Malaysia are rapidly moving away from the manufacture of low value primary products. This is in line with the national objectives and priority as stipulated in both the First and Second Malaysian Industrial Master Plans, respectively for the period 1986-1995 and 1996-2005. In improving the socio-economic level of the rural population, steps are also being undertaken to encourage the setting up of small-scale rural based industries. The forestry industry has been identified as one of the resource-based industries to be further developed as an important export-oriented sector. It is the Government's objective to make Malaysia a major producer of high value added wood-based products in the world market; specifically Malaysia would become an important furniture and joinery/ mounding centre.

Collaboration with partners and international agreements

As the follow up to UNCED, Malaysia ratified the Convention on Biological Diversity. A National Committee on the Convention on Biological Diversity (NCCBD) was established to plan, co-ordinate and implement follow up actions as required under the Convention. In 1988, the NCCBD formulated the National Policy on Biological Diversity to provide the direction for the nation to implement strategies, action plans and programmes on biological diversity for the conservation and sustainable utilisation of its resources. In addition, the Government prepared a National Conservation Strategy and the Ministry of Science, Technology and the Environment published a country report on the Assessment of Biological Diversity in 1997.

Malaysia is a producer member country of ITTO and is committed to implementing the ITTO Year 2000 objective by making the Malaysia Criteria and Indicators (MC&I) operational and allocating financial resources to carry out forest development activities, projects, and studies related to sustainable forest management. The National Committee on Sustainable Forest Management established in 1994 will be strengthened. In line with Malaysia's commitment towards achieving the ITTO Year 2000 objective, the implementation of the Malaysian Criteria, Indicators, and Activities for sustainable forest management will be critical. The Malaysian Criteria, Indicators and Activities for Sustainable Management (MC&I) was formulated in 1995 for two levels i.e. the national and the Forest Management Unit level, in consonance with the requirements of ITTO. Since its formulation, the MC&I has undergone numerous refinements and has taken into account the latest development on Criteria and Indicators for Sustainable Management of Natural Tropical Forests which was adopted at the 24th ITTC held in Gabon in May 1998. This effort is further strengthened by the establishment of the National Timber Certification Council (NTCC) in October 1998.

Collaboration in forestry at the regional level is implemented through the Association of South East Asian Nations (ASEAN) administrative structure through the following: a) ASEAN Common Forestry Policy; b) Technical Co-operation; c) Forestry Institutions; d) Co-operation in Intra-ASEAN Timber Trade; and e) ASEAN Common stand on international issues on forestry.

In regard to collaboration with international partners, Malaysia has carried out

several projects through bilateral arrangements, including the following:

- Various Malaysia-ITTO projects in the field of watershed management and rehabilitation, wildlife sanctuary and genetic resource conservation of commercial tree species, and sustainable forest management;
- Various Malaysia-German Technical Co-operation Programme (GTZ) on sustainable forest management and conservation in Peninsular Malaysia, Sabah and Serawak;
- Malaysia-EC projects on training of forest workers in Sabah;
- Malaysia-Japan project on multi storied forest management, which aims to establish multi storied forest management systems for the tropical forest;
- Various Malaysia-Danish Co-operation for Environment and Development (DANCED) projects on sustainable management of peat swamp forests, preparation of an integrated management plan for Johor's Mangrove forest, as well as on extraction and processing of forest residues and small dimension logs;
- Malaysia-the Netherlands projects on the documentation of scientific information on plant resources in order develop a more comprehensive inventory of the country's forest resources, and the Forest Absorption Carbon Emission (FACE) project which is concerned with the rehabilitation of logged over areas in Sabah. Through its foundation "Keurhout", the Government had undertaken an assessment of current forest management practices in the States of Pahang, Selangor and Trengganu based on a phased approach in accordance with the MC&I for forest management certification at the Forest Management Unit (State) level; and
- In Sabah, a forest certification exercise was also conducted by an independent assessor, SGS Sdn. Bhd, where the management model in Deramogot was certified as being a "well managed forest".

Involvement and consultations with non-governmental organisations have been intensified in recent years. In the development of MC&I a member of internal consultative processes were carried out through the leadership of the National Timber Certification Council (NTCC). A national level consultation for the formulation of Malaysian Criteria, Indicators, Activities and Standards of Performance for Forest Management Certification was organised by the NTCC on 18-21 October 1999.

In 1993 the Government amended the National Forest Act of 1984. The amended Act has provisions for the Police and Armed Forces to undertake surveillance of forestry activities, especially in curbing illegal logging and timber theft. A new Protection of Wildlife Act became effective in 1992. It provides the legal backing for the conservation of national parks, wildlife and bird sanctuaries, as well as of endangered species.

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Maldives

Country data	
Total land area (thousand ha)	9,000
Total forest area 1995 (thousand ha)/ % of total land area	30/0.33
Natural forest 1995 (thousand ha)	n.a.
Total change in forest cover 1990-95 (thousand ha)/ annual change (%)	n.a.
Population total 1997 (thousand)	258.7
Rural population 1995 (%)	74.3
GNP per person 1997 in US$	837.4

Source of data: FAO - State of the World's Forest, 1999 and Asia-Pacific Forestry Sector Outlook Study

General information

The Republic of Maldives is a coral archipelago consisting of 1,190 islands. These islands are grouped into 26 coral atolls. The total landmass of the area is less than 10%. The islands are small and low-lying with an average elevation of 1.6 m above mean sea level.

The Government has established the Perspective Plan for Maldives – Vision 2005, which provides a vision and embodies the hopes and aspirations of the country for the future. Within the framework of the long-term national goals envisaged in the Perspective Plan, Three-year Plans have been formulated and implemented. The fifth three-year National Development Plan of 1997-99 is currently under implementation.

The vegetation is relatively uniform and follows a common pattern: salt-tolerant bushes and coconut palms. The soils are poor and highly porous. All islands are dominated by large stands of coconut. Although no distinct forest exists per se, the demand of timber for boats, house building, fuel wood, fencing, foods and medicines has been partly fulfilled by the bushes and coconut palms.

The population is scattered over 200 inhabited islands. The remaining islands are uninhabited, except for 87 islands that have been developed as tourist resorts. Maldives has achieved economic growth during the last decade. Since 1987, the average annual economic growth rate has exceeded 9.0% due to the global market for fish and tourism services. The agriculture sector grew at an average rate of 3.7% during 1994-96.

Shifting cultivation is still being practised in agriculture development. Land is cleared by farmers and planted with cash crops for a few years. Wood lots are also converted for cropping. Coconut trees are used in an agroforestry system, providing shelter and shade to crops and gardens.

In Maldives, all lands belong to the State. In the inhabited lands (not including backyard gardens) islanders are given communal cropland free of charge for the cultivation of annual crops.

Currently, the country is experiencing a severe shortage of forest products as a result of population pressure and unsound land use practices, as well as developments in the fishing industry and marine transport. The majority of timber demand was met from imports. About US$ 97 million of timber products were imported in 1994.

Recently, a more secure system of leasing land has been adopted. This will encourage tree planting and develop sustainable land use systems through out the country. It was reported that uninhabited islands make up the

major part of the land area of Maldives. The Government feels that it is necessary to upgrade the land tenure system of these islands.

Policy and planning

Maldives has not previously formulated a national forest programme, either under the TFAP or a Forestry Master Plan. However, in the current Government development plans, promoting and sustaining forestry development is one of the priorities.

Timber is recognised as a valuable natural resource in Maldives and its preservation and regeneration is an important element of the government policy. The Ministry of Fisheries, Agriculture and Marine Resources (MOFAMR), the institution responsible for forestry, has restricted the issuing of timber cutting permits to protect the existing vegetation. Only one or two varieties are allowed to be cut for firewood. Two new trees must be planted for each tree cut down for any purpose.

MOFAMR has successfully completed a programme to plant two million trees, mainly to support timber production and minimise the environmental impact of tree degradation, but also to improve the condition of the community lands. Trees for timber, shade and fruit trees have been planted almost all over the country. In addition, a project supported by international institutions was launched to stimulate domestic timber production through the establishment of four regional nurseries.

The forest's role in providing wood energy for domestic purposes was appreciated for daily cooking and preparing by-products from fish, etc. Although the cost of labour and increasing fuel wood prices has begun to result in a shift to kerosene and gas, in the outer islands fuel wood is still used intensively.

From the utility point of view, tree species in Maldives have been grouped into the following:

- timber commonly used for boat construction;
- timber used for house building;
- timber used for handicrafts; and
- timber used for fuel wood.

Constraints

There are no minerals available for economic exploitation. Land and fresh water are in scarce supply. There are no lakes, rivers, or streams. All islands are dependent upon fresh water lenses that can be easily depleted or contaminated unless handled with care. Most of the islands are not suitable for agriculture as the soils are porous, highly alkaline, deficient in potassium and nitrogen, and resist root penetration.

Island ecosystems are environmentally vulnerable. Encroachment and depletion can have long-lasting harmful effects that can threaten the achievement of sustainable economic and social development. Economic, socio-economic and environmental developments are seriously constrained by the continuing rapid population growth and pressure on forests, the lack of qualified manpower, the lack of space, and the poor soil conditions.

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Federated States of Micronesia

Country data	
Total land area (ha)	70,100
Total natural forest area 1990 (ha) / % of total land	35,100
Reported plantation area 1990 (ha)	81,000
Population 1994	120,000
GNP (per capita) 1992 US$	2.000

***)** Source of data**:** Government statistics

General information

Agriculture in the Federated States of Micronesia is of the subsistence type with some semi-commercial activity. An agrofores-try system is commonly applied throughout the country with fruit trees, particularly coconut, breadfruit, mango, banana, and papaya, planted alternatively with vegetable and root crops. Pigs are the most important animals raised by households for food, ceremonies, and sale. Tourism revenue is small, but contributes significantly to the economy.

Forestry is a State responsibility. State forestry activities are carried out by the Agriculture Division of the Department of Conservation and Development, except in the State of Pohnpei. At the national level, forestry is handled by the Agriculture Division of the Department of Resources and Development. After a recent reorganisation under a new administration, forestry is now merging with agriculture to form an office of Agriculture and Forestry under a new Division of Resource Management. Forestry has been able to retain all of its programmes, but in general is under-budgeted.

The States and municipalities claim the legal authority to regulate mangrove exploitation. An assessment of the mangrove resources of the island of Pohnpei has been undertaken to determine priority areas for preservation and sustained management. A mangrove management plan has also been prepared. Domestic demand for timber and wood products is met through imports. Sawn timber accounts for 50% of all timber imported.

The first aerial photographs taken in 1976 showed that 42% of Pohnpei's land was covered by undisturbed forestland. However, by November 1995, this area had been reduced to 15%, according to the aerial photography carried out at that time.

Policy and planning

A National Environmental Management Strategy was prepared under the guidance of the Presidential Task Force on Environmental Management and Sustainable Development in 1991. The National Management Strategy and Tourism Plan was completed recently. A watershed management steering committee was created. The members include interested Government institutions and representatives of the traditional chiefs.

In 1994, the Government decided to launch a Forest Policy and Strategic Planning process following the Basic Principles and Operational Guidelines of the National Forestry Action Programme. No action has been taken as yet. When the process begins, the utilisation of existing institutions should be explored, for example the watershed management steering committee. The exercise should also take into consideration the existence of the National Environmental Management Strategy and Tourism Plan. Its linkage with these exercises should be examined. The involvement of local communities right from the beginning is vital.

The planning process will be useful since long-term forestry development plans have not been made. The exercise could be a useful tool to develop a national dialogue on forestry and forestry-related issues among partners involved in forestry sector development.

In 1996, the forestry staff participated in the following training/ workshops:

- Wetland fire suppression;
- Fundamentals of research, and research thinking;
- Atoll agriculture; and
- Environmental Impact Assessment in mangrove forests.

A proposal to repeal the Pohnpei Watershed Forest Reserve and Mangrove Protection Act of 1987 (S.L. No. 1L-128-87) was under process, and would be introduced to the Pohnpei Legislature in September 1996. The main purpose for repealing the current law is to ensure that its administration is consistent with community-based management and decision making.

The Pohnpei's Watershed Management Strategy as the basis for watershed management was developed with assistance from the Asian Development Bank (ADB), and completed in February 1996. It was reviewed by the Government and the traditional leaders in March.

A Participatory Rural Appraisal (PRA) process has been carried out in 22 communities in two municipalities. The communities are developing community action plans (CAPs) for the management of their conservation areas, including watersheds, mangroves, and marine conservation systems. Part of the process is the identification and designation of community conservation officers who will be carrying out conservation responsibilities in accordance with the CAP in each community.

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When you go digging for an ounce of gold,
you have to move tons of dirt to get an ounce of gold.
But when you go digging, you don't go looking for the dirt,
you go looking for the gold.
(Shiv Khera – You can win)

Mongolia

Country data	
Total land area 1996 (thousand ha)	156,650
Total forest area 1995 (thousand ha) / % of total land	9,406/ 6.0
Natural forests 1995 (thousand ha)	9,406
Total change in forest cover 1990-95 (million ha) / annual change (%)	0
Population 1997 (millions)/Annual rate of change 1995-2000 (%)	2.6/ 2.1
Rural population 1997 (%)	38.1
GNP per person 1995 (US$)	310

Source of data: FAO - State of the World's Forest 1999

General information

Mongolia is a land locked and mountainous country with an average eleviation of 1,580 m above sea level. The highest point is Munh Hairhany Orgil at 4,653 m and the lowest is Hoh Nuuryn Depression at 520 m above sea level. Due to the distance from the sea, the climate is continental. The temperature varies not only between seasons, but also within a day. In winter, the temperature can drop to minus 50 ^{0}C. The river-system in Mongolia covers about 67,000 km. There are 4000 lakes and approximately 7,000 hot springs. The country has a large resource of underground water. In 1997, about 70% of the population was under 29 years of age and about 56.4% were living in cities.

The transformation of the country from a feudal agrarian society to a relatively modern and structurally diverse state was accomplished under a socialist regime and a system of centrally directed allocation of physical and financial resources in the last seven decades. In August 1990, the country held its first parliamentary election, during which opposition parties gained 40% of the seats in the parliament. A new Constitution was approved in 1992 and has turned Mongolia into a country of democracy with a market economy. The country is divided into 21 administrative units (aimag). Each aimag is divided into several sums (districts). A sum is comprised of several bags (the lowest rural administrative unit). The country held a new election in September 2000. A new political party gained power and a new administrative system is being formed at this moment. The change from central planning into a market economy system resulted in substantial changes in the country's economy as presented, in brief, in Table 1.

Since 1990, the economic development has been shifting from a centrally planned to a market-oriented system. The system aims at expanding the role of the private sector, diversifying the economic base, promoting exports, and strengthening the institutions. During the initial phase of implementing the system, there was rapid devaluation and inflation, increasing unemployment, and the living standard of the people was sharply lowered. In addition, the domestic production also sharply decreased. However, the industrial sector is the largest contributor to the national economy, accounting for 32 % of the Gross Domestic Product in 1993. Since 1996, the system has had a positive impact on the socio-economic development of the country.

Forest resources

All forestlands in Mongolia belong to the state. The Ministry of Nature and Environment (MNE) is responsible for the management of the forest resources.

Table 1: Progress in the economic sector development

Item	1991	1992	1993	1994	1995	1996	1997
GDP growth rate (%)	-9,2	-9.5	-3.0	2.1	6.3	2.4	3.3
Inflation (%)	54.4	321.0	183.0	66.3	53.1	53.2	17.5
Unemployment (thousand)	55.4	54.0	71.9	74.9	45.1	55.4	63.7
Imports (US$ million)	360.9	418.0	379.0	362.7	415.3	450.9	434.4
Exports (US$ million)	348.0	388.4	382.6	360.5	473.2	424.3	418.0

According to the Government's statistics of 1997, the total forest area was 17.5 million ha, or 11.2% of the total land area. The area of exploitable forests was estimated to be 5 million ha, located mainly in the northern parts of the country, forming a transition zone between Siberian forests and the Central Asian steppe zones. Significant areas of arid forests and shrub lands for timber harvesting are found in the southern and south-western parts of the country. In the forest-steppe zone, the environmental protection functions are more important than the economic functions; exploitation is limited to meet the local needs for fuel wood.

The forests are very slow growing, estimated at about 1.5-2.0 m3/ha per year. The survival rate of plantations is very low, approximately between 50-60%. Almost all rivers, including the inflow to Lake Baikal, the largest fresh water lake in the world, flow from forested watersheds of the northern and central parts of the country. In addition to timber production, the forests function as wind breaks against desertification and help stabilise soil productivity in the agricultural lands.

Forest and steppe fires have been the main natural disaster in Mongolia. Due to the warm weather and high wind velocity, the fires spread out very fast over vast areas. In spring 1996, about 2,364 thousand ha of forests were destroyed by fires.

In the past, timber production was around 2.0 million m3. But by 1991, it had dropped to 800 thousand m3/year. The Soviet Union was the main trading partner. Log exports were banned in 1995, and since then, the export has shifted to China and other Asian countries in the form of processed products.

"Gers" are traditional Mongolian wooden houses constructed of sawn-wood and wood-based panels. It is estimated that half of the Mongolian population live in Gers. Thus, the Gers industry has been an important sector. According to a recent assessment, eco-tourism also has a great potential for promotion in Mongolia.

The Ministry of Nature and Environment (MNE) is the responsible institution in managing the forest resources, while the Ministry of Agriculture and Industry is responsible for co-ordinating the forest industries. The privatisation of the forestry sector is still underway and will be in line with the Privatisation Programme of 1996-2000. Finding funds to upgrade the equipment is among the main issues in this Progamme.

The range of geographical zones, including highland, steppe, and desert, accounts for the diversity of Mongolia's flora and flora. The endangered and threatened flora and fauna have been listed in the Mongolian Red Book. Some endangered wildlife are the red dog, wild horse (Takhi or the Przhevalski horse), Mongolian saiga, and wild camel. Some species listed as threatened include snow leopard, reindeer, and gazelle. The total number of animal species listed in the Red Book are divided into the following categories: 1) endangered species: 7 mammals, 6 birds, 2 amphibians, 4 reptiles, and 2 fishes; and 2) as threatened species: 16 mammals and 13 birds.

The Government has established 28 nature reserves, covering an area of approximately

6.8% of the total land area. In order to sustain the existing range of wildlife species and ecosystems, the MNE has set a target of 30% of the total land area to be under protected areas, including national parks.

About 50,000 ha of tree plantations have been developed during the past 20 years. Forest fires and insects cause severe loss to forests of about 200,000 ha and 80,000 ha annually respectively. Natural regeneration has been taken place in the logged over and burned over areas. The main causes of deforestation and forest degradation are fires, overgrazing, mining, improper forest harvesting, illegal collection of timber for construction and fuel, pest and diseases.

Policy, planning and regulations

In 1997, the Parliament passed the National Policy on Environmental Protection, in which higher priority on forestry is to be given to the following aspects: forest resource development, improvement of forest inventory methodology, institutional strengthening for forest protection from fires and diseases, high survival rate of seedlings, and improvement of wood harvesting and wood processing technologies.

During 1995-96, Parliament passed a package of laws on forestry, including Forest Law, Law on Forest Fire Protection, and Law on Forest Resource Fee. However, these laws will be reviewed accordingly in line with the new National Forest Policy.

The main salient features of the Forest Law are:

1. Emphasis has been given to protection of forest resources and the environment;
2. The clear-cutting system has been banned;
3. The logging quota has been decentralised to the provinces;
4. Logging companies have to plant 3-5 seedlings for each tree cut;
5. The royalties are calculated based on the market price.

The Forest Law adopted in 1995 stipulates that the State budget for protection and restoration should be at least 70% of fees collected during the same year. The "National Forestry Statement", which was ratified in 1998, stated that 6,500 ha of forests land are planned to be reforested in 2000 and 40,000 ha for the period 2000-2005. The reforestation plan for aimag and capital, which will be implemented by citizens, people's groups and village organisations, shall be approved and controlled by the local government. The constraints faced by the Government in reforestation activities include the following: low capacity of nurseries and seed orchards, inadequate funds and facilities for plantation activities.

The Mongolian Law on Forest Steppe Fire Protection was adopted by the Parliament in 1996. The Principles for Assessment of Forest Steppe Fires Risk and the Rules for Mobilisation of Resources during Forest Steppe Fires were adopted in 1997. It was reported that approximately 6.0 million ha of forests were damaged by fires during 1995-1999.

In 1999, an export tax on round wood and sawn wood equivalent to US 150 per m3 was adopted by the Parliament. This law was designed to ban the export of raw and semi-processed wood with the main objective to promote domestic processing and conserve the forests.

In regard to ownership, the Mongolian Law on Land and Forests clearly spelled out that forests are the property of the State. However, the Mongolian Government Resolution No. 125 of 22 June 1998 stated that economic entities or organisations could be given a licence or contract to manage certain forest areas, in certain period and conditions. The duration of the licence/contract can be for 15 to 60 years with an extension of a maximum of 40 years. It was reported that since 1998 the Government had issued contracts for 6 communities covering an area of 37,000 ha of 20-40 years duration and contracts to some

private logging companies covering an area of 11,800 of 60 years duration.

Harvesting and processing

At the end of 1987, all issues of forest management, protection and rehabilitation were handed over to the Ministry of Nature and Environment. Issues of forest harvesting and wood processing were handed over to the Ministry of Industry and Trade. The Forest Management Centre of the Ministry of Nature and Environment conducts forest surveys and inventories to determine forest resources status in different forest zones, produce forest maps, and craft forest management plans.

Under the centrally planned system, most of the timber industries were state-owned or joint ventures with Russia, Rumania, and Poland. Currently, timber industries are utilising less than 30% of their production capacity. At the beginning of the economic reform, the forest industry was left aside. Attention was given to more promising industrial sectors. Later, the policy reform included the forestry industries, including the privatisation of the state-owned enterprises and many reforms in smaller production units. Some of these units and state-owned enterprises have been reorganised into several joint stock enterprises. According to the 1998 statistics, the number of wood working companies totalled 60 units, mostly sawmills and small scale joinery or furniture factories.

During the centrally planned economy system, the average timber production was 2 million m3 annually. It was 0.8 million m3 during the new system. The timber harvesting system followed the Russian methods and technology i.e. clear cutting and tree length logging. Under the economic reform, selective felling has been in used in larch and pine forests.

Nowadays, there are 22 forestry enterprises dealing with forest management, rehabilitation, maintenance and protection, nine of which are owned by the Government, and the rest have been privatised.

Action plan for the 21st century (MAP-21)

MAP-21 is the country's national agenda on sustainable development for the 21st century. It covers activities at the national and provincial (Aimag) levels. It provides an overall framework for sustainable development activities based on the country's natural resources and ecosystems. The MAP-21 document was approved by the Government in November 1995, and formulated with assistance from UNDP.

MAP 21 is structured into four main subjects, including sustainable social development, sustainable economic development, proper use of natural resources and protection of nature and the environment, and means for implementing Mongolia's System of sustainable development. Action for protection and careful use of forest resources includes the following: educating people about the importance of protecting Mongolia's forest reserves, strengthening management and organisation, dealing with the financial and economic factors that lead to irresponsible forest exploitation, developing better human resources in forest management, achieving greater scientific understanding and conducting forest related research, creating information and promotion systems, improving use of forest reserves and reforestation, establishing a programme for extensive afforestation of areas without forest reserves, assistance in evaluating forest raw materials and the proper use of reserves, creating conditions for the development of forest tourism, and strengthening the various systems of forest activities, planning, evaluation and control.

In addition, several actions have been identified for combating desertification and protecting biodiversity, biotechnology development, policies, and also laws and programmes related to the use and conservation of water resources.

Other Action Plans such as the National Environmental Action Plan (NEAP), Biodiversity Action Plan (BAP), and the National Plan of Action to Combat Desertification (NPACD) are complementary to and integral parts of MAP-21.

National Environmental Action Plan (NEAP)

Mongolia initiated a National Environmental Action Plan (NEAP) in 1993. The NEAP covers actions to the year 2010. The Plan is composed of three parts as follows:

1. Principal Environmental Issues, which has four sub-parts: environmental protection, management of natural resources, conservation, and natural disaster mitigation;
2. Social and Economic Dimensions; and
3. Other Mechanisms and Responses.

Forestry related issues raised in the NEAP include:

1. Reversing land degradation is one of the nation's highest priority environmental actions, including measures to control and reverse overgrazing near settled areas.
2. The National Plan of Action to Combat Desertification was drafted with support from UNEP.
3. The wildlife population is declining due to illegal hunting, wildlife trade, and destruction of habitats due to deforestation, overgrazing, and urbanisation.
4. Eco-tourism offers a potential contribution to the economy; however, the facilities, particularly hotels and roads, are not well developed
5. Institutions, including regulations, co-ordination, and human resources, are weak.

Biodiversity Conservation Action Plan (BAP)

Biodiversity conservation is one of the priority issues in Mongolia. The BAP exercise was initiated in 1993. The detailed planning exercise including the preparation of the action plan, was undertaken in August 1995. The objectives of the BAP are to protect biodiversity and to restore damaged areas. The specific objectives of the BAP are as follows:

1. Establish a complete protected area system representing all ecosystems and to protect endangered species. This may require joint actions with the Russian Federation and the People's Republic of China.
2. Establish effective population control measures to limit human impact on the nation's biodiversity;
3. Implement an effective environmental impact assessment programme.
4. Establish a research programme to improve knowledge of biodiversity.
5. Establish a nation-wide information and monitoring system for biodiversity conservation.
6. Establish national education and training programmes for biodiversity conservation.
7. Establish a public information programme to improve people's knowledge on biodiversity.
8. Control pollution of air, water, and soil.
9. Regulate hunting and fishing.
10. Prevent pasture deterioration from over grazing.
11. Establish effective land-use planning control.
12. Draft regulations to protect biodiversity from the negative impact of mining.
13. Support tourism while developing sensible regulations to protect biodiversity.
14. Ensure that agriculture and forestry are carried out in compatible ways with biodiversity conservation.
15. Identify and restore damaged lands.
16. Develop renewable, clean energy sources, and ensure environmentally safe transport of fossil fuels.
17. Improve ex-situ management for species conservation and genetic resources.

National Plan of Action to Combat Desertification (NPACD)

As stated in the Convention on Desertification, the Rio declaration on Environment and Development, Agenda 21, June 1992, desertification is defined as: " land degradation in arid, semi-arid, and dry sub-humid areas resulting from various factors, including climatic variation and human activities". Under the above criteria, 90% of lands in Mongolia, which have been used for range lands for livestock i.e. sheep, goats, cattle, horses, and camels, are vulnerable to desertification.

It has been assessed that the major causes of desertification in Mongolia are:

1. The climatological factor. Scientists claim that drought is a cyclical phenomenon, but its duration may have become longer and more severe. Strong winds are also one of the major causes of desertification.
2. The anthropogenic factor. Several factors have been identified, including overgrazing and other human activities associated with livestock grazing; intentional burning; and rodent and insect attacks.

Initially, the NPACD was prepared in 1991 by Mongolian and Russian specialists with assistance from UNEP, ESCAP, and the Russian Centre for International Projects (CIP). In 1994, the draft was revised. A national workshop on desertification was organised in August 1995 to review the revised draft document. The final NPACD draft was approved by the Government in July 1996. The development objective of the NPACD is consistent with the development objectives of the MAP 21 document i.e. to ensure that a process of national development is established which fully incorporates the principles of environmental sustainability and meets the basic human needs. The immediate-term goal of the NPACD is to provide the country with the institutional capability to effectively address problems with the sustained use of natural resources caused by the natural and anthropogenic forces associated with desertification and land degradation.

At the National Workshop on Combating Desertification held in Mongolia on August 1995, the NPACD prioritised programmes were identified as follows:

1. Institutional support for awareness raising, co-ordination and monitoring of the NPACD;
2. Creation of an enabling environment for sustainable management of land resources;
3. Support to applied and adoptive research and its dissemination;
4. Assessment and monitoring of drought and desertification/ land degradation;
5. Promotion of sustainable pastoral land use system;
6. Integrated management and rehabilitation of crop lands; and
7. Sustainable management of forest resources.

National forest programmes (NFP)

Discussions concerning the possibility of formulating a comprehensive strategic plan for forestry toward sustainable forest development began in 1994. However, due to unavoidable circumstances, mainly financial and expertise, the exercise could not be undertaken. In mid 1997, the Government submitted an official request to FAO for support to launch a national forest programme. An FAO mission to clarify the programme's approach and assist the Government to formulate a project proposal for possible support from donors was fielded in May-June 1998. A draft project proposal to launch the NFP exercise was made available. The mission also provided assistance to finalise the draft National Forest Policy.

For the smooth NFP preparation, FAO assisted the Government in organising a training workshop to discuss NFP strategic planning concept and modalities, held in Ulanbaatar in June-July 2000. As the follow up to the workshop, UNDP agreed to provide funds, under the SPPD scheme, to support the Government to strengthen the institution, including possible collaboration with the neighbouring countries for transboundary forest conservation. UNDP also would be assisting the Government to draft a national code for forest harvesting practice, and develop community boreal forestry.

Research

Research activities are implemented in research institutes such as Institute of Geocology, Institute of Biology and Institute of Light Industry and Technology of Mongolian Technical University in Charge of reforestation, forest protection from forest

fire and insects, forest silviculture, forest management, forest inventory and improvement of wood industry technology and furniture technology development.

Support from partners

Nowadays, the bilateral donors, international agencies, and other institutions active in forestry development in Mongolia are: UNEP, UNDP, JICA, GTZ, DANIDA, DGIS-the Netherlands, IDRC, WWF, ADB, University of Susse of UK, and USAID.

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Any of us will put out more and better ideas
if our efforts are fully appreciated
(Alexander F. Osbom)

If you argue and rankle and contradict, you may achieve a victory sometimes;
but it will be an empty victory
because you will never get your opponent's good will.
(Ben Franklin, quoted from How to Win Friend & Influence People – Dale Carnegie)

Myanmar

Country data	
Total land area 1996 (thousand ha)	65,755
Total forest area 1995 (thousand ha)/ % of total land	27.151/ 41.3
Natural forests 1995 (thousand ha)	26,875
Total change in forest cover 1990-95 (thousand ha)/ annual change (%)	-1,937/ -1.4
Population 1997 (millions)/Annual Growth Rate 1995-2000 (%)	46.8/ 1.8
Rural population 1997 (%)	73.4

Source of data: FAO - State of the World's Forest 1999

General information

Myanmar is rich in culture, traditions and natural resources. The country is endowed with substantial arable land, an expanse of unexploited marine life, potential extensive tracks of mineral resources (tin, tungsten, lead, zinc, copper, silver, and gems) and commercially viable gas deposits. In addition, the country is the world's prime supplier of natural teak (Tectona grandis), which is one of the pillars of the country's economy and will remain so, if managed soundly, for years to come. The revenue generated from teak constitutes the largest portion of the forestry sector's earning. The plentiful rivers and streamlets will be targeted for immense development of irrigation systems, industry, and hydropower.

