FORESTRY OUTLOOK STUDY FOR AFRICA

SUBREGIONAL REPORT
CENTRAL AFRICA

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Foreword

Although Central Africa is very rich in forest resources in comparison with other African subregions and offers considerable potential for supporting social and economic development, this potential remains largely unrealized. Especially, the Congo basin forests, the world's second largest contiguous block of tropical forests, have drawn a lot of attention on account of their critical importance in the provision of global public goods, especially in protecting biological diversity and in stabilizing global climate. In the recent years it has become the most important source of tropical timber in Africa. In addition, a substantial proportion of the population in the Central African countries is dependent on the forests for a variety of goods like woodfuel, medicinal plants and bushmeat. These demands are changing over time in response to a variety of factors, both internal and external to the countries.

This report prepared within the framework of the Forestry Outlook Study for Africa (FOSA), provides an overview of the current situation and the likely trends which lead the changes in forestry up to the year 2020 in Central Africa. Further, the report also outlines what may be done to improve the situation, especially to address the pervasive problems of poverty and environmental degradation facing the countries in the subregion.

Considering the diversity within Central Africa, there will be obvious differences in the development of the forest sector between countries. FOSA has attempted to capture some key aspects of this diversity and indicated the changing opportunities and challenges. The subregional and regional overview provided by FOSA would help to strengthen the knowledge base of the national forest programmes.

FOSA also has a broader purpose of stimulating discussion on the future of forests and forestry. While it provides some broad indications of what the future is likely to be, it should be seen as a process, enabling the stakeholders to raise appropriate questions, visualise emerging situations and identify various options to enhance the contribution of forests to sustainable development. FAO in partnership with the countries and other organizations will continue to strive to support this process taking advantage of the insights provided by FOSA.

M. Hosny El-Lakany
Assistant Director-General
Forestry Department
Food and Agriculture Organization of the United Nations

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Abbreviations

ADB	African Development Bank
ATIBT	Association technique internationale des bois tropicaux
ATO	African Timber Organization
CARPE	Central Africa Regional Program for the Environment
CBD	Convention on Biological Diversity
CEFDHAC	Conférence sur les écosystèmes de forêts denses humides d'Afrique centrale.
CIRAD	Centre international de recherche agronomique pour le développement.
COMIFAC	Conférence des ministres en charge des forêts d'Afrique centrale
CCD	Convention to Combat Desertification
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CDM	Clean Development Mechanism
ECA	Economic Commission for Africa
FAO	Food and Agriculture Organization of the United Nations
FCCC	Framework Convention on Climate Change
FOSA	Forestry Outlook Study for Africa
GDP	Gross Domestic Product
GNP	Gross National Product
HIV/AIDS	Human Immuno Deficiency Virus / Acquired Immune Deficiency Syndrome
CIFOR	Center for International Forestry Research
IFIA	Interafrican Forests Industries Association
IIED	International Institute for Environment and Development
IUCN	The World Conservation Union
ITTO	International Tropical Timber Organization
HIPC	Highly Indebted Poor Countries
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
NWFP	Non-Wood Forest Product
PAFC	Pan African Forest Certification
SFM	Sustainable Forest Management
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNEP	United Nations Environment Programme
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme

Executive summary

This report provides an overview of the long-term trends in forestry in Central Africa in the context of current and emerging economic, social, institutional and technological changes in the subregion, as well as outside influences. Central Africa is the most forest-rich subregion in Africa and is thus a major object of divergent and conflicting interests. In recent years it has become the foremost source of tropical timber in Africa. As the second largest block of tropical forest in the world, it is also critical in conserving biological diversity and mitigating global climate change.

CURRENT SITUATION

The current situation with regard to forestry in Central Africa can be summarized as follows:

- Central Africa has a forest cover of 241 million hectares accounting for 37 percent of forests in Africa. Notwithstanding its richness and the enormous scope for supporting social and economic development of the countries in the subregion, this potential remains unrealized. Between 1990 and 2000 Central Africa registered an annual forest loss of about 934 000 ha accounting for 18 percent of deforestation in Africa. Cameroon and the Democratic Republic of the Congo accounted for more than 80 percent of the forest cover reduction in Central Africa;
- although transnational logging companies have been operating in the Congo basin countries for many years, the extent of sustainably managed forests is negligible. Only in recent years have logging companies started to draw up management plans as part of concession agreements. However, even when such plans are drawn up, their implementation lags behind on account of the weak institutional capacity for monitoring and ensuring compliance;
- in view of the low intensity of selective logging involving the removal of a small number of trees of valuable species, deforestation in the conventional sense is not a major issue at present, although it paves the way for the use of logged-over forests for agriculture and other alternative uses;
- in densely populated countries such as Burundi and Rwanda there have been considerable efforts by farmers to establish and manage trees on farmlands and in other areas, and such trees have become the major source of woodfuel, construction materials, etc.;
- most non-wood forest products are produced in the informal sector, in large part by gathering from natural forests and woodlands. There are no significant efforts to manage these products sustainably;
- bushmeat is a major non-wood forest product and forms an important source of protein for the local communities. In recent years, however, bushmeat production has become more commercialized, causing considerable alarm regarding depletion of the resource and its long term economic and environmental impacts;
- wood continues to be the primary source of household energy, in most Central African countries. There is, however, a significant variation in dependence on woodfuel depending on population density, degree of urbanization, level of household income, and availability of and access to commercial fuels. Dependence on wood for energy is very high in Burundi, Chad and Rwanda, while it is very low in Gabon;
- most industrial roundwood production is geared for export, as logs, sawnwood or panel products. Europe has traditionally been the main destination of exports, but the increasing demand from Asia is altering the direction of trade;
- export of industrial roundwood, sawnwood and wood-based panels from Central Africa has increased substantially during the recent years. However, the increase in the value of exports is not commensurate with the increase in the quantity exported. In some cases there has been a decline in export income notwithstanding the increase in the quantity exported. This suggests that many Central African countries are not gaining much from the rapid expansion of logging and wood processing;
- one of the most important services derived from Central African forests is related to biodiversity conservation. Most countries have established a network of protected areas covering some of the

critical and unique biomes. However, the overall institutional weaknesses affect protection and management of these areas.

DRIVING FORCES

A number of factors are impacting the forestry developments in Central Africa, the main ones being as follows:

- population in the Central African countries is expected to grow from 98 million in 2000 to about 164 million by 2020. Although the annual growth rate of population is expected to decline, the increase in absolute numbers during 2000-2020 is substantially higher than the previous decade. While Central Africa as a whole has very low population densities, countries like Burundi and Rwanda and certain areas in Eastern Congo are very densely populated, creating enourmous pressures on forests. Urbanisation, population movements and HIV/AIDS will all have significant direct and indirect effects on forests and forestry;
- despite the rich resources of the subregion, most countries are very poor, a situation compounded by the very unequal distribution of income. This is reflected in the various indicators of social development;
- the growth rate of per capita income in several countries has been negative in the past ten years. Fundamentals such as the rate of saving and investment are weak, suggesting continued sluggishness of the subregion's economies. The situation is further compounded by the very heavy debt burden of these countries. A significant proportion of export income goes for debt servicing;
- most investment - including that in logging and wood-based industries - comes from transnational companies, and such investment tends to drive the pattern of forest-resource use in most countries in the subregion. The ability of governments to invest in sustainable forest management is seriously limited by low income and the compulsions to use resources for other priorities;
- in most countries there has been very little diversification of the economy, and in countries where this has taken place, undue dependence on extractive resources such as oil and mining has increased their vulnerability. A similar situation is found in countries that have invested in export-oriented cash crops as the main plank of their economies;
- technological progress in all sectors, including forestry, continues to be slow. There has been very little investment to build up a strong science and technology base, and this will significantly hamper the future progress of all the countries. Currently there is a very high dependence on imported technology, but this cannot be sustained in the long term. The prospects for significant technological changes during the next two decades are limited;
- in view of the poor growth of opportunities for employment and income in the formal sector, dependence on the informal sector has increased significantly. The production of woodfuel, the collection of non-wood forest products, hunting for bushmeat, etc. have emerged as major informal sector activities, but there are limits to the long-term sustainability of these activities;
- weaknesses in governance and accountability, coupled with the absence of a transparent system for the effective functioning of market forces, have led to the development of a highly organized informal sector, often linked to international criminal networks. These networks often support and benefit from conflicts in the subregion;
- although a number of international and national civil society organizations are involved in pursuing issues relating to forestry and the environment, the overall development of civil society remains very weak. In most countries the necessary conditions for the effective functioning of civil society are yet to emerge.