The rural population is heavily dependent on forest resources for fuel, food and timber. Degraded forests account for 7.5% of the total forest area. The underlying causes of forest degradation include: socio-economic problems, scarcity of land in densely populated areas, illegal agriculture expansion, shifting cultivation, low agricultural output, improper land use, illegal fuel wood extraction, and improper practice of forest management.

Export earnings by the sector was 21.63% of the total exports in 1994/95, 19.25% in 1995/96, 18.32% in 1996/97, and 13.91% in 1997/98. The sector failed to sustain the 1994/95-export level earning due to scaling down of the annual allowable cut of teak from 609.000 m3 to 409,060 m3 to ensure its sustainable production. However, production of non-teak hardwoods has been gradually increased.

Myanmar still remains highly reliant on agriculture. In its economic policies, agriculture constitutes the pillar and base for the development in other sectors. Expansion of agriculture and irrigation has had direct and strong effects on the forestry sector. Timber concessions were stopped by the end of 1993. To promote the market economy, the Government formed the Privatisation Commission on 9 January 1995, to oversee and ensure the successful implementation of the privatisation process.

In line with reorienting the policy toward an appropriate market-oriented economy system, the Government adopted the following four objectives:

- Development of agriculture as the base and all-round development of other sectors of the economy;
- Proper evolution of the market-oriented economic system;
- Development of the economy, inviting participation in terms of technical know-how and investment from sources inside the country and abroad; and
- The initiative to shape the national economy must be kept in the hands of the State and the nation's people.

According to the official statistics, the total area of plantations was 621,318 ha in 1997, of which 54% are commercial and industrial wood species, 29% local supply plantations, while the rest are watershed protected species. It was increased to 694,192 ha, or an increase of 72,874 ha in two years. The annual planting programme is now fixed at around 40,500 ha per year, of which teak plantation's comprise 8,100 ha on a 40-year rotation. Special emphasis is being given to the greening programme in the dry zone. The objectives are to reforest and prevent desertification and to meet the critical fuel wood needs of the rural people. The annual planting area was around 6,900 ha in 1995-97 and increased to 14,100 ha in 1998.

Initial adoption of a market economy was announced in September 1988. As a result, many private timber companies became involved in timber industries. However, for teak timber, the Myanmar Timber Enterprise (MTE) has a monopoly in its harvesting, processing, and export. Common problems for private companies are shortages of power supply, spare parts, and diesel oil.

The country's import of forestry products is almost nil, except for a small quantity of paper products and some infrastructure inputs. The export earnings were 25.479% of the national total in 1995-96, and teak and other hardwood timber are the most important products. Therefore, forest management is focused on the sustainable management of natural teak-bearing forest.

The Forest Department is the main arm of the Government for forestry sector policy and programme implementation. Lately, the Forestry Department has been re-structured with the addition of five new directorates, i.e. the Watershed Conservation and Management Directorate, the Extension Directorate, the Inspection Directorate, the Directorate of Training and Research Development, and the Directorate of Zoological Gardens. In June 1997, the Dry Zone Greening Department was newly created to speed up greening and environmental restoration activities in the dry zone.

Land use, policy and planning

In 1999, The Forest Department conducted a forest resources assessment using a remote sensing and geographical information system. It revealed that the forest cover was 52.3%. The area under closed forests had decreased from 43.34% in 1989 to 37.4% in 1999.

Improved access to the forest areas as a result of development schemes makes the control of trafficking of high-valued timber and forest products more difficult. External factors such as population growth, increased need for food, shifting cultivation, illegal cutting and development activities constitute the main causes of forest degradation and depletion.

The status of the Permanent Forest Estate in 1999 is shown in Table 1. According to the Forest Policy, 1995, it is mandated to increase the area of Reserved Forests and Protected Public Forests up to 30% and the area under the Protected Area System up to 5% of the total area, scheduled to be achieved by the year 2010.

Table 1: Permanent forest estate in 1999/2000

Category	Area (mill ha)	% total area
RF & PPF	12,553	18.55
PAS	2,509	3,72
Total PFE	15,063	22.27

Note: RF= Reserved Forest;
PPF= Protected Public Forests
PAS= Protected Areas System

In 1996, the Forest Department launched a special operation to update and reformulate the old Working Plans in line with the modern sustainable forest management (SFM) concept. The new district forest management plans place the emphasis on all forest products and services, including non-wood forest products, biodiversity conservation and the socio-economic well-being of the local people. The plans are based on the district level. The

designation of 62 districts throughout the country has been completed.

The preliminary work of launching the National Forestry Action Programme (NFAP) started in mid-March 1995, by formulating an Issues Paper as the basis for the NFAP exercise. A proposal to designate the Ministry of Forestry as the National Lead Institution and for the establishment of the Steering Committee was approved by the Cabinet.

The final issues paper was adopted by the government in September 1995. The main aim was to explore possible funding support of the remaining NFAP process. However, no response has been received to date. In October 1995, the Forest Policy was promulgated in which the conservation aspects of forest resources and biodiversity are highlighted. It is stipulated that the area of reserved forests has to be increased to 30% from the present status of 14.8%, and the Protected Area System (PAS) to 5% from 1.72% in order to permanently dedicate enough land to forestry. Two important laws were promulgated, i.e. the Forest Law in 1992 and the Protection of Wildlife, Wild Plants and Natural Areas Law in 1994.

At the beginning of 1998, a "Co-ordination and Monitoring Committee" was formed to facilitate the National Forest Programme (NFP) exercise. The NFP was titled "National Forest Master Plan" and it was composed of 19 chapters. At present, the drafts of all chapters are completed and the NFP document will be finalised soon.

The Dry Zone Greening Department was established in 1997 to undertake environmental conservation and greening activities in the central dry zone of Myanmar. The integrated plan for the period 2001/02 to 2030/31 has been prepared.

Legislation on Forestry and Wildlife Conservation has turned away from the old concept of protecting only animals. It has now adopted a holistic approach by conserving habitats, which is pivotal to the conservation of wildlife. The new Forest Law emphasises the importance of people's awareness and participation in the conservation and sustainable utilisation of forest resources, as well as the collection and updating of the resource information, planning, continuous monitoring of all forest operations, and of ecological balance and environmental stability.

NGOs such as Farmer's and Women's Income Generation Groups (FIGG) are being formed. This initiative aims at raising off-farm incomes and helping sustainable forest management with positive effects on the social well-being.

In order to promote and facilitate community participation in managing the forests, the "Community Forestry Instructions" were issued in late 1995, focusing on the management of forests by rural communities through the protection of natural vegetation, establishment of forest nurseries, and forest plantations so as to enable them to fulfil their own basic needs for fuel wood and small timber. It also focuses on the flow of benefits to the communities participating in forest management activities.

Professional forestry education formerly under the responsibility of the Ministry of Education has been transferred to the Forestry Institute, under the Ministry of Forestry. Sub-professional level training is given at the Myanmar Naing-Ngan Forest School in Pyin-Oo-Lwin, while in-service training, (refresher courses, training on basic principles, awareness in forest protection and agroforestry for rural communities, etc.), are conducted at the Central Forestry Development Training Centre.

Criteria and indicators for SFM (C&I for SFM)

The development of C&I for SFM at national and forest management unit (FMU) levels was completed in October 1999. The C&I for SFM contains 7 criteria at both national and FMU levels, 78 indicators and 257 required activities at the national level, and 73 indicators and 217 activities at the FMU level.

At present, the Forest Department will test the C&I in the field. Revision and improvements

of the C&I will be made afterwards as appropriate. In addition, the Forest Department has been undertaking an assessment of the application of the C&I in a FMU.

Model forest

Myanmar has established two model forests, namely Oktwin and Pauk Khaung Model Forests in Bago Yoma Region. Natural teak forests grow extensively in this Region. Japan International Forestry Promotion and Co-operation Centre (JIFPRO) and JOFCA, both NGOs, have been co-operating with the Forestry Department in managing these model forests.

Myanmar is a member of the Regional Project entitled "Implementation of the Model Forest Approach for SFM in the Asia-Pacific Region. The Philippines, China, and Thailand are also members of this Regional Project.

Timber certification

The Timber Certification Committee (TCC) was formed in August 1998. A preliminary check list for forest management certification was formulated in late 1999. Two workshops on C&I and timber certification were organised by the Forestry Department and JOFCA in 1999 and 2000.

The TCC started to establish links with other timber certification bodies on a bilateral basis in mid 1998. The TCC seeks assistance and co-operation from the National Timber Certification Council (MTCC) of Malaysia and the Ecolabelling Institute (LEI) of Indonesia.

Forest harvesting and utilisation

The Forestry Department regulates the annual allowable cuts (AACs) for teak and other hardwoods. To update the AACs, the Forestry Department conducts a national forest inventory every year. The total AAC for the year 2000 is presented in Table 2.

Table 2: AAC for teak and other hardwoods in 2000

Species	No. of trees	m3
teak	124,213	409,062
OH	1,795,424	3,236,071

Note: OH= other hardwoods

Elephant skidding is extensively used in forestry operations. The country has about 6,000 domestic elephants and about 5,000 in the wild. In some areas, where the slope of the terrain is low, water buffaloes are also used for skidding. The Myanmar Timber Enterprise (MTE) has been using about 600 buffaloes for skidding under contract.

The obvious benefits of using animals for skidding are the low impacts on the soil surface. The Myanmar Selective System will remain as the prime management system with animal logging being practised.

There are 96 state-owned sawmills, of which 8 are for export products. The private sector owns 459 sawmills of small to medium capacity and 1,224 re-cutting mills. There are 6 plywood factories, 4 managed by MTE, one under a joint venture between MTE, Daewoo and Sam Won, and a private company owns one factory

The local people and the private sector have carried out harvesting of non-wood forest products (NWFPs), following the regulations and procedures prescribed by the Forest Department. Among the important NWFPs are bamboo, cane, cutch, bark, plant fibre, nipa palm, and honey.

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Table 3: Production and export of teak and other hardwoods

Fiscal year	Production (Hoppus ton)		Export of logs (Hoppus ton)	
	Teak	Other hard woods	Teak	Other hard woods
1995/96	230,093	623,054	97,312	75,872
1996/97	203,124	732,331	118,549	108,577
1997/98	238,085	818,938	123,070	228,836

Five-year plan

Currently, the country is in the second year of its Five Year Short-term Plan (1996/97 - 2000/01). This Five Year Plan is a follow-up to the earlier Short-term Four Year Plan (1992/92 - 1995/96). The priorities of the current short-term plan are: a) agriculture, b) livestock and fishery, c) production of crude oil, national gas, gems and jades, d) transportation and energy, e) value added and agro-based industries, and f) export of goods and services.

The salient features of the plan for the forestry sector can construed as to:

- systematically extend and conserve reserved forest areas;
- decrease teak production from 2.6 to 2.5 lakh cu.ton;
- increase hardwood production from 11.1 to 14.4 lakh cu.ton;
- increase charcoal production from 2.8 to 3.6 lakh cu.ton;
- increase bamboo production from 953.4 to 1087.6 million pieces;
- increase the total value of forest products exports from 1,131 million kyats in 1995-96 to 1,344 million kyats by 2000-01;
- place emphasis on wood lots plantation and conservation of mangroves and watersheds;
- explore fuel wood resources alternatives;
- promote forest-based eco-tourism; and
- promote and support the production of value-added products.

Institutional

In regard to forestry research, the Myanmar Academy for Agriculture, Forestry, Livestock and Fishery organised a research conference in April 2000, in which 12 forestry research papers were presented. The main problems facing forestry research at the Forestry Research Institute are as follows:

- There have been a large number of disconnected projects; thus a programme approach needs to be initiated.
- The lack of qualified researchers; thus training abroad needs to be intensified.
- Inadequate financial resources.

The issuance of Community Forestry Instructions in 1995 was a major break through in the history of Myanmar forestry. It aims at decentralisation in forest management, addressing the basic needs of the local people through participatory approach and environmental conservation.

A forestry extension division was established within the Forestry Department in 1995. A "Forest Bulletin" has been published every two months since 1998. The public media, such as radio, television, and exhibition have also been used for extension purposes.

There are four state-education and training institutions for forestry in the country as follows:

- Institute of Forestry at Yesin;
- Myanmar Forest Scholl at Pyin Oo Lwin;
- Central Forestry Development Training Centre at Hmawbi; and
- MTE training schools 1,2, and 3.

Collaboration with partners

In the field of forestry, the Myanmar Government is the member of the following on-going regional programmes/projects:

- GCP/RAS/154/NET: Regional Wood Energy Development Programme for Asia;
- GCP/RAS/177/JPN: Regional Project on Assistance for the Implementation of the

Model Forest Approach for Sustainable Forest Management in the Asia-Pacific Region;

- GCP/RAS/163/NET: Forestry Research Support Programme for Asia and Pacific (FORSPA); and
- GCP/RAS/173/EC: Information and Analysis for Sustainable Forest Management: Linking National and International Efforts in South Asia and South East Asia.

The Forest Department also gets assistance from UNDP and FAO in the form of Human Development Initiatives Projects. Moreover, the Myanmar Government was a member of two recently-completed regional projects. The salient important results of support from these two projects on forestry development in Myanmar were as follows:

- GCP/RAS/142/JPN: Strengthening Re-afforestation Programmes in Asia (STRAP)
  A national workshop was held in November-December 1995. Four zonal working groups on mangrove, teak, hilly, and dry zones were formed to deliberate and make recommendations on policy, problems and constraints, people's participation, technical matters, and suggested problem resolution on re-afforestation programmes.
- GCP/RAS/137/JPN: Forestry Planning and Policy Assistance in Asia and the Pacific Region
  This project assisted the Government in the formulation of a National Forest Policy, 1995.

As a follow up to the recommendation made at the 17th APFC meeting held in Yogyakarta, Indonesia, February 1998, the Government crafted the National Code of Forest Harvesting Practices. FAO provided assistance to facilitate the formulation of the Code. The document was printed in early 2000.

Myanmar is the Headquarters of the Asia-Pacific Regional TEAKNET. FAO Regional Projects were instrumental in the formation of the TEAKNET. The objective of the TEAKNET is to strengthen interaction among all those concerned with the conservation and sustainable management of teak-bearing forests and plantations through sharing of information and promoting collaborative efforts to deal with common problems. The aims of TEAKNET are to:

- facilitate the exchange of technology and information on tree improvement, silviculture, management, harvesting, processing, and trade of teak;
- assist in the exchange of genetic material and plant, wood samples, and to standardise trials and methods; and
- promote collaborative studies on critical areas that are of common interest to member countries or institutes.

The Second TEAKNET Steering Committee Meeting was held in Chiang Mai, Thailand, 14-15 December 1997. The need for information about teak was emphasised by the members from the private sector. The meeting discussed issues on co-ordination with other teak related groups e.g. Teak 2000, APAFRI, etc. The venue of the Third Regional Seminar on Teak will be held in Indonesia.

With regard to human resource development, Myanmar has had the opportunity to participate in several seminars, workshops, training, and study tours.

Following the establishment of the Community Forestry Institutions, about 15,000 ha community-owned forest plantations had been established throughout the country by 1999. A nation wide tree-planting programme is implemented annually; school children, local communities, and NGOs take part in this programme; and about 15 million tree seedlings are planted every year.

The Forestry Department and UNDP/FAO are implementing three projects as follows:

a) Environmentally sustainable food security and micro-income opportunities in the dry zone , Phase III – MYA/99/006;

b) Environmentally sustainable food security and micro income opportunities in critical watersheds of Shan State -MYA/99/007;
c) Environmentally sustainable food security and micro income opportunity in the Ayeyarwady (mangrove) delta, Phase III -. MYA/96/008.

These projects are designed to increase food production and income generation for the rural poor through environmental conservation and management.

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Rudeness is the weak man's imitation of strength
(Eric Hoffer)

Politeness and courtesy are signs of being cultured
(Shiv Khera – You can win)

Nepal

Country data	
Total land area 1996 (thousand ha)	14,720
Total forest area 1999(thousand ha) / % of total land area *)	4,270 / 29
Natural forest 1999 (thousand ha)	4,270
Total change in forest cover 1990-95 (thousand ha)/ annual change (%)	-274/ -1.1
Population total 1997 (million)/ Annual rate of change 1995-2000 (%)	22.6/ 2.5
Rural population in 1977	89.1
GNP per person 1995 in US$	200

Source of data: FAO - State of the World's Forest 1999
*) – Government Inventory Report, 1999

General information

Nepal is a relatively small and landlocked country. Nepal is distinctive for its rectangular shape and being the location of Mount Everest- the highest peak in the world. More than 80% of its land is covered by rugged hills and mountainous terrain, with a narrow belt of flat land in the southern part of the country known as the Terai. Because of its varied topography and elevation, it possesses a wide diversity of geo-ecological conditions. Precipitation varies from one place to another with an average that ranges from 225 to 4,500 mm. The vegetation ranges from tropical hardwood forests in the Terai to tundra vegetation in the North.

The economy is predominantly agrarian. Agriculture provides a livelihood to over 90% of the population. About two-thirds of the households in Nepal own less than 1 ha of cultivated land. About 21% of the total land area of the country is under cultivation. Decentralisation is a basic policy of the Government development administration. The objective is to mobilise all local resources for development.

So far, no commercial deposits of oil, coal, or gas have been found. Thus, fuel wood from forests as well as from the private lands is the major source of energy for domestic consumption. The fuelwood comes from forests, shrub lands, and lands adjacent to farms in the form of agriculture residue. According to Government statistics, it was estimated that 80% of fuel wood for domestic consumption is obtained from forests, with the rest coming from the private plantations. With a view to reduce the pressure on forests, the government has launched plans and programmes to develop alternative sources of energy such as biogas, turbines, solar, wind, and hydro-power energy. Some reports indicated that almost 90% of the people of Nepal are estimated to depend on forest resources for their livelihoods. Forest resources are critical to sustaining farming system that provide fodder, fertiliser, provision of energy supplies, building materials, medicinal plants, other income earning opportunities, and indirect benefits such as soil and conservation and eco-tourism.

Forests have been deforested and degraded for the last 50 years or so. Officially, it has been reported that the forest area has been decreased at an annual rate of 1.3% in the Terai and 2.3% in the hills from 1978/9 to 1990/91. For the whole country, from 1978/79 to 1994, forest area has decreased an annual rate of 1.7%. As forests and shrubs together decreased at an annual rate of 0.5%. The major causes are over-cutting for fuel wood and heavy harvesting for fodder. Fodder from forestland provides more than 40% of livestock nutrition. In the Terai,

the cause of forest degradation is the illicit felling of timber for smuggling across the border. The annual planting by the government and community was 5,260 ha between 1992-96. Reliable figures for private planting are not available.

The major non-wood forest products (NWFP) are medicinal and aromatic plants, lokta paper, pine resin and sabai grass. The collection, trade, and processing of NWFPs have contributed substantially to the socio-economic development of the country. However, this contribution has suffered as a result of diminishing resources.

The protected areas play an important role in the tourism industry as a recreation destination. They are popular for trekking, mountain activities, and wildlife watching, particularly in the Terai. There are five categories of protected areas:

- National Parks are areas set aside for the conservation, management, and utilisation of flora and fauna together with the natural environment;
- Strict Nature Reserves are areas of ecological significance set aside for scientific study;
- Wildlife reserves are areas set aside for the conservation of animals and bird resources and their habitats;
- Hunting Reserves are areas set aside for the management of animal and bird resources for hunting purposes;
- Conservation areas are areas managed for the sustainable development of human and natural resources.

At the moment, 2,670 thousand ha, or 18.14% of the total land area, have been selected as protected areas consisting of eight National Parks, four Wildlife Reserves, one Hunting Reserve, and two Conservation Areas.

Forest resources

Forest is the main natural resource of Nepal. Due to the wide range of climatic and topographic conditions across the country, almost every known forest type, except tropical forest, is available in Nepal. In the natural forests, hardwood species dominate the stock with 59%; another 24% are mixed, and 17% are conifer species. Details information concerning forest resources in Nepal is presented in the FAO Home Page: www.fao.org (click forestry, subject, forest resource assessment, and publications).

The Government has enacted and implemented the Forest Act, 1993 and the Forest Regulation, 1995. According to the Act, the National Forests have been classified into five categories i.e. production forest, community forests, leasehold forests, protective forests, and religious forests.

About 69% of the country's energy needs come from forest for mainly cooking and heating. Tree leaves are equally important to feed the domestic animals. Leaf litter has significant value for animal bedding and compost preparation. According to an overview of supply and demand of fuel wood and timber made by the Master Plan for the Forestry Sector, the demand has been significantly above the supply. However, people are collecting timber and fuel wood from several sources, including government managed forests, community forests and the private lands. The supply and demand situation of fuel wood and timber is presented in Table 1.

Table 1. Demand and supply for timber and fuel wood

Fiscal year	Timber (m3)		Fuel wood (ton)	
	Demand	Supply	Demand	Supply
1993/94	1,156,063	28,400	10,029,370	100,038
1994/95	1,179,362	45,438	10,231,497	156,636
1995/96	1,204,880	48,575	10,452,875	29,426
1996/97	1,229,288	54,246	10,664,627	52,356
1997/98	1,254,806	39,383	10,886,005	22,631
1998/99	1,281,433	44,918	11,117,008	20,895

Master Plan for the Forestry Sector (MPFS)

In 1984, national authorities and foreign and international donors met in order to

initiate planning of the MPFS. Its objective was to activate forestry operations within clearly defined development programmes. The MPFS final document was available in early 1988 and the International Round Table meeting was organised in May 1988. The national lead institution was the Department of Forest, Ministry of Forests and Soil Conservation. The overall forest policy strategy is to improve the management of the country's forest resources, with a sustainable balance between people's needs, the production systems, and the environment.

The plan has four long-term objectives:

- to meet people's basic needs for fuel wood, timber, fodder, and other forest products on a sustainable basis and to contribute to food production through effective interaction between forestry and farming practices;
- to protect the land against degradation by soil erosion, floods, landslides, desertification, and other effects of ecological imbalance;
- to conserve the ecosystem and genetic resources; and
- to contribute to the growth of local and national economies by managing forest resources, forest-based industries, and by creating opportunities for income generation and employment.

The medium-term objectives of the plan are to:

- promote people's participation in forest resource development, management, and conservation;
- develop the legal framework needed to enhance the contribution of individuals, communities, and institutions for forest resource development, management, and conservation;
- strengthen the organisational framework and develop the institutions of the forestry sector to enable them to carry out their mission.

In order to meet long- and medium-term objectives, the MPFS has formulated six primary and six supportive programmes as follows:

1) Primary Forest Development Programmes
- Community and private forestry;
- National and leasehold forestry;
- Wood based industries;
- Medicinal and aromatic plants;
- Soil conservation and watershed management;
- Conservation of ecosystems and genetic resources;

2) Supportive Development Programmes
- Policy and legal reform;
- Institutional reform;
- Human resources development;
- Research and extension;
- Forest resource information and management planning;
- Monitoring and evaluation;

In order to pave the way for the successful implementation of the MPFS, the Government had taken the following steps:

- approval of the proposed forestry sector policy along with the MPFS, in April 1989;
- revision of legislation and preparation/ circulation of a new Forestry Bill;
- implementation of organisational reform in the MPFS;
- a Forestry Sector Co-ordinating Committee was formed and meetings held to oversee implementation of programmes and donor co-ordination;
- reformulation of on-going projects to fit into the MPFS framework; and
- creation of 65 new posts in accordance with the Human Resources Development Plan of the MPFS.

The Ninth Five Year Plan (1997-2002) followed the Master Plan for the Forestry Sector Policy in order to continue its main thrust of people's participation in forest management practices. The main objective of the Ninth Five Year Plan is poverty alleviation through providing economic opportunities for poor people and encouraging their participation in development activities.

The main objectives of the Ninth Five Year Plan for the forestry sector include a) mobilise, conserve and manage forest resources to reduce the gap between demand

and supply; b) create income generating and employment opportunities for poor and marginal families; c) mobilise local people to enhance productivity; d) adopt proper land use practices.

The main policies and strategies to achieve the above objectives include: a) Local users will be supported in their efforts to fulfil their day to day needs for timber, fuel wood, fodder and other forest products. A regular supply will be ensured through community forestry development; b) Support to poverty alleviation will be provided by promoting and establishing participatory forest management and by implementing community based development activities; c) Conservation of the Siwalik area will be carried out in order to maintain the renewal capacity of the groundwater reserve by giving priority to soil and water conservation programmes; d) The management, marketing, industrial development, processing and export of herbs and forest products will be supported; and e) The private sector will be encouraged by providing the opportunity for the commercial management of government owned forests in potential areas.

In regard to the implementation of the Master Plan for the Forestry Sector Development, a Forestry Sector Co-ordination Committee (FSCC) has been established as a forum for the discussion of policy analysis, planning, and programme implementation on a priority basis among forestry sector donors and officials of the His Majesty's Government of Nepal. At the 9th FSCC meeting held on 18 and 19 September 2000, the Revised Forestry Sector Policy, 2000 was discussed.

Special programme of the Government

His Majesty's Government has now implemented two major forest development programmes through the Department of Forests, i.e. the Community Forestry Programme (CF) and the Leasehold Forestry Programme. Community forestry, a legally supported programme by the Forest Act, 1993 and the Forest Regulation, 1995, is now being implemented with great success throughout the country. The community forestry concept, which is active involvement of local people based upon the user group approach, is the key of the programme. The forest will be handed over to the community through a specific set of arrangements. This programme attracted support from donor agencies like DANIDA, USAID, GTZ, DFID, SIDA, EEC, JICA, Australia, CARE-Nepal, ICIMOD, CECI, and JICA. In addition to major donors, there are various NGOs, organised ad hoc groups, and individuals, providing support to small-scale projects and campaigns.

The CF has achieved remarkable results, especially in terms of sustainability, equity, and self-reliance. The quality of forest has also improved. It was reported that the number of wild animals has been increasing, for example local people are facing problems from leopard in the hills. More forest user groups (FUGs) are being formed and similarly more national forests are being handled over to the real users. However, it was reported that the co-ordination aspect is still poor and 80% of the development budget for community forestry is donor-funded so the sustainability of the programme after the termination of the donor-funded projects should be looked into more carefully.

It was also reported that some FUGs are sustainable in terms of protection of the resources, thereby delivering improved biodiversity and watershed management benefits. But self sustainability of equity and income factor has not yet been demonstrated. Achievements of the programme for the last two years is presented in Table 2.

An in-depth analysis of the community forestry programme recommended that there is a need to move focus away from community forestry in isolation to transformation of the forest sector as a whole. There are indications that the recent modification of policies may be circumscribing the rights of FUGs. In the high value forests of the Terai, there are substantial conflicts over the resources, policy is less well formed, and marketing is distorted.

In regard to institutional appraisal, it was reported that as more areas of forest are protected, the benefits to FUG members decrease as they lose access to previously neighbouring areas. Therefore, it is a major rationale for accelerating the switch from passive to active management.

Table 2: Achievement of community forestry programme 1996-1999

Fiscal year	Number of FUGs	Forest area handed over as CFs (ha)	Number of households benefited
Till 1996/97	8,183	506,864	800,338
1997/98	1,101	97,192	130,730
1998/99	677	54,319	77,169
1999/00	1,067	79,527	117,010
Total	11,028	737,902	1,125,247

Source: Department of Forests

The Leasehold Forestry Programme was started in 1992/93 under the technical assistance of UNDP/FAO and a programme loan by IFAD. It is now being implemented in the twelve Hill Districts. Community-based leasehold forestry is conceptually different from community forestry, as it provides exclusive rights of forestlands to the marginal people, who are relatively small leasehold groups in the community, to increase their livelihood through different income generating activities. However, the approach is considered to be complementary to community forestry as it focuses on key issues such as poor people and poor soil. Section 31 of the Forest Act 1993 stated that the Government has the authority to grant any part of a national forest in the form of leasehold forest. It creates interest among the people to increase rehabilitation of the degraded forestland to sustain more productive livestock. The community, which consists of people living below the poverty line, should be given priority. This provides exclusive right of 40 years to the products of the forestlands to the marginal people of the relatively small leasehold groups. Achievements of the Leasehold Forestry Programme for the last two years is presented in Table 3. The purposes of the programme are to:

- produce raw materials required by forest products based-industries;
- plant trees and increase the production for sale, distribution, or for use;
- operate the tourism industry in a manner conducive to the conservation of the forest; and
- operate farms of insects, butterflies, and wildlife in a manner conducive to the conservation of the forests

Table 3. Achievement of leasehold forestry programme 1996-1999

Fiscal year	Number of group formed	No. of forest are handed over (ha)	No. of poor Family benefited
Till 1996/97	570	2,637.00	3,881
1997/98	408	1,672.92	2,694
1998/99	328	1,243.42	2,198
1999/00*	214	1,076	1,708

Note: 1 family = 6.72 person

Revised forestry sector policy, 2000

The Ministry of Forests and Soil Conservation realised that to implement the forestry programmes efficiently and effectively requires a clear-cut policy. Therefore, the Revised Forestry Sector Policy, 2000 has been formulated. It is an updated version of the Forestry Master Plan Policy and subsequent amendments to that document. The formulation of the Revised Forestry Sector Policy, 2000 is based on the analysis of the status of forests, the previous policies and legislation, including the previous policies stipulated in the 7th, 8th and 9th Five Year Plans and the Master Plan for the Forestry Sector.

The basis for the formulation of the new policy includes: a) the land use criteria recently approved by His Majesty's Government (which still lacks appropriate institutions and mechanisms to ensure their implementation); b) the Local Self-Governance Act (LSGA) of 1998 that empowers District Development Committees (DDCs) and Village Development Committee (VDCs) to collect revenues and calls on each local government unit to draw up a development

plan of their own (unfortunately the institutional capability to enforce and monitor the implementation of this legislation appears quite limited); c) after a recent survey (1998) estimated that the annual depletion rate of forests in Terai is 1.3 % and in the mountain is 0.2% (together with forest and the shrublands), His Majesty's Government introduced a new concept in managing the forests of Terai, Churia on 1 May 2000, in order to check the depletion of forest resources, to improve conservation, and to manage it in a sustainable way.

The Forestry Sector Policy, 2000 contains development imperatives, outlines, strategies, programmes, and summaries of the investment required to prepare plans and programmes, to formulate legislation and to develop a mechanism that fosters co-operation with supporting partners.

Because of the complexity of the forestry sector, a holistic approach is needed to translate the policy into administrative and management actions. The Policy issues are multidimensional and interrelated, therefore requiring a mixture of strategies. The Forestry Sector Policy, 2000 identified several strategies on the following aspects; a) land use planning; b) production and utilisation; c) effective harvesting and distribution; d) reducing consumption; d) improved pasture and livestock management; e) conservation of biodiversity, ecosystems and genetic resources; f) social aspects of land and forestry resources; g) providing a livelihood to poor and landless people in forestry related activities; h) promoting private investment in forestry development; i) investment in the forestry sector; and j) creating an environment conducive to investment.

In regard to programme structure, the Forestry Sector Policy, 2000 keeps the programmes structure that was crafted by the Master Plan for the Forestry Sector i.e. six priority programmes and six supportive programmes. Some of the important strategies crafted in the Forestry Sector Policy, 2000 include the following:

- Continue the forestry master planning process;
- Continue the Forestry Sector Co-ordination Committee (FSCC) as a forum for the discussion of policy analysis, planning, and programme implementation on a priority basis; and reorient the FSCC to better co-ordinate forest programme activities;
- Promote commercial plantations;
- Promote the involvement of the private sector;
- Pay a just income to the rural poor who collect raw materials for forest products based industries;
- Reduce the land tax on private land used for tree plantations;
- Make parastatal organisations compete with private enterprise; and
- Accept loan assistance for only those productive forestry programmes which are economically and financially feasible.

Table 4: Ongoing project supported by donors

No	Donor	Project
1	DANIDA	Natural Resources Management Sector Assistance Programme Watershed Management
2	USAID	Environment and Forest Enterprise Activity
3	IFAD/ Neth.	Hill Leasehold Forestry & Forage Development Project Phase II
4	AusAID / DANIDA	Community Resource Management Project
5	GTZ	Churia Forestry Development Project
6	SDC/ Swiss	Nepal Swiss Community Forestry Project
7	DFID	Nepal-UK Community Forestry Project
8	UNHCR	Bhutanese Refugee Programme
9	EEC	Bagmati Watershed Project
10	JICA	Community Development and Forest/ Watershed Construction Project Phase II
11	UNDP	Park and People Project Phase II
12	WWF	Bardia Integrated Conservation Project Northern Mountain Conservation Project Institutional Support
13	CARE/	Upper Andhikhola Watershed

	Neth.	Management Project
14	LZS	Buffer Zone Development Project Wildlife and Domestic Veterinary Programme in Royal Chitwan National Park

Legislation and institutions

The Forest Act of 1961 was re-amended and published as the Forest Act, 1993. The Forest Act 1993 has categorised the forest into two broad classes: national forest and private forest. For the sustainable development of forests, the Government has further categorised the national forest into five sub-categories as follows:

- Community forest;
- Leasehold forest;
- Government-managed forest;
- Religious forest; and
- Protected forest.

The basic system in community forestry is to hand over nearby national forest land to local communities. Under the community programme, user group formation and handing over of forest have been more emphasised. All the activities are carried out with the approach of "for the people, by the people". The users group concept will be used as the basis for sustainable forest management. Users group means a group of local people who are authorised to manage and utilise nearby forests. The users group should form a user's committee by themselves and they will prepare the operational plan for the forest. The users group can freely sell the forest products to the local markets.

Collaboration with partners

Many donor agencies have been assisting the country in the forestry sector development. They include DANIDA, USAID, FINNIDA, ADB, IFAD, AusAID, GTZ, SDC, DFID, UNHCR, EEC, JICA, UNDP, WWF, FAO, the Netherlands, WB, CARE, The country has also received support from several regional/ sub-Regional projects.

In 2000, there are a number of on-going projects supported by donors, as presented in Table 4. The total project cost amounted to US$69,542.75 thousand. Due to some issues, there was an idea towards sector wide approach to reduce transaction cost, avoid lengthy approval process and duplication activities, and promoting more joined approach, which will avoid stakeholder working in isolation and micro management.

The Sustainable Development – Agenda 21 and the National Biodiversity Action Plan are being drafted. In addition, there are a number of national policy reforms have been made, including the Local Self-Governance Act, 199 (or Decentralisation). Harmonisation and synchronisation of these plans with the other international initiatives needs to be made.

A Forest Se1ctor Co-ordination Committee (FSCC) was established, of which the 9th meeting was organised in September 2000. In addition, a Donors Sub-group on Forestry has also been established, of which the third meeting was organised on 21 August 2000. It was noted that there are substantial results and recommendations had been made at these meetings. Several partners are of the view that the Master Plan for the Forestry Sector Development, which was launched in 1988, needs to be reviewed.

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Our thoughts lead to actions, actions lead to habits, and habits form character.
Character leads to destiny.
(You can win – Shiv Khera)

Count your blessing.
Not your troubles
(Darle Carnegie – How to enjoy your life and your job)

New Zealand

Country data	
Total land area (thousand ha)	26,799
Total forest area 1995 (thousand ha)/ % of total land	7,884/29.4
Natural forests 1995 (thousand ha)	n.a
Total change in forest cover 1990-1995 (thousand ha)/ Annual change %	217/0.6
Population total 1997 (million)/ annual rate of change 1995-2000 (%)	3.6/1.1
Rural population	13.7
GNP per person total 1995 in US$	14,340

Source of data: FAO – State of the World's Forest 1999

General information

The make-up of the New Zealand forest industry has changed substantially over the last 15 years. Deregulation of the New Zealand economy since 1984, the privatisation of the State-owned forestry assets since 1990, and private sector acquisitions and restructuring that followed have transformed forestry. The industry is now dominated by the private sector and includes numerous international companies. It also includes an increasing proportion of small forest growers.

The evolution has continued the segregation into two reasonably distinct forest estates in New Zealand. On the one hand, timber production forests comprising planted forests and, to a limited extent, areas of indigenous species are expanding in area and volume to meet domestic and export market demand. This trend allows for the State-owned natural forest to be set aside for conservation management of non-timber values.

As a result of the expansion in the planted estate, New Zealand is developing into a major forestry nation. By 2010, the forecast wood supply from our planted forests will be almost double the current harvest volume and will continue to rise. For the year ending 30 June 1999, forestry contributed 3.9 percent of New Zealand's national income.

Planted production forest

Sixty-four percent of the planted forest estate is owned by 13 major companies (with considerable off shore investment). There will continue to be rationalisation of forest holdings among existing companies as well as sales of forests allowing new entrants.

The remaining forests are owned by small companies, local government, partnerships, joint ventures and thousands of small scale land owners. The dominance of large companies in new planting has given way to smaller investors playing an increasingly important role. These include farmers, individual investors, Maori forestry interests and additional foreign participants. More than 14,000 forests are less than 100 ha in size, and is confirmation of this trend. It is possible that by the year 2005, small-scale growers will own one-third of the forest estate.

Estimates of new planting for1999 indicate an approximate area of 22,900 ha, down dramatically from the 1998 new planting of 51,900 ha, due in part to the Asian financial crisis influencing the level of new investment in forest growing in 1999

New Zealand's planted production forest now covers 1.73 million ha (April 1999). A further 12.6 million ha of land is physically suitable for expanding the planted forest estate on degraded farmland and rolling and steep hill country. The total standing volume of timber contained in these forests is 353

million m3. In the year ending March 1999, the volume of timber in New Zealand's planted forests increased by 32.8 million m3.

Harvesting

Harvesting has risen from 15.2 million m3 in the year ending December 1998, to 17.9 million m3 in the year ending December 1999 - an increase of about 18%. The increase has resulted from improved trading conditions in New Zealand's key export markets. Two-thirds of this was processed on-shore by New Zealand's industry mix of four pulp and paper companies, eight panel board companies, more than 350 sawmillers and approximately 80 remanufacturers.

Sixty-one percent of the forest area is 15 years old or younger because of planting done during the 1980s and 1990s. As these young forests mature, New Zealand's long term renewable wood supply is expected to double. From the actual harvest of 17.9 million m3, the wood supply is forecasted to increase to almost 30 million m3 by 2010 - an 84% increase.

Indigenous forest

Indigenous forests are a key part of New Zealand's environment and help protect the many values of our natural ecosystems in addition to making a marginal contribution to the wood supply. The main threats to these forests are introduced animals and plants and an increasing demand for access and recreational opportunities. The indigenous forests harbour about 126 native land bird species and subspecies (some classed as endangered or threatened), two species of bats, reptiles, freshwater fish, amphibians and invertebrates. Their other values include cultural recreational, scientific, historic and scenic.

Volumes harvested from natural forests have diminished over the past 50 years from being almost 100% of the total NZ harvest, to currently being less than 1% of the total harvest.

In 1993, amendments to the Forest Act were introduced that require landowners to have a sustainable management plan or permit if they wish to harvest and mill indigenous timber. The amendment also introduced indigenous timber sawmilling and export controls.

Expansion of area under sustainable management

The following table illustrates the changes that have taken place with respect to sustainable management plans and permits since the last APFC session, as of 31 January 2000.

Table 1: Sustainable plans and permits

	1998	2000
Plans		
Number	21	16
Area (ha)	28,993	29,483
Annual harvest (m3)	58,000	50,724
Permits		
Number	83	212
Area (ha)	10,028	27,000
10 yr harvest volume	26,111	60,000

A further 9 plans and 59 permits were under consideration by the Ministry of Agriculture and Forestry at the beginning of this year.

Of the 1.3 million ha of indigenous forest in private ownership, only around 20 %, or 250,000 ha, is seen as having some potential to support sustainable management plans and permits. If all of this area was approved for sustainable forest management, it could yield an annual log harvest volume of around 250,000 m3.

Amendments to sustainable forest management legislation

Amendments to the Forests Act, currently before parliament, include proposals to:

- extend the controls on the export of indigenous timber to cover timber from land that is currently exempt from the Forests Act, viz South Island Landless Natives Act (SILNA) forests and State-owned, South Island West Coast forests;

- amend the nature of the controls to permit the export of logs and wood chips produced from sustainably managed indigenous forests;
- allow for South Island Landless Natives Act forests to be voluntarily brought within the sustainable management provisions of the Act.

Forests on land granted to Maori under the South Island Landless Natives Act are exempt from the indigenous forestry provisions of the Forests Act. They are the only private indigenous forests in New Zealand not covered by sustainable forest management requirements.

The opportunity for harvesting timber without the obligation for sustainable management makes SILNA forests also have high conservation values. There is also an equity issue with landowners of other forests that are subject to the Act, who see themselves as disadvantaged. The Government has been involved in a number of settlements to prevent such harvesting from taking place, and the current policy towards SILNA forests is to pursue negotiated settlements with the owners on a section by section basis (there are over 400 sections in total). These negotiated settlements may include bringing the sections under the Forests Act, agreement to a conservation outcome, and withdrawal of grievance claims. Inclusion under the Forests Act would be on a voluntary basis. The mechanism for this is dependent on the passage of the Forests Amendment Bill currently before Parliament. The first stage of this process is to gain the agreement of owners to a one-year voluntary moratorium on harvesting, on receipt of a small goodwill payment from the Government.

Cessation of beech logging on State-owned land

State-owned production forests on the West Coast of the South Island are managed by Timberlands West Coast (TWC) - a stand-alone State-owned enterprise.

The newly elected Government has halted all beech harvesting in State-owned forests, and amended Timberlands West Coast's mission statement to preclude the harvesting of beech.

Government review of logging (other than beech) on State-owned land

The West Coast Accord, signed in 1986, is an agreement between environmental groups, local authorities, industry and the Government which, amongst other outcomes, resulted in certain areas of forest on the West Coast of the South Island being set aside for sustainably management timber production. The Timberlands Deed of Appointment is based on the West Coast Accord.

TWC has introduced sustainable forest management under independently audited plans. The management standard in these Rimu forests is generally consistent with the Forests Act's requirements, and has been recognised internationally. TWC has also developed and established commercially viable aerial extraction techniques (helicopter harvesting) in Rimu forest.

The Government is currently reviewing its obligations under the West Coast Accord, and its options for ceasing all Rimu logging in the West Coast state forests. At the same time, the Government has confirmed its commitment to sustainable forest management in indigenous forests on private land.

Ongoing debate on processes to determine sustainable forest management, the use of negotiated accords, and sustainable resource management in general, is likely.

Completion of a land cover database

The Ministry of Agriculture and Forestry has just completed mapping No's land cover through analysis of satellite imagery and on-ground verification. The process was started during 1996/97 and was completed in May 2000. Planted forests, indigenous forests, scrub, and major shelter belts, along with 12 other land cover types, can be reliably identified on satellite imagery and all areas greater than one hectare have been mapped.

These images will effectively be a "snapshot" of the location of New Zealand's

forest resource. The Land Cover Database improves the accuracy of core Ministry statistical databases, assists both in monitoring shifts in land use and the Government's ability to meet a range of international reporting requirements. It is expected that this data will be pivotal in determining habitat fragmentation and quantifying the areas of remaining forest vegetation by forest type.

On-going development of a National Environmental Performance Indicators (EPI) Programme

The Ministry for the Environment is developing a national environmental indicator program in order to provide standardised methods and protocols for the collection of environmental data.

The Government's objectives for the EPI program are:

- to systematically measure the performance of its environmental policies and legislation;
- to better prioritise policy and improve decision making;
- to systematically report on the state of New Zealand's environmental assets.

A modified Pressure-State-Response (PSR) model has been used as the framework. This model has been applied in many other countries and is recognised internationally as a useful framework.

We are now more than 80% through the process of confirming the core set of environmental performance indicators. Only transport, urban amenity, energy, animal pests, weeds and diseases remain.

Currently trials of indicators for land, air freshwater, climate change, ozone and waste are underway, and indicators for marine, toxics, biodiversity and transport are also underway.

Montreal process criteria and indicators for sustainable forest management

New Zealand, Australia, China and Japan from the Asia-Pacific region, and 8 other countries with temperate and boreal forests, are members of the Montreal Process. The Montreal Process represents the prime international instrument whereby New Zealand can monitor and assess national trends in forest condition and forest management.

The 11th Montreal Process meeting was held in November 1999. New Zealand recently contributed to a report on "Progress and Innovation" produced by the Montreal Process group. The first full official report by member countries will be in 2003. New Zealand has just completed prioritising its reporting efforts against the 67 indicators.

Collecting the required information for reporting will require a collaborative effort between government agencies and the forestry sector. This work has already commenced.

Certification developments

There is a fast growing interest world wide in timber certification. There are a handful of schemes that have been adopted internationally and regionally, while a number of countries are developing their own national schemes.

New Zealand participated in a meeting in New York last year initiated by Australia. This meeting allowed for considerable sharing of experiences with certification. Whilst government intervention in the international market was not necessarily seen as being required at this point, it was agreed that it was important that governments continue to monitor developments in this area.

The New Zealand forest industry has been heavily involved, through chairing the International Forestry Industries' Roundtable, in developing a framework for mutual recognition based on substantive equivalence of different systems. Within New Zealand, the NZ Forest Industries Council (NZFIC) is developing a Verification of Environmental Performance system to provide a cost effective, credible, environmental performance verification and communication tool for use by New Zealand forest industry companies. This is now undergoing some trials with the intention of implementing it later this year.

Application of certification schemes to growers of small forests in New Zealand presents difficulties. Their small scale of operations and the high costs associated with many of these schemes has not encouraged the adoption of any of the existing processes. VEP and Forest Stewardship Council (FSC) are currently exploring ways to facilitate participation by small wood lot owners.

Erosion control

The East Coast Forestry Project is a Government-funded initiative aimed at controlling present and potential erosion in the East Coast region of the North Island by means of afforestation, reversion or gully planting. This area has some of the world's most severe soil erosion. Preventing the erosion is a key land sustainability issue facing New Zealand.

A government review of the project, completed in 1999, adopted the single objective of promoting the sustainable use of 60,000 ha of highly erosion-prone land. Funding was approved to continue at up to $6.5 million per year. This will enable new planting to continue at 2-3,000 ha per year. Around 40% of the target area is Maori-owned land.

Health and safety implementations

The forest industry has one of New Zealand's highest accident rates by international standards. Both the New Zealand Forest Industries Council and the New Zealand Forest Owners' Association have committees focusing on safety. Recently, the industry training organisation - Forest Industries Training - developed a Forest Safe Campaign that seeks to change workers' behaviour and attitudes.

In 1999, the Occupational Safety and Health (OSH) Service of the Department of Labour completed a Safety Code of Practice for Forestry Operations, and Guidelines for the Provision of facilities and General Safety and Health in Forestry Work.

Forest companies environmental management system (EMS) implementation

Most of the major companies in New Zealand have implemented their own EMS's in the last few years. These typically more than cover their obligations under various acts such as the Resource Management Act and Health and Safety in Employment Act. As a consequence, the applicability of the industry Code of Practice for Forest Harvesting has to a degree been made redundant for these companies because of the existence of more detailed and company-specific operating guidelines.

Wood processing and utilisation

Most of the wood available for processing over the next 5 to 6 years is owned or managed by a few companies, all of whom have wood processing divisions. Investment by the current large forestry companies is likely to be in both new plants and extensions, and upgrades to existing plants. Expansions by existing smaller independent sawmillers are most likely to be in plant upgrades. The industry faces a significant challenge to process the future harvest expansion.

With changes in resource management regulations, and increasing wood production in many wood-processing companies, the use of wood residue flows within the production site has increased in importance over the last few years. For large integrated processing sites (where a solid wood processing plant is colocated with either panel or pulp and paper plants) the practice of using wood residue for heat generation for other processes is already in place. The focus is on process improvement to reduce costs and external waste flows.

Data from the Ministry of Agriculture and Forestry's Annual Survey of Sawmills and Chipmills for the year ending 31 March 1999 indicates that 16 % of residues from

the sawmilling process is used to provide heat and steam at an associated processing plant. This figure is up from 11 percent in the 1995 survey.

Pest and disease incursions

To protect forests and agriculture from harmful pests and diseases, New Zealand requires that timber imports must be free of bark, fungi and insects. All imports are inspected at port of entry and where contamination is found, fumigation is required.

The increase in imports and international passenger movements has increased the level of risk that New Zealand faces from pests and diseases.

Government and industry-funded surveillance programs using independent service providers are in place to detect any pests that are introduced.

The level of surveying required to meet the probability of detection is determined through risk profile modelling techniques.

The Ministry of Agriculture and Forestry is addressing a number of issues:

- The risks associated with the importation of used vehicles.
- Revision of the import health standard for pine seed to combat the threat of pine pitch canker.
- The risk of pests being introduced via the outside of imported containers. Viable gypsy moth egg masses have been found on containers on more than one occasion, following targeted inspections. A risk assessment of the external surfaces of imported sea containers is currently under action.
- The quarantine risk from air cargo imports.
- The need to ensure quarantine measures conform with the International Plant Protection Convention and the World Trade Organisation's Sanitary and Phytosanitary Agreement, signed by New Zealand.
- Incursions necessitating recent responses from the Ministry, including the painted apple moth (Teia anartoides) in Auckland, which is a potentially serious threat to forestry and horticulture, the gumleaf skeletoniser (Uraba lugens) at Tauranga, which is a potentially serious threat to the increasing eucalypt estate, subterranean termites in Otorohanga, and Dutch elm disease in Auckland.

Amendments to the Resource Management Act

The forest industry has been very active in pursuing an effects-based approach to local authority plans produced under the Resource Management Act 1991, rather than the previous prescriptive approach.

Key forestry issues in the planning process include:

- treating forestry equitably with other land uses, which flows from controlling effects and not activities;
- establishing planning certainty, especially given forestry's long timeframes;
- processing of resource consents (cost and time); and
- Developing self-regulation and recognising and utilising Codes of Practice.

The Resource Management Amendment Bill addresses a number of the forestry industry's concerns to varying degrees. It includes provisions that would enable contestable resource consent processing and consent applicants or submitters to request commissioners to consider applications. It contains other provisions to streamline consent processes, reduce duplication of responsibilities within regional and territorial government, and tighten the requirements for cost-benefit analysis of council planning.

Assessment of IPF Proposals

Most of the IPF proposals will be covered in New Zealand through meeting our obligations in other areas, e.g. the Montreal Process, the Kyoto Protocol, the Biodiversity Convention, the RMA, the Forest Act, and the Biosecurity Act. Nonetheless, a "gap analysis" was initiated early this year to ensure that the proposals are being covered.

Increasing energy usage and awareness

The availability of competitive energy sources is particularly important for wood processing industry development. Further investment may be delayed/ hindered if appropriate and adequate energy supplies are perceived to be not available at competitive prices.

The wood processing industry is estimated to have consumed around 50 petajoules (PJ), or 12% of the total NZ energy consumption in 1998. Of this, pulp and paper production consumed around 44 PJ. The energy used by the wood processing industry in 2020 is expected to reach 83 PJ, up 66% from 1998. The potential for co-generation of energy has been realised by the forest industry, which produces around 50% of the energy it consumes by burning pulp and wood residues.

Emerging labour concerns

A labour shortage is developing in the forest growing and harvesting sectors, which will be exacerbated with an increasing wood supply. While employment opportunities are rising, particularly in harvesting, forestry is seen as an unattractive industry. (See also training below).

Port upgrading

Forestry's competitive advantage is critically linked to continuous improvement at the country's ports. Port reforms initiated in the late 1980s have resulted in greater loading efficiencies and more flexible working hours, with consequent economic benefits to the port companies.

Forestry products exports are projected to increase substantially due to the increase in harvest volumes over the next 5 to 10 years. Many ports around New Zealand are upgrading and adding new facilities to service the expanding volume and range of forest product exports.

Research status and issues

Research and development are key to upgrading New Zealand forestry's commercial and environmental competitive advantages. Forestry sector research and development expenditure is drawn from both the Public Good Science Fund (PGSF) and forest industry investment as illustrated in the table 2. below.

Table 2: Expenditure on Research and Development (in million $)

Subject	1996/97	1997/98	1998/89
Total PGSF	266.8	294.5	304.0
PGSF Forestry	22.7 (8.5%)	24.6 (8.4%)	24.7 (8.2)
Industry investment	36.0	44.8	32.6

NZ Forest Industries Council (NZFIC) has recently produced a report on Strategic Directions in Research and Technology for New Zealand's Forest-Based Industries. The objective of the strategy is to provide an integrated approach to the research and technology needs of New Zealand's forest-based industries. Forest Research (a State-owned Research Institute), continues to conduct internationally respected research into growing and managing forests and using forestry products. However, spreading the research findings to parts of the sector that do not directly fund Forest Research is often limited. Information on species other than Radiata pine is restricted, and Forest Research has recently reduced funding on alternative species.

Training and education initiatives

The training needs and qualifications requirements of five forestry sectors (growing and harvesting, biosecurity, solid wood processing, wood panels, and pulp and paper) are determined by the industry through Forest Industries Training (FIT), and registered on the New Zealand Qualifications Authority (NZQA) framework. FIT is the forestry's Industry Training Organisation (ITO), and a part of the NZ Forestry Industries Council.

FIT is the largest of 52 ITOs and caters for the needs of over 8,500 trainees. The organisation has experienced sustainable growth over the past four years from under 3,000 trainees to nearly three times that figure.

Over half of the education and training is delivered by a number of independent training providers, namely polytechnics and

private training enterprises accredited through NZQA.

Much on-the-job training takes place in forests and mills. Many companies have opted to link their own company training systems to the nationally recognised industry training framework based on unit standards and national qualifications.

Government financial support through Forest Industries Training for the 1999/2000 year is $4.4 million ($4.2 million in 1998/99) - with the industry typically contributing just over half of that amount.

Considerable progress has been made on developing programs and systems to improve training achievement, e.g. from 2000 onwards on the job training and assessment will be subsidised.

Industry training is complemented by ongoing technology transfer activities provided for by industry associations, such as the Timber Industry Federation, New Zealand Pine Manufacturers Association, Forest Industry Engineering Association and the NZ Institute of Forestry.

Community issues

Forestry's effects on rural communities and environments in New Zealand have generally been positive and for the year ending 30 June 1999, forestry directly provided jobs for more than 25,000 people. However, the forest industry is being asked to respond to a number of challenges, including:

- potential impacts of harvesting activities on ecological values;
- the perception of planted forestry as a monoculture (based on a single species) and associated concerns;
- impacts on rural community populations, infrastructure and employment;
- landscape changes; and
- road infrastructure demands and safety.

Tapping Maori forestry potential

Forestry has a number of advantages for the Maori, as compared with other potential land uses. It is seen as an inter-generational use, providing a return to the owners through harvesting approximately once per generation. Forestry is relatively profitable and can provide Maori with valuable employment opportunities. It protects hill country from erosion. One of the main factors restricting new Maori planting has been the difficulty in obtaining development finance for multiple-owned land.

A common strategic objective of recent governments has been closing the economic and social gaps between Maori and non-Maori. The establishment of a Cabinet Committee on Closing the Gaps, headed by the Prime Minister, shows the current government's commitment to this objective.

Around 21 percent of all planted forests are on Maori-owned land. Most of these forests are owned and controlled by forestry companies or the Government, through long-term (up to 99 years) forestry leases. The government is progressively transferring its interests in the leases to the Maori landowners. Over the period 1997-99 the Government negotiated two direct sales and one progressive transfer to the Maori. Discussions with other lessors are making good progress.

The transfer of lease forests to Maori landowners has the potential to significantly increase Maori involvement in commercial forestry in the Central North Island, Northland and East Coast regions. This in turn could have implications for Maori economic and social development.

In addition, there are claims on State-owned lands under an historical treaty (Treaty of Waitangi) signed between Maori and the State. Forest assets have been used to fund and settle some of these claims.

Rental income from the forested lands goes into a fund administered by the Government Forestry Rental Trust, with interest from the fund going to assist the progress of Maori claims to the forests.

International agreements and conventions

The expanding forest estate is thought to be offsetting a high proportion of New Zealand's carbon emissions.

New Zealand's Kyoto Protocol target is to stabilise emissions at 1990 levels on average for the period 2008-2012.

New Zealand still has to make decisions on a mix of measures that will deliver emission reductions across the economy. Some of these decisions can only be made once international negotiations resolve the necessary details of the Kyoto Protocol. Central among these issues is the treatment of greenhouse sinks.

New Zealand has undertaken significant afforestation/ reforestation efforts since the agricultural reforms of the late 1980s. Therefore, forest sinks are important to New Zealand because the expanding forest estate will offset a high proportion of New Zealand's carbon emissions.

An economic instrument that rewards absorption is likely to boost the expansion of planted and indigenous forests, creating climate change and other environmental benefits.

Development of a Carbon Monitoring System (CMS)

A program to develop a monitoring system for a national carbon budget in indigenous vegetation and soil started in 1996.

The overall aim of the project is to develop a framework national system for monitoring carbon in indigenous forests and scrub land, and in soils, to ensure that New Zealand can meet its reporting requirements under the Framework Convention on Climate Change (FCCC). It will also assist in meeting other national and international reporting requirements.

The estimates of total forest and scrub carbon are satisfactory to meet the reporting requirements of the FCCC.

The proposed CMS will be based on a national uniform square grid containing a permanent sample plot system. Estimates of carbon stocks will be determined by using allometric relationships to the tree and shrub diameter and height measurements and to measures of dead wood volume. The main spatial data source will be the land use database that has been developed (refer above). The system being developed to monitor soil carbon is a modification of the IPCC approach. New Zealand's land area has been stratified into climatic and soil classes, and overlain by land-cover/land-use (LC/LU) classes to derive climate/soil/land-use cells. Climate and soil classes are regarded as constant over time, while LC/LU classes change. Coefficients of change are being developed to estimate changes in soil carbon as a function of land use change over time. The climate and soil classifications have been completed and tested.

The first three-year phase of the project ended in June 1999. The Ministry for the Environment appointed an international review panel to assess whether it and other stakeholders could have confidence in the approach and systems being developed by the research providers.

The CMS will provide important contributions for New Zealand's international reporting requirements under the UNFCCC, UN/FOA/TBFRA-2000 and Montreal Processes.

Release of national biodiversity strategy

As a signatory to the Convention on Biological Diversity, New Zealand's draft Biodiversity Strategy was launched in January 1999. The strategy sets a vision, goals and actions towards conserving and sustainably using New Zealand's biodiversity.

The intention of the draft biodiversity strategy is to:

- Increase our knowledge of our indigenous biodiversity and key threats to it. Fill critical information gaps through a co-ordinated national research strategy for biodiversity.
- Make information about indigenous biodiversity more available and accessible to people and communities to enable them to make decisions and take actions to conserve and sustainable manage biodiversity.
- Develop performance standards and codes of practice to assist primary producers and businesses to sustain biodiversity.

The forest industry is involved in a number of joint initiatives with conservation groups to protect biodiversity values. Examples are, the New Zealand Forest Accord, the Principles for Commercial Plantation Forest Management in New Zealand, and the Carter Holt Harvey-sponsored Project Crimson (to protect and enhance Pohutukawa and Rata).

Asia-Pacific economic co-operation

A key APEC objective is to strengthen the open multilateral trading system and to reduce barriers to trade in goods and services among participating economies. In 1999, APEC leaders gave strong support for the launch of the new WTO round. This was to include comprehensive market access negotiations on industrials (which include forest products) being completed within three years and consideration of the "Accelerated Tariff Liberalisation" proposal by the APEC economies that would have ensured faster tariff reductions for forestry products.

The Seattle Ministerial Conference in December 1999 was, however, suspended without reaching a formal conclusion. Nevertheless, it is important that New Zealand and APEC continue to work towards the re-launch of a broad-based round of WTO negotiations, including non-agricultural products to reduce barriers to forestry products trade.

Timber imports tariff reduction

Since mid 1980's successive New Zealand governments have committed to a steady and significant reduction in tariffs on imported timber. The rates were reduced further between 1998 and 1999 to where they are now typically around 6.5% to 7% on timber and timber products.

The current government has frozen tariffs at the 1999 level, and these will be reviewed again in 2005.

In 1999, it imported around US$550 million worth of forest products. Of this, less than 1% was made up of tropical timber. Sawn timber accounted for around 60% of the tropical timber imports and plywood/veneers made up a further 35%. Major timber suppliers were Indonesia (24%), Fiji (17%), and Australia (14%).

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Pakistan

Country data	
Total land area 1995 (thousand ha)	77,088
Total forest area 1995 (thousand ha)/ % of total land area	1,748/2.3
Natural forest 1995 (thousand ha)	1,580
Total change in forest cover 1990-95 (thousand ha)/ annual change (%)	-275/ -1.1
Population total 1997 (million)/ Annual rate of change 1990-95 (%)	143.8/ 2.7
Rural population 1997(%)	64.6
GNP per person 1995 in US$	46.0

Source of data: FAO - State of the World's Forest 1999

General information

Improving and transforming the country into a free market economy has been a top priority of the Government since 1990. In 1991, economic policies were formulated in that direction, including a programme of privatisation, deregulation, and the formulation of new agricultural, industrial, and energy policies. In order to support the expansion of international trade and investment, relations were strengthened with members of the Association of South East Asian Nations (ASEAN) and Japan. Economic co-operation links were also strengthened with Turkey.

The military took over the government on 12 October 1999. It was the major event during the last two years. The Military Government outlined 7 agendas as follows: rebuilding national confidence and morale, strengthening the federation, removing inter-provincial disharmony and restoring national cohesion, reviving the economy and restoring investors confidence, ensuring law and dispensing speedy justice, depoliticising state institutions, devolution of power to grass root levels, and ensuring the board's accountability. The Government emphasised loan and tax recovery, accountability and revival of economy and restoration of investors' confidence. Further, the Government announced an economic revival plan consisting of tax reform, reprioritisation of public expenditure towards poverty reduction, debt reduction, and privatisation and reviving investors' confidence.