IMPLICATIONS

Considering the above driving forces and the various scenarios affecting the behaviour of the different actors, the emerging situation as regards forests and forestry in Central Africa can be summarized as follows:

- in view of the growth in population and the limited scope for economic diversification, agricultural expansion is expected to continue. Central Africa is likely to become a major frontier of agricultural growth, including animal husbandry, and there will be continued pressure from the more populated but resource-poor countries and subregions. All the indications are that the rate of deforestation will continue at the 1990s level or possibly even higher;
- despite ongoing efforts, sustainable forest management is unlikely to be adopted widely in Central Africa. Although policies and legislation may

be in place, the capacity to enforce the principles of sustainable management is far from adequate;

- in response to the increasing emphasis on domestic processing, an expansion of the sawmilling and plywood industries is expected in the next 20 years. However, their impact on employment and income generation is unlikely to be significant. Considering the anticipated increase in global supply of wood, Central African countries are unlikely to benefit much from the expansion of logging and the associated increase in export of wood and wood products;
- in view of the global changes in demand and supply of forest products, further changes in the direction of trade of wood and wood products could be expected in the next two decades. In addition to concentrating on the traditional niche markets, increasingly Central African forests will be required to cater to the growing demand from within Africa, especially the wood deficit subregions of North and West Africa;
- a number of factors militate against the development of large-scale industrial plantations in Central Africa. However, there is scope for small-scale tree planting under agroforestry systems primarily to cater to local demand for sawn wood, poles and woodfuel;
- woodfuel will continue to be a major source of household energy in most of the countries, but this is unlikely to be a major cause of forest degradation except in areas close to urban centres;
- Central African forests, more particularly those in the Congo basin, are of critical importance in the provision of global public goods, especially as repositories of biodiversity and as carbon sinks. However, there are significant constraints on taking full advantage of this potential, especially as long as fundamental issues concerning the poverty of most of the people - who are dependent on these forests - are not addressed;
- while Central Africa is very rich in resources, poverty is widespread and chronic, largely as a result of the inequitable distribution of wealth and income. Much of the poverty arises from disempowerment of the people and appropriation of their resources. Improving access to forest resources may provide some respite, but poverty eradication will depend on more fundamental changes.

PRIORITIES

The overall priorities for most countries in the subregion in the next 20 years will be poverty alleviation and environmental protection, ensuring in particular that forest management helps to produce the full range of necessary goods and services on a sustainable basis. Considering the resource richness of the subregion, sustainable resource management consistent with principles of equity will go a long way towards reducing poverty. A number of areas in need of strengthening have been identified, focusing principally on:

- implementation of sustainable management of natural forests, drawing the full benefits from such management and ensuring their equitable distribution;
- improved protection of biodiversity and other environmental values; and
- development of non-wood forest products.

The main areas of required action are:

- a move towards sustainable forest management and rationalization of the scale of operations, taking into account the capacity for effective monitoring of logging, including an improvement in the efficiency of revenue collection, the scaling down of logging to a level that can be effectively managed, and implementation of a strict code of conduct for logging companies in order to ensure their adherence to social, environmental and ethical standards;
- increased investment in social infrastructure in forested areas, in support of local community development;
- support for the traditional informal sector, which plays a critical role in the livelihood of local communities;
- strengthening of institutional capacity, especially that of forest agencies to discharge their regulatory functions effectively, while supporting and strengthening civil society organizations to play a proactive role; and
- promotion of regional and subregional cooperation, especially to develop a common framework to detect and prevent illegal operations and to realise the economies of scale in such critical areas as research, education and training.

Chapter 1

Introduction

BACKGROUND

Central Africa is a subregion rich in resources and is becoming increasingly linked to the regional and global economies as a source of timber, minerals, oil and other natural resources. Over time the nature of the links is changing, with consequences for the capacity of forest resources to contribute to sustainable development.

Developments in forestry are integrally related to developments in other sectors, making it imperative to understand emerging changes while taking into account a longer time horizon and a broader social and economic environment. It is in this context that the Food and Agriculture Organization of the United Nations (FAO) launched a series of forestry sector outlook studies. The Forestry Outlook Study for Africa (FOSA) is one among these, initiated at the request of the African Forestry and Wildlife Commission and the Near East Forestry Commission. Coordinated by FAO, FOSA is a collaborative effort involving all the African countries, the African Development Bank, the European Commission, the Economic Commission of Africa and various regional and subregional organizations.

BOX 1

CENTRAL AFRICA SUBREGION

For the purposes of FOSA, the following countries constitute the Central Africa subregion: Burundi, Cameroon, the Central AfricanRepublic, Chad, the Congo, the Democratic Republic of the Congo, Equatorial Guinea, Gabon, Rwanda, and Sao Tome and Principe.

OBJECTIVES

The primary objective of FOSA is to examine the long-term outlook (with 2020 as the horizon) for the development of the forest sector in Africa in the context of wider economic, social, institutional and technological changes. FOSA analyses the trends and driving forces shaping the sector in the next 20 years and then attempts to identify the policies and strategies to enhance forestry's contribution to sustainable development. FOSA is designed to complement African countries' other forest-related strategic planning initiatives, including national forest programmes.

In addition to outlining the long-term trends in forestry development, FOSA also gives considerable importance to the study process, especially to ensure the involvement of all the key African stakeholders. Wide-ranging consultations were held to develop a shared vision of what could be done to realize the full potential of forestry in Africa.

The main products of FOSA consist of five subregional reports discussing the long term potential and challenges of forestry in each of the five subregions, together with a regional report providing an overview of the continent-wide situation, placing forestry in Africa in the global context. The present report deals with Central Africa (see Box 1 for the list of countries), focusing on the current and emerging situation in the subregion.

FOSA PROCESS

FOSA is a highly participatory initiative, involving all the countries and key organizations in the subregion. To facilitate inputs from countries, each one nominated a national focal point, who produced a FOSA country report with the help of a working group. A baseline study on population, income and forest resources prepared by the African Development Bank (African Development Bank, 2000) provided the background information on factors affecting forestry. Subregional meetings were held at the outset to plan the FOSA process and later to review the main findings of the

country reports[1]. Most of the coordination and initial drafting of the subregional report was undertaken by two experts from the subregion[2]. In support of this effort, the African Development Bank, through the Swedish Trust Fund, contracted ORGUT Consulting AB of Sweden to prepare two thematic papers, one on the key issues in forestry and the other analysing the main factors affecting forestry (see African Development Bank, 2002a and 2002b).

The draft subregional report was presented and discussed at a regional technical review meeting held in Addis Ababa (17-19 September 2001). On the basis of inputs from this meeting, the subregional report was revised thoroughly and reviewed by the FOSA Expert Advisory Group. A revised version of the report that amalgamated the various inputs were presented to the African Forestry and Wildlife Commission during its thirteenth session held at Libreville, Gabon in March 2002. This final version of the subregional report incorporates the comments and suggestions from the members of the African Forestry and Wildlife Commission and others who reviewed the report.

The FOSA regional and subregional reports have been prepared drawing upon input and support from several organizations. The European Commission supported project on data collection and analysis provided critical background information. Links were established with the United Nations Environment Programme to establish synergy with the Global and Africa Environment Outlook studies, focusing particularly on scenario development. The World Bank commissioned a study on institutional issues, covering such aspects as decentralization, community participation, privatization, corruption and illegal activities. The Center for International Forestry Research (CIFOR) contributed a paper on science and technology issues, focusing particularly on research priorities and the capacity for undertaking research (Kowero *et al.,* 2001). FAO undertook a questionnaire-based survey to elicit the views of civil society on the perception of forestry in the region. An advisory group consisting of African experts provided the necessary guidance for the study[3]. Further, FAO established an internal advisory committee to oversee progress and provide technical guidance.

STRUCTURE OF THE REPORT

An overview of the forestry situation in the subregion, focusing on the state of forests and tree cover and the flow of goods and services, is provided in chapter 2. The main factors contributing to change and how they alter the path of forestry developments are discussed in chapter 3. Chapter 4 explores alternative scenarios, focusing specifically on how the various actors respond to changing opportunities and how the scenarios may develop over time. Considering the driving forces and the scenarios, chapter 5 discusses key forestry issues in Central Africa that may become critical in the next 20 years. Strategies and actions based on the results of the findings are given in chapter 6, while an overview of conclusions and recommendations are given in chapter 7.

[1] The FOSA planning meeting for Central Africa was held in Lambaréné, Gabon (27 September-1 October 1999) and the subregional technical review meeting in Douala, Cameroon (15-17 November 2000).

[2] Efforts in the Central Africa subregion were coordinated by Assitou Ndinga and Séraphin Dondyas, whose report forms the basis of this subregional report.

[3] The FOSA Expert Advisory Group included Agnes Odijide (Chairperson), Hennie Coetzee (Vice Chairperson), Madeline Cisse, Fousaba Banahane, John Kaboggoza and Hassan Osman Abdel Nour.

Chapter 2

An overview of forestry and wildlife in Central Africa

The Central Africa subregion is an area with strong contrasts. It consists of ten countries, four of which are landlocked and one - Sao Tome and Principe - comprising of two islands. It is the largest forested subregion in Africa and hosts the second largest block of tropical rainforest in the world. In the context of FOSA, the Central Africa subregion has three distinct zones:

- the less populated forested area, comprising the Congo basin countries of Cameroon, the Central African Republic, the Congo, the Democratic Republic of the Congo, Equatorial Guinea and Gabon;
- the heavily populated humid zone, comprising Burundi, Rwanda and the islands of Sao Tome and Principe; and
- the arid zone, made up mainly of Chad.