Although some problems were faced, including economic sanctions, the economic performance showed positive progress. The GDP grew by 4.5%, the agriculture sector grew by 5.5% in 1999, and exports and imports increased by 9.8% and 10.9% respectively.

Agriculture is the largest sector of Pakistan's economy, accounting for 26% of the GDP. It employs around 46% of work force (52% of the rural labour force), and contributes 45% to the net export earnings. The main commodities are wheat, cotton, rice, sugar cane, pulses, tea, and livestock. In recent years, awareness about the importance of forests has increased, and there is now concern for increasing the area of land under forests.

The agricultural policy adopted in May 1991 envisaged an increase in the existing forest areas from 5.4% to 10% during the next 15 years. It also contained a commitment to combat environmental degradation and conserve biodiversity by improving the management of hill forests, watersheds, range lands, irrigated plantations and the expansion of social forestry, forest research, education, and extension programmes. In order to help implement the afforestation plans, special emphasis would be put on the concept of social forestry.

Pakistan's problems are heterogeneous and complex, caused by population growth which

has increased from 34 million in 1951 to 140.5 million in 1995. Some decreases in the area of cropland due to water logging and salinity have reduced the average crop area per person from 0.4 ha in 1951 to 0.16 ha in 1995.

Forest resources

The forests in Pakistan are heterogeneous and reflect great physiographic, climatic, and edaphic contrasts. The following forest types are found:

- Tropical dry deciduous forests;
- Tropical thorn forests;
- Sub-tropical broad-leaved evergreen forests;
- Sub-tropical pine forests;
- Litoral and swamp forests;
- Himalayan moist temperate forests;
- Himalayan dry temperate forests;
- Sub-alpine forests; and
- Alpine scrub.

According to the Government's report, total forest area, including range lands, is 10.5 million ha, of which 1.4 million ha are productive forests. However, the contribution of the forestry sector to the national economy was 0.3% in 1999 due to ban on forest harvesting.

Wood for fuel wood is produced from state-owned forests, private farmlands, and waste lands. A study on Household Energy Strategy conducted by the Government with assistance from the World Bank, confirmed that the country's consumption of fuel wood is high, with about 79% of all the households using fuel wood for cooking (82%), space heating (7.3%), and water heating (9.8%). Fuel wood is also used in the commercial sector by bakeries, restaurants, in ovens and brick kilns, for tobacco curing, in ceramic products manufacturing, food processing, etc.

Several forestry development and extension programmes and projects are currently being executed in different parts of the country with financial assistance from FAO, UNDP, the World Bank, Asian Development Bank, KFW, and the International Fund for Agriculture Development. However, they only cover a small area and do not address all the problems of forest conservation and development. Environment and forestry awareness campaigns have created a lot of enthusiasm amongst the general public.

The Advisory Notes on the Fifth Country Programme of Assistance for Pakistan, 1993-1998 were finalised based on four cross-sectoral themes:

- Poverty alleviation (income and employment generation and social services);
- Environmental protection and natural resource management (capacity building);
- Assistance to a deregulated, open-market economy;
- Institutional adjustment for more effective management of development (implementation capacity.

Although the country is deficit in timber and the demand gap of about 734,000 m3 was met from imports, the commercial timber harvesting ban is still in effect. This has badly affected the income of poor families, who were mainly dependent upon the commercial sale of the products.

As the result of lack of rain in the past three years, some parts of Pakistan have been badly affected, particularly Baluchistan Province and certain parts of Sindh.

The Master Plan for Forestry Development (MPFD)

In view of the country's problems relating to forest resources, including the difficulty of meeting fuel wood and timber demands, the Government decided to prepare a Master Plan for Forestry Development, covering the 25-year period from 1993 to 2018.

The MPFD envisages increasing the forest area by 10% by the year 2018. This should be achieved by planting new areas on private and public lands and restocking public lands.

Watershed protection and development will be accorded highest priority, and the Government will allocate 32% of the total estimated expenditure. A similar amount will be allocated to planting in the farm lands

programme, amounting to 23% of the total expenditure. For planting and wood production programmes, the Government will allocate 19% of the proposed outlay. Programmes for the preservation of ecosystems and biodiversity should receive 3.5%, and strengthening of institutions, including administration, education, and research, should represent 3.2%.

Action should focus on the following areas:

- Commercial plantations, by planting fast-growing species in irrigated areas, such as poplar, eucalyptus, semul, and bamboo;
- Fuel wood plantations on hillocks which are not suitable for agriculture;
- Afforestation of sand dunes and sand dune fixation through shelterbelt plantations;
- Watershed rehabilitation through reforestation;
- Increasing tree planting by individuals and communities through social forestry and extension programmes, encouraging NGO involvement, and increasing the price of fuel wood and timber in the country.

Recent changes in policy, legislation, and institutions

A donors meeting (International Round Table) was held on 18 April 1993 in Islamabad to discuss the MPFD document. The meeting was attended by several donors including ADB, FAO, UNDP, the World Bank, the Netherlands, Switzerland, Japan, IUCN, USAID, ODA, WFP, FINNIDA, and AIDAB, as well as representatives of the central and provincial Governments.

It was suggested at the meeting that provincial action plans be prepared and greater community participation achieved. As a follow-up to the meeting, ADB agreed to support the implementation of the Master Plan by providing US$580,000 over a 15-month period.

Implementation of the MPFD began in the fiscal year 1993-94. The Plan proposed the setting up of planning and evaluation cells in each provincial forest department to strengthen the planning machinery. It also proposed the establishment of extension wings in provincial departments and a central Monitoring and Evaluation Unit at the federal level.

The Government felt that the MPFD was too general. It was decided to undertake a social sector survey in the North West Frontier Province (NWFP). In 1994, the Government requested ADB to provide support to a project with an estimated investment of US$ 75 million.

The first forest policy was revised in 1991, and the goals of the new policy feature the following:

- Meeting the country's environmental needs and requirements of timber, firewood, fodder, and other products by raising the afforestation area;
- Conserving the existing forest, watershed, range land and wildlife resources, and developing them to meet the increasing demand;
- Promoting social forestry;
- Encouraging planting of fast-growing and multi-purpose species in irrigated plantations, riverine forests, and private lands;
- Generating opportunities for income and self-employment;
- Promoting NGO and voluntary organisations' support to public education programmes.

A National Conservation Strategy was adopted in 1992 and had an important effect on the forest policy. The emphasis on meeting the country's environmental needs was a direct result of the policy for conserving natural resources. Growing concern for environmental protection was reflected in the policy for conservation of forests and trees. In line with privatisation and deregulation policies, a higher emphasis was given to private sector intervention in forestry development. However, no forest area owned by a public sector forest industry has been privatised so far.

As a follow-up to UNCED, and given the concern about the environmental impact of industrial projects, environmental protection agencies were created at the provincial and federal levels.

The most notable change in forestry

administration was the creation of cells/wings in provincial forest departments for the implementation of social forestry programmes. The staffs of these cells approach farmers to explain the benefits of tree planting. Lectures are arranged in connection with congregation prayers. Occasionally, seminars are held which farmers are encouraged to attend. Farmer's Days and Farmer's Conferences are held periodically. Plantation Weeks are organised twice a year. Cash and other prizes are awarded to farmers who plant the most trees. NGOs are also active in the field, encouraging farmers to plant more trees.

Progress in increasing the forest area has been limited due to financial and social constraints. The only way to increase the forest wealth is to extensively grow trees on farmlands. In order to involve the farming community in tree growing activities, social forestry programmes have been launched throughout the country with attractive incentives in the form of a subsidised supply of planting stock, partial payment of planting cost, free protection of planned areas for a limited period of time, and a fair return to the farmers. As a result, farmers have been induced to take up tree growing on 47,000 ha of farmlands annually under various social forestry and watershed management projects. During tree plantation campaigns in 1997, 238.4 million plants were planted. Due to the political situation, the country has drawn criticism from abroad. Multilateral and bilateral institutions/ donors withheld their duly paid financial commitments. WB and ADB also suspended the already agreed upon loans with the previous government. Consequently, progress in the forestry sector development is becoming stunted.

Country wide survival rates of seedlings/ saplings were reported at 63% to 81%. In addition to increasing planting trees, research in forestry should focus on:

- methods for creating economic incentives for responsible stewardship of forests by integrating forest management with other activities, such as agriculture and livestock husbandry;
- education and training to teach the local people the methods and benefits of integrated forest management.

In line with the policy that more focus be given to community participation, the forestry department staff have been re-oriented towards effective people's participation through extension and training programmes. During the process of implementing the social forestry programmes, it was found out that the existing forest policies and acts would not allow full community participation in the government-owned and managed forests. To overcome these problems, institutional and policy reforms are currently under way in some provinces.

The present environmental legislation is by and large considered adequate. The laws for controlling illicit cutting and damage to ecosystems need to be enforced strictly.

Biodiversity conservation

Government statistics show that there are 10 national parks with a total area of 954,246 ha, 82 wildlife sanctuaries on 2,749,054 ha, and 82 game reserves on 3,535,284 ha. However, protection and scientific management of these areas are not adequate. In the majority of these reserves, grazing by domestic stock, collection of fuel wood, cutting of trees, and illegal hunting and poaching are common and almost nothing is done to preserve the ecosystem.

The development of a wildlife park at Loi Bher district will be continued. Development of tourist facilities at Ayubia National Park and the wildlife extension programme will also be carried on.

Pakistan is a signatory to several international conservation conventions, including Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), the Convention on Wetlands of International Importance (RAMSAR), the World Heritage Convention and the Convention on Conservation of Migratory Species of Wild

Animals (Bonn). In addition, Pakistan is a member of the World Conservation Union (IUCN), the International Waterfowl and Wetland Research Bureau, and the World Wild Fund for Nature (WWF)

A national plan for conservation of biodiversity is being prepared. All species of wild plants and animals which are considered threatened or endangered species will be given the highest priority for conservation in this plan. The preparation of the plan will begin with the preservation of habitats and making inventories of populations under threat. The welfare and interests of the local people will be considered of highest importance in the management plans of nature reserves through the rural support programme.

Combating desertification

A major part of Pakistan lies in the arid and semi-arid zones. The total area represented by the arid and semi-arid zones is 70 million ha, including 11 million ha of sandy deserts in Thal, Cholistan (Punjab), Thar (Sindh), and Chagai Kharan, and also the coastal belt of Mekran, Gwadar, and Lasbela (Balochistan).

Desertification is an ongoing process and recognised as a severe problem associated with agriculture and grazing animal husbandry in semiarid lands. Measures being suggested to minimise desertification include:

- controlling desertification by regulating development of cropland and livestock;
- maintaining an ecological balance between livestock numbers and grazing land;
- absorbing excess populations into other economic activities;
- developing and popularising new energy sources such as: solar energy, bio-fuels, electricity, fuel wood plantations, and local coal sources;
- reconverting marginal croplands by changing land use regulations;
- developing land use patterns that integrate grazing lands, woodlands, and croplands; and
- developing and applying an integrated master plan.

Constraints

The main constraints in implementing the forest policy are the lack of funds and the socio-economic conditions prevailing in forest and rural areas. Funds are scarce, and planners are reluctant to divert them to forestry projects. The people are poor and illiterate, and are not in a position to co-operate in efforts to conserve forest resources.

No changes have taken place in forestry legislation since the 1990-1992 period. It has been generally recognised that forestry laws and rules have become irrelevant to the current situation, making their revision and updating essential.

Although the need is clearly recognised to enlist the private sector in forestry programmes, no legislative measures have been adopted in this regard. New legislation would be necessary in order to achieve the Master Plan goal of afforestation on private land.

Future actions

- Activate and review the implementation of the MPFD.
- The expansion of farm and social forestry planting, involving Governments institutions and NGOs, with assistance from international banks and aid agencies.
- Planting trees on farmlands to reclaim salt-affected and waterlogged areas.

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Give me fire and I will give you light.
(Arab proverb)

Any of us will put out more and better ideas if our efforts are fully appreciated.
(Alexander F. Osbon)

Palau

Country data	
Total land area (ha)	48,800
Total natural forest area 1990 (ha) % of total land	35,100/ 72
Reported plantation area 1990 (ha)	180
Population 1994	17,000

Source of data: Government statistics

General information

Palau consists of 343 islands, of which only nine are inhabited. The country is divided into 16 States, each having relative autonomy. Agroforestry is the traditional agricultural practice in the country. The main crops are: pineapple, banana, taro, cassava, papaya (grown among coconut), breadfruit, mango, betel-nut, and leguminous trees.

Tourism is a major and growing industry with some 40,000 visitors per year. As a Trust Territory of the USA, about 95% of the country's national budget comes from the USA. An environment strategy is presently being prepared with assistance from UNDP.

Forestland is owned by private landowners, communities, or State Governments. The national Government does not own or manage forest lands. Plantations of mahogany were established during the 1930 's, but most of the older plantations have already been harvested. A tree planting programme was started in 1970. Currently, the Forestry Department is planting about 10,000 mahogany seedlings and 5,000 seedlings of other species per year.

Forestry is a weak sector. It is a branch of the Division of Agriculture and Mineral Resources and is supervised by a Head Forester with a very limited staff. The responsibility for the management and conservation of natural resources, including forest resources, lies with the State Governments. There is a fairly good information base on soil, vegetation and timber. A forest inventory for the island of Babeldaop was conducted in 1987. A soil map on the scale of 1:10,000 is available.

The watershed is the most important element of forest management for a sustainable, clean and healthy water supply for the reef and marine ecosystems for tourism and fisheries development.

Since the late 1960s, the USDA Forest Service has been providing technical assistance including: a vegetation survey, a review of timber resources, a forestry plan, an inventory of ecotourism, a fire protection and fire fighting training, and a soil survey.

Policy and planning

A preliminary information mission to seven countries to launch a sub regional National Forestry Programme (NFP) in the South Pacific region was carried out in April 1994. Since that time no action has been taken for the launching of a Forest Policy and Strategic Planning Process following the Basic Principles and Operational Guidelines on National Forest Programme. The mission reported that information on conservation, land tenure, and land ownership is limited. Rehabilitation of degraded land and savannah in Babeldaob are important aspects that should be covered in a strategic planning exercise. Institutional aspects, i.e. organisation and human resources, are also weak.

Since the country is very dependent on its marine environment and marine resources for the fisheries and tourism industries, the forestry strategy has to be developed with strong linkages to these sectors.

The primary focus of forestry in Palau will be on reforestation and afforestation for watershed management. Acacia spp. is the main trees planted because they outperform other species in establishment and growth. However, the native species are beginning to be planted. The nursery capacity has been enlarged to meet the need for seedlings.

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Make the other person feel important-
and do it sincerely.
(Dale Carnegie – How to enjoy your life and your job)

If you can't be a highway, then just be a train;
If you can't be the sun, be a star;
It isn't by size that you win or you fail-
Be the best of whatever you are.
(Dale Carnegie – How to enjoy your life and your job)

Papua New Guinea

Country data	
Land area 1966 (thousand ha)	45,286
Total forests 1995 (thousand ha) / % of total land	36,939/81.6
Natural forest 1995 (thousand ha)	36,909
Annual Change in Forest Cover 1990-95 (thousand ha) / annual rate (%)	-133/ -0.4
Population 1997 (millions)/Annual Rate 1995-2000	4.5/ 2.2
Rural population 1997 (%)	83.4
GNP per person 1995 (US$)	1.160

Source of data: FAO- State of the World's Forest 1999

General information

Agriculture is the dominant sector in the Papua New Guinea economy, accounting for 35% of the GDP, 40% of exports, and providing the main source of livelihood for 85% of the population. Approximately 55% of agricultural production comes from cash crop production. Three main tree crops (coffee, palm oil, and copra) account for 90% of agricultural exports. Two-thirds of the tree crop production comes from small-holder farms.

Minerals are also important commodities, particularly copper and gold. However, mining in PNG is an enclave activity. Most investment expenditure goes to imported capital goods. Forward linkages to the rest of the economy are weak, particularly in employment generation. The country must, therefore, look to other major non-mineral resources for development.

Some key constraints, which have to be taken into account by the Government when launching development programmes, include:

- The rugged topography and spread of islands;
- The cultural and language diversity (some 700 different languages and dialects are spoken);
- Shortage of skilled labour and limited labour capacity of public institutions;
- Lack of infrastructure (especially for internal transport); and
- The fact that 97% of the land is held by clans and tribes under a customary tenure system.

The ecological value of biodiversity is enormous, with a rich diversity of Malay and Gondwanaland flora and fauna. The flora comprises more than 11,000 species, including 2,000 ferns. The lowland forests feature 2,000 timber species.

The forestry sector plays an important role in the subsistence economy of the rural population. It is a major source of food, provides fuel wood for rural energy needs, and meets other domestic consumption requirements. Population pressure on the highland areas has created local shortages of fuel wood and other forest products. The sector employed about 7,500 people, representing about 4% of the total formal employment. In many cases logging companies are responsible for providing roads, infrastructure and welfare services to the landowners. In general, most companies have a poor record of meeting these obligations.

Forest resources

The current estimate of total potential sustainable production from forest projects is approximately 3.13 million m3 per year. It is

estimated that 4.4 million ha of forestland will be converted to agriculture over the next 50 years, or an average of 2.6 million m3 per year over those 50 years. Thus, the annual log harvest (from forestry and conversion projects) will be approximately 5.73 million m3 per year.

The plantation resources are only of minor importance. There are, at present, three main private plantations, all operated by Japanese companies. A chip mill is operating at the Gogol Plantation. In 1995, 705,000 BDUs of wood chips were exported. As of 1999, the total reforested areas amounted to 58,000 ha, of which 35,200 ha were developed by the private sector. It was reported that some plantations were unsuccessfully developed due to the following problems: land tenure, resources ownership, poor management, and a lack of financial commitment to the project. To avoid duplication of mistakes, these problems should be overcome in order to develop successful projects in the future.

It was also reported that there are large amounts of available information from the past plantation research works; however, these need to be collected and documented. In addition, there is no specific revenue system or taxation regime in place, which would be suitable to encourage investment from the private sector. To make the plantations competitive and commercially sound, a major policy review is needed concerning the place, format, and nature of plantations within the forestry sector, including employment creation and improvement of deforested grassland.

Policy and planning

The National Forest Plan was approved by the National Forest Board on 8 May 1996 and subsequently ratified by Parliament in July 1996. The Plan is now official and all future Forestry Projects shall be developed under this Plan as required under Section 34 of the Forestry Act.

The National Forest Policy was approved in 1990. The two main objectives of the policy are:

- Management and protection of the nation's forest resources as a renewable natural asset;
- Utilisation of the nation's forest resources to achieve economic growth, employment creation, greater Papua New Guinean participation in industry, and increased viable onshore processing.

As indicated in the PNG Forest Authority (1998), Corporate Plan of 1998-2001, the corporate objectives of the Forest Authority is based on the principles of Sustainable Forest Management (SFM) as defined by ITTO. To give weight to its policy of sustainable forest management and to achieve sustainable development in the forest sector, the following objectives are being pursued:

- to formulate and maintain the National Forest Plan and the National Forest Development Programme as defined under the Forestry Act;
- to maintain sustained yield management of the country's commercial forest resources through acquisition of timber and management rights under Forest Management Agreements and management of the Permanent Forest Estate;
- to effectively control and monitor harvesting and export operations to ensure compliance with the Forestry Act and associated Government policies, guidelines and procedures;
- to promote resource owner participation in the management and utilisation of their forest resources;
- to provide advice to the Government and potential investors on forest resource utilisation options;
- undertake research programmes and data collection aimed at improving the knowledge base for sustainable forest management and reforestation;
- to promote a fair and equitable forest revenue system that provides for fair returns to landowners, industry and government and a self funding mechanism for the Forest Authority, which will ensure efficient operations;
- to promote and facilitate forest plantation development;
- to promote through extension, public understanding of the multiple value of trees

and forests for income generation and livelihood; and
- to invest in sound organisational development so as to maximise the Forest Authority's resource utilisation to meet the above corporate objectives.

The major problems that the Forest Authority faces when implementing these policy objectives are inadequate funding and lack of competent manpower. Lack of suitable legislation and regulations, including those relating to commercial development and biodiversity protection on customary owned lands, is another problem faced by the Forest Authority.

To respond to the international initiatives on sustainable forest development and to arrest deforestation, a National Forests and Conservation Action Plan (NFCAP) exercise was prepared in 1988-1989. The NFCAP identified six major programme areas and priorities for actions:

- Resource assessment with rapid resource appraisal and re-inventory of resources;
- A new resource management structure, including a National Forestry Board, Standing Committees, four National Forestry Boards, a new Forest Service and a new financial framework;
- Maximising returns from logging with a comprehensive review of royalties, export taxes, and other revenues from log exports, and by inviting marketing firms to raise their level of activity;
- Industrial development prospects with a review of the log export ban and the conducting of feasibility studies for sawmill/ board plants, wood chipping and pulp mills;
- Conservation and land-use including a World Heritage proposal, a national conservation strategy, rehabilitation of the existing national parks, an improved ecological and monitoring programme, training of local people, support to NGO activities, and a feasibility study for the establishment of a land-use research council;
- Institutional and human resource development.

Through external assistance, notably under the auspices of the NFCAP, the Forest Authority has moved forward in implementing its guiding policy of sustainable forest management. Some positive results have been achieved, including the following:

- Sustainable forest development
  As of 1993 onward, all new forestry operations have a cutting cycle of 35 years. Two approaches have been adopted as follows: as existing projects come out for review, they are being renegotiated to allow for a permitted annual harvest volume based on a 35-year sustainable logging cycle; and new projects are only being granted with an annual sustainable harvest volume.
- Acquisition of timber rights
  Land ownership in PNG is vested with customary owners. The acquisition or purchase of forest management rights from the customary owners is a prerequisite for a forestry development to take place. The acquisition consists of the following steps: a) conduct a forest inventory of timber areas; b) conduct land awareness and incorporation of land groups under the Incorporation of Land Group Act; and c) compilation and execution of a Forest Management Agreement. Major constraints and problems include: a) the procedures are lengthy; b) due to a capacity problem, land group documents may not be adequately assessed for compliance; and c) defining land boundaries is an extremely difficult task due to lack of proper documentation.
- Landowner Companies
  The Landowner Company (LOC) concept was developed in order to increase national participation in the forestry sector under the 1979 National Forest Policy. It is good in theory. However, most of the LOC's have been plagued by mismanagement, corruption, and in fighting between different landowner factions. The main problems are the lack of education and business knowledge by the majority of the landowners, difficulties in

successfully structuring the LOC's due to the complex land tenure system, and the proliferation of landowner's groups.

- Improving the level of monitoring and surveillance of log harvesting and export operations

  The standard of monitoring of forestry operations in the field has been set. This includes the engagement of a private surveillance company – SGS (PNG) Ltd to monitor all log export operations.
- Domestic processing policy

  A study to review the domestic processing policy options and to recommend the most efficient package of measures to encourage its development was completed in July 1998. The Government is yet to evaluate the recommendations of the study. It is realised that as a matter of urgency the Government must establish a clear domestic processing policy for the forestry sector which is achievable and sustainable. Currently, the official Government policy is for a log export ban by the year 2000. Clearly this will not be achieved. The reality is that with the country's current financial difficulties, the Government is eager to retain the financial benefits from log exports.
- Plantation sector

  There is huge potential for rural employment generation through plantation development, particularly on the large areas of deforested grasslands.
- Code of Logging Practise

  The PNG Logging Code of Practise was finalised in February 1996. As of July 1997, it becomes mandatory. There were some problems faced for the full implementation of the Code. The AusAid project on human resource development that commenced in 1995 has had a positive impact on the effectiveness of field staff. It is expected that all the forestry training in PNG will be overhauled, including the training of industry field staff.

The NFCAP exercise was reviewed by a team in September 1994. The team assessed the effectiveness, issues and constraints, impact, and relevance of NFCAP, as well as NGOs and donor agencies participation. The review team made the following assessments and recommendations:

- NFCAP has been partially successful in achieving its objectives;
- NFCAP should be continued, but requires strong and explicit commitment to sustainable conservation and a transparent administrative and legal process, backed by adequate financial and human resources;
- Enhancing landowner awareness, local capacity in management, non-wood forest products development and strengthening the NFCAP Steering Committee;
- Strengthening the consultation process;
- Improvement of the data-base, training, and capacity building;
- Decentralisation of planning;
- Promote the utilisation aspect to include small scale investment, phase out log exports, and review the revenue system;
- Develop a code of harvesting and its aspects.

Legislation

Some important legislation related to sustainable forest management have been executed, including the following:

- PNG Logging Code of Practice. The Code was finalised in February 1996 and approved by the Parliament in July 1996. Activities which have been undertaken to ensure full implementation of the Code include: a) Development of the key standard for selection logging; b) Development of a new set of field planning, monitoring, and control procedures which set out required pre-logging planning, monitoring, and control during logging operations, and post logging activities; c) Advertising the Code in all major newspapers; and d) Training courses for all field staff regarding the planning, monitoring, and control procedures of the Code.
- Forest Protection Policy. The Policy was passed by the National Executive Council (NEC) in July 1996, and the Guidelines for

Conversion of Forest was passed in January 1997.

Collaboration with partners

Several donors have been providing support to the forestry sector development in the country including: the Japanese Government (JICA), ITTO, the New Zealand Government, Australia (AusAid), bilateral NGOs from the USA (Mc. Arthur Foundation), WB, UNDP, GEF, and FAO.

On 28 April 1995, the Government announced that it had agreed to adhere to a structural adjustment programme in association with the World Bank, IMF, and other major donors and lending agencies in return for budgetary support to overcome the nation's financial problems. The programme includes the following specific forestry measures: a) refrain from introducing amendments to the Forestry Act of 1991; b) ensure that areas of natural forests which are used for log production are managed on a sustainable basis; c) introduce a new forest revenue system incorporating a marginal progressive output tax scale; d) provide the authority with an operating budget equal in real terms to that allocated in 1995; e) ensure that the Forest Authority formally adopts a forestry and operational code of conduct of the PNG's Code of Logging Practice.

PNG is a signatory of several international agreements and conventions, including: a) International Tropical Timber Agreement; b) Convention on Biodiversity Conservation; and c) Convention on Framework of Climate Change. PNG is actively involved in several international initiatives dealing with forest and forestry, including participating in the deliberations in various sessions of IPF/IFF, CITES and other international initiatives on forests and forestry.

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The only way you will never be criticised is if you do nothing,
say nothing or have nothing.
You will end up being a big nothing.
(Shiv Khera – You can win)

Philippines

Country data	
Total land area , 1996 (thousand ha)	29,817
Total forest 1995 (thousand ha)/ % of land area	6,766/ 22.7
Natural forest 1995 (thousand ha)	6,563
Change in forest cover 1990-95/ annual change in %	-1,312/ -3.5
Population 1997 (millions)/ annual rate of change 1995-2000(%)	70.7/ 2.0
Rural population 1997 (%)	44.2
GNP per person in 1993 (US$)	1,050

Source of data: FAO-State of the World's Forest 1999

General information

The Philippines is home to 10 major cultural groups and many ethnic minority groups. The agricultural sector plays a dominant role in the economy of the country. The industrial sector derives a large portion of its raw materials from the agricultural sector. Starting in 1992, the economy saw a modest growth. The Government is actively seeking to develop an economic framework that will create a more attractive investment climate and stimulate private sector business activities. Economic indicators show that the economic situation of the country is improving. This economic development was brought about by macro-economic stability, increasing foreign exchange, trade liberalisation, regulatory reforms, and privatisation.

The overall land use pattern of the country in 1999 was as follows (in million ha):

- Alienable or disposal (A or D) 14.145
- Forest lands 14.766
- Unclassified public lands 1.089

Over the past several decades, the country had become one of the most active producers and exporters of logs and other wood products in the Asia Pacific Region. These important contributions to the economy were not sustainable due to the massive conversion to other land uses, forest fires, and illegal logging, among other reasons. Regarding trade, the country had a wood and wood products export and import ratio in 1984 of 91:11, which changed to 51:49 in 1994. In 1998, the country was a net importer of wood and wood products; the total value of logs, lumber, plywood, and veneer was US$ 43.0 million, while imports totalled US$ 17.291 million.

The Government has crafted the Philippine Strategy for Sustainable Development (PSSD) as the basic framework for the country's development to promote economic growth without putting into jeopardy the existence of the country's biological resources and its biodiversity, vital ecosystem functions and the overall environmental quality. The PSSD has the following core activities:

- integration of environmental considerations in the decision making;
- proper pricing of resources;
- proper right reforms;
- establishment of an Integrated Protected Areas System;
- rehabilitation of degraded ecosystems;
- integration of population concerns and social welfare in development planning;
- inducing growth in rural areas;
- promotion of environmental education; and
- strengthening of citizen's participation and constituency building.

The Department of Environment and Nature Resources (DENR) is the government institution for the management of national parks, and other protected areas. At the moment, there are 69 terrestrial areas desig-

nated as national parks, of which 59 are under the control of DENR and the rest are under the Philippine Tourism Authority (PTA).

Forest resources

The estimated area of natural forests was about 5.39 million ha, or roughly 18% of the country's total land area as follows (in million ha):

- Dipterocarp Forests 3.54
- Pine forests 0.23
- Mangrove forests 0.11
- Mossy forests 1.04
- Submarginal forests 0.47

Strategy

The forest development programmes, strategies and approaches have to be geared to the PSSD, of which the following three development strategies have been crafted: Master Plan for Forestry Development; Community - Based Forest Management Strategy; and the 14-Strategies of the present Administration.

1. Master Plan for Forestry Development

The Government launched the Master Plan for Forestry Development (MPFD) at the end of 1988. It is a nation-wide and aggregate blueprint for the development of the forestry sector across a 25-year horizon. It presents a holistic approach to the multi-dimensional concerns in forestry. The function of the MPFD is to point the direction that the country's forestry sector should take, and to draw the support needed to move the sector in the prescribed direction. The international round table meeting to discuss the MPFD implementation was held in October 1990. The exercise was supported by the Asian Development Bank (ADB) and FINNIDA.

The general goal of the MPFD is to achieve the following conditions:

- equitable access for all Filipinos to opportunities for the development and management of the forests and their benefits;
- scientific management, conservation and utilisation of forest resources by a mix of managers from the private sector and local communities in partnership with the Government; and
- fulfil, on a sustainable basis, the people's needs for forest-based commodities, services and amenities.

The objectives of the MPFD are:

- to conserve the forest ecosystem and its diverse genetic resources;
- to meet the needs for wood and other forest products by placing all the country's production forest under sustainable management;
- to protect the land and its resources against degradation such as desertification, soil erosion, floods and other ecological calamities through proper land management and practices;
- to contribute to the production of food, water, energy, and other basic needs by properly managing upland watersheds;
- to promote social justice and equity, and recognition of the rights of indigenous communities (ICCs) in the management, conservation and utilisation of forest resources; and
- to contribute to employment and growth of the national and local economies through fully developed forest-based industries.

The plan proposes 15 programmes, grouped under three umbrella programmes (five programmes in each umbrella pro-gramme):

- man and the environment;
- forest management and products development, which encompasses the management and utilisation of forest resources to meet the needs of people for products, employment, and economic development; and
- institutional development to address the relevant concerns to ensure that forest development proceeds in a planned and well prepared manner. A major focus of the MPFD has been to provide opportunities for people's participation in forestry development, management, and utilisation so they will become dedicated advocates of forest conservation.

The MPFD exercise has been blended and incorporated into the country's medium-term development plan for the period 1993-1998 and Philippine Agenda 21. Future programs, projects, investment planning, and implementation will be tied-up with the MPFD and must be incorporated in the five-year development and annual plans. The aggregate cost of the 15 programmes is US$ 76.06 billion over the 25-year period 1991-2015.

Mechanisms to direct the implementation of the plan have been institutionalised. A formal planning organisational structure was evolved and serves as a focal point for forestry planning in the country, including the creation of four groups: the National Planning Group, the Regional Planning Group, the Provincial Forestry Planning Group, and the Community Environment and Natural Resources Forestry Planning Group. In addition to the above groups, other relevant agencies, including NGOs, private organisations, organised communities and beneficiaries of the Plan will actively participate in the overall planning and implementation through a continuous dialogue of consultation and mobilisation.

Drastic structural changes and policy reforms have been implemented since the adoption of the MPFD. A number of laws, executive orders and administrative orders were issued to guide implementation of forestry programmes, projects, and activities in support of the MPFD. Laws were also issued to sustain development strategies that evolved from the progressive turn of events and demands in the country, including the following:

- Department Administrative Order (DAO) No. 24, series of 1991 prohibits logging of the old growth, effective from 1st January 1992. Logging is banned on slopes of 50% gradient and over 1,000 meters above sea level. Demarcation of boundaries for permanent forests is nearing completion. Protection of these areas is being intensified under the newly institutionalised Forest Protection Information System (FPIS).
- Republic Act 7586, known as the National Integrated Protected Area System Act, protects and conserves the country's forest resources, and addresses the problem of environmental degradation.
- Republic Act No. 7161 imposes a forest charge equivalent to 25% of the FOB price for all timbers extracted from the forests;
- Department Administrative Order (DOA) No.3, series of 1993 prohibits the use of the highland yarding system in the dipterocarp forests.
- DAO No. 60, series of 1993 provides for the conversion of the existing timber licence agreements (TLAs) to industrial forest management agreements (IFMAS) under a production/profit sharing agreement.
- Executive Order No. 263 adopts community-based forest management as the national strategy to ensure sustainable development of the country's forestland resources. Consistent with the paradigm of shifting from commercial corporate utilisation, this envisions that organised local communities work together with the Government in the sustainable management of the forest resources.

A New Forestry Code (NPC) and an Environment Code (EC) designed to support the implementation of the MPFD were institutionalised. The Government, through the DENR, entered into a joint Memorandum of Agreement with the Department of Interior and Local Government, Department of Public Works and Highways, and the Civil Service Commission for urban greening, through an Adopt-a-Street/Park Programme.

Policy reforms streamline forest resources development. Among these policies are:

- a ban on logging in the old growth forest and critical areas;
- a ban on the export of logs and lumber;
- integration of all community-based forest management programmes and projects;
- the sustainable management of residual forests;
- application of appropriate technology on forest harvesting;

- improvement of forest-based industries;
- capability strengthening for forest protection and support institutions;
- establishment of a centre for forest pest management and research;
- inclusion of gender concerns in the development process;
- integration of environmental impact assessment;
- research and development.

One of the important MPFD long-term policy recommendations is that all the forest resources should be under efficient and equitable management, conservation, and utilisation for the needs of the people for forest-based commodities and services through appropriate means and on a sustainable basis. Among the important policy reforms are the people-oriented forestry programmes and forest plantation development programmes.

Under the people-oriented forestry programme are several components such as: the Integrated Social Forestry Programme (ISFP), Forest Land Management Agreement (FLMA), and Community Based Forest Management (CBFM). The ISFP recognises the needs of the forest occupants for the land they till by granting them a Certificate of Stewardship Contract, which provides them with a maximum of 7 ha of land with a tenure security for 25 years, renewable for another 25 years based on performance. FLA is a production-sharing contract entered into by the government and a family, community, or corporation for the management of plantation areas that have been established under the contract reforestation scheme. CBFM is a concept of allocating a portion of the public forest to a given community to manage.

Under the industrial forest plantation system, the government encourages private investors to engage in industrial forest plantations. Incentives available for investment in plantations include, among others:

- income tax exemption for three years after the start of commercial harvest;
- tax and duty-free importation of capital equipment;
- tax credit on domestic capital;
- deduction for labour expenses after the tax holiday;
- exemption from wharfage dues and export taxes and duties; and
- exemption from the contractor's tax.

Recently, the Socialised Industrial Forest Management Programme (SIFMP) was launched which recognises the individual rights of equitable access to natural resources development and utilisation. The Programme intends to enable individuals, families, co-operatives or corporations to engage in plantation establishment ranging from one ha to 500 ha. Qualified individuals/ groups would be given the following incentives:

- the right to harvest, sell and utilise plantation crops;
- export of logs, lumber and other forest products harvested from SIFMP in accordance with the government allocation system;
- exemption from payment of forest charges; and
- entitlement to appropriate and reasonable compensation for the developments in the area.

It must be remembered that the Master Plan was formulated in 1988 and that several new international and national initiatives have taken place since Rio, 1992, including the Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF). Several partners are of the view that the MPFD needs to be assessed or reviewed for its achievements, usefulness, weaknesses, threats, issues and problems. As requested by DENR, the UNDP Global Programme on Forests (PROFOR) commissioned a two-member fact finding mission in July 1999. The mission had the opportunity to meet with partners, including DENR, representatives from NGOs, business, academia, and bilateral and multilateral donor agencies. The objectives of the mission were to make a quick appraisal of the status of the MPFD in the context of current national and international policy environments relevant to the forest sector, and advise on future actions.

The main important outcomes of the report include the following:

- The country now has the lowest per capita forest cover in the region, i.e. 0.08 ha per capita; the deforestation rate of about 100,000 ha per year is considered to be very high. The causes have been a mix of bad policies (indiscriminate and uncontrolled logging) and the rapidly expanding population pressure (upland deforestation by settlers).
- The MPFD is very comprehensive and detailed in terms of its annual work activities. Following the MPFD, regional and provincial plans were also drawn up. The quantitative targets are the basis for its projection over the plan period (1991-2015), while focusing on capacity building in its immediate-term objectives. The MPFD does not clearly link how different programmes are co-ordinated, and how they will lead to achieving higher level objectives;
- Almost all of the first ten component programmes contain institutional components in the last five programme components. Therefore, there is some duplication and confusion amongst the components of the programmes;
- Due several reasons, the mission faced some difficulties in the process of collecting information on the status of the MPFD implementation. These include no annual targets; some programmes have accumulated targets for each period; several changes have been made under the people-oriented forestry programme (the largest programme in MPFD); and the formats for targets are inconsistent with the accomplishments.
- Implementation of some of programme components was below the targets. Some programme components exceeded the targets, including the following:
  - People-oriented forestry exceeded the target, i.e. 4.3 million ha against a target of 2.9 million ha;
  - the total number of projects under soil conservation and watershed management is almost nine times more than what was targeted in the MPFD;
  - the buffer zone management area was three times greater than the target i.e. 26,500 ha against 9,000 ha; and the protected area system coverage was over eight times over the target, i.e. 1.4 million ha against a target of 0.17 million ha;
  - urban forestry was able to establish many times more mini parks/ forests and roadside plantings than were targeted
  - forest protection areas of about 10 million ha were placed under effective protection; the DENR has been equipped a helicopter and a vessel, and constituted 206 forest protection committees to effect surveillance and prevent illegal logging.

In addition to the above assessment, substantial consultations have taken place concerning the reformulation of the Master Plan to gear to the new international and national initiatives toward sustainable forest development.

2. Community Based Forest Management Strategy (CBFM)

The Government has adopted the CBFM as the national strategy to ensure sustainable development of the country's forestland resources pursuant to the provisions of Executive Order No. 263 of 19 July 1995. The CBFM provides mechanisms for the efficient and sustained management of forestlands and coastal areas through responsible development, protection, conservation, and utilisation of forest resources by organised and empowered local communities.

CBM applies to all areas classified as forestlands, including allowable zones within protected areas not covered by prior vested rights. It includes the following features:

- security of tenure – The CBFM agreement entitles forest communities to use and develop the forestland resources for a duration of 25 years, renewable for an additional 25 years;
- social equity – social justice is a basic principles underlying CBFM in granting forest communities, tenure and comprehen-

sive rights to use and develop forest resources;
- DENR and Local Government Units (LGUs) partnership is vital to the success of the CBFM. DENR and LGUs , in active collaboration with other sectors, are working together to help strengthen local forest communities in managing forest resources;
- investment capital and market linkage – CBM helps participants gain access to investment capital, identify markets, and build marketing capabilities.

3. Fourteen-point strategies of the Administration

Of the 14 strategies under the present Administration, 10 are directly focused on forest resources management as follows:

- delineation of the permanent forest boundary;
- effective protection of existing forest resources and rehabilitation of degraded lands;
- development of an integrated land use plan;
- revitalisation of the forest-based industries and enhancement of private investment in the forestry sector rehabilitation activities;
- strengthening the implementation of community-based forest management;
- upgrading the capability and encourage private sector support to the natural resources and environmental research sector;
- strengthening the partnership between DENR and LGUs ;
- simplifying the EIA process;
- strengthening collaboration with UN agencies and donor communities in environmental protection and sustainable use of natural resources; and
- promotion of sectoral complementation.

Major programme/ projects

There are several programmes/ projects in the forestry sector development, including the following: 1) National Forestation Programme; 2) Forest Protection; and 3) Special Forestry Projects.

1) Forestation programme

Tin July 1986, the Government launched the programme that aimed at the rehabilitation of 1.4 million ha of denuded forestlands from 1986 to 2000 at a rate of 100,000 ha annually. Some of the major activities are as follows:

- Government Sector Initiatives, which is composed of several activities as follows:
  - Regular reforestation activities. There are 229 regular reforestation projects with a total area of 1,128,841 ha. In addition, there are 43,368 ha of plantations carried out by the Government and NGOs.
  - Urban and roadside forestry. In 1998 there were 114 mini-forests established throughout the country with an area of 139 ha. In the same year, nation-wide planting was also conducted with an accomplishment of 269 km.
  - Watershed rehabilitation/ management programme. Major activities undertaken include reforestation, protection and development of natural forests, community/ social forestry, erosion control and enhancement of environmental resources and an information and educational campaign.
  - Forest sector project. This project is funded by ADB/ OECF.
  - Let's go green. It aims to revitalise and operationalise the greening of national/ provincial/city/municipal highways and the river/stream banks stabilisation nation-wide.
  - Other Government agencies initiative.
- Private sector initiatives are composed of several activities as follows:
  - Industrial plantation programme. As of June 1999, there were 192 IFMAs/ ITPLas and 469 SIFMAs with total areas of 502,276 ha and 9,599 ha respectively, of which 120,434 ha have been planted.
  - Private forest plantation development. As of June 1999, there were 42 private plantation developers covering an area of 2,922 ha.

* Mandatory plantation development. The plantation activities were in line with the issuance of forestland grazing lease agreements and forestland grazing permits, which was started in November 1982.

b) Forest protection

It covers several activities, including forest law enforcement and resources control monitoring through the deployment of forest rangers in critical areas and by the use of aircraft for aerial surveillance, mapping and telecommunications; integrated pest control and management to provide protection to the natural and plantation forests against pest and diseases; and forest fire control to reduce the incidence of wildfires in fire-prone areas and regions.

Around 288 illegal logging hotspots were neutralised, and 499 check-points were established. These led to the confiscation of illegal cutting of 8,655.26 m3 in 1998, and a total of 5,912 m3 for the first semester of 1999.

c) Special forestry projects

On 10 October 1996, DENR integrated and unified all the people oriented forestry programmes of the government under CBFM. As of June 1999, a total of 4,075 sites covering an area of 5,040,342 ha were established nation-wide. Of these, CMFM tenurial instruments covered 3,926,266 ha. The specific programmes/ projects integrated under CBFM include the following:

- Forestry sector project (FSP). It is being implemented through financial assistance from ADB, Japan-OECF, and the Philippines Government. At present, the FSP is being implemented in 207 subproject sites covering an area of 117,000 ha. As of June 1999, a total of 38,482 ha had been planted under the ADB component, or 103% of the target. Meanwhile 27,186 ha have been planted under the OECF component out of 80,000 ha targets.
- National Resources Management Programme (NRMP). It was conceived for the purpose of helping DENR develop a policy environment conducive to ecologically sound and sustainable economic growth in collaboration with local government units, communities, NGOs and the private corporations;
- Community Forestry Project. It is funded through a grant from the German Government. It started in 1997 and will end in 2001. The project aims to attain the sustainable development of the entire province of Quirio through agroforestry, community forestry, land use planning and resource management, rural financing and capacity-building of local government units and DENR personnel.
- The Low Income Upland Communities Project (LIUCP). It is an integrated area development undertaking in the province of Oriental and Occidental Mindoro. It was initiated in January 1990 and will be terminated in December 2000. The main activities include community organising and co-operatives development, resource access and management, agroforestry, reforestation and livelihood, and infrastructure and social services delivery.
- The Watershed Resources Development Project (WRDP). It aims to formulate a national watershed strategy and long-term programme of investment for the sustainable management of watershed areas in the country.

Trade and industries

During 1960s and 1970s, the export of logs and wood products contributed to generating foreign exchange earnings. From 1990 to 1999, there was a significant decrease in the number of timber licence agreements (TLA), from 75 in 1990 to only 18 in August 1999. Consequently, the annual allowable cut (AAC) declined from 4.7 million m3 to only 0.5 million m3, or by 89.4%.

There were 55 active sawmills, of which 11 operated with timber concessions, with annual logs requirements of 904,000 m3 in 1998. The number of active sawmills gradually decreased from 1990 to 1998 at a rate of 9.8% per annum, due to the insufficient supply and high

cost of raw materials. The average recovery rate of the sawmills was estimated at 60%.

In 1998, the country had 19 veneer and 33 plywood plants with a total annual log requirement of 2,953 thousand m3.

The exports of major forest products drastically declined from 1991 to 1999. There was no export of logs in 1998. Export bans on logs and lumber were imposed in 1986 and 1989, respectively. These policies have encouraged the development of value-added products for export market.

Unlike exports, imports of wood and wood products have increased significantly. In 1998, the total import of logs was US$ 4,875 million, and imports of lumber and plywood were also increased substantially. Table 1 shows export and import data of the country. In 1998, the country was a net importer of wood and wood products.

Table 1: Exports and imports (in 1000 US$)

	1991	1998
Exports		
Logs	142	-
Lumber	16,634	5,543
Veneer	9,457	11,748
Plywood	41,761	80
Imports		
Logs	29,960	54,875
Lumber	2,135	71,188
Veneer	824	16,586
Plywood	486	661

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You love him, although you have not seen him, and you believe in him, although you do not now see him.
(quoted from I will return to the Father)

Samoa

Country data	
Total land area (thousand ha)	283
Total forest area 1995 (thousand ha)/ % of total land	136
Natural forest 1995 (thousand ha)	127
Total change in forest cover 1990-95 (thousand ha)	-8
Population total 1995 (million)/ Annual rate of change 1995-2000 (%)	0.2
Rural population 1995 (%)	78.9
GNP per person 1993 in US$	980

Source of data: FAO - State of the World's Forests 1999

General information

Samoa is composed of four inhabited and five uninhabited islands. Upolu is the most developed and densely populated (72% of the country's total population) while Savai'i is the largestin area. More than 70% of the land is under customary ownership. The country's economic potential lies primarily in agriculture, tourism and small and medium-scale industry.

The main agricultural commodities are copra, taro, fish, bananas, cocoa, beef, pork, passion fruit and poultry. Industrial production is based on agriculture raw materials, some of which are imported from Tonga and elsewhere. These products include coconut oil, electricity, beer, cigarettes, timber, coconut cream, soft drinks, soap, copra meal, corned meat, veneer, matches and paints.

In the past, the forests supplied the majority of the country's sawn timber needs, poles, building materials, fire wood, certain food and medicines. Paid employment in the forestry sector supported 10% of the labour force.

Over the past 20 years the forests have provided export earnings. Notable achievements of forestry functions and the contribution to the socio-economic welfare include the National Forest Policy, the National Environment Management Strategy, Village Conservation Agreements, and the setting up of environmental NGOs. Thus, the support to forestry development from politicians, policy makers, business persons, and urban and rural communities had been quite encouraging.

Forest resources

The Samoa land use pattern is predominantly one of indigenous forests rather than agricultural cultivated lands. Forest in Samoa is unique in its biodiversity. It supports 775 vascular plant species, of which 30% are found nowhere else. There are more native flowering plant genera than in any other archipelago in Polynesia. There are 21 butterfly species and 11 species of reptiles, including 7 lizard species and 1 snake type. There are 43 resident bird species, of which 8 are found nowhere else.

The overall land use of the country is presented in Table 1.

Table 1: Land use

Land type	Area (ha)	%
Merchantable forest	13,574	4.8
Forest protected under village conservation agreement	3,089	1.1
Watershed areas	31,992	11.3
National parks and reserves	2.800	3.6
Land available for reforestation	10.000	3.6

Agriculture and crop land	98,000	34.7
Recent lave flows	11,433	4.1
Unproductive forest areas	111,112	39.4
Total	282,000	100.0

Note % = of the total land area

Due to the termination of the New Zealand bilateral assistance forestry development in Samoa was reduced to a new level of operations. Therefore, the emphasis has been on the accountability of output performance measures. The level of plantation development has also been reduced by about 4%.

Policy and legislation

The Government has approved the National Environment Management Strategy (NEMS). In addition, the Village Forests Conservation Agreement has been approved and environmental NGOs have also been setting up. These are evidence of the Government's and the people of Samoa's commitment in their efforts to conserve the forests and the environment.

The principal forestry legislation are the Forest Act, 1967 and the Forest Regulation, 1969. Other related Acts include the Lands Survey and Environment Act, 1989, National Parks and Reserves Act, 1974, Alienation of Customary Lands Act 1965, Lands Act, 1964, and the Water Act, 1965. On the basis of these legislation and other national management plans, two policy documents have been formulated and have been approved by the Government, i.e. the National Forest Policy, 1995 and the Watershed Protection and Management Regulations, 1992.

Five guiding principles provide the foundation for the forestry policy:

- Optimal and sustainable use of the forest resources;
- Forest protection;
- Basic human needs;
- Individual and collective responsibility; and
- Economic development.

The formulation of the Forest Policy, 1995 followed a long process and several phases, including the following:

- review and consultations (June-July 1991);
- policy formulation (July-September 1991);
- post-cyclone re-assessment and consultations (1992);
- final draft (April 1994).

The Forest Policy will be used as the basis for the formulation of programmes and projects to strengthen the forestry sector and to seek donor support and national funding. The sector analysis should take into account on-going programmes and related activities.

Forestry is one of the Divisions under the Ministry of Agriculture, Forests, Fisheries, and Meteorology. The Forestry Division is responsible for the implementation of Government policies related to forestry development in the country. There are 4 main sections under the Forestry Division, i.e. Reforestation, Research, Indigenous Forest Monitoring, and Watershed Protection and Management.

The country has supported the Code of Logging Practice (COLP). This is one of the important steps towards the implementation of sustainable forest management. The draft is almost completed. In addition, the Reduced Impact Logging Guidelines (RIL) have been drafted to complement the COLP implementation. However, intensive training and awareness programmes for all the stakeholders have to be undertaken.

The SPC/GTZ/Pacific Regional Forest Programme is currently implementing a sustainable indigenous forest management project in Samoa. An area of 400 ha of natural forest has been identified and demarcated, and pre-inventory has been completed. A logging system will be developed based on the principles of sustainable forest management

The policy related to indigenous forestry production has been given a higher priority that calls for the sustainable utilisation and management of the remaining merchantable indigenous forests. The following strategies were adopted by the Government:

- Liaise with industry, landowners, timber merchants, and end users on the implications of the forest policy;
- Increase the royalty rate;

- Prescribe an administrative levy to reflect the cost of Government supervision on logging;
- Strict enforcement of logging and utilisation standards, with higher penalties for non-compliance;
- Lower duty on imported timber; and
- Fire protection.

A National Environmental Management Strategy (NEMS) is also being completed with assistance from UNDP, UNEP, and WWF. Another achievement in the field of policy and legislation was the adoption of the Watershed Protection and Management Regulation, 1992, which created a better legal framework and co-ordinating mechanism among agencies involved, directly or indirectly, in the protection and use of water resources.

In addition, conservation farming using the concept of agro-forestry is being practised at the demonstration level under the on-going watershed management and conservation education project. Tree planting on individual farmer's plantations located on or adjacent to watersheds is being promoted.

Research and extension

There are plans to strengthen forest research and development with the appointment of professional staff to redefine objectives and priorities. Among the new objectives are the management of indigenous forest and natural resources, watershed management, and community forestry.

A complete National Ecological Survey, finalised in 1992, identified 14 key sites for conservation of biodiversity in the coastal lowlands. Recently, a non-governmental agency was established, and two conservation agreements with villages have been negotiated.

Several research studies have been undertaken with support from several bilateral institutions, including the following: a) the establishment of field trials for priority tree species in collaboration with SPRIG; b) slow release fertilisers and testing other alternative growing media studies in collaboration with ACIAR; c) testing of silvicultural systems appropriate for natural regeneration; d) assessment of indigenous tree species suitable in line planting; e) community forestry; and f) weed control.

In regard to community participation, considerable efforts had been made to encourage people in tree planting. Workshops and meetings with farmers and villagers have been conducted. In the near future it is hoped "to develop and establish an effective, well-structured community forestry extension section, with programmes and services that provide the delivery of reliable, professional, technical information, training and shared experiences and supports the needs of the community for both environmental and economic gains".

In regard to training, substantial financial support has been provided by NZODA, ADB and UNDP/FAO, for both long- and short-term training using overseas and local teaching institutions.

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Solomon Islands

Country data	
Total land area 1996 (thousand ha)	2,799
Total forest area 1995 (thousand ha) / % of total land area	2,389/ 85.4
Natural forest 1995 (thousand ha)	2,371
Total change in forest cover 1990-95 (thousand ha)	-23
Annual rate of change 1990-95 (%)	-0.2
Population total 1997 (millions)/Annual rate of change 1995-2000 (%)	0.4/ 3.2
Rural population 1997	81.9
GNP per person 1995 in US$	910

Source of data: FAO - State of the World's Forest 1999

General information

The Solomon Islands gained its independence from the British Government in 1978. The country's population is a multi-racial mix with 94% Melanesians, 4% Polynesians, 1.4 Micronesians, 7% Europeans, 2% Chinese and 3% others. The country is composed of many islands with the main chain comprising: Choiseul, Shortlands, Vella de Vella, Renonga, New Georgia group, Russell Islands group, Florida group, Guadalcanal, Isabel, Malaita, San Cristobal, Santa Cruz and Outer Islands, and outlying atolls. The country form a mountainous and atoll archipelago stretching over 1,400 km into the Pacific to the south of the British Commonwealth. There are over 300 islands.

The Solomon Islands economy relies heavily on natural resources exports such as timber, fish, copra, palm oil, cocoa, other agriculture products, and gold. The country is struggling to cope with lack of domestic capital, lack of infrastructure, difficult transport and communication logistics, low literacy rate, rapid population growth and deliberating internal ethnic tensions. The combination of improved timber prices and the reduction of log supplies from Malaysia and Indonesia in 1990, resulted in a dramatic upsurge of logging activities in the Solomons. The Government is undertaking a massive reform programme aiming to increase efficiency in the public service and in the management of economy.

About 88% of the total land area of the Solomons is under customary ownership. The majority of the rural population rely on forests to supply many of their needs: timber, poles, rattan, building materials, fruits, medicines, oils, honey, nuts, leaves, firewood, etc. The forest is central to the lives of many Solomon Islanders and needs to be conserved if their present way of life is to continue.

The forest resources are of prime importance to the economy. Direct forestry paid employment, rivals agriculture as the largest employer, with an estimated 2,700 people employed in the forest industries.

Forest resources

The Solomon Islands has around 2.4 million ha of natural forest (85% of the total land area) and almost all are in custom ownership; but only about 10% is considered suitable for commercial exploitation. The non-commercial areas are situated on steeply sloping land or scattered across many small islands and are presently not economically feasible to log.

The interim results of the recent natural forest inventory indicate that the total amount of harvestable wood is approximately 13 million m3, which at current logging rates would be exhausted within 16 years. Reducing harvesting to sustainable levels and improving logging practices are two major issues which need to be tackled. But, recently there is added concern over the high population growth and pressure may be exerted on land and forests, 9% of which have been degraded due to agricultural activities, swidden subsistence farming, logging, and damaged by natural

disasters such as cyclones.

Where necessary to protect a water catchment area, the Minister may declare any are as a forest reserve. This power allow for restriction of the rights of owners to affect the values of the land as a catchment. Public land whether freehold or leased may be declared to be a State Forest with the consequences that there is security of tenure for forestry developments such as state owned plantations. Similarly state forest reservation can be used to protect important conservation values.

At present, there are 91 logging licenses of which 19 are operating. These provide 50% of the country's export revenue earnings. The largest of these are foreign owned, providing capital and expertise, but also resulting in a significant share of profits offshore. There are also more than 50 smaller licenses, each cut only a small amount of timber, generate cash at local level and supply timber primarily for local uses. Rapid population increase and the desire to build permanent housing construction resulted in the increasing demand for timber is constantly growing.

Over the next several years the cost of timber extraction will rise because the remaining resources will be increasingly difficult to access. The current harvesting rate is about double of the long-term sustainable rate.

Policy and planning

British ODA provided technical assistance for the preparation of the Policy Formulation and Strategic Development Plan. A planning expert was recruited for two years starting in April 1994. The exercise aimed at integrating the various past and on-going projects - e.g. national forest inventory, timber control unit, extension forestry programme (supported by New Zealand, British ODA, and the European Union), forest plantations programmes (supported by AIDAB) - into a development plan for sound, long-term and sustainable use management and development of forest resources. The Government terminated the NFAP in October 1995, and then the Forest Plantation Inventory Project and the Timber Control Unit Project.

A National Environmental Management Strategy was prepared in 1991. Forestry issues, as well as raising public awareness of the important role of the forestry sector, were considered major priorities.

In 1979, most "Timber Rights" were given to logging companies in the alienated lands. Since 87% of the land is under customary ownership, the logging companies have to acquire the "Timber Rights on Customary Land. Companies which have been carrying out logging operations and establishing plantations in the Solomon Islands are from New Zealand, the United Kingdom, several European countries, Korea, and Japan.

In early 1995, when the new Government took over, one of its policies was to privatise all Government plantations.

There are 70 registered Non-Government Agencies in the country under the umbrella of the Development Services Exchange, but only six are engaged in forestry sector development. They are quite active in assisting resource owners in land use planning and development, and they also provide some training in timber grading, surveying, sawmilling, and marketing.

Representatives of NGOs from the Solomon Islands participated at a meeting of foresters and non-government organisations (NGOs) from four countries: PNG, Solomon Islands, Vanuatu, and Fiji. The meeting was organised in Fiji in September 1995, to discuss forestry projects and plan how they could work better together. The NGOs' philosophy focuses on the resource owners as a target group. At the meeting, the NGOs' presentations were grouped into:

- Ensuring fair return, especially monetary;
- Owners having effective control of their forests;
- Reducing the adverse environmental impacts;
- Importance of working with resource owners, Governmental agencies, and other NGOs.

In the Solomon Islands, the SIDT (Solomon Island Development Trust) is running two projects i.e. the Eco-Forestry Unit, which concentrates on teaching chainsaw-milling and forest management, and the Conservation in Development Project, which is developing eco-tourism and Ngali nut oil production.

The National Co-ordinating Unit has promoted the Strategic Planning process and established liaisons with representatives of the

forestry sector, NGOs and the donor community. Relevant forest sector information has been gathered and stored and the main forestry issues have been written up into an "Issues Paper". Several studies have been commissioned and a number of proposals have been made for forest sector initiatives.

Legislation

A national forestry conference was held in late 1994, during which about 100 delegates from all provinces discussed the proposed new forest law and main forestry issues. The recommendations were published and presented to the previous Government. A Steering Committee was formed to guide the process of finalising the draft, comprising representatives from various ministries, the provincial governments, landowners, the forest industry, NGOs, and the National Council for Women.

A national forest policy, which supersedes all previous policies, was formulated in the last quarter of 1994, and approved by Government caucus on 16 December. The policy declares the need for sound forest management, maintaining the forests in perpetuity, improving forest industry production, increasing the level of domestic processing, enhancing employment, privatising forest plantations, and supporting research and training.

The Policy and Evaluation Unit of the Office of the Prime Minister has been instrumental in the drawing up of the current policy, which supersedes all previous policies. The objectives of the current Forest Policy "PP4/94, Development of the Forest Sector and related Industries/ Resource are to:

- ensure sound forest management, toward sustainable development;
- improve efficiency of forest industries and maximise market value of logs and sawn timber;
- support research to promote the appropriate end-users;
- promote the involvement of forest owners in the operations;
- enhance employment opportunities and undertake manpower planning and training;
- setting up a forestry college or institute in Solomon Islands:
- promote public education and awareness of the dangerous affects of the environment pollution and destruction;
- encourage diversification of the timber industry, including downstream processing, and the banning of logs exports by the year 2000; and
- strengthening the Timber Management and Extension Section of the Forestry Division.

A new Forest Act was passed by the Parliament in June 1999 and implemented with Regulations on 29 February 2000. It was required because the previous law was inadequate to deal with modern forestry practice. Since its consolidation in 1969, the Forest Resources and Timber Utilisation Act was amended nine times, including two major amendments in 1977 and 1990. The Forest Division is still coping with the multitude of disputes and disappointments caused by the complexity of the Act and by abuse of its processes.

The objectives of the Forests Act 1999 are as follows: a) to ensure proper management of forest resources in an efficient and effective ways and ecologically sustainable manner; b) to promote the development of a timber industry that ensures maximum benefit to present and future Solomon Islanders; and c) to protect and conserve forest resources habitats and ecosystems. These objectives are explained and established through a set of principles, which guide the Minister and the Commissioner of Forests in the exercise of their power, include: a) sustainability of resource utilisation; b) the rights of custom owners; c) application of the precautionary principle to management decisions; d) the balancing of economic and ecological objectives; e) the protection of biodiversity; f) consistency with international treaties and obligations; and g) consistency with the national policies for forest resource conservation and timber industry development.