The varying ecological conditions and degrees of human intervention have resulted in a unique mosaic of resource-use patterns. The present section attempts to provide an overview of the current forest resource situation, including the state of forests and the availability of goods and services.

STATE OF FOREST RESOURCES AND THEIR MANAGEMENT

Forest cover and changes therein

As indicated earlier, Central Africa is the most forested subregion in Africa, with nearly 46 percent of its area under forest cover. Table 1 gives the distribution of forest in the various countries of the subregion. As can be seen, there is considerable variation between countries as to the percentage of forest cover. Burundi, Chad and Rwanda are the least forested countries, whereas most other countries have more than 50 percent of their land area under forests. Gabon is the most forested country having almost 85 percent of the land area under forests. The Democratic Republic of the Congo accounts for about 56 percent of the forests in the subregion and 21 percent of the total forest cover in Africa.

It should, however, be noted that in the case of a number of countries forest cover estimates are based on expert opinion, especially in the absence of recent national inventories (see Box 2). The area of productive natural forests is estimated at 130 million ha, while the remainder is regarded as inaccessible. Although tropical rainforest forms the dominant vegetation type, the subregion also has extensive mangrove forests along the coasts of Gabon and Cameroon, montane forests in Rwanda, Burundi, Cameroon and the Democratic Republic of the Congo, savannah woodlands in Cameroon, the Central African Republic and Chad, and desert scrub in Chad.

In comparison with other subregions, the Central Africa subregion (apart from Burundi and Rwanda) has one of the lowest population densities. However, the

BOX 2

FOREST RESOURCE INFORMATION IN CENTRAL AFRICA

Forest resource knowledge is relatively low and most of the Central African forest inventories cover only part of the productive forested domain (Cameroon, the Congo, Gabon, Rwanda and the Central African Republic). At the national level, the information regarding forest areas is obsolete where it exists at all and needs to be updated. The last national forest inventory of Burundi dates to 1976 and that of the Democratic Republic of the Congo to 1982. The most recent national-level data are those of Equatorial Guinea (1992).

(FAO, 2001)

TABLE 1

Forest cover in Central Africa in 2000

Country	Total land area	Forested area	% of land area	Total forest plantation
	(000 ha)	(000 ha)	(%)	(000 ha)
Burundi	2 568	94	3.7	73
Cameroon	46 540	23 858	51.3	80
Central African Republic	62 297	22 907	36.8	4
Chad	125 920	12 692	10.1	14
Congo	34 150	22 060	64.6	83
Democratic Republic of the Congo	226 705	135 207	59.6	97
Equatorial Guinea	2 805	1 752	62.5	-
Gabon	25 767	21 826	84.7	36
Rwanda	2 466	307	12.4	261
Sao Tome and Principe	95	27	28.3	-
Total Central Africa	**529 313**	**240 730**	**45.5**	**648**

Source: FAO, 2001a.

area under forest is on the decline. Between 1990 and 2000, the forest cover in Central Africa decreased from 250.1 million ha to about 240.7 million ha, corresponding to an annual loss of 934 000 ha (see Table 2). This accounts for nearly 18 percent of the forest-cover reduction in Africa. Although the Democratic Republic of the Congo and Cameroon together account for most of the deforestation, in terms of the rate of change Burundi and Rwanda registered annual forest cover losses of 9 and 3.9 percent respectively between 1990 and 2000. Gabon lost about 10 000 ha annually, which is fairly insignificant in comparison with its total forested area. All this suggests the divergent impact of a number of factors, which are discussed in chapter 3.

TABLE 2
Forest cover loss in Central Africa 1990 - 2000

Country	Forest cover in 1990	Forest cover in 2000	Annual loss 1990-2000	percentage
	(000 ha)	(000 ha)	(000 ha)	(%)
Burundi	241	94	-15	-9.0
Cameroon	26 076	23 858	-222	-0.9
Central African Republic	23 207	22 907	-30	-0.1
Chad	13 509	12 692	-82	-0.6
Congo	22 235	22 060	-17	-0.1
Democratic Republic of the Congo	140 531	135 207	-532	-0.4
Equatorial Guinea	1 858	1 752	-11	-0.6
Gabon	21 927	21 826	-10	n.s.
Rwanda	457	307	-15	-3.9
Sao Tome and Principe	27	27	n.s.	n.s
Total Central Africa	**250 068**	**240 730**	**-934**	**-0.4**

Source: FAO, 2001b.

The main reasons for deforestation in Central Africa remain the same as elsewhere in Africa: expansion of agriculture and an increased demand for forest products, which particularly affects forests close to rapidly expanding urban areas. Fire has also been a major factor contributing to forest cover reduction and, more important, to degradation. The Central Africa subregion has emerged as the foremost producer of tropical logs, and large tracts of forest in the Congo basin are under logging concessions. Since most logging is selective, involving the removal of a limited number of commercially valuable species, the current definition of forest cover loss fails to capture the change, especially of degradation and loss of biodiversity. In the past, the expansion of cash crops, especially coffee and cocoa, has been a major contributor to deforestation.

Management of natural forests

As the largest stretch of natural forest in Africa, the Central African forests are a major source of industrial rounwood supply in Africa. Logging the natural forests provides most of the industrial roundwood supply from the subregion. However, management of natural forests in Central Africa faces a number of technical, institutional and economic problems.

For economic reasons, especially distance from markets, logging is focused on a few high-quality species, which constitute 60 to 80 percent of annual timber production[4]. Although efforts are being made to use and market 60 to 70 lesser-known species, harvesting systematically creams the forests, removing a small number of commercially valuable species, amounting to about 10 to 20 m^3 per hectare. Harvesting is regulated by the requirement of preparing a management plan (almost entirely focused on logging) and the use of diameter limits for trees to be harvested.

Considering the small number of trees extracted and the poor infrastructure, especially access roads, it becomes difficult for small scale operators to take up logging, as it involves substantial investment in infrastructure development. Further, there is very little local demand and it becomes imperative to export timber as logs or after processing. The high investment requirements and the need to find external markets results in the dependence on external investors.

Another issue relating to the management of natural forests is its long-term sustainability, especially with

BOX 3
MANAGEMENT PLANS

Forest management for timber exploitation is focused on the demarcation of concession areas and control of harvested volumes. Production forests are generally awarded to timber companies or individuals under more or less long-term concession agreements. In Gabon a resource inventory and forest management plan proposal are compulsory before any exploitation. In the Congo and Cameroon, the national forest estate has been divided into forest management units, each having a sufficient area to feed an independent wood industry under coordinated resource use and management plans.

(FAO, 2001a)

[4] In Cameroon the main species extracted are ayous (*Triplochiton scleroxylon*), sapelli (*Entrandrophragma cylindricum*), frake (*Terminalia superba*) and azobé (*Lophira elata*). In Equatorial Guinea and Gabon the main species extracted are okoumé (*Aucoumea klaineana*) and ozigo (*Dacryodes buettneri*).

BOX 4

FOREST DEVELOPMENT IN GABON

The Global Forest Watch (2000) report on the forestry development situation in Gabon indicates, among other conclusions, that:

- the area conceded to mining concessions increased seven times between 1957 and 1999, rising from 1.6 million ha in 1957 to 11.9 million ha in 1999;
- concessions doubled between 1994 and 1999;
- since 1957, two thirds of the 22 million ha of the forests of Gabon have been exploited and the majority of the okoumé forests are under concession;
- in 1997, a third of the forests of Gabon were under mining concessions;
- approximately one-third of the total surface under concession is granted to five forest companies which are wholly or partially owned by foreign interests - Rougier (700 000 ha), Leroy (654 000 ha), CFG (651 000 ha), CEB (505 000 ha) and Lutexfo/Soforga (487 000 ha);
- between 1993 and 1997, Asia replaced Europe as the biggest importer of Gabonese wood and China replaced France as its biggest importing customer.

(WRI, 2000)

BOX 5

FOREST REGENERATION - CONGO AND GABON

One important issue relating to management planning, and to the long-term sustainability of both the forests and the forest enterprises that depend on them, is that of forest regeneration. This is particularly true when future timber crops depend upon the success of natural regeneration as in the case of the type of selective harvest practiced by both by CIB and SBL. We were surprised to learn that neither company has carried out comprehensive regeneration surveys in the past, even to determine the degree to which the important timber species are regenerating successfully after harvesting.

(Dykstra & Toupin, 2001)

regard to rehabilitation of logged-over areas, including regeneration. Very little information is available on issues relating to regeneration and the economic viability and profitability of post-logging silvicultural operations. Some limited studies have been undertaken in the past on growth dynamics as well as the rehabilitation of logged-over areas. However, the current preoccupation with harvesting old-growth forests persists and very little attention is given to rehabilitation of logged-over areas. In most logging concessions even a regeneration survey is not undertaken (see Box 5).