In regard to promote the sustainable forest management, a code of forest practice has been drafted. The code is an important component to achieve the objectives of the Forest Act. Attention to the code is mandatory under the new legislation and there are significant punitive powers. The first priority for implementation is to update the current draft code. Training of officers and licenses will also be important. Similarly, the knowledge of the community concerning forest and forestry and the code should be improved.

The Code should not be taken as a means to punish offenders, but rather as a set of guidelines to safeguard the environment, resources owners, operators, and sustainability of resources. The guidelines contained in the document are binding and will apply to all natural forest harvesting operations. The major part of the Code is comprised of: the Administrative, Policy and legislative framework, land use management, harvesting planning, construction work for timber harvesting operations, harvesting operations, weather limitations, rehabilitation of logged over areas, bush and camp hygiene, Heli-logging, and evaluation.

For the implementation of the Forest Act 1999, including re-equipping and re-training, AusAID/SIG has provided funds of AUS$ 16.5 million for a forest management programme for three years, which was started in August 1999. The programme has 6 components as follows: a) providing policy regulatory and legal framework for a sustainable forest industry; b) improving forest monitoring and revenue capture; c) improving infrastructure for monitoring; d) improving institutional arrangements; e) crafting policies for increasing domestic processing; and f) improving inventory and silviculture.

For issuing of a license, a procedure has been formulated that it will ensure the proposed harvest area is suitable for the purpose through a determination of potential forest uses. This involves an assessment of the capability of the land to support a commercial timber harvesting. This will prevent unrealistic expectations being raised and will ensure that forest harvesting is not permitted in areas of special environmentally sensitive.

Procedures are included to ensure that landowners are properly identified and notified of any application. Negotiation between logging companies and landowners must in future be in accordance with the new procedures.

Where the wood is for custom or domestic purposes and not for sale, no licence is required. If forest owners would like to sell timber, there are local timber harvesting licence and community timber harvesting licence available. A community may combine their efforts to cut up to 2,000 m3 per year under a community timber harvesting licence. The new legislation treats large-scale land clearing in the same way as timber harvesting, i.e. a permit is required. Traditional clearing for garden sites and village use does not require a permit.

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Sri Lanka

Country data	
Total land area (thousand ha)	6,463
Total forest area 1995(thousand ha) / % of total land	1,796/27.8
Total change in forest cover 1990-95 (thousand ha) / annual rate (%)	-101/-20
Population 1997/annual rate of change 1995-2000 (%)	18.2/1.0
Rural population 1997(%)	77.3
Gross Domestic Product (GDP per capita) 1995 US$	700

Source of data: FAO- State of the World's Forest 1999

General information

Sri Lanka consists of a highland area in the south central part of the island, which rises to about 2500 m above sea level, and the lowland plains surrounding it. The climate is tropical and maritime. Three major climatic zones can be recognised based on the rainfall pattern: the wet zone (over 2500 mm/year); the intermediate zone (1900-2500 mm/year); and the dry zone (1250-1900 mm/year), which has a markedly seasonal rainfall regime and where dry conditions prevail from May to September. Mean annual temperatures vary from about 28 °C in the lowlands to 18 °C at around 2000 m. In the wet zone, the tropical rain forest is the original vegetation type with a gradual change in composition moving from the south-western lowlands to the central mountains, at elevations ranging from 1,000 to 1,800 m. The original vegetation is classified as "tropical highland rain forests". At the still higher elevations, with lower temperatures and higher humidity, tropical mountain forests occur.

It is widely accepted in Sri Lanka that deforestation is one of the major environmental problems and that unless planned action is taken, the demands for various forestry products and services will outstrip the productive capacity of the remaining forest resources. Sri Lanka's varied topography and tropical island conditions have given rise to extremely high levels of biological diversity and endemism. Sri Lanka has greater biodiversity than most Asian countries when measured per unit area. More than 3,650 species of flowering plants, 300 species of pteridophytes, about 400 birds, almost 100 mammals and more than 160 reptiles can be found in Sri Lanka. And 26% of the flowering plants, 76% of land snails, 60% of amphibians, and 49% of the reptiles are endemic to Sri Lanka.

The rate of plantation establishment per year has been in the range of 3,000 ha. In addition to plantation establishment, enrichment planting of degraded natural forests and protective planting by the Forest Department, village reforestation through selected farmers on a short-term 4 year lease agreement supported by payment of incentives was carried out under the Participatory Forestry Programme (PFP). The activities under the PFP programme were home garden development, raising of farmers' wood lots, and miscellaneous planting. A new approach was launched in 1995 i.e. establishing forest plantations on barren state lands through long-term 30 years leases to private individuals and institutions.

The adaptation of new technology for forest mapping enables the preparation of 1:50,000-scale maps. The computerised forest inventory data base has enabled the preparation of five management plans for the main plantation species such as teak, pinus, eucalyptus, and mahogany. All plantations will

be managed according to these management plans by 1998.

Since August 1994, the management of wildlife under the Department of Wildlife Conservation is no longer under the purview of the Ministry in charge of forest. A project supported by the Global Environmental Facility (GEF) is being implemented to upgrade the facilities of the Department of Wildlife Conservation. So at present, forestry and wildlife management are administered by two separate departments under two ministries. As the follow-up to the commitment to the International Convention on Biodiversity, a Biodiversity Action Plan is being prepared.

Forest land use

To ensure sustainable use of forests and related aspects, strategies to promote sustainable land use for forestry have been drawn up. The logging ban, which was enforced in 1990, is still in effect. Harvesting is done in forest plantations of mainly eucalyptus, mahagony, and pinus.

In regard to forestland use, the state forestland will be classified into the following categories based on the relevant management objectives as follows: a) Class I: these forests are conserved and preserved to protect biodiversity, soils and water and historical, cultural, religious and aesthetic values; only non extraction uses, such as research and recreation, are allowed in these areas; b) Class II: non extraction uses, such as scientific research, protection of watersheds and habitats of wildlife and regulated nature-based tourism, are allowed, and collection of NWFPs and firewood by local people living adjacent to forests is also permitted; the broad management objectives of Class II would be the same as in Class I; c) Class III: these forests are to be managed for multiple use production purposes for sustainable production of wood for the national needs and NWFPs for the benefit of adjacent communities; d) Class IV: these forests consist of forest plantations and agroforestry systems in state lands for production of wood and NWFPs by the state and non state sectors, including deforested and degraded state lands suitable for plantation forestry and agroforestry development.

Forest resources

According to the Government Statistics, the dense natural forest cover represents around 23.9% of the land area of the country; if the sparse forests are included, it becomes 30.9%s. The total forest plantation areas covered around 135,000 ha in 1998, of which teak, mahagony, eucalyptus, Acassia auriculiformis and Pinus caribaea were the main species.

During the dry periods, occasional forest fires cause significant damage to forest plantations. The occurrence of fires in natural forests is very rare. Records are kept of no diseases that cause damage to forest trees.

The total area of protection forests (conservation forests), which are managed by the Forest Department and Department of Wildlife Conservation, is around 271,000 ha.

Policy and planning

The First Forestry Master Plan (FMP) was prepared during 1983-86 by the Forestry Planning Unit of the Ministry of Lands & Land Development under the Forest Resources Development Project funded by FINNIDA and IDA of the World Bank. It was a product of its time and was a classic investment programme. However, this was the first meaningful step taken towards providing a coherent, comprehensive long-term framework for the development of the sector. As a result of the justified criticisms made towards the FMP, an environmental component was added to the five-year investment programme.

In order to implement the FMP, a project called the Forest Sector Development Project (FSDP), co-financed by the World Bank, FINNIDA, ODA, and UNDP\FAO, was launched in 1990. Because of its comprehensiveness, this project can be regarded as a landmark project in Sri Lanka's forestry sector. It has been the key vehicle in implementing the FMP. The

revision of the FMP was included as one of its project components. The main components of the FSDP were:

- Environmental management in forestry development;
- Forest Management;
- Plantation establishment and maintenance;
- Forestry education and training;
- Research and information; and
- Institutional development.

The inclusion of the environmental management component in the FSDP was a significant milestone in this country's forestry development. This enabled the setting up of two environmental management units in the ministry and the Forest Department (FD). The environmental management unit set up in the FD initiated the National Conservation Review (NCR) for making a hydrological and biodiversity appraisal of all the major natural ecosystems in the country. The NCR, which at present is nearing completion, is an attempt to identify the minimum conservation area network in which the biological diversity of the country's forests is fully represented. Based on the results of the NCR, 13,000 ha of wet zone forests have been set aside for conservation and the management plans for these areas are being formulated. The work done in this regard has also helped to establish a comprehensive environmental database, covering both fauna and flora. The FSDP was successfully concluded in 1996.

The revision of the Forestry Master Plan, which was called the Second Forestry Master Plan, commenced in July 1993 with assistance from FINNIDA. Although only a revision was envisaged at the beginning, due to the deficiencies of the first FMP, and the fact that more detailed work had to be completed and also on the present emphasis on the "sector", the final output of this exercise can be regarded as the preparation of a Forestry Sector Master Plan (FSMP).

This plan, accepted in July 1995, is the result of a national exercise carried out jointly by senior staff and also including numerous NGOs. This can be cited as one of the rare examples of a successful joint effort in support of strategic planning, where the officials of the Ministry in charge of forestry, the Forest Department, NGOs, and other relevant agencies were fully involved in its preparation.

The first FMP was a classic investment plan. In contrast the Second FSMP is a policy, strategy, and programme-oriented plan. The National Forestry Policy (NFP) forms the foundation of the Second FSMP.

The main objective was to prepare a comprehensive long-term development framework which, when implemented, will ensure that the forestry sector can provide environmental services and various forestry products to meet the needs of the people and also contribute, in a sustainable way, to the nation's economic and social development. The Plan covers the period 1995-2020.

The immediate outputs of the Master Plan can be summarised as follows:

- a comprehensive, NFP Proposal to reflect the present and foreseeable development priorities to provide the basis for legislative reform and guide the development efforts;
- a feasible long-term action plan and strategy for the implementation of the NFP;
- ten development programmes outlining immediate-, short-, medium-, and long-term actions, and providing a clear framework for detailed formulation and implementation of projects;
- development of organisational and institutional frameworks for successful implementation of development programmes;
- the setting up of a database to facilitate future planning efforts; and
- institutionalisation of long-term sectoral planning capabilities within the relevant Government agencies.

The FSMP development programmes have been divided into two categories: development programmes which will deal with bio-physical, technical, social, economic, and environmental aspects of forests and land resource

management for the production of various outputs; and institutional support programmes which strengthen the sector's capacity to make the best use of available basic resources.

One of the most important items under the FSMP is the formulation of a NFP for Sri Lanka. An NFP has been drawn up to provide clear directions for development. It reflects consultations lasting for almost a year, involving the Ministry in charge of forestry, the FD, other key Government agencies, universities, research institutes, NGO representatives, and the general public.

The key areas of emphasis in the policy adopted in March 1995 by the Government are: a) high priority on conservation of biodiversity and soil and water resources; b) empowering local people and communities in the management and protection of forests, mainly for their own benefit; c) building partnerships with local people, communities, NGOs and the private sector in all forestry development activities, including the management of natural forests and protected areas; d) the establishment and management of industrial forest plantations on the State lands will be entrusted progressively to the private sector; and e) developing home gardens and other agroforestry systems as a main strategy for meeting the increasing subsistence and industrial demand for wood.

The focus of the policy is on forestry in a broad sense. Forestry covers biophysical components such as land and biological resources found in natural forests, forest plantations and tree crops such as home gardens outside the forest; environmental components like those concerned with the conservation of wildlife and bio-diversity, soils and water supplies, and the mitigation of atmospheric pollution and global warming; socio-political components such as those concerned with or having a stake in policy making, legislation, administration, management, utilisation, and other operations concerning the biophysical resources; and economic components such as those concerned with the production, processing, marketing, and utilisation of forest products.

The policy acknowledges concern for safeguarding the remaining natural forests for posterity to conserve bio-diversity, soil, and water resources. It also emphasises the importance of retaining the current natural forest cover and increasing the overall tree cover. A large part of the forests should be completely protected for the conservation of biodiversity, soil, and water. Multiple-use forestry is to be promoted. The natural forests outside of the protected area system should be used sustainably to provide for the growing demand for bio-energy, wood and non-wood forest products, and various services, especially for the benefit of the rural population, with due attention to environmental concerns.

The policy recognises that home gardens and other agro-forestry systems and trees on other non-forest land, have a crucial role in supplying timber, biomass energy, and non-wood forest products. It recognises that the State alone, or its Forest Department, cannot protect and manage the forests effectively. People's participation in forestry development and conservation are to be promoted. The policy emphasises the need to develop partnerships with local people, communities, NGOs, and the private sector. The proposed policy aims at broadening the institutional framework for forest management, with clearly defined roles and responsibilities for the various partners. Farmers, community organisations, NGOs, and small and medium-scale commercial enterprises should all have a role in activities such as protecting the forests and growing trees to meet household needs, supplying raw material for wood-based industries, harvesting, transporting, processing, and distribution of various forest products.

An important new trend, which has arisen since the early '80s in the forestry sector, is the recognition of the need for people's participation in forestry activities for sustainable development. Programmes underway emphasise people's participation in tree planting on leased State land, private land, and the establishment of nurseries. Sri Lanka also

participated in the Training of Trainers Programme on Gender Analysis and Forestry in Asia, which resulted in qualified national trainers in this important dimension of planning and programme/project formulation.

A National Conservation Strategy (NCS) has been prepared by a special task force. The NCS identifies constraints to conservation and lays out a plan of action to remove them. It also provides guidelines for the implementation and monitoring of the action plan. The NCS includes directions for the establishment of a comprehensive system of protected areas and in the forestry sector, for the identification of forests for protection by the State.

A National Environmental Action Programme (NEAP) was prepared by the Ministry of Environment and Parliamentary Affairs and is the first comprehensive document regarding environmental planning in the country. The National Environmental Steering Committee and NGO's were involved in the formulation of the NEAP.

Institutional linkages have been established between the Government agencies concerned with forestry development (FD, Department of Wildlife Conservation, State Timber Corporation/STC etc. and the Ministry of Power). These linkages will strengthen progress in wood energy development.

In the Plan, the programmes have been separated into two categories: development programmes which deal with the bio physical, technical, social, economic, and environmental aspects of forests and land resource management for the production of various outputs; and institutional support programmes which strengthen the sector's capacity to make the best use of available basic resources.

The FSMP development programmes are not ready for implementation as such, but priorities between various development programmes and proposed activities have to be set and detailed programmes/projects have to be developed before implementation can start. An Identification Mission was launched in 1995 to identify key programmes for implementation during the next five years. The Identification Mission took into account the short- and medium-term development strategies suggested in the FSMP and came up with components and activities that are very crucial to the development of the sector.

The Indicative Five Year Implementation Programme is not a comprehensive document, and hence the preparation of a detailed Five Year Implementation Programme (FYIP) has to be prepared, which was initiated in 1997. The FYIP highlighted the need for expediting the legislative reforms, including the drafting of regulations, and institutional re-orientation and strengthening of forestry institutions. The aim of the FYIP is to develop and conserve forests and enhance the forest sector contribution to the welfare of the rural population and the national economy with particular attention to equity and economic development. A Project Preparation Team (PPT) comprising senior officials of the Ministry in charge of forestry, the Forestry Department, a few internationals, and national consultants was involved in the preparation of the FYIP.

As in the case of the preparation of the FSMP, a participatory process was followed where all the stakeholders were given a chance to be involved in the exercise. A large number of workshops, discussions and meetings were held to discuss the programme components and the various activities.

The purpose of the FYIP is to conserve forests and enhance the forest sector's contribution to the welfare of the rural population and the national economy with attention to equity and economic development. The component and activities of the FYIP are as follows:

- Forest conservation
  - Development of institutional capacity, legislative capacity, and legislative frame-work for management planning.
  - Establishing and management of an effective protected area system.
  - Systems to monitor biodiversity, and soils and water development.

- Forest land allocation and macro-level zoning
  - Establishment of a categorisation system.
  - Identification and allocation of all forest land.
  - Survey and demarcation of priority forest land.
- Commercial plantation development
  - Management of existing plantations improved.
  - New commercial plantations established.
  - Creation of suitable environment for non-state sector involvement in commercial forestry.
- Multiple-use management of natural forests
  - Improvement of institutional capacity for forest management planning
  - Development of participatory forest management planning procedures and management systems.
  - Forest management plans prepared and implemented.
- Social forestry/ agro-forestry and extension
  - Provision of effective extension service.
  - Identification and mapping of suitable land for social forestry.
  - Development sustainable models for social forestry developed and replication at a larger scale.
  - Forest management plans prepared and implemented.
- Forest base industry development
  - Promotion of use of new forest products.
  - Increased private sector involvement in forest based industries.
  - Creation of a favourable business environment.
- Institutional development
  - Formulate, enact, and enforce legislation and regulations.
  - Necessary institutional arrangements developed for implementing the investment programme.

The total cost of the FYIP is approximately US$ 33 million. The major cost of the programme is concentrated in the Forest Land Allocation and Macro-level Zoning Component, accounting for 58% of the total programme costs.

The FYIP was presented to all donor agencies, who have shown an interest in assisting the forestry sector. Several donors have shown interest, but no firm commitments have been made. The FSMP and the NFP was prepared in 1995, and the FYIP in 1997. It is important that the activities recommended in the FYIP be implemented without delay, as they are very crucial for the continuation of the development efforts made over the years.

Legislation and institution

As highlighted in the FSMP, the need for legislative and institutional reforms required for the smooth implementation of the NFP and the FSMP was given priority by the Ministry.

Necessary arrangements were made to revise the current Forestry ordinance, taking into account the current needs of the sector. The new forestry legislation is due to be forwarded for government approval shortly.

The need for continued legislative and institutional changes was also highlighted in the FYIP. The component on Institutional Development included in the FYIP is expected to deal with the necessary changes.

A new Ministry incorporating forestry and environment was created in 1994. The Forest Department, State Timber Corporation and the Central Environmental Authority operates under this Ministry. A proposal to decentralise the activities of the Forest Department through the establishment of 4 regional offices has been agreed upon in principle. Each regional office will be headed by a Deputy Conservator of Forests.

One of the main constraints of the research division of the Department was the lack of human resources. The scope of activities will be broadened to include environmental forestry, forest ecology and allied subjects, agroforestry, participatory forestry and forest management.

Awareness among NGOs, CBOs and the general public concerning the important role of forests for human wellbeing has been improving.

ADB and AusAid have provided support in this matter. In addition, various programmes and strategies have been developed to involve non-government sectors as partners in the forest management and development. In this respect, several pilot projects have been implemented using the joint forest management and community/social forestry schemes.

Collaboration with partners and international agreements

a) Biological Diversity

The convention was ratified in 1994. The Ministry of Forestry and Environment is the focal point for biological diversity. The framework and the first national report were completed in 1988 and the preparation of a strategy for the biodiversity action plan was completed in 1995.

b) Combat Desertification

The convention was ratified in 1999. The Natural Resources Management Unit of the Ministry of Forestry and Environment is the focal point for the preparation of the National Action Plan and the First National Report is in progress.

c) Climate change

The convention was ratified in 1993. The Secretariat of the Ministry of Environment is the focal point. A study on climate change supported by ADB was completed in 1997.

d) Montreal protocol

The protocol was ratified in 1999. The focal point is the same as the focal point for the Climate Change Convention.

e) Wetland conservation

The Department of Wildlife Conservation is the focal point. The preparation of the National Wetland Strategy and wetland site reports for more than 30 sites have been finalised. A National Atlas was prepared in 2000. Bundala and Lunama Kalamatiya were declared as Ramsar Sites

f) Migratory species

The Department of Wildlife Conservation is the focal point.

g) Conservation of world cultural natural heritage

The Forest Department and the Department of Archaeology are the focal points. Five sites have been declared as cultural sites and one site (Sinharaja) was declared as natural site.

h) International trade in endangered species (CITES)

The Department of Wildlife Conservation is the focal point for the convention. The National Wildlife Conservation policy is being amended incorporating the legal bindings under the CITES convention. The Department is also the scientific and administrative authority for CITES and inspects, monitors and evaluates the import and export of fauna and flora species listed under appendices I to III of the convention.

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Thailand

Country data	
Total land area in 1996 (thousand ha)	51,089
Total forest area 1995 (thousand ha) / % of total land area	11,630/ 22.8
Natural forest 1995 (thousand ha)	11,101
Total change in forest cover 1990-95 (thousand ha)/annual change (%)	-1,647/ (-2.6)
Population total 1997 (millions)/annual rate of change 1995-2000 (%)	59.1/ 0.8
Rural population 1997 (%)	79.4
GNP per person 1995	2,740

Source of data: *) FAO - State of the World's Forest 1999

General information

Administratively, Thailand is divided into four regions: the North, Northeast, Central and South. There are 76 Provinces and 716 Districts. The North is mainly mountainous with average altitudes rising above 200 m above sea level. The Northeast comprises the Korat Plateau, which lies 100-200 m above sea level. The Central Plains are the alluvial basin of country's principal river, the Chao Phraya, which feeds the most fertile area known as "the rice bowl of Asia". Most of the land area in this region lies below 50 m above sea level and is prone to flooding. The Southern Peninsula consists of a narrow strip of land where mountain ranges run north to south separating the eastern coast along the golf of Thailand and the western coast along the Andaman Sea. Thailand has a coastline of more than 2,500 km. Thai society comprises many ethnic tribes with the Thai in the majority and Chinese, Khmer, Laotian, and hill tribes the minorities. Buddhism is the national religion.

Thailand is quite vulnerable to severe weather events such as tropical storms, flooding and drought. At least 2 tropical storms have hit Thailand annually since 1991 and the new areas affected by flooding seem to be increasing. Most Thai people believe that the severity of damage could be reduced if the local ecological systems are better conserved. A massive landslide in Southern Thailand induced the Government to impose a logging ban in 1989.

According to the Government statistics, the population reached 62 million in 1999. The population grew at an average of 1.5% per year during the period 1980-1997. The number of people living in poverty dropped substantially from 18 million in 1988 to 7 million in 1996. Per capita real income increased from Baht 2,000 per month in 1988 to more than Baht 3,830 in 1996.

About 80% of Thailand's population are farmers. The need for agricultural land is progressively growing as a result of the increasing population and rising demand for goods and services. The cultivation of marginal soils, which cannot support sustainable agriculture, is increasing, mainly through encroachment upon state-owned land. When crops such as maize and tapioca are in great demand in the world market, forest encroachment intensifies.

The economy grew by between 6-11% during the early 1990s, boosted by continued expansion in the non-agriculture sector. Both exports and imports grew rapidly. However, the social, natural resources and environment goals were not met. Rising social inequity has threatened the economy and political stability.

Since the second half of the 7th National Development Plan (1994), the economy has

shown signs of slowing down. In 1997, the Government decided to adopt a managed float system of exchange rate. Production, investment, and domestic demand collapsed, and unemployment increased as businesses and manufacturers ceased operations, cut production costs or downsized. As a whole, the economy posted a negative growth rate of about 10% in 1998.

Thailand's forest resources have been subjected to continuing pressure and devastation. Demand for land for subsistence farming, commercial agriculture, physical infrastructure, tourism and other uses remains high. The Government undertook an accelerated reforestation programme after devastating floods destroyed two villages in 1988.

Under previous National Development Plans, the emphasis was growth-oriented with attention focussed on whatever would contribute significantly to the economic development. However, this resulted in countless social ills, including aggravated environmental degradation, and created a rural/ urban-rich/ poor income gap. In the Eighth National Development Plan (1997-2001) the emphasis is on human resources development. The Government policy includes economic stability and confidence enhancement, agricultural production structure adjustment, service structure adjustment, and natural resource and environmental management.

The main objective in forestry sector development is to preserve and rehabilitate the area of conservation forests to at least 25% of the total area of the country, as well as to maintain the mangrove area at not less than one million rai (400,000 acres) by the end of the Eighth Plan. The development strategies for natural resources and environment management are as follows:

- preserve and enrich the natural resources;
- create a balanced ecology;
- protect the environment in order to improve the quality of life and build a solid foundation for development;
- establish a management system for the efficient utilisation and protection of natural resources and the environment for the benefit of the society and community; and
- protect against and give relief from natural disaster.

To achieve the reforestation target, a number of schemes have been introduced and carried out by Government agencies (the Royal Forest Department, Forest Industry Organisation, and the Thai Plywood Company), the private sector, NGOs, and people's organisations. In addition to these schemes, in order to pay tribute to the Golden Jubilee of King Bhumipol Adulyadej (The Fiftieth Anniversary of H.M. the King's ascension to the throne), the National Forestry Policy Committee launched a "Reforestation Campaign" during 1994-96. The target area was five million rai, or approximately 800 thousand ha, at the following locations:

- 50,000 km along the roadsides;
- around the school premises, government offices, and religious places;
- areas such as parks, recreation areas, dams and reservoirs, riversides; and
- existing deteriorated forests.

Forest resources

The first National Development Plan formulated under the aspects of economic growth and basic structure development was implemented in order to accelerate development in 1961. Before the Plan, the forest resource was very productive with its coverage more than 70% of the total land. Wood was the important export commodity and income earner, second only to rice. The Royal Forest Department was founded in 1896 to take in charge of forest management, which enabled the central government to look after all logging. The forest area was 27,36 million ha, or 53% of the total land area and the total population was 26 million. During 4 decades, the population increased considerably with a consequent conversion of the forest area into agricultural land.

During the period of rich forest resources, forest management was mostly focused on

logging. The forest reserve was zoned starting in 1964. Forest protection and conservation forests were introduced due to increasing forest encroachment. Afterwards, the forest village approach was introduced and cultivation rights land was issued. Subsequent to the tragic floods, landslides, and logging ban in 1989, the Government handed over the degraded forest reserve lands to the Land Reform Office in order to release the lands to lessen people's suffering from the lack of cultivable land.

The Cabinet resolution of 10 and 17 March 1992 was passed to carry out forest land zoning in 1,220 reserves covering an area of 23.52 million ha in 63 Provinces. Forest reserves are classified into three categories as follows: the conserved forests zone (Zone C) of 14.12 million ha; the commercial forest zone (Zone E) of 8.30 million ha; and the suitable for agriculture zone (Zone A) of 1.16 million ha. The Royal Forestry Department (RFD) handed over 7.08 million ha of the degraded forest reserves (all Zone A and some part of Zone E) to the Land Reform Office for agricultural purposes. As the result of a joint survey, 0.58 million ha of land unsuitable for agriculture were handed back to the RFD. Currently, the RFD is responsible for the forest reserve area of 17.07 million ha and the Land Reform Office is responsible for the degraded forest reserve area of 6.5 million ha. According to Government statistics (1998 survey), the remaining forest area was 12.97 million ha, or 25% of the total land area. Table 1 shows the trend of the size of forest areas from 1961-1998.

The first national park and the first wildlife sanctuary covering an area of 0.25 million ha were established in 1962. After that time, the number of parks and sanctuaries increased, particularly during the 4^{th}-7^{th} National Development Plans. In 1998, there were 139 national parks and 59 wildlife sanctuaries, covering an area of 6.95 million ha and 4.04 million ha respectively.

Table 1: Forest area 1961-1998

year	Area (mill. ha)	% of land area
1961	27.36	53.3
1973	22.17	43.21
1976	19.84	38.67
1979	17.52	34.15
1982	15.66	30.52
1985	15.09	29.40
1989	14.34	27.95
1991	13.67	26.64
1993	13.35	26.03
1995	13.15	25.62
1998	12.97	25.28

Teak plantations were started in 1956. Subsequently, several plantation projects have been introduced, including non-teak species, eucalyptus and other fast-growing species for fuel wood, watershed rehabilitation, community forests and private plantations. Up to the end 1999, the total plantation area was 2.10 million ha, consisting of 1.15 million ha of protected forest rehabilitation and 0.95 million ha of commercial forest rehabilitation.

Non-wood forest products (NWFPs) include a diverse array of useful commodities in Thailand. They have been an important source of income and food for the rural people. At least five million forest dwellers have been critically dependent on NWFPs. No concessions have been granted for these products. Permits for some commodities have been issued on an annual or short-term basis. Records of harvests are scarce and incomplete. Some important NWFP commodities are: medicinal plants, edible plants, rattan, bamboo, bee products, lac, and pine resin.

Coastal resources

It was reported that the mangrove forests covered an area of 0.37 million ha in 1961. However, in 1996, it was only 0.17 million ha. The causes that reduced the area were several, including conversion to other uses such as mining, shrimp farming, residential areas, roads and public buildings. Most of the existing mangrove forest areas are found in the southern region, particularly along the Andaman Sea. Table 2 shows the trend of mangrove forest area from 1961 to 1996.

All 29 cabinet resolutions concerning mangroves have been revised in order to define clear and systematic management guidelines that are suitable for the real and current situation. The revision will be submitted to the National Forest Policy Committee and the Cabinet for further consideration.

Table 2: Mangrove area 1961-1996

Year	Area (mill ha)	% of land area
1961	0.367	0.72
1975	0.313	0.61
1979	0.287	0.56
1986	0.196	0.38
1991	0.174	0.34
1993	0.169	0.33
1996	0.168	0.33

Thailand has a coastline of more than 2,500 km. The coastal areas can be divided into the Gulf of Thailand area, which adjoins the Pacific Ocean, and the Andaman Sea area of the Indian Sea. The physical structure and natural endowments of the Thai seas have generated a great variety of biological and non biological resources. There are more than 1,000 species of fish and about 900 types of other marine resources.

Mangrove forests and coral reefs are natural resources vital for maintaining the ecological balance of Thai seas and coastal areas. Mangrove forests are important nursery grounds for a variety of fish. They are also an important source of charcoal and firewood and protect the coastal areas from soil erosion.

Policy and planning

The Cabinet Resolution of 3 December 1985 stipulated several important forest policies, including the following: 1) promoting forest management sharing between the Government and the private sector; 2) improving the administration system to make it compatible with the changes in forest situation; 3) specifying the target forest areas at 40% of the country's area of which 15% are conservation forests and 25% are commercial forests; 4) the Government and the private sector should jointly develop and manage the forest area both for direct and indirect benefits; 5) reducing forest destruction by improving agricultural technology; 6) integration of the Forest Development Plan into the National Development Plan; 7) accelerating the city planning process and designing forest utilisation zones in each province; 8) appointing a National Forest Policy Committee under the Forest Act; 9) intensification of private forest plantations to meet the need sof forest industries; 10) defining 35% slope areas as forest areas; 11) creating incentive private forest plantations; 12) planning on human resources development and settlement based on a nature conservation basis.

The important targets under the current plan, 1997-2001, include the following: 1) a forest area of 17.07 million ha will be strictly protected from illegal activities and encroachment, and 3.34 million ha will be under an intensive forest fire control programme, and the productive forest areas of 14.36 million ha will be managed as protected areas in the form of national parks, wildlife sanctuaries, non hunting areas and head water areas; 2) in order to increase the forest area, various programmes and projects on forest rehabilitation and plantation will be implemented, including State plantations on dry lands and mangrove forests, head water ecosystem rehabilitation, commercial forest plantations, community forest development, and reforestation for the Royal Golden Jubilee; 3) survey activities will be carried out in 66 Provinces to solve land tenure and forest problems and the forest boundaries will be clearly and transparently demarcated; 4) relevant officers and target groups will be trained in forest management; networks of subordinate agencies will be laid down, and forest maps will be produced; 5) arboretums and botanical gardens will be continuously managed and public relation and information dissemination concerning forest conservation will be carried out.

The Ministry of Agriculture and Co-operatives has defined 3 main agriculture and co-operative strategies for the 8th National

Development Plan concerning forest management as follows: 1) Competitive competence by appropriately adjusting the agricultural producing structure and system to meet the potential areas and market needs, increasing co-operation with all related agencies on research and development; 2) Promoting natural resource conservation and sustainable development by encouraging environmental friendly activities, formulating plans for management and biodiversity resource utilisation, adjusting the planning system and budget allocation consistent with the resource base, decentralisation of natural resource protection and management, including conflict resolution in natural resources utilisation to local organisations and communities, emphasising law and regulation improvement in order to involve all parties involved in sustainable natural resources and environment utilisation; 3) Developing human resources and farmers' organisations by putting down capital for education and technology transfer systematically and compatibly with target groups, giving land tenure to poor farmers, increasing agricultural alternatives, emphasising management capacities, production and marketing, and encouraging low interest loans, and establishing an information network utilising both modern technology and local knowledge.

Forest management and institution

The mandate of the Royal Forest Department can be summarised as follows: a) enforcing of 5 Forest-Acts and other related Acts; b) extending and developing natural resources conservation and forest ecological rehabilitation; c) studying, seeking, researching, experimenting and developing appropriate technologies on forestry, wildlife and other related subjects; d) implementing authority under the provision of laws, ministry decrees and Cabinet resolutions.

The Royal Forest Department has defined forest conservation and development strategies into 5 major aspects for the Forest Action Plan in the 8th national Development Plan, 1997-2001, as the following: 1) protection of the remaining natural forests; 2) rehabilitation of the degraded forests and forest plantation extension; 3) reduction of forest and land resource utilisation conflicts; 4) enhancement of management effectiveness; 5) strengthening forest research, development and extension.

In regard to forest management, new strategies have been crafted, including the following important aspects: a) Adjusting the administrative system by introducing a forest ecosystem structure, in which forest, soil, water, wildlife, human and other related factors live in harmony; b) Reforming the administration by allowing all stakeholders, including government, the private sector, academics and citizens, to participate in the administration as a partnership; c) Defining 2 main types of target areas for management, i.e. protected forests to be kept intact by implementing habitat management, and commercial forests to be increased by implementing sustainable management; d) Stopping illegal logging, particularly in protected and high risk forest areas, by establishing an ad-hoc task force to resolve the problems and direct investigations; co-operating with the Ministry of Defense to intensively look after the forests located at the border areas; and in collaboration with Custom Department to jointly check timber imports, strictly patrolling and arresting all law violators; e) Motivating the officers in their duties; f) Building people's awareness of the important role of forests for the environment; g) Strengthening research and development and transfer of technology.

A Special project to pay tribute to the 72nd King's Birthday called "Forest loves water" was implemented by campaigning to jointly plant 5 million trees in 72 provinces. Due to unavoidable circumstances, the reforestation target of five million rai under the Golden Jubilee of King Bhumipol Adulyadej could not be achieved as planned. However, it was reported that about 1,416,014.92 rai was successfully reforested during 1994-97. Therefore, the plan has been continued and it was expected that the target would be reached

in 2002.

Insufficient budget is one of the biggest constraints of forest management, particularly during the past few years of financial crisis. The slow down of the economy resulted in the migration of the unemployed labour force back to rural areas, where those desperate people then encroached upon the remaining forest for their sustenance. At the same time, government revenue diminished, which resulted in fewer resources for forest protection and rehabilitation of degraded forestland.

About 0.41 million ha of forest reserve have been permitted for various objectives such as rock quarries, the mineral industry, road construction, electricity, reservoirs, government offices, religious places, and forest plantations. During 1982-1992, about 1.19 million ha had been allocated and been given to 727,082 citizens in order to mitigate their land tenure trouble.

Although Thailand has imposed a logging ban since 1988, forestland is still subjected to continuing pressure and devastation. Demand for land for subsistence farming and other uses remains high. The shifting cultivation practiced by hill tribes and refugees has degraded watersheds.

Forestry Sector Master Plan

In line with the efforts to arrest the deforestation rate, the Government submitted a request for assistance from the donor community to launch a Forestry Sector Master Plan (FSMP). The exercise began in 1991 assisted by ADB and FINNIDA. The lead institution was the Royal Forestry Department.

The immediate objective of the FSMP is to formulate a master plan at the national level for the development of the forestry sector, which should be sufficiently broad-based and balanced to cope with various sectoral problems. The exercise aims at improving sectoral planning skills as an initial step to institutionalise long-term planning in the forestry sector.

During the FSMP exercise, 22 sub-teams were created to carry out in-depth studies of the forestry sector. The result was a macro-plan that spells out national-level decisions. The drafting of the FSMP called upon other development partners to help build a national consensus on policy and development directions for the forestry sector.

The FSMP proposes 15 sub-sectoral programmes grouped into three major dimensions i.e. socio-ecological, technological, and institutional. The socio-ecological dimension covers conservation and forest-based rural and urban development aspects. The development programmes in this dimension are referred to as Peoples' and Environment Programmes, and include forest protection, forest-based rural development, watershed management, conservation of ecosystems, biodiversity, and urban forestry. The technological dimension covers the management of multi-purpose forests and the development of man-made forests to produce wood and non-wood forest products. The development programmes in this dimension include management of multi-purpose forests, man-made forest and agroforestry development, fuel wood and rural energy development, wood-based industry development, and non-wood forest products development. The institutional development dimension covers the supportive framework provided by forestry sector institutions. The development programmes in this dimension include policy and legal reforms, organisations and human resources development, extension, research, and impact monitoring and evaluation.

In the context of FSMP, fuel wood is not included among the NWFPs. Fuel wood is widely used in the household sector and by small enterprises. Wood supplies from around the houses (home garden, wood lots, and public forests) are able to fill the demand for fuel wood.

The Royal Forestry Department (RFD) improved some elements of the FSMP and it was presented for consideration by the National Forest Policy Committee (NFPC) on 30 April 1997. The Committee agreed in principle

and asked the RFD to modify the FSMP to make it up to date and relevant to the changing situation of the country, including the preparation of an action plan, for approval by the Cabinet. The revised plan has been submitted by the RFD for consideration by the Ministry of Agriculture and Co-operatives before presenting it to the Cabinet for approval.

The macro-level FSMP will be implemented through local-level plans drawn up for a bottom-up process. This approach is currently being applied on a pilot basis in two provinces: Lampang in the North and Surat Thani in the South. The exercise will provide excellent opportunities for NGOs, people's organisations, religious organisations, and other groups who best represent the interests of the local people to participate in the FSMP exercise. Local communities and villagers will have decision-making powers concerning the forest resources entrusted to them.

Collaboration with partners

Thailand is serious on forest related international co-operation, particularly concerning international agreements and conventions. Many of the international conventions have been ratified, including International Tropical Timber Agreement (ITTA), CITES, RAMSAR, World Heritage Convention. Unfortunately, most of the implementation of the international agreements and conventions has not progressed as expected due to several constraints, including lack of funding, unfavourable economic situation, insufficient technology, unfavourable political conditions, and limited people's understanding.

At the moment, there are several regional forestry programmes, projects, and activities with offices located in Bangkok, including Forestry Research for Asia and the Pacific (FORSPA); Regional Wood Energy Development Programme (RWEDP); Information and Analysis for Sustainable Forest Management; Model Forest Approach for Sustainable Forest Management; Regional Community Forestry Training Programme (RECOFT); Asian Institute of Technology (AIT).

The logging ban, imposed in 1988, has drastically cut wood supplies. Therefore, the industry has to rely on imported wood, as well as on rubber and other plantation-grown wood. A review revealed that the policy, legal, and land-tenure conditions are not supportive of forest plantation development. Consequently, major private sector investors are looking outside Thailand for land to produce industrial wood.

Focal point

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Tonga

Country data	
Total land area (thousand ha)	72
Total agroforestry/ coconut plantation land (ha)	14,540
Total potential forestry plantations (ha)	23,000
Total indigenous forests	8,000
Population total 1997 (million)/ Annual rate of change 1995-2000 (%) **)	0.1/ n.a
Rural population 1997 (%) **)	56.6
GNP per person in 1995 in US$**)	1,630

Source of data: **) FAO - State of the World's Forest 1999
*) Government statistics, Country Report 1996

General information

Tonga is composed of 170 islands, 36 of which are inhabited. Tongatapu is the largest and most populated island (25,900 ha with 64,000 inhabitants).

In the country's traditional farming system, food crops, predominantly coconut, are cultivated under the canopy of trees. The traditional agroforestry system however, has undergone some changes and is moving toward commercial farming systems, thus reducing the number of standing trees. All land is community property.

Tonga's very limited forest resources consist of natural hardwood forests, exotic plantation forests, and coconut plantations. Natural hardwood forests can only supply a small and ever decreasing part of the domestic timber demand because of over-exploitation and depletion by clearing for shifting cultivation. It is estimated that only 4,000 ha remain of natural hardwood forests. It has been proposed that the remaining forest be protected as a national park because of its biological diversity.

In the 1950's, land was allocated for the development of forest farms. By September 1992, 579 ha of mainly Pinus caribea had been planted on exposed and infertile sites. Tonga's extensive coconut plantations are its largest timber resource and will continue to be the major source of domestic timber production.

Fuel wood is the main source of energy: 80% of the households use wood for cooking and 70% of fuel wood cut is for household consumption. Tonga also produces handicrafts which require significant amounts of wood. These handicrafts are culturally important and provide domestic and export earnings. Resources of sandalwood have declined, leaving only a short-term supply for local consumption. Non-wood products, such as dye from the bark of koka trees and mangroves for making tapa cloth, are also important.

The country has seven protected areas, as well as nine marine and two territorial parks. Tourism has begun to play an increasingly important role in the country's economy. Earnings from tourism are double those of all exports combined.

Policy and planning

The forest and tree resources in Tonga are composed of indigenous forests, coconut plantations, agroforestry resources, and forestry plantations. The largest timber resource is found in the extensive coconut plantations and the forest plantations.

Notable timber resources are found in land areas as follows:

- Agroforestry/ coconut plantation land: 48,000 ha
- Forestry plantation land: 2,000 ha
- Indigenous land: 4,000 ha

An Environmental Management Strategy was formulated in 1992. Forestry projects in

Tonga are outlined in the Forestry Three-Year Rolling Plan, which is reviewed and adjusted every year. For the next five years, projects are envisaged in the following areas:

- ecology-based inventory of natural hardwood forests and development of a management plan;
- promotion of tree planting by encouraging agroforestry;
- development of the Eua National Park;
- establishment of an agroforestry nursery;
- plantation area trials;
- maintenance of existing nurseries;
- inventory of coconut resources and development of a management plan;
- development and management of the Mataliku Sawmill Centre as a commercial operation;
- natural re-generation of logged areas;
- forest plantations;
- establishment of coconut sawmills;
- upgrading of existing sawmills

Small, portable sawmills designed to be easily shifted around the islands have proved to be useful assets for small island groups with sufficient resources. They produce excellent timber at a price lower than imported timber. The portable sawmill is also being adapted for use with coconut timber.

A Tonga/New Zealand forestry development programme has been essential to the management of Tonga's forest resources. The programme includes development of coconut sawmilling, increased emphasis on agroforestry, and upgrading of Forestry Division skills. In 1991, the Government approved the lease of 800 ha of additional land on Fua. According to a study conducted in 1996, it was recommended that to optimise the returns from the forest, a rational policy for the expanded forest would be to maximise the area of the mixed regime of Sandalwood and Caribea, which is the most profitable.

In light of insufficient land for timber plantations, agroforestry offers an opportunity for promoting tree planting such as timber species, fruit trees, and important cultural and indigenous species.

In the forest sector development the Government received support from partners, particularly from international institutions, including: New Zealand Overseas Development Assistance; Australian International Development Assistance Bureau (AIDAB), FAO, European Community, German Technical Co-operation (GTZ), CIRAD-Foret, UNDP/South Pacific Regional Environmental Programme (SPREP) and South Pacific Forestry Development Programme (SPFDP), and Japan Overseas Co-operation Volunteers. The support and assistance cover several fields including: training, sawmilling, nursery development, forestry plantation, agroforestry, handicraft development, training on processing and utilisation of coconut wood, research on farm trials with alternative agroforestry systems, participatory process in forestry, coastal protection and rehabilitation, biodiversity conservation, forestry information and promoting the forest and trees programmes, and institutional strengthening.

Legislation and institutions

The Government recognises the important role of the forestry sector in socio-economic development and environmental conservation, and passed a Forest Act in 1991. A major review of the Forestry Division was undertaken in 1991, resulting in a new organisational structure, i.e. establishing a Forestry and Conservation Division within the Ministry of Agriculture and Forestry.

The Forestry and Conservation Division does not have a formal policy except for the forestry objectives set out in the Five Year Development Plan. This Plan spells out the need to maximise the forestry contribution to national development on sustainable basis.

The Forestry Act of 1961 is the only Act that provides the legal status under which the Forestry and Conservation Division operates. However, it is considered that the Act of 1961 is too general, and does not give the legal status and authority required by the Division for the management of the forest resources. The proposed new Act is still under consideration by the Government.

Other Acts that relate to forest resources management include the 1988 Parks and Reserves Acts, and the proposed new

Environment Act initiated by the Ministry of Land, Survey, and Natural Resources. However, according to several reports, these Acts are overlapping, thus creating confusion.

The Forestry Division views coconut trees as a forest species and is considering the inclusion of their management in the forestry development programme. It has estimated that 20,000 ha could be replanted over the next 20 years.

Currently, the Forestry and Conservation Division is understaffed as a result of the transfer of 8 staffs from the Division to the Forestry Sawmills.

In 1976, a Parks and Reserves Act was adopted to protect natural forests by creating national parks and reserves. The Parks and Reserves Authority is responsible for the allocation of land for parks and reserves. In July 1992, a 449.4 ha area in Eua was declared a national park.

Constraint

The Forest Act of 1961 is limited in its application with respect to allowing the Government to set up forest reserves and control forest use, and needs to be amended. The Forestry Division is understaffed. At least eight additional well-trained staff members with degrees and diplomas will be needed for forestry activities over the next ten years.

Formulation of a conservation strategy for the remaining natural forests is needed in order to safeguard rare plants and the habitats of important animal species such as the redbreast musk parrot. An appropriate multi-purpose agroforestry system, based on the traditional system, is urgently required.

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Never leave till tomorrow
which you can do today
(Benjamin Franklin)

The United States of America

Country Data	
Total land area (thousand ha)	915,912
Total forest area 1995 (thousand ha)/ % of total land	212,515/23.2
Natural forest area 1995 (thousand ha)	
Total change in forest cover 1990-1995 (thousand ha)/ annual change (%)	
Population total 1997 (million)/ annual rate of change 1995-2000	271,6
Rural population	23.4
GNP per person total 1995 in US$	26,980

Source of data: FAO- State of the World's Forest 1999

Forest history and trends

Many U.S. forests, particularly those in the eastern U.S., were heavily depleted during the 19th century due to agricultural land clearing, logging and massive wildfires. The forest conservation policy framework that emerged after 1900 to address these concerns included the following efforts: 1) to promote and encourage the protection of forests and grasslands, regardless of their ownership, from wildfire; 2) to acquire scientific knowledge on the management of forests and wildlife and on the more efficient utilization of wood products; 3) to reserve remaining public lands for permanent use, management, and protection, e.g. national forests, national parks, national wildlife refuges, etc.; and 4) to improve the management and productivity of private forests and agricultural lands through research and technical and financial assistance to landowners.

The means for implementing this conservation strategy included public and private research and extension, establishment of professional forestry and natural resource colleges and universities, and a variety of public and private partnerships, e.g. cooperative fire protection involving federal, state and private entities, among others.

A snapshot of current conditions is as follows:

- After two centuries of decline, the area of U.S. forestland stabilized around 1920 and has since increased slightly. The forest area of the U.S. is about two-thirds what it was in 1600.
- The area consumed by wildfires each year has fallen 90%; it was between eight and twenty million ha (20-50 million acres) in the early 1900s and is between one and two million ha (2-5 million acres) today.
- Nationally, forest growth has exceeded harvest since the 1940s. By 1997, forest growth exceeded harvest by 42%, and the volume of forest growth was 380% greater than it had been in 1920.
- Nationally, the average standing wood volume per acre in U.S. forests is about one-third greater today than in 1952; in the East, the average volume per acre has almost doubled. About three-quarters of the volume increase is in broadleaved or deciduous trees.
- Populations of many wildlife species have increased dramatically since 1900. But some species, especially some having specialized habitat conditions, remain causes for concern.
- Tree planting on all forestland rose dramatically after World War II, reaching record levels in the 1980s. Many private forestlands are now actively managed for tree growing and other values and uses.
- Recreational use of national forests and other public and private forestlands has increased many fold.
- American society in the 20th century changed from rural and agrarian to urban and industrialized. This has caused a shift in the mix of uses and values the public seeks from its forests (particularly its public forests). Increased demands for recreation and protection of biodiversity are driving forest management. This has caused the timber harvest from federal lands to decline by more than 60% since 1990. In spite of this shift, today's urbanized nation

is also placing record demands on its forests for timber production.

Demand and supply situation of timber

The U.S. is the world's largest consumer of forest products and the second largest producer (after Canada). The U.S. accounts for 15% of the world trade in forest products. The forest products sector, although small in comparison to the rest of the U.S. economy, is significant on a global scale, as demonstrated by the fact that the U.S. exports and imports of wood products total $150 billion yearly.

Forests in the U.S. are considered productive and provide for much of the country's needs. In 1997, the U.S. produced 512.5 million m3 of forest products (including wood fuel) and consumed 563.3 million m3.

Between 1990 and 1997, the timber harvest from U.S. federal lands, which formerly supplied about 25% of the U.S. softwood timber production, declined from about 66 million m3 per year to 24 million m3. This has caused a shift in harvest to U.S. private lands and to Canadian forests. Between 1990 and 1997, U.S. softwood lumber imports from Canada rose from 42 to 63 million m3, increasing from 27 to 36% of the U.S. softwood lumber consumption. Imports of panel products from Canada increased as much as lumber. Much of the increase in lumber imports has come from the native old-growth boreal forests of eastern Canada. In Quebec alone, the export of lumber to the U.S. has tripled since 1990.

U.S. consumption, by major product, included: lumber - 263 million m3 (47%); pulpwood-based products - 178 million m3 (32%); plywood and veneer products - 35 million m3 (6%); wood fuel - 72 million m3 (13%); and other products - 14 million m3 (2%).

U.S. wood product consumption has increased by 50% since 1965, from 374 to 563 million m3 annually.

Forest policy and institutional framework

The U.S. has a basically decentralized system of policy-making for forests that reflects its mix of forestland ownership.

The federal government has a direct management and policy responsibility for the federal forest estate. In addition, the federal government has one of the largest forestry research organizations in the world, which, among other duties, carries out regular inventories and assessments of conditions and trends of all U.S. forestlands, regardless of ownership. The federal government also provides the states with funding to help support technical and financial assistance to private forest owners to improve management of the vast private forest estate. The federal government is involved in providing assessments of insect and disease and wildfire problems and the funding to help address them, regardless of ownership.

All fifty states are individually responsible for guiding and regulating management of the 71% of the productive non-reserved forests that are privately held. Each state has a state forester and forestry organization to provide direct technical and financial assistance to private forest owners, to protect forests from fire, insects and disease, and to implement state laws affecting the use and management of these lands. Many states also manage public forests. At the local level, hundreds of counties and many cities own and manage forest, park and municipal watershed areas.

Federal, state and local governments spend $6.4 billion annually on forest management, including $3.2 billion by the U.S. Forest Service, which alone manages 77 million ha of national forests and rangelands and employs 32,000 people.

In view of decentralized forest regulations and extensive private forest ownership, the actions of state and local governments and non-government parties, such as small non-industrial forest owners, industry and local communities, are the principal factors in how private forests are managed in the U.S. All U.S. citizens are part of the natural resource public decision-making process at the local, regional and national levels.

Current forestry issues

The success of the U.S. conservation policies put in place in response to public concerns at the turn of the century left the U.S. well positioned to implement UNCED's Agenda 21. An extensive educational, management and policy infrastructure now exists to support scientific forest management. Government, universities and industry are all actively in-

volved in research to produce faster and better growing forests. New and innovative ways are constantly being developed to use wood products more efficiently.

Under the Forest and Rangeland Renewable Resources Act of 1974 (RPA), the U.S. Forest Service publishes an "Assessment of US Forests" every ten years, with five-year updates. Current assessments of the health and conditions of U.S. forests show that in some cases resource conditions are not satisfactory. Problems include: habitat fragmentation due to residential subdivisions and urban development; loss and deterioration of the forest and grassland habitats that once were created by frequent, low intensity fires; reduction and fragmentation of late successional and old-growth forest habitats due to timber harvesting; loss and degradation of riparian and wetland habitats; and effects of air pollution on forests in some areas, to name a few. Of particular concern are rare and unique ecosystem types and species with specialized habitat requirements that are associated with them.

One significant general threat is from introduced exotic plants, animals and diseases. There is a long history of heavy damage to U.S. forests and loss of species from introduced biological agents, including white pine blister rust, chestnut blight, Dutch elm disease, gypsy moth and, more recently, hemlock woolly adelges, beech bark disease and the Asian long-horned beetle. Increasing world trade in forest products and of international trade in general only increased the opportunity for such introductions. Introduced exotic animals also pose a significant threat to displace and out-compete domestic wildlife species.

Policy initiatives

On October 13, 1999, President Clinton announced plans to protect 16 million ha of National Forest System land from road building and commercial development. A yearlong process soliciting pubic comments will determine the specific areas selected.

In September 1999, the U.S. Forest Service established its new planning regulations that will give greater emphasis to the sustainable management of National Forest System lands. The regulations provide direction for working towards the goal of sustainability and encourage the use of "criteria and indicators" for sustainable forest management, emphasizing monitoring activities designed to develop a desired future condition.

In 1998, the U.S. Forest Service incorporated sustainable resource management into its National Forest policy agenda. In June 1998, the U.S. Forest Service also committed to prepare a comprehensive national assessment of the status and trends of U.S. forest conditions and management based on the Montreal Process criteria and indicators (C&I) for sustainable forest management. In July 1998, the Chief of the U.S. Forest Service initiated the Roundtable on Sustainable Forests, bringing together representatives of federal, state and local government agencies, non-governmental organizations and industry to discuss how best to implement the Montreal Process C&I for both public and private forests. Follow-up workshops are planned. The report will be released in 2003 as part of the mandated five-yearly assessment of all forestlands and trends in the forest sector, which the U.S. undertakes within the framework of the Resources Planning Act of 1974. The resulting Presidential report to Congress will be organized using the Montreal Process C&I. In the meantime, the 2000 Assessment will be organized utilizing the Montreal C&I format as an important step in a long-term commitment to developing comprehensive quantitative and qualitative information on the sustainability of U.S. forests.

Respect and recognition of traditional rights of indigenous people, including Native Americans, Native Hawaiians and Alaska Natives, is an ongoing effort by the U.S. government. Since 1992, numerous actions have been taken by the government, including issuance of Executive Orders regarding consultation and coordination with Indian governments and Indian sacred sites, and of directives on government-to-government consultations with federally recognized tribal governments.

The U.S. Fish and Wildlife Service (FWS) is involved in the implementation of conservation and management programs for North American forest-dwelling neotropical birds. FWS has developed partnerships with dozens of federal and state agencies, private conser-

vation organizations and local governments to restore and manage forest habitats for these migratory species. The Texas Gulf Coast Wood Lot Initiative (important to migrating birds crossing the Gulf of Mexico) and the 12-million ha Tennessee Valley Project are working examples.

State Foresters are responsible for the establishment of State Stewardship Committees in every state, which include representation from a range of natural resource disciplines as well as the public and private sectors. Each state has also developed and is implementing state resource plans, which will ultimately bring millions of hectares of non-industrial private forestlands under stewardship management.

In June 1999, the Office of the U.S. Trade Representative and the White House Council on Environmental Quality sponsored an initial study on the potential economic and environmental effects of tariff liberalization in the forest products sector. The study was released in October 1999.

Other efforts

There are numerous organized advocates and partners in the U.S. for forest conservation that have a profound effect on U.S. forestry and forest policy.

The Nature Conservancy (TNC), an NGO dedicated to preservation of the nation's biodiversity, has accumulated over 3.64 million ha of wildlife habitat and manages over 1,500 reserves. TNC is currently focusing on developing agreements with the business community and has come to an agreement with the timber company Westvaco to conduct a biodiversity inventory of its 562,000 ha of land.

In October 1994, the American Forest and Paper Association (AFPA), which represents 95% of the industrial forestland in the U.S., approved a set of Sustainable Forestry Initiative Principles and Guidelines (SFI), which includes performance measures for reforestation and the protection of water quality, wildlife, visual quality, biological diversity and areas of special significance. In 1998, the program was expanded to include public and non-industrial private lands.

The U.S.-based International Wood Products Association (IWPA), which represents major timber exporting and importing companies, has established membership-approved voluntary "Codes of Conduct" for trade in wood products and forest management, similar to the SFI.

There are a number of standards and certification schemes, such as the International Standards Organization and the Forest Stewardship Council, involved in a growing trend for wood products certification. This trend is reflected in the growing number of lumber mills seeking and receiving "chain of custody" certificates and a number of large corporate retailers such as Home Depot, the world's third largest lumber retailer, selling certified wood products. To date, about 179 companies throughout the U.S. carry FSC chain-of-custody certification and 52 U.S. forest management companies are FSC-certified.

International activities in general

The U.S. has major interests at the international level. The U.S. provides substantial forest-related assistance to developing countries and countries with economies in transition through the U.S. Agency for International Development (USAID) and other federal agencies, as well as through contributions to international organizations and financial institutions such as the World Bank, and various innovative debt reduction initiatives. Several of the largest multinational forest and paper companies are U.S.-owned, and many U.S.-based environmental organizations and academic institutions undertake forest field activities and projects abroad.

The U.S. is active in a wide variety of intergovernmental agreements, organizations, initiatives and other fora that undertake forest-related work and policy discussions. Key among them is the Intergovernmental Forum on Forests (IFF). The U.S. is a member of the 12-country Montreal Process Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests and hosted the 11th Meeting of the Working Group in November 1999 in Charleston, South Carolina. The U.S. initiated the G-8 Action Program on Forests, which world leaders launched at the Denver Summit in 1997 and endorsed a year later. A progress report on implementation of the G-8 Action Program will be submitted to G-8 leaders at the Okinawa Summit in 2000.

In July 1998, the President signed into law the Tropical Forest Conservation Act (TFCA), which authorizes the reduction of official debt owed the U.S. by countries with tropical forests in exchange for forest conservation measures. The law expands the 1992 Enterprise for the Americas Initiative, which led to the signing of agreements with seven Latin American countries that were undertaking macroeconomic and structural adjustment reforms to cancel $875 million in their official debt, generating substantial local currency for child survival and environmental projects. Seven countries have requested debt buy-back or debt-for-nature swaps under the TFCA; many more have expressed interest in debt reduction should funding become available.

The U.S. is actively pressing the G-8 and other industrialized countries to establish environmental guidelines for export credit agencies along the lines of the "Environmental Procedures and Guidelines" used by the Export-Import (EX-IM) Bank of the United States to evaluate applications for financial support for foreign projects sponsored by U.S. business. Proposed forest sector projects, such as pulp and paper mills, area evaluated by EX-IM for ecological soundness and mitigation measures. Project sponsors are required to develop forest management plans that consider, among other things, impacts on water resources, endangered/threatened species, and local communities from construction and operation.

International activities in the Asia-Pacific Region

Reduced impact harvesting

The U.S. Forest Service is collaborating with the Asia-Pacific Forestry Commission (APFC) to promote reduced-impact harvesting in the Asia-Pacific region. Numerous workshops and meetings have been held to develop and implement a Code of Practice for Forest Harvesting in Asia-Pacific. An internet-based network, RILNET, has been established to disseminate information. A workshop is planned to gather information on the current state of reduced-impact harvesting and share it with policy makers, managers and implementers. Through USAID and U.S. Forest Service support, the Tropical Forest Foundation has placed a field person in Indonesia to help provide training and support to reduced-impact harvesting in the region. A study is also planned to gather information on the economic benefits/cost of employing reduced impact harvesting techniques.

Underlying causes of fires

In partnership with the Center for International Forestry Research and the International Center for Research in Agroforestry, the U.S. Forest Service is assisting in an assessment of the underlying causes of the 1997/98 fires in Indonesia. The U.S. Forest Service's Remote Sensing Applications Center has been active in analyzing satellite imagery of the areas burned on the Indonesian islands of Sumatra and Kalimantan. The final results will be disseminated throughout Indonesia with the aim of assisting the Indonesian Ministry of Forestry and Estate Crops and other government agencies in policies that would prevent wide scale forest burning and promote sustainable forest management.

Fire management

The U.S. Forest Service is building capacity in Indonesia for fire suppression and management in cooperation with the Indonesian Ministry of Forestry and Estate Crops and the Association of Southeast Asian Nations (ASEAN). Assistance has been provided since August 1998, and is in the form of short to medium-term assignments of fire management specialists. The U.S. Forest Service assisted in the implementation of a workshop to foster interagency coordination for fire suppression at the provincial level. This activity specifically meets the goals of and builds the capacity of the Indonesian Ministry to decentralize authority.

Invasive species

Invasive species are a serious global biological and economic problem. Yet, usually little is known of the severity, life history, or effective control measures for the invasive pests until they are already well established. The U.S. Forest Service has been working with countries in the region to identify priority invasive species to control and explore effective measures to control these invasive species. This includes studying the pest's life history, biological control, chemical control, and monitoring and evaluation. Some of the pests of interest to the United States include: Asian longhorned beetle, kudzu, beech bark scale, Oracella acuta (mealybug), mile-a-

minute weed, hemlock wooley adelges, and red turpentine beetle.

Erosion modeling

A GIS-Based Soil Erosion and Sediment Transport Model is being developed in collaboration with the Beijing Forestry University to validate a new geographic information system based on soil erosion and transport model using data collected from the Quxi watershed in the Yangtze River Basin in Southern China.

Nature based tourism

A brochure is being developed in collaboration with the Forestry Bureau in Zhongdian Prefecture, Yunnan Province. The brochure will highlight the natural features of the area and incorporate environmental ethics such as "tread lightly" and "leave no trace." The brochure will be developed in both Chinese and English and completed by the end of 2000.