Size limits for tree harvesting and concession permits have been the only conditions ruling forest exploitation in Central Africa for many years. Currently, research and study are under way to facilitate implementation of sustainable forest management. Preparation of a management plan is currently compulsory in order to obtain a forest concession. Certification schemes have triggered interest on the part of the forest industries in sustainable forest management in Central Africa. Efforts are also underway to develop a code of conduct and the implementation of low-impact harvesting practices. However, the lack of sufficient human and other capacities is a major constraint on implementing sustainable forest management. In theory, the provision of larger concessions to be managed with a longer time horizon could encourage wider adoption of sustainable forest management, but it may not be sufficient condition. Some efforts are under way to develop partnership arrangements in support of sustainable forest management and wider adoption of certification (see Box 6). For example, the Congolaise du Bois-CIB corporation is involved with various non-governmental organizations in implementing an International Tropical Timber Organization project submitted by the Congolese government in the CIB concession in the northern Congo.

Efforts are also being made to involve local communities in the management of natural forests. For example, the commune of Dimako in Cameroon is preparing a management plan for its recently gazetted 15 000 ha of forest with the assistance of the "Forêts et terroirs" project supported by French development aid. However, community involvement in the management of forests in Central Africa is very limited.

The key issue of the long-term sustainability of current logging practices has not been addressed adequately in most countries. Most of the logging is still in primary old-growth forests and some of the logging companies have extensive concession areas yet to be harvested. There is therefore very little compulsion to consider the long-term sustainability of management systems. Although no reliable data are available, experience in other regions suggest declining productivity during successive cycles of harvesting. What is often seen is a progressive degradation, especially when more easily accessible secondary forest is subjected to logging in the course of which smaller-dimension trees are harvested. Another factor encouraging selective extraction is the distance from markets. The inaccessibility of most of the

BOX 6

PAN-AFRICAN CERTIFICATION

Among tropical regions, Africa is particularly lagging behind in forest and timber certification: only the Keurhout Foundation has so far certified forests (in Congo and Gabon) in West and Central Africa. Given the increasing demand of certified tropical timber products, the African forest industry is facing market constraints.

Some initiatives have been taken to make more progress in forest certification in the tropics, including in Africa and particularly in African Timber Organization (ATO) member countries. For instance, in 1999 the Inter-African Association of Forest Industries (IFIA) identified the promotion of forest certification as one of its main strategies. In October 2000 the ATO Ministerial Conference adopted an IFIA-proposed pan-African certification concept as a policy for promoting the development and implementation of a regional approach to forest certification among member countries. The Pan-African Certification Scheme would use as its basis the ATO/ITTO Principles, Criteria and Indicators for Sustainable Forest Management (PCI), which were developed jointly by ATO and ITTO. The recent ITTO workshop on forest certification recommended that support be provided to regional initiatives of forest certification in the tropical regions.

In a first step towards such support, the International Tropical Timber Council approved and funded a project at its most recent session to establish capacity to implement the ATO/ITTO PCI at the national level in African ITTO member countries.

(ITTO, 2002)

areas and the long distances to ports make it uneconomical to transport the wood and wood products of low-value species.

Much of the problem of unsustainable management stems from the weak state of institutions in Central African countries. This is both a cause and effect of the current state of poor resource management, which is largely geared to the extraction of surplus for the benefit of the few. Public institutions are therefore extremely weak and often unable to regulate the activities of the more powerful logging companies and ensure that income generated by the forest sector is fully devoted to meeting public needs. Studies by Global Forest Watch in Cameroon and Gabon indicate that the number of forest service agents and the facilities available to them are far from adequate to enforce the provisions of management plans.

This suggests that management of tropical forests is still in the early stages of development, while a number of factors contribute to the low-intensity management currently in vogue. More important, policy and institutional inadequacies limit the ability of governments to take full advantage of forest resources.

In contrast to the preponderance of dense forest in the Congo basin, Burundi, Rwanda and Chad have very limited extent of natural forests. In the case of Burundi and Rwanda, the high population density has led to a high rate of deforestation, although this has in turn encouraged the extensive cultivation of trees on homesteads. In the case of Chad, the main problem is the harsh environmental conditions, resulting in sparse vegetation. Although population pressure is low, the arid and semi-arid conditions result in low productivity. Resource management is largely geared to cater to the local demand. The low productivity and the low income (especially since most products meet the demand from low income consumers) again does not result in the generation of any surplus to reinvest and sustainably manage the resources.

Forest plantations

The Central Africa subregion has approximately 648 000 ha of plantations, accounting for about 0.2 percent of the total forested area and about 8 percent of the plantations in Africa. Within Central Africa the objectives and nature of plantation activities vary considerably, with widely varying consequences for the current state of management, as well as future prospects. Rwanda accounts for about 40 percent of the plantations in the subregion. In the case of Burundi and Rwanda, plantations account for 78 and 85 percent of forest cover respectively, whereas in all the other countries the proportion of plantations is insignificant.

Most of the plantations in Burundi and Rwanda (primarily consisting of *Eucalyptus spp.* and pines) have been established to meet the local demand for woodfuel, poles and construction material. The high population density, the favourable conditions for growth and the pattern of settlements have encouraged intensive land use in these two countries, with trees as an integral component of land use. In addition, past initiatives have resulted in the establishment of small woodlots and plantations catering to local demand and providing wood for local industries.

In other Central African countries, the establishment and management of plantations have received much less attention, especially since wood availability to meet local demand is adequate in view of the low population density (except in urban areas) and the high

proportion of forest cover. Much of the focus is on logging natural forests to meet the demand from overseas markets. Small extent of plantations of okoumé, ayous and other hardwoods have been established in Cameroon, the Congo and Gabon, often on an experimental scale, including enrichment planting. However, many of these trials have not been followed up systematically and have been abandoned. Nor has the information from such trials been used for reforestation or the enrichment of logged-over natural forests.

Apart from the small experimental plantations of indigenous species, there has been some industrial-scale planting, for example in the Congo, where a 50 000 ha pulpwood plantation was established in the savannah area near Point Noire as a joint venture (Eucalyptus du Congo ECO-SA) between the government and Shell, the latter owning 90 percent. Although these plantations produced nearly half a million tonnes of pulpwood, catering mainly to export demand from Norway, France, Italy, Spain and Morocco, in recent years declining prices have affected profitability, resulting in the closure of the venture. This gives some indication of the issues affecting large-scale export-oriented industrial plantations in Central Africa. In view of the limited internal demand, it becomes imperative to focus on export demand, but profitability will depend on comparative advantages and on issues such as productivity, transport costs and political stability.

Trees outside forests

In the humid zones with large areas under forests, there is very little incentive to cultivate and manage trees on farms, in view of the profuse natural growth. Most timber and woodfuel requirements are met locally from the natural growth available in forests and on communal land. Except in urban and peri-urban areas, the demand pressure is generally very low on account of low population densities. People also value cultural and religious aspects, as is seen particularly in their efforts to protect sacred groves and trees on burial grounds.

Trees outside forests are more critical in the low-forest densely populated countries of Burundi and Rwanda and to some extent the arid and semi-arid areas of Chad. In areas with a high population density, the high demand for woodfuel and construction materials have particularly encouraged the cultivation of trees on farms as an integral part of land use. And most of the supply of industrial roundwood and woodfuel in Burundi and Rwanda is in fact provided by trees grown outside forests. In countries such as Chad there are traditional systems of community management of trees on common land, although such systems are facing strains on account of the increasing demand for woodfuel, poles and other products and conflicts with other land uses. In the Sahelian zone of Chad, land tenure issues have become a critical factor in the conservation and management of trees on public and community land.

SUPPLY OF WOOD AND NON-WOOD PRODUCTS

The role of woodfuel in providing energy

Wood is the main source of energy, meeting about 76 percent of household energy needs in Central Africa as a whole, although there are significant differences on account of access to and availability of alternative energy sources, income, urbanization and, more important, the availability of wood and other biomass resources. For example, in the case of Chad woodfuel accounts for 97 percent of household energy consumption, while in the other Central African countries it is about 75 percent. Table 3 indicates the extent of woodfuel consumption and the share of woodfuel in total roundwood consumption.

Woodfuel consumption accounts for about 90 percent of the total roundwood consumption of Central Africa, which is more or less on a level with the overall situation in Africa. However, there are significant differences between countries as to per capita consumption, as well as the share of woodfuel in total wood consumption. Gabon has the lowest proportion of woodfuel consumption, largely due to the high

TABLE 3
Estimated woodfuel consumption

Country	Estimated consumption in 2000	Woodfuel consumption as a proportion of total roundwood consumption
	($000\ m^3$)	(%)
Burundi	8 790	96
Cameroon	9 958	77
Central African Republic	6 357	89
Chad	7 019	90
Congo	1 153	64
Democratic Republic of the Congo	72 707	95
Equatorial Guinea	199	35
Gabon	531	17
Rwanda	9 592	97
Sao Tome and Principe	119	93
Total Central Africa	**116 425**	**90**
Africa	**634 974**	**91**

Source: Broadhead *et al.*, 2001.

proportion of population living in urban areas and the better availability and access to commercial fuels. In the case of Burundi and Rwanda, most of the estimated roundwood production is used as woodfuel. In general, the more urbanized oil-producing countries have a low per capita woodfuel consumption. Also the proportion of roundwood consumed as woodfuel is also low.

Very little information is available on the sources of woodfuel supply and their long-term sustainability, or on the trends towards replacement with alternative fuels. As indicated earlier, in densely populated countries such as Burundi and Rwanda most of the woodfuel is obtained from farm plantings and government-established woodlots. In other countries most of the woodfuel is obtained from forests and woodlands adjoining settlements. Considering the low population densities and the fact that most such collection is confined to twigs and branches, this does not pose a major problem, except in the case of forests close to urban centres. These are subjected to degradation due to unsustainable charcoal production and fuelwood gathering.

Industrial roundwood and its processing

By virtue of its extensive tropical rainforests and the declining supply from West Africa, Central Africa has emerged as the major source of tropical hardwood logs, and all the indications are that the subregion will continue in this position in the years ahead. In 2000 the subregion produced about 12.7 million m^3 of industrial roundwood, or about 18.5 percent of total African production. Most of this is produced by the Democratic Republic of the Congo, Cameroon, Gabon and the Central African Republic. As indicated earlier, almost all industrial roundwood production is from natural forests[5]. Table 4 gives the quantity of production and exports of various forest products from Central Africa.

TABLE 4
Central African forest-based industry in the regional context

Product	Production in 2000	Exports in 2000	Central African share of African production	Leading producers
Industrial roundwood (million m^3)	12.731	4.689	18.5 %	Democratic Republic of the Congo, Cameroon, Gabon, Central African Republic
Sawnwood (million m^3)	1.148	0.777	15.0 %	Cameroon, Central African Republic
Veneer sheets (million m^3)	0.141	0.146	36.4 %	Cameroon, Gabon
Wood-based panels (million m^3)	0.326	0.260	15.9 %	Cameroon, Gabon
Plywood (million m^3)	0.185	0.114	26.9 %	Cameroon, Gabon, Democratic Republic of the Congo
Particle-board (million m^3)	0	0	0 %	
Woodpulp (tonnes)	0	0	0 %	
Paper and paperboard (tonnes)	3	0	neg.	Democratic Republic of the Congo

Source: FAO, 2002.

During the period 1980 to 2000 there has been a notable increase in the production of industrial roundwood from Central Africa (see Table 5). Currently Democratic Republic of Congo, Cameroon, Gabon and Central African Republic accounts for over 80 percent of the industrial roundwood production.

TABLE 5
Production and export of industrial roundwood from Central Africa

Industrial roundwood	1980	1985	1990	1995	2000
	(000 m^3)	(000 m^3)	(000 m^3)	(000 m^3)	(000 m^3)
Production	7 904	9 024	10 669	12 740	12 731
Export	2 314	2 392	2 897	3 548	4 688

Source: FAO, 2002.

Most countries in Central Africa have traditionally been log exporters, but many have in the recent years enacted legislation to encourage domestic processing and value addition and there has been some increase in the establishment of processing units[6]. There is therefore considerable inter-country variation as regards production and export of industrial round wood and other products. Countries like Cameroon have reduced the export of industrial roundwood, significantly increasing the export of sawnwood and wood-based panels, whereas countries like Gabon continue to focus on export of logs (see Box 7). On the whole the proportion that is processed is still small and at best the emphasis is on primary processing to convert logs into sawnwood and veneer sheets. Much of the log production is geared to processing units in importing countries in Europe and Asia. It should also be noted that in countries such as Cameroon there has been a rapid expansion of the processing capacity, especially

[5] It should, however, be noted that the reported figures for production and exports are often underestimates, especially in view of illegal logging and unauthorized exports. Some reports indicate that almost 50 percent of wood is produced illegally. There is also a considerable discrepancy between the quantity of what is exported and what is recorded as imported by the importing countries, the latter being significantly higher than reported exports.

[6] The 1994 Forest Law of Cameroon stipulated a complete ban on the export of logs by 1999, and there are several supporting legislative provisions encouraging local processing. This decision has strongly influenced other timber-producing countries in the subregion. For example, the Congo aims to ban log exports by 2003.

BOX 7

WOOD EXPORTS FROM GABON

Although over 65 tree species are exported from Gabon, in 1999 okoumé and ozigo represented about 67 percent of the volume exported. However, the proportion of species other than okoumé and ozigo exported increased from 19 percent in 1996 to 33 percent in 2000. Gabon processes only a small part of its total wood production.

Log exports from Gabon – main species (in m^3)

Species	1996	1997	1998	1999	2000
Okoumé	1 728 801	1 900 743	1 038 923	1 562 763	1 664 676
Ozigo	115 428	135 794	48 068	60 994	62 051
Padouk	39 551	57 291	86 859	79 109	123 910
Kevazigo	42 489	55 501	83 390	75.426	87 396
Bahia	19 416	29 286	57 587	44 664	38 046
Others	348 113	540 905	457 798	514 930	607 927
Total	**2 288 799**	**2 719 520**	**1 772 626**	**2 337 887**	**2 584 005**

Source: La lettre de l'ATIBT – no. 12, Stat. Export SEPBG – Gabon

sawmilling, and there is concern that the compulsion to provide raw material for these units is encouraging the expansion of felling, including the revisiting of logged-over forests.

Forest-based industries are primarily geared to meeting the demand from external markets, mainly in Europe but more recently in Asia, particularly China. Most of the logging companies (or their affiliates or associates) have processing units in Europe and Asia, and most of the exports are destined for these units. Often investment in processing is limited to the bare minimum required to circumvent the regulations relating to domestic processing. The main concerns as regards wood-based industries are as follows:

- political stability, which is critical to ensuring long-term investment;
- sustainability of wood supplies;
- economic efficiency, including easy access to markets; and
- social viability, including the impact on local communities.

Within Africa, Central Africa is emerging as an important producer and exporter of tropical logs and other products, notably sawnwood and wood-based panels. The trend in the export of important products is indicated in Table 6.

TABLE 6

Forest products export from Central Africa

(Figures in parenthesis are the share of Central Africa in percentage of the exports from Africa)

Product	1980	1985	1990	1995	2000
	(000 m^3)	(000 m^3)	(000 m^3)	(000 m^3)	(000 m^3)
Industrial roundwood	2 314	2 392	2 897	3 549	4 688
	(37.4)	(52.6)	(70.0)	(81.8)	(76.8)
Sawnwood	278.4	202.1	283.3	333.2	776.7
	(31.1)	(22.8)	(21.0)	(23.5)	(41.4)
Wood-based panels	185.6	156.6	187.5	108.6	260.4
	(55.9)	(50.3)	(42.7)	(29.3)	(37.3)

Source: FAO, 2002.

Central Africa's share in export of industrial roundwood and sawnwood from Africa has increased substantially between 1980 and 2000. In 2000, Central Africa accounted for about 76.8 percent of the African exports on industrial roundwood. Sawnwood has registered a significant increase. On the other hand the subregion's share in the export of wood-based panels has declined, although between 1980 and 2000 the quantity exported has increased. At the global level, paper and paper products have registered the fastest growth in value terms, but Central Africa is completely excluded from this segment of trade on account of the absence of investments in pulp and paper industry.

While the growth of exports has been significant with Central Africa increasing its share in the African exports, it is important to consider how this compares with the increase in the value of exports. Table 7 gives the growth rates of volume and value of exports during 1980 and 2000.

TABLE 7

Annual growth rates of volume and value of exports

(in percentage)

Period	Industrial Roundwood		Sawn wood		Wood based panels	
	Volume	Value	Volume	Value	Volume	Value
1980-1990	2.3	7.2	0.2	3.4	0.1	1.2
1990-2000	4.9	-1.0	10.6	12.0	3.3	-2.2

Although the annual growth rate of the volume of exports during 1980-1990 was rather modest, in terms of value the growth rate was quite substantial. However, during the period 1990-2000 the volume of exports grew significantly, but in terms of value the performance has been mixed. There has been a decline in the value of exports of industrial roundwood and wood based panels during the period. Only in the case of sawnwood, the growth rate of value exceeded that of volume.

It is therefore important for the countries to carefully evaluate the policies relating to production, processing and trade of wood and wood products. A rapid expansion of logging or even setting up processing facilities need not necessarily increase the income to the countries. Mechanisms need to be developed to ensure the full capture of the income through an effective pricing system and to minimise the loss on account of transfer-pricing, under-invoicing, etc.

The African Timber Organization (ATO) based in Libreville was established in 1974 with the objective of

promoting cooperation between 14 countries in forest resource management, especially to coordinate the policies on wood industry development. While the efforts of ATO have helped to highlight some of the issues relating to development of a sustainable wood industry in Central and West Africa, it has not been able to realise the full potential on account of resource constraints.

Non-wood forest products

Non-wood forest products play a significant role in the livelihood of local communities, providing nutrition as well as income. Several products, such as mushrooms (in Burundi), *Prunus africana* bark (in Cameroon) and gum arabic from *Acacia senegal* (in Chad), are traded on international markets. Traditional health-care systems are almost entirely dependent on a wide range of forest-derived medicinal plants. Most collection, processing and trade takes place in the informal sector, so that reliable information on the role of the various products in the rural economy is unavailable. Limited location-specific studies provide a general indication of the significant role played by non-wood forest products, including bushmeat, in the livelihood of local communities. The consumption of most non-wood forest products is on the increase, largely because of their low price and availability. In a village study undertaken in Cameroon, it was estimated that non-wood forest products contributed nearly 44 percent of household incomes - more than that from cash crops and foodcrops (van Dijk, 1999).

Several products are traded internationally, partly to meet the growing demand from African communities in Europe and North America, but also as a major source of phytochemicals for modern medicines (see Box 8). One of the main products supporting local industry is rattan, although it is everywhere considered an "open-access" resource and there are very few customary laws regulating its harvesting in the wild (Sunderland, 2001)[7]. Southeast Asia is becoming a major destination for raw rattan. There are no management systems to regulate the exploitation of non-wood forest products, including rattan.

One of the most important non-wood forest products is bushmeat, but there are indications of a growing crisis on account of the increasing commercialization of bushmeat production and trade. This has been particularly so as a result of the declining income from farming (especially on account of low prices for cash crops) and the increasing urban demand for bushmeat. Improved access by logging roads and the large number of people involved in logging have accentuated the problem (see Box 9). Ongoing conflicts have exacerbated the problem, especially on account of the easy availability of arms and the inability of forestry agencies to effectively patrol vast stretches of forests.

All the indications are that most non-wood forest products, including bushmeat, will be produced and used in the unorganized informal sector and that under the present circumstances no formal management system is likely to be adopted. Much of the current focus is on timber, and even for this item there are serious constraints on applying sustainable management practices. This being the case, the current state of unorganized opportunistic exploitation of non-wood

BOX 8

PHARMACEUTICAL USE OF NON-WOOD FOREST PRODUCTS

Pharmaceutical uses of non-wood forest products generate most significant revenues. Extracts from the bark of the *Pausinystalia yohimbe* (yohimbe) tree are consumed locally as a 'cure' for many ailments and are sold in North America and Europe as an unproven aphrodisiac and as a stimulant in soft drinks. The total value of yohimbe bark exports from Cameroon was US$600 000 in 1998 and is growing each year. Similarly the bark of *Prunus africana* (pygeum) is used to extract a chemical cocktail used for the treatment of benign prostate hyperplasia in Europe and North America and was worth $700 000 to Cameroon and $200 million to the pharmaceutical companies in 1999.

(CARPE, 2001a)

BOX 9

BUSHMEAT CONSUMPTION: EMERGING ISSUES

In Central Africa, over 1 million tonnes of bushmeat is eaten each year - the equivalent of 4 million cattle. A hunter can make US$300-1000 per year - more than the average household income for the region and comparable to the salaries of those responsible for controlling bushmeat trade. Traders, transporters, market sellers and restauranteurs also benefit from the commercial trade. As demand for bushmeat increases, more people will be encouraged to become involved in the trade, increasing the pressure on wildlife populations, threatening the survival of rare species.

(CARPE, 2001b)

[7] In terms of diversity, the greatest concentration of rattan species and the highest level of endemism are found in the Guineo-Congolian forests of Central Africa. Eighteen of the 20 known African rattan species occur in Cameroon.

forest products is expected to persist in the near future. This is already resulting in depletion of the more valuable products. For example, the harvesting of bark is causing the death of most of the stripped yohimbe trees. The long-term economic and social impact of non-wood forest product depletion on rural communities has not been assessed.

SERVICE FUNCTIONS OF FORESTS

Biodiversity

The extensive forests of Central Africa with their high variability in topography and climate support some of the richest biodiversity on earth. Central Africa harbours unique endemism, in such areas as the interglacial refuges of the central Congo and Gabon basins, the mangroves of the Atlantic coast, the dry-forest ecozone of the Congo and Zambezi rivers, and the lakes and tributaries of the Congo river. It has a network of protected areas, including national parks that support some unique fauna, especially large mammals.

While the biodiversity of Central Africa has the potential to be a unique advantage for the countries and people of the subregion, the current level of efforts to understand, manage and use this biodiversity is far from adequate. One of the key strategy for conservation of biological diversity is the establishment of protected areas. The approximate extent of protected areas in Central Africa in 1997 is about 36.6 million hectares or 6.9 percent of the land area. Table 8 gives the extent of protected areas in the Central African countries.

While the extent of protected areas has registered an increase reflecting the growing concern for protecting biological diversity, actual investments to protect the areas seem to be far from adequate. Vast areas are protected incidentally on account of their remoteness, low population density and the absence of economically viable alternative uses. However, there are already indications of change, especially as mining and logging become profitable options. As access improves, there is an increase in hunting for commercial bush meat production. Ongoing conflicts in several countries in the subregion contribute significantly to the decimation of wildlife.

TABLE 8

Protected areas in Central Africa - 1997

Country	Protected area	
	(000 ha)	(%)
Burundi	146	5.6
Cameroon	2 097	4.5
Central African Republic	5 445	8.7
Chad	11 494	9.1
Congo	1 700	5.0
Democratic Republic of Congo	14 637	6.4
Equatorial Guinea	-	-
Gabon	723	2.8
Rwanda	396	16.0
Sao Tome and Principe	-	-
Total Central Africa	**36 638**	**6.9**

Source: UN, 2003.

Forests and ecotourism

The diversity of flora and fauna and the wide range of landscapes should in theory form a unique recipe supporting a rapidly growing tourism industry in Central African countries. Despite this potential, the tourism industry in Central Africa is still undeveloped, largely because of such constraints as political instability and conflicts, and poorly developed infrastructure, with the former acting as a major disincentive for improvement in the latter. With the current level of tourism, most national parks and other protected areas are unable to generate adequate income to maintain and improve the quality of management or to ensure that benefits from ecotourism accrue to local communities.

Ecotourism in Central Africa is thus an untapped area of considerable potential, but realizing this potential

BOX 10

BIODIVERSITY OF CENTRAL AFRICA

Central African forests shelter approximately 400 species of mammals, 1 086 species of birds, 216 species of amphibians, 280 species of reptiles, more than 900 species of butterflies, and more than 10 000 ligneous species, at least 3 000 of which are endemic. For lack of systematic and regular inventories, the faunal potential of Central Africa remains little known.

Although biodiversity is very rich, some species are in danger of disappearance as a result of overexploitation and poaching. Central Africa is well endowed with big wild animals of global importance, such as elephants, rhinoceroses, gorillas, chimpanzees, cercopitheques, leopards, lions, lamantins, giraffes and various species of antelope. About 20 000 elephants live in the northeast of Gabon, constituting the highest density of elephants in Central Africa. The number of gorillas is estimated at 4 000 and chimpanzees at 9 000. In Central Africa, the rhinoceros population has been depleted, and the estimated current number is less than 100, compared to 3 000 in the 1970s.

(African Development Bank, 2002a)

depends on significant improvements in political stability and the perception of security.

Central African forests and climate change

By virtue of their vast size, their favourable climatic conditions and their large biomass, Central African forests are a major terrestrial stock of carbon. Mismanagement of this stock, especially through deforestation involving conversion into other uses, fires, etc., could significantly reduce the stock and correspondingly increase carbon levels in the atmosphere. Scientific management of these forests to maintain the stability of the carbon stock is thus critical.

While carbon conservation through sustainable management of existing forests and by ensuring that land-use changes do not increase the level of atmospheric carbon are important considerations, existing international arrangements focus more on carbon sequestration through afforestation and reforestation. Arrangements under the Clean Development Mechanism of the Kyoto Protocol do not make any provision for supporting the conservation of existing carbon stocks, despite the fact that this would be a more effective and less costly option. While Central African countries also have a potential to implement afforestation and reforestation, especially in their vast savannah grasslands, there are a number of constraints in this regard. High costs and, more important, the stability of such investments (especially in the context of political uncertainties) are important factors.

SUMMARY OF THE CURRENT SITUATION

Central Africa hosts the largest and richest of Africa's forest resources. Forestry in the subregion (except in the densely populated countries of Burundi and Rwanda and the largely arid and semi-arid Chad) is centred on harvesting natural forests. Much of the logging in Central Africa is controlled by transnational corporations and the capacity of governments to regulate the activities of the logging companies is poorly developed. Weak political and institutional structures have impaired the ability of countries to take advantage of the favourable resource situation to advance the cause of social and economic development. Some of the features that need to be taken into account are as follows:

- while Central Africa is very rich in forest resources and thus offers considerable potential for supporting social and economic development, the contribution of these resources tends to be negligible;
- although transnational logging companies have been operating in the Congo-basin countries for many years, the extent of sustainably managed forests is negligible. Only in recent years have logging companies started to draw up management plans as part of concession agreements. However, even when such plans are drawn up, there is considerable uncertainty over their implementation, especially in view of the weak institutional capacity for monitoring and ensuring compliance;
- in view of the low intensity of logging on account of the selective removal of a small number of species, deforestation in the conventional sense is not a major issue at present, although it may become so as a consequence of the use of logged-over forests for agriculture and other alternative uses, increased hunting for bushmeat and - in the long-term - intensive harvesting of secondary forests to meet the demand for industrial wood;
- plantation activity is very limited in the Congo basin countries, largely because of the focus on timber production from natural forests. However, it is highly developed in densely populated countries such as Burundi and Rwanda, largely catering to local demand;
- in densely populated countries such as Burundi and Rwanda there have been considerable efforts by farmers to establish and manage trees on farmland and in other areas, and such trees have gone a considerable way to meeting the demand for woodfuel, construction materials, etc.;
- most non-wood forest products are produced in the informal sector, in large part by gathering from natural forests and woodlands. There are no significant efforts to manage these products sustainably;
- bushmeat is a major non-wood forest product and makes a considerable contribution to the nutritional status of local communities. In recent years, however, bushmeat production has become more commercialized, causing considerable alarm over resource depletion and the ultimate economic and environmental impact;
- wood continues to be the main source of energy in most Central African countries. There is, however, a significant variation in the level of dependence on woodfuel depending on population density, degree of urbanization, level of household income, and

availability of and access to commercial fuels. Dependence on wood for energy is very high in Burundi, Chad and Rwanda, while it is very low in Gabon;

- most industrial roundwood production is geared for export, as logs, sawnwood or panel products. Europe has traditionally been the main destination of exports, but the increasing demand from Asia is changing this, with countries such as China emerging as major markets. Although there has been a significant increase in the volume of exports, the increase in the value of exports has been far less;
- one of the most important services derived from Central African forests concerns biodiversity conservation. Most countries have established a network of protected areas covering some critical and unique biomes. However, the overall institutional weakness affects the protection and management of these areas;
- although Central Africa's unique flora, fauna and landscapes give it considerable potential for tourism development, this has so far not been pursued. Political instability and a poorly developed infrastructure are the major limitations on taking full advantage of the potential.

Chapter 3

Driving forces affecting the forest sector

The situation of forestry described in the previous section is the outcome of a number of factors, and it is important to discern their future trends in order to understand the possible state of forests and forestry in the next two decades. These factors, largely arising from outside the sector - both inside and outside the country - alter the actions of the various stakeholders and in the process shape the resource situation as well as the flow of goods and services. These factors can be broadly grouped as demographic, economic and social, environmental, technological, and policy and institutional. The key factors affecting forestry and their consequences for the sector - in terms of resources and the demand for and supply of goods and services - are indicated below.

DEMOGRAPHIC CHANGES

Demographic changes include a number of elements relating to overall changes in the size and structure of the population, changes in distribution and patterns of concentration, etc. Each of these elements affects forests and forestry directly and indirectly, most often in combination with other factors. The current and emerging situation in Central Africa is discussed below.

Population growth

One of the most important factors influencing the use of land and other natural resources, including forests, is population growth. Table 9 gives an indication of the population change in Central Africa in comparison with other African subregions.

Central Africa is the least populated subregion, with about 12 percent of Africa's population, although it has about 18 percent of the land area. The average annual rate of population growth is approximately 2.6 percent, which means that the population can be expected to reach about 164 million by 2020. The annual growth rate ranges from 2.9 percent for Rwanda to 1.8 percent for Sao Tome and Principe. At the projected growth rate, Central Africa is expected to account for about 14 percent of the continent's population by 2020.

TABLE 9
Population changes in Central Africa and other subregions

Subregion	1980	1990	2000	2010	2020
	(million)	(million)	(million)	(million)	(million)
North Africa	108.6	140.2	170.4	208.8	239.0
East Africa	104.5	141.2	182.1	230.0	289.0
Southern Africa	69.5	89.7	113.4	128.7	150.2
Central Africa	**54.4**	**73.6**	**97.9**	**127.0**	**163.8**
West Africa	132.2	177.8	234.0	277.6	344.0
Africa	**469.2**	**622.5**	**797.8**	**972.1**	**1 186.0**

Source: Figures for 1980, 1990 and 2000 from World Bank, 2002.
Projections for 2010 and 2020 from African Development Bank, 2000.

This will have major consequences for the demand for land and products, depending on the pattern of economic development. As long as dependence on land persists, population growth will lead to increased forest clearing, depending on the nature of agricultural development, especially changes in technology. In the densely populated countries of Burundi and Rwanda, the remaining forests will come under increasing pressure to provide additional land for agriculture. The pressure on these forests is also expected to increase on account of demand for wood and wood products, fodder, non-wood forest products, etc. Central Africa undoubtedly has extensive areas with potential for agriculture, but the pattern of population distribution will have an impact on how this potential is actually used.

Population size and density

There is considerable variation in the size of the population in the different Central African countries (see Table 10). Several countries have a population of less than 5 million and this in conjunction with low income has implications on the size of the markets and the economic viability of industries like pulp and paper characterised by economies of scale. The size of population has also implications on human resource availability.

Population density in the Central Africa subregion varies significantly from country to country. Although the average population density is 18 inhabitants/km^2 - the lowest in Africa - Burundi and Rwanda have very high densities (241 and 294 inhabitants/km^2 respectively), while Gabon, Central Africa, the Congo and Chad have densities of less than 10 inhabitants/km^2 (see Table 10). All this has major consequences for resources, including the market for products and services.

TABLE 10
Population trends in Central African countries

	Population in 2000	Estimated population in 2020	Density in 2000	Density in 2020	Per capita forest area 2000
	(million)	(million)	(inhab/ km^2)	(inhab/km^2)	(ha)
Burundi	6.81	10.50	241	379	0.02
Chad	7.69	12.50	6	10	1.70
Cameroon	15.09	23.90	32	50	1.60
Central African Republic	3.60	5.20	6	8	6.50
Congo	2.94	5.00	9	15	7.70
Democratic Republic of the Congo	51.39	92.20	22	39	2.70
Equatorial Guinea	0.45	0.72	16	26	4.00
Gabon	1.24	1.80	5	7	18.20
Rwanda	8.51	11.50	294	438	0.02
Sao Tome and Principe	0.12	0.20	154	214	0.10
Total Central Africa	**97.87**	**163.8**	**18**	**31**	**2.48**

Source: World Bank, 2002; African Development Bank, 2000.

Urbanization

Urbanization is a major factor affecting forests and forestry directly and indirectly. Twenty years ago nearly 75 percent of the population was rural, and currently the figure is about 69 percent. There are, however, significant differences between countries as to the rate and level of urbanization. For example, Gabon is a highly urbanised country with 81 percent of the population living in urban centres. At the other end of the scale are Rwanda and Burundi with 6.2 percent and 9.0 percent of the people living in urban areas (see World Bank, 2002). The most populated country in Central Africa, namely the Democratic Republic of Congo has about 30 percent of the population living in urban areas. Increasing opportunities in urban centres (especially in the oil-producing countries) coupled with instability in rural areas has led to significant population movements from rural to urban areas.

The current trend of rapid growth in the urban population is expected to continue, and the average urban population of all the Central African countries is expected to increase to about 42 percent by the year 2020. The growth of urban population has a significant impact on forests in the vicinity, especially on account of the increased demand for woodfuel and construction material. The switch from fuelwood to charcoal that usually takes place with urbanisation results in increased wood harvesting. The type of wood removed also undergoes changes affecting forests and woodlands near urban centres. Recently emigrated rural inhabitants living in urban zones continue to use traditional products for their pharmacopoeia or their food. The enormous demand for forest products generated by the urban population tends to degrade forest resources in the peri-urban areas.

Population movements

As is the case in the rest of the continent, Central Africa is marked by a high degree of mobility of people in response to changing economic and political conditions. This stems in part from the artificial nature of the borders of countries, which were drawn up largely on the basis of the convenience of colonial regimes, failing to take into account the ecological, social, cultural and economic linkages that transcend artificial borders. Nomadism has been a characteristic feature of the savannah and arid zones, especially in Cameroon, the Central African Republic, Chad and certain parts of the Democratic Republic of the Congo. While there was historically considerable accommodation between pastoralists and settled agriculturists, as well as between hunter-gatherers in the denser forests and adjoining communities, increasing population density and the consequent reduction in economic space have fuelled conflicts, resulting in population movements.

Rapidly changing economic opportunities in recent years have also resulted in population movements, especially from the poorer interior areas to the coastal cities. A typical example is that of Gabon, which has traditionally imported labour from other countries, especially in West Africa, with people from Senegal, Nigeria, Chad, Burkina Faso and Mali being employed in a variety of sectors, including trade and commerce, and representing a significant proportion of the urban population.

The subregion has seen considerable population shifts as a result of civil unrest and war. The civil war in the Democratic Republic of the Congo has caused the displacement of people to neighbouring countries, especially Gabon, while the Central African Republic has absorbed refugees from the northern provinces of the Democratic Republic of the Congo. Cameroon has been unable to avoid the intrusion of Chadian refugees, fleeing insecurity in their own country. The situation remains alarming in the lakes area. Between mid-1994 and the end of 1996, more than one million Rwandan refugees were accommodated in the eastern Congo.

While the economic and social systems can to some extent adapt to regular population movements - especially the seasonal movement of pastoralists and migration to urban areas - there is very little capacity to cope with the large-scale movements arising from conflicts and civil wars. Central Africa is probably the subregion worst affected by such population movements. The impact of this on forests and woodlands is both direct and indirect. Forests and

woodlands in the vicinity of refugee camps are depleted, while in a state of uncertainty and extreme destitution there is no incentive or capacity to consider environmentally appropriate options. In many cases, governments and international agencies also lack the resources and capacity to manage the situation.

Impact of HIV/AIDS

A number of countries in Central Africa are severely affected by the HIV/AIDS pandemic. The multiple social and economic consequences of this pandemic are devastating. While it depletes the human and financial resources of households and governments, society as a whole has to cope with the negative fall-outs of social disorganization (increasing numbers of orphans, the loss of traditional skills, rising crime rates, etc.). Further, HIV/AIDS undermines capital formation and investment, especially inasmuch as households, the private sector and governments will be forced to use most of their available resources for health care. Life expectancy in Burundi and Rwanda is expected to fall drastically, and the number of excess deaths from HIV/AIDS in these countries between 1995 and 2000 is estimated at about 29 and 31 percent respectively over and above the norm (United Nations, 2001a). The overall growth rate of GNP is expected to decrease by 0.7 percent.

The forest sector will be affected by the pandemic in several ways. Increasing poverty would enhance the dependence on forests, in due course accelerating the degradation. The performance of the forest sector will also be impaired by the decrease in financial and human resources available to it. A reduction in the capacity of households and communities to manage land will have serious consequences for forestry. While there will be increased dependence on forests, the capacity to invest and manage the resources sustainably will be drastically curtailed.

ECONOMIC AND SOCIAL FACTORS

The nature of use of forests varies significantly depending on the state of socio-economic development. While forest-dwelling communities are dependent on forests for most of their livelihood, the nature of dependence on forests changes as agricultural and industrial development advances and the nature of products and services required by the society diversify. The Central African situation is characterised by the existence of societies with varying degress of direct and indirect dependence on forests. As social and economic changes take place, this is expected to undergo change. It is hence important to consider changes in the economic situation of the countries to understand what may happen to forests and forestry in the next two decades

Income and its growth rate

The size of Central African economies varies considerably, and in 2000 they accounted for a total GDP (at 1995 constant prices) of US$31.3 billion, or about 5.3 percent of the entire African GDP (see Table 11). The growth rates of GDP vary widely between the different countries. Gabon, Equatorial Guinea and Cameroon have benefited considerably from the oil boom. However, this has also increased the vulnerability of the economies, especially from declining oil production and prices.

There are large differences in per capita Gross National Income (GNI) between the countries of Central Africa. As can be seen from Table 11, Gabon has a very high per capita income - the highest in sub-Saharan Africa - while the figures for, Burundi, Central African Republic, Chad, the Democratic Republic of the Congo and Rwanda are less than US$1 per day, putting them among the poorest countries in Africa.

TABLE 11
Central Africa – GDP in 2000 and its growth rate*

Country	GDP at constant 1995 prices	Growth rate of GDP 1990–2000	Per capita GNI– 2000
	(million US$)		(US$)
Burundi	946	-2.2	110
Cameroon	10 044	1.0	570
Central African Republic	1 258	1.6	290
Chad	1 676	2.1	200
Congo	2 539	-0.3	630
Democratic Republic of the Congo	6 589	-5.6	-
Equatorial Guinea	731	19.7	1 170
Gabon	5 385	3.1	3 280
Rwanda	2 057	-0.9	230
Sao Tome and Principe	50	1.7	290
Total Central Africa	**31 275**	**0.3**	**320**
Africa	**595 002**	**2.6**	**671**

* GDP estimate for the Democratic Republic of the Congo pertains to the year 1999.
Source: Economic Commission for Africa, 2001 and World Bank, 2002.

The growth rates of income have varied considerably among countries, and short-term spurts in growth (attributable to favourable global prices for primary commodities) are often followed by negative growth rates during a down-turn in commodity prices[8].

[8] For example, as per the recent forecast made by the Economist Intelligence Unit in 2003 Equatorial Guinea is likely to be the fastest growing economy in the world with an estimated GDP growth rate of 12.5 percent. Chad is likely to take the second place with an estimated growth rate of almost 10 percent. Congo has been included under the group of poorest-performing economies registering a decline of about 2 percent (The Economist, 2003).

Although there was some improvement in economic performance in the second half of the 1990s, most countries registered negative GDP growth rates during the decade 1990-2000. The country with the largest population, the Democratic Republic of the Congo, accounting for about 52 percent of the subregion's population, registered a GDP decline of 5.6 percent. In terms of per capita income, the performance is still worse. All the countries, except Equatorial Guinea and Gabon, registered negative growth rates of per capita income. The fall in coffee, rubber and cocoa prices has affected many countries, although some that have petroleum and mineral resources were able to ride out the situation. However, fluctuating oil prices and declining petroleum reserves suggest uncertainty over the future performance of the economies.

Distribution of income

More than the per capita income and its growth rate, its distribution has a critical impact on the social and economic well-being of people. The very limited data suggests an extremely skewed distribution of income, that a very small proportion of people gain most of the benefits from the growth of the economies. For example, in the case of Central Africa the poorest 10 percent of the population account for 0.7 percent of income, while the share of the richest 10 percent is estimated at 47.7 percent (World Bank, 2002). In the case of Rwanda, the shares of the richest and the poorest 10 percent are 26.6 percent and 3.4 percent respectively.

The low levels of income and its skewed distribution results in high levels of poverty. This has important direct and indirect implications on forestry, especially as it affects the nature of demand for forest products and services. In view of the poor purchasing power of the majority of the people, the demand for high-value-added products will be limited. Investment in the production of such products will have to necessarily rely on external markets. However, the dependence on forests for subsistence products like woodfuel, medicinal plants and forest-derived foods like bushmeat will remain very high. Differences in the characteristics of goods and services required by different segments of the population will contribute significantly to the resource use conflicts.

Social development

Indicators of social development provide an idea of the overall pattern of development. Despite a relatively better resource situation in Central Africa, the state of social development as seen in the various indicators is far from satisfactory, reflecting inequities in income distribution and consequent poverty. Table 12 gives the values for some of the key social indicators in the Central African countries.

TABLE 12
Key social indicators

Country	Under 5 mortality rate per 1 000 births–1999	Life expectancy at birth	Adult literacy rate (%)
Burundi	176	43	37
Cameroon	154	54	63
Central African Republic	172	45	40
Chad	198	48	33
Congo	108	49	75
Democratic Republic of the Congo	207	52	67
Equatorial Guinea	160	51	78
Gabon	143	52	63
Rwanda	180	41	53
Sao Tome and Principe	76	-	73

Source: UNICEF, 2001.

As can be seen, the values for most indicators suggest a low level of overall social development. Life expectancy in most countries (except Cameroon) is less than the average for Africa as a whole (which is 52.7 years). Of particular concern is the fact that in countries such as Burundi and Rwanda life expectancy fell between 1970 and 1999, largely under the effect of HIV/AIDS. In all the countries of Central Africa except Sao Tome and Principe, child mortality rates continue to be high and are over 100. The literacy rate also gives an indication of the current situation and possibly reflects society's priorities in the allocation of public resources. Burundi, the Central African Republic and Chad have illiteracy rates of over 50 percent. Although there has been some improvement over the past thirty years, the figures reflect some of the constraints in social and economic development.

The current state of social development in Central Africa has several consequences for forests and forestry. Most important, poverty and poverty-related diseases affect the capacity of households to invest and to manage natural resources. With most people relying on low-investment, low-skill alternatives, technological progress is expected to be slow in all activities. Increasingly governments will be compelled to invest more on education and health and in a situation of resource constraints, investment in sustainable forest management is unlikely to receive a high priority.

Indebtedness

The low income levels and its skewed distribution are further compounded by the high indebtedness of Central African countries. Social and economic development in general and sustainable management of

forests in particular are closely linked to how countries are able to deal with their very heavy debt burden. The total Central African external debt in 2000 was about US$33.3 billion