A workshop is being planned in Sichuan with the Sichuan Forestry Department to discuss the components of nature-based tourism, especially ecotourism. Additionally, it will serve as an opportunity for park and reserve managers to share experiences and try to develop a group to address issues of mutual interest. The workshop is tentatively scheduled for the fall of 2000.

The effect of removing forests from timber production

The Forest Service is supporting a study by the International Forestry Sector Analysis of the effects of removing natural forests from commercial timber production, in collaboration with FAO and professional forestry personnel from selected countries in Asia.

Information sources online

Information concerning marketing and trade of timber and timber products in the U.S., particularly import from the Asia Pacific Region has been regularly presented at the ITTO Tropical Timber Market Report website at:
http://www.itto.or.jp/market/recent/mns120199.html.

The Year 2000 RPA Assessment is expected to be published by October 2000. Supporting technical reports and analyses are in various stages of completion and several have already been published on the following website at: http://www.fs.fed.us/pl/rpa/.

Forest inventory data for the U.S. can be accessed online at USDA/Forest Service's forest inventory website at:
http://www.srsfia.usfs.msstate.edu/wo/wofia.htm.

Many other Forest Service publications can be accessed online at:
http://www.fs.fed.us/links/pubs.shtml.

For a summary overview on U.S. forests visit the "State of the Nation's Ecosystems" website at: **http://www.us-ecosystems.org/** and click on "Forests".

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All component man should have some ambition, for ambition is like the temper in steel. If there's too much the product is brittle, if there's too little the steel is soft, and without a certain amount of hardness a man can not achieve what he sets out to do.
(Dwight Eisenhower)

Vanuatu

Country data	
Total land area (thousand ha)	1,219
Total forest area 1995 (thousand ha)/ % of total land area	900/ 73.8
Natural forest 1995 (thousand ha)	893
Total change in forest cover 1990-1995 (thousand ha)/annual change (%)	-38/ -0.8
Population total 1997 (millions)/annual growth rate 1990-95 (%)	0.2/ 2.5
Rural population 1997 (%)	80.9
GNP per person 1995 in US$	1200

Source of data: FAO - State of the World's Forest 1999

General information

Vanuatu is a small island, made up of 82 islands, 70 of which are inhabited. Two major islands account for half of the total land area. Customary land represents the vast majority of land holdings. The majority of the rural population live in a subsistence economy. The largest components of the GDP are the agricultural and industrial sectors and tourism. Offshore financial services are also important. The major agricultural commodities are copra, beef, and cocoa.

The Government's development priorities for the coming years are geared to the rational utilisation of natural resources and the expansion of the cash economy through an increased contribution of the private sector.

The economy is essentially agricultural with about 80% of the population primarily engaged in subsistence farming of food crops such as taro and yams. Agriculture was dominant in export earning accounting for about 85% of the nation's export income.

Forest resources

A draft National Land Use Plan was compiled during 1998. It recognises that land is Vanuatu's heritage and the key to its peace and prosperity. The national goal for land use is to develop land resources in a sustainable way for the benefit of all ni-Vanuatu now and in the future.

Forestry is the responsibility of the Ministry of Agriculture, Forestry, and Fisheries. The Department of Forestry, officially established in January 1980, was recently restructured with the creation of a Forest Research Division and an Extension Forestry Division (responsible for all reforestation, afforestation and small-scale sawmilling programmes). Forestry is quite important to rural communities. It is one of their main sources of cash income. In addition to the commercial forestry operations, the forests provide a wide range of products for the subsistence lifestyle of most ni-Vanuatu.

Almost 75% of the land area is covered by natural vegetation, with around one third covered by forest. However, the quality of natural forests in terms of commercial forestry is low. According to the inventory carried out in 1993, there were a total of 205,000 ha of mid height forest (>20 m tall) and 234,000 ha of low forests. However, only about 20% of the total forest resource is commercially available, owing to the steep slopes, dissected landform, low density and cultural reasons. The National Forest Policy has adopted the sustainable yield of 68,000 m3/year. This means that a greater proportion of the timber resources can be harvested if a combination of mobile sawmills and conventional logging is

used. The Policy allocates 70% of the available timber resources to large processing plants and 30% to mobile sawmills.

The tree plantations are dominated by one species, i.e. Cordia alliodora, and range in age from 14 to 22 years. The National Forest Policy sets a target of establishing 20,000 ha of plantations over the next 20 years.

Small scale farmers plant trees, but the number of hectares can not be accurately measured due to the small scale and scattered locations. In 1998 and 1999, the Forestry Department supplied 7,004 seedlings and 9,608 seedlings respectively to small farmers.

As of 1996, the total area under plantation was 20,910 ha, comprised of local supply plantations (1,160 ha); Aneityum pine plantations (890 ha); Ipota industrial plantations (260 ha); IFP research plantations (350 ha); and Melcoffee whitewood plantations (250 ha).

Planning

In early 1991, the Government officially requested assistance from FAO to initiate the Forestry Planning Process. A consultant was retained from November 1991 to January 1992 to assist the Government in drafting an NFAP Issues Paper.

This document was then reviewed at the National Round Table convened in early 1992, after which a final draft was to be prepared for consideration by the Cabinet. The study would aim at establishing the groundwork for which partners could provide support to forest and forestry development in Vanuatu. A draft report consisting of three volumes: Executive Summary, Draft Forest Policy Statement, and the Forest Sector and Policy Options was ready in April 1992. It was suggested by the consultant that the document be circulated widely for intensive discussions among partners in Vanuatu, including politicians at the national and provincial levels, to seek input, acceptance, and also commitment for its possible implementation. Due to a political crisis in the government at the time and other matters, further action on the process was suspended. In July 1994, the process was rejuvenated and an issues paper was submitted for consideration by the Council of Ministers. However, since then, the process has not progressed.

A TSS-1 proposal for a "Forestry Sector Study and Implications on Forest Policy for Vanuatu", intended to keep the momentum for the exercise, was approved and started at end of June 95, with a duration of two and a half months. Another project, "Sustainable Management of Forest Resources", which is in the pipeline, would contribute significantly to forestry development. The result of the TSS-1 study was a draft National Forest Policy. It was reported that the Department of Forest has been using the draft as a guide toward sustainable forest management in Vanuatu.

The draft was submitted for approval to the Council of Ministers in mid-1997 but, unfortunately, there is no record of their approval. A new Government was formed in March 1998, to which the Department of Forest is submitting the draft for formal ratification.

Policy

Article 7(d) of the Constitution of the Republic of Vanuatu is the basis for the formulation of the national forest policy, i.e.

“protect the Republic Vanuatu and to safeguard the natural wealth, resources and environment in the interests of the present generation and of future generations”. Therefore, the principal national goal for the forest sector is: to ensure the sustainable management of Vanuatu’s forest to achieve greater social and economic benefits for current and future generations.

The National Forest Policy (NFP) was developed through a wide consultative process in 1996 and 1997. It was endorsed by the Council of Ministers in 1998. The NFP guides the work of the Department of Forests and this provides a clear indication to investors and donors about how the forestry sector will be managed in the country. The policy is grouped

into nine main areas and sets out clear policies, objectives and strategies for each area. The roles of various stakeholders are clearly identified, including national and provincial Governments, customary chiefs, landowners and communities, forest industries and NGOs.

The NFP presents a positive vision for the management of the nations' forest resources. It is stated that "the Government will work co-operatively with the landowners and the forest industries to achieve sustainable forest management and thereby encourage revenue generation for ni-Vanuatu landowners, economic development for the wider community and conservation of the country's forest biodiversity".

The NFP identifies a number of issues and constraints affecting the forest sector, which can hamper the achievement of sustainable forest development. There are 38 detailed strategies to address the issues and constraints identified by the NFP. The main issues and constraints are the following:

- out of date legislation;
- land disputes;
- inadequate land use planning;
- lack of forest management plans at the regional level;
- imbalance between utilisation and reforestation/ afforestation;
- inadequate resource knowledge;
- weakness of the institutional component;
- non-compliance of the industries with the code of forest harvesting practices; and
- inadequate funding and management of protected areas.

Code of logging practice

A Code of Logging Practice was developed in co-operation with Australian Aid (AusAID) and in consultation with the industry sector. The Code is designed to foster the application of sustainable forest harvest practices. The Code will be a catalyst for upgrading industry standards. The Code was developed in 1995 with the assistance of the Vanuatu Sustainable Forest Utilisation Project. A revised version of the Code was prepared in March 1998 incorporating minor improvements based on experiences gained so far. The amended Forestry Act, 1997 provides a legal basis for preparing and amending the Code and establishing strong penalties for breaches of the Code.

Currently, most of the logging operations do not comply with all the standards contained in the Code, mainly due to lack of skilled workers. Logging planning requires considerable specialist skills. The Machine operators and tree cutters will require considerable retraining. AusAID, under the Vanuatu Sustainable Forest Utilisation Project, has provided significant training over the last five years.

The Forest Department is developing a competency based assessment system to licence forest operators starting in 2000. Specialised training has been provided for the logging planners and logging supervisors, as well as for machine and chainsaw operators. Forest Officers and some NGOs, such as FSP, carried out this training through their Eco-Timber project.

Reduced Impact Logging (RIL) guidelines were developed in 1997 as the follow up to the development of the Code. The RIL produced supporting documents, including the improved silvicultural prescription using variable diameter species cutting limits for selected forest types.

The Forest Department, in collaboration with the Pacific German Forestry Project, is establishing a demonstration site in Santo, the largest island that has the majority of the commercial logging. A similar one was established in Efate in 1997.

Sandalwood

Sandalwood (Santalum austro-caledonia) is an important forest product in Vanuatu. It is used for fine carvings or made into incense or oil for perfumes. There is limited information available about the sustainable management of sandalwood. In 1997, the Government introduced new regulations for controlling the harvest and exports of sandalwood. Taiwan was the major buyer of the sandalwood exports from Vanuatu.

The initial trial operation of a sandalwood oil distillery in Vila by a company was conducted in 1999. It is expected that the production of processed sandalwood will be

increased in the years 2000 and 2001.

The Department of Forestry has taken the initiative to implement a minimum cutting limit of 15 cm diameter at 50cm up from the ground. This helps young sandalwood trees to grow to maturity for harvesting and increases the proportion of heartwood that has higher oil content. The quantity of sandalwood harvesting is presented in Table 1.

Table 1: Sandalwood harvesting

Year	Quantity (kg)
1996	77,000
1997	32,906
1998	72,356
1999	28,551

Biodiversity and conservation

The work on conservation and protected areas was initiated by an ACIAR research project (PN 9020). This project resulted in the establishment of a Forest Conservation Unit within the Department of Forests in 1995. The Unit manages the herbarium, provides information to landowners on conservation and protected areas, collects information on potential forest conservation sites, monitors existing forest protected areas, and promotes post-logging forest regeneration through awareness and permanent plots.

The formal concept of conservation, protected areas, and national parks is very new to Vanuatu; the placing of taboos has been the traditional method used for conserving resources. This has assisted substantially in conserving forests. However, with the current economic drive and deterioration of traditional cultures, these methods of taboos are losing their importance and reducing their effect in conserving the resources, including trees.

The existing conservation reserves in Vanuatu include:

- Kauri Reserve, Erramango (3,205 ha);
- Big Bay Conservation Area, Santo (4,300 ha);
- Loru Protected area, Santo (150 ha); and
- Nagha mo Pineia Area, Malakula (1,056 ha).

In addition to the above, there are a number of conservation areas proposed by landowners, including:

- Middlebush Tanna;
- South-west Malakula;
- East Santo;
- West-coast Santo; and
- Loh, Torres and Efate.

Some of the constraints affecting the implementation of forest conservation programmes, include the lack of resources, lack of effective co-ordination between the various organisations involved in conservation programmes and the inability to implement the National Parks Act.

The development of a Biodiversity Strategy and Action Plan is currently underway with assistance from the GEF and SPREP. The planned activities include the establishment of the Biodiversity Conservation Trust Fund and an inter-agency Protected Areas Group to co-ordinate and share information on protected areas.

Marketing and utilisation

The number of mobile sawmills, sometimes called walkabout sawmills, has increased rapidly over the past years. They have very low production capacity and produce moderate quality timber, but they have the significant advantages of employment and income opportunities for local communities and minimum environmental disturbance. However, their uncontrolled use can cause problems. New regulations for controlling the use of mobile sawmills were developed and approved in 1997.

Log exports were banned from 1989 through 1993. The ban was lifted in mid-1993 but re-introduced in May 1994 and still applies to date. The Government will maintain the policy introduced into legislation in 1994

that logs (other than coconut and sandalwood) should be processed domestically. Any export of unprocessed logs will require the approval of the Council of Ministers.

Logging concessionaires were invited to renegotiate timber licenses based on a sustainable level of harvest, and new licenses were granted in 1995 for significantly reduced volumes. The permissible annual cut was

206,500 m3, but the total harvest was only 44,000 m3 in 1994 - less than 29% of the national sustainable yield level. According to the National Forest Inventory, it is estimated that the total area of log-able forest is only about 117,000 ha, and the total forest resource is about 13 million m3. However, only about 20% of the total forest resource would be commercially available, the rest being unsuitable due to steep slopes, dissected landforms, low sawlog volumes, and for cultural reasons.

There are some plants that have significant potential for medicinal purposes and historically many plants have been used to cure and prevent diseases. However, these have not been protected from interested companies or countries that may want to use these plants or patent them. There is an urgent need to develop intellectual property rights so that some benefits can be channelled back to the people or the location where these plants originates.

Collaboration with partners and international conventions

Many donor agencies have been involved in the forestry sector development in the country. They include AusAID, German Technical Co-operation (GTZ), the European Union, New Zealand ODA, FAO and UNDP.

Donors had contributed substantially to carry out forestry activities by providing support of US$ 462,000; this was more than the Government budget of US$ 385,000, in 1999. Donor funded projects in 1999 is presented in Table 2.

The Convention on International Trade of Endangered Species of Flora and Fauna (CITES) was ratified in 1989. The Convention on Biological Diversity was ratified in 1993.

In the year 2000, the European Union supported project entitled “Landowner Extension and Awareness of Reforestation Naturally (LEARN)”. Key activities include plans to develop methods for post-harvest reforestation of natural forest in participation with landowners.

Vanuatu became a member of the Asia Pacific Forestry Commission in August 1999. In addition, the Vanuatu Council of Ministers have approved Vanuatu’s joining the International Tropical Timber Organisation, expectedly in the year 2000. Due to funding constraints and a limited ability to become effectively involved and meet obligations, Vanuatu has had limited involvement in the international discussions on forestry issues such as the IPF/IFF process.

The Department maintains a policy of open co-operation with non-government organisations (NGOs) and collaborates closely with some programmes carried out with NGOs. The NGOs active in the forestry sector include:

- Foundation of the Peoples of the South Pacific FSP);
- Industrial Development and Economic Alternatives for Sanma (IDEAS);
- National Komunity Development Trust (NKDT);
- Vanuatu Environment Organisation (VEO);
- Vanuatu Rural Development Rural Training Centres Association (VRDTCA); and
- Wan Smol Bag Treatre.

In addition, Customary Chiefs have an important role in maintaining traditional social structures, including consultations concerning logging plans, identification of taboo sites, and dispute resolution.

Table 2: Donor funded project in 1999

Project Name	Donors	Estimated budget (Vatu)
Vanuatu Sustainable Forest Utilisation Project	AusAID	21,178,780
Forest Management Project	GTZ	9,322,500
Kauri Reserve	N. Zealand	3,570,000
Aneityum Erosion Control Project	N. Zealand	2,314,600
Mangaliliu Community Forestry Project	N. Zealand	214,550
Biodiversity Mapping and Training Project	AusAID	8,400,000
Sandalwood Inventory Project	N. Zealand	587,000
Genetics Project (SPRIG)	AusAID	21,250,000
Total		**66,837,430**

Note: Exchange rate US$ 1 = 130 Vatu

Landowners will decide how their forest resources are to be managed, and they will be involved in harvesting and planting trees. The forest industry will negotiate with landowners for timber harvesting areas and implement the approved plans.

Focal point

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If you treat people as they are, they will stay as they are.
But, if you treat them as they ought to be, they will become bigger and better persons.
(Goethe – quoted from John Adair – Effective Motivation)

Viet Nam

Country data	
Total land area 1996 (thousand ha)	32,549
Total forest area 1995 (thousand ha) / % of total land	9,117 / 28.0
Natural forest 1995 (thousand ha)	7,647
Total change in forest cover 1990-1995 (thousand ha)/Annual Change (%)	-676/11.4
Population total 1997 (million)/ annual rate of change 1995-2000 (%)	76.5/ 1.8
Rural population 1997 in %	80.4
GNP per person total 1995 in US$	240

*) Source of data: FAO - State of the World's Forest 1999

General information

The country is administratively divided into 49 provinces, which are subdivided into 400 districts, and further into communes, with each commune containing a few villages. The economic development policy has been changed in line with the country's move towards a market economy, and it is expected that the economic activities will change substantially.

Agriculture activities occupy 6.9 million ha, or 21% of total land area, provide a livelihood for more than two-thirds of the population, and accounting for about 40% of export earnings. During the initial stages of transition towards a market economy, the forestry sector played a prominent role in the economy and culture of the country, contributing 5.1% of the GNP, and 5% of the total exports.

Direct responsibility for the day-to-day management of the forests rests with the Provincial and District administrations. The Ministry of Agriculture and Rural Development is responsible for providing technical guidance and services.

The basic forest policy goals are to:

- meet the nation's needs for forest products and sustainable environmental protection;
- increase social and economic benefits of forest resources through efficient utilisation;
- increase people's participation in forest protection and utilisation; and
- improve the living conditions of the rural population through forestry development.

In 1988, a decision was made to allocate some forest lands formerly under the authority of the Ministry of Agriculture and Rural Development for transfer to non-State units. The amount to be transferred was initially 6 million ha, then increased to 7 million ha, and recently was reduced to 5 million ha.

National forest programme (NFP)

The Tropical Forestry Action Programme (TFAP) exercise was launched in November 1988. The TFAP Issues Paper and the Final TFAP document were finalised in August 1989 and May 1991 respectively, and an International Round Table meeting was organised in September 1992. The national lead institution during the formulation of the TFAP document was the Ministry of Forestry.

The TFAP exercise identified seven key issues and constraints as follows:

- deterioration of living conditions for the rural population;
- declining forest cover;
- lack of operational efficiency;
- decline in biodiversity;
- watershed degradation;
- wood imbalances; and
- lack of skilled man power.

The TFAP exercise proposed four main

programmes and fourteen sub-programmes as follows:

- Institutional strengthening
  - ✓ Restructuring of the Ministry of Forestry
  - ✓ National planning capability
  - ✓ Training and education
  - ✓ Research and extension
- Environmental protection
  - ✓ Protection of forest ecosystem
  - ✓ Protection forestry
- Forest management
  - ✓ Wood industries
  - ✓ Industries
  - ✓ Non-wood products
  - ✓ Natural forest management
  - ✓ Forest plantation
- Forestry in land use
  - ✓ Sedentarization
  - ✓ Community forestry
  - ✓ Agro-forestry

The TFAP exercise identified 28 priority projects for immediate implementation with an estimated total cost of US$ 475 million. Support from partners, particularly donors, has been considered substantial, coming from Sweden, Australia, Germany, Japan, the Netherlands, Finland, Italy, Switzerland, UNDP, FAO, WB, ADB, WFP, EU, and WWF. Regional Programmes/ Projects have also provided support, particularly on training, methodology, policy formation/formulation, study tours, and information sharing among developing countries. The support covers several activities including:

- Intensification of capacity for national forestry planning;
- Training and education in the forestry sector;
- Conservation of wildlife and biological diversity;
- Land use in the watershed;
- Social and community forestry;
- Decentralised planning;
- Reforestation of denuded and degraded lands;
- Environment training and preparation of biodiversity plan;
- Establishment of a social forestry centre;
- Research;
- Wood energy.

Substantial Government investment has also been made in the following area:

- management and protection of protective forests to support irrigation and hydro-power stations development;
- plantation, management, and protection of forests on barren hills and wastelands; and
- protection and management of national parks and natural reserves.

Three major documents were produced to support strategic thinking for the implementation of the TFAP:

- Renewal of strategies for forestry development (May 1993);
- Economic realities to consider in developing strategies for forest land use (August 1993); and
- Report on land-use management and land-use planning (September 1993).

The National Programme for Upland Development (also known as Programme 327), established in late 1992, is still operating. During 1995, the Government allocated about US $ 60 million for the Programme implementation, which was carried out through 1200 projects, operating within the geographical limits of districts. The projects within the Programme aim to increase income levels for all households through improved land use practices, including components of social and infrastructure development such as school construction, health stations, minor roads, markets, etc.

The Programme was initially led by three Ministries, i.e. Labour, Social Affairs, and War Invalids, and backed by the State Planning Committee. In 1993, the overall guidance of the programme was transferred to the State Planning Committee, and the Ministry of Agriculture, Forestry, Industry, and the Committee of Ethnic Minorities and Mountain Issues will be the implementing agencies of the projects.

Policy, legislation, and institutions

In 1995, the Prime Minister decided to

review the activities of Programme 327, including the organisational structure. This resulted in the broadening of the vision of the programme to include a social and economic development programme for upland areas, involving several ministries, focusing on the conservation and restoration of natural resources by the local people. The Ministry of Agriculture and Food Industry, Ministry of Forestry, and Ministry of Water Resources were merged into the Ministry of Agriculture and Rural Development. The overall targets are the following:

- Management of 9 million ha of forestland in order to protect biodiversity and environment.
- Management of buffer zones surrounding protected natural forests, including agro-forestry on denuded hills.
- Management of natural production forests, reducing logging intensity.

In January 1994, a decree concerning land allocations to be managed by organisations, households, and individuals for long-term forestry purposes was promulgated. As the follow-up to this decree, five million ha of forest areas have been allocated to be managed by about one million families living in upland areas. About 8,000 extension workers are now working in this field.

Changes in the forestry sector and policy should be seen in the context of the on-going transition in the political, economic, and social spheres in Vietnam. In brief, the policy foundation for this transition has the following components:

- An open door policy, particularly towards the neighbouring South-East Asia countries, resulting in Vietnam joining ASEAN;
- Reduction in the size of the Government structure as the result of moving toward a market-oriented economy;
- Decentralisation of planning to provinces and districts, combined with strengthening the institutional capacity at the central level to implement the overall reform process;
- Restructuring of the economy, with reduced Government involvement in production, and increasing the role of households and the private sector.

This transition has been quite successful. Without experiencing serious disturbances, rapid economic advances have been achieved, including the following:

- Inflation has been brought under control;
- There has been rapid growth in the Gross National Product, with a 6 to 8 percent annual growth rate achieved for the past few years;
- There has been rapid growth in exports, initially rice followed by other commodities, and the market was broadened from mainly socialist to other countries, in particular to South-East Asian and European countries;
- A balance was achieved between exports and imports;
- Increasing flow of overseas investment, including loans from the World Bank, the Asian Development Bank, and other institutions, and from direct commercial investment.

However, the formulation of a comprehensive regulatory framework has lagged behind. Thus, the administrative system is still weak, and the human resource-base is not well enough trained to operate in the new policy framework. Notable important issues are the following:

- As part of the national reform process, the forestry sector is in a strong position to initiate work with a renovated policy framework for the sector. A new forest law, i.e. the Forest Protection and Development Act, was promulgated on 19 August 1991, and key subsidiary decisions and decrees were issued, including a decision on the provision of funds for long-term investment in the development of forest resources (1992); a decision to create a programme for the development of upland areas and ethnic minorities (1993); and a decree on the allocation of forest land to non-State units (1994).
- The country's capacity to formulate suitable policies for forestry development was improved. Previously, policies were directed toward the forest resources; nowadays, rural

people and food security have been given a higher priority.

- A long-term national programme for the re-greening of bare hills and the protection of forest resources was initiated in 1992 within the framework of the renewed national policies, and based on the technical conclusions reached during the implementation of the NFAP. The programme is unique, since it is set up expressly to bridge the gap between the macro- and micro-levels in the present context of rapid national change. The key characteristics of the programme are the following: a multi-disciplinary and multi-sectoral approach; the protection of biodiversity and sustainability; people's participation; combining top-down and bottom-up approaches; applying decentralised planning methods; and strengthening the national capacity in mobilising local resources and absorbing external support.
- Other important issues are:
  - ✓ The timber exploitation ban in specialised-use forest and forests reserves, and also the limits put on logging, which was announced in April 1992;
  - ✓ Enhanced awareness of politicians and decision-makers of the important role of forests for the environment and economic development;
  - ✓ Strengthened communication and co-operation among sectors dealing with forestry development in the country;
  - ✓ Establishment of an Information Unit to improve co-ordination, communication, and co-operation among donors in support of forestry development.

The Government's decision to ban the exploitation of timber in natural forests represents a package of comprehensive socio-economic and technical solutions towards protecting natural forests, while accelerating reforestation to ensure short- and long-term environmental and social security. It reflects the Government's commitment to respond to Agenda 21 of UNCED 1992. The immediate objectives of the decision to ban the exploitation of timber are:

- Consolidating the protection function of forests through stricter control of the existing protection forest of 9.3 million ha, and establishment of forest plantations, so as to increase the forest coverage to 43%.
- Contributing to the creation of job opportunities and income generation, thereby improving the living conditions of 24 million people living in and around the forest areas. Support will be provided to farmers to establish 3 million ha of timber plantations.
- Meeting the demand for fuel wood.

The important activities which will be carried out to achieve the above objectives includes:

- A ban on forest products collection from protected areas, and restrictions on the harvesting of non-wood forest products in critical watershed areas for 30 years;
- Prohibition of commercial logging in the remaining natural forests in Northern Vietnam, south-east of the South Mekong Delta, and in the Red River Delta;
- From the year 2000, the total timber volume allowed to be cut will be 300,000 m3 per year. The Ministry of Agriculture and Rural Development is the responsible institution to approve the logging sites.

A meeting concerning improving aid co-ordination in the forestry sector was held in Hanoi, September 1995. At the meeting a draft paper concerning the Concept of a Co-ordination Group for Forest Development in Vietnam was discussed. The meeting also discussed a paper entitled Framework for a Forestry Development Strategy for Vietnam towards the year 2010.

In 1995, an "Information Unit" was established with assistance from GTZ/Germany to develop a database for all projects funded by donor agencies, the national budget, and NGOs. This database would be used as a platform to discuss the concept of the establishment of a Consultative Group on Forest Development in Viet Nam (CGFV). This Group was created in September 1995.

The overall goal of the CGFV is to increase

the effectiveness, efficiency, and sustainability of long-term investment in forest development in Viet Nam. The purpose of the CGFV is to strengthen communication, co-ordination, and co-operation between all parties in the planning, implementation, evaluation, and further development of the National Forestry Action Programme.

The composition of the Group is as follows:

- Representatives of the State Planning Committee;
- Officials of the Ministry of Agriculture and Forestry;
- Representatives of donor agencies / countries; and
- Representatives of NGOs.

In addition, under the auspices of the Swedish-supported project: "Renovation of Strategies for forestry Development", an International Support Group, comprising representatives from the key Vietnamese agencies responsible for the use of forest resources in the country and from international and bilateral organisations interested in supporting the sector, has become operational.

In 1996, the government of Viet Nam approached FAO for assistance in the revision of the forest policy. The reason was that the Forest Policy and Legislation was being overtaken by political and economic reforms, which had progressed to such an extent that significant revision and modifications had become necessary. A meeting was organised in July 1996 to discuss this assistance. An FAO support project TCP/VIE/6715: Support to Forestry Policy and Formulation and Legislation in Vietnam was approved. A National Forum on Forests was organised in Hanoi from 10-12 June 1998 to identify and prioritise issues which need to be addressed by the future forest policy, as well as to identify broad strategic measures to address the issues.

Five million hectares reforestation programme

In support of the reforestation target of 5 million ha up to the year 2010, Resolution No. 08/1997/QH10 of the 2nd Session of the 10th National Assembly and Decision No. 661/QD-TTg of the Prime Minister of 29 July 1998 were issued. These regulations stipulated that the Government launch the National Five Million Hectares Reforestation Programme (5MHRP). The overall objective of the programme is to reforest and rehabilitate 5 million ha of forest by the year 2010. It is the Government's major effort towards sustainable forest management in line with the Rio Declaration and Agenda 21.

At the Consultative Group Meeting in Paris in December 1998, the donor community and the Vietnamese Government agreed to establish a Partnership Support Programme in support of 5MHRP. A Memorandum of Understanding (MoA) was signed in Hanoi between the Ministry of Agriculture and Rural Development (MARD) and 15 representatives of the donor community and international institutions namely UNDP, FAO, EU, WB, ADB, JICA, JBIC, WFP, WWF, IUCN, the Netherlands, Germany, Finland, Sweden, and Switzerland. The objective of the MoA is to reach agreement on a formal partnership between the Government of Vietnam and interested donors, including NGOs, which will lead the Government and donors to a shared sector support programme for effective and efficient implementation of the 5MHRP on the basis of agreed policies, strategies, priorities and principles of implementation. The MoA is not a legally binding document.

A Partnership Steering Committee was established under Decision 855 QD/BNN-TCCB of 14 March 2000. A Partnership Secretariat was established under the International Co-operation Department.

In addition, several Task Forces have been set up as follows:

- Task Force I: Clarification of the 5MHRP

The objectives of Task Force I are to: a) review and assess the current preparation and implementation of the 5MHRP; b) present in detail the objectives and outputs, ways and means, and implementation structure of the 5MHRP; and c) define core activities, the relations with other national programmes as well as the limitations. It is expected the report will be submitted to the Steering Committee in October 2000.

- Task Force II: Forest Policy, Strategy and Institutions

The objectives of Task Force II are to: a) review and assess the strengths and weaknesses of the current national forestry strategies and policies; b) based on the analysis, develop proposals for effective strategies and on how to revise the national forestry strategies and policies; and c) make contributions towards the development of a long-term vision for the forestrys ector in Vietnam.

- Task Force III: Forestry Sector Investment and Assistance Needs and Partnership Support Structure.

The objectives of Task Force III are to: a) review and assess the future investment needs; b) recommend a financing strategy for sustainable forestry sector development and the implementation of the 5MHRP;

The second Steering Committee meeting was held on 22 May 2000 to discuss several aspects of the 5MHRP, including the action plans of the task forces, updating the information, status and progress of the project, and overcoming the problems faced.

The above shows that the partnership programme in Vietnam covers a wide scope of co-ordination aspects, including the preparation, planning, and mobilisation of partners to achieve a specific target.

Focal point

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It is not enough to do our best. Sometimes we have to do what's required.
(Winston Churchill)

I am persuaded that every being has a part to play on earth:
to be exact, his or her own part which resembles no other.
(Andre Gide)

You get more of the behavior you reward.
You don't get what you hope for, ask for, wish for or beg for.
You get what you reward.
(Michael le Boeuf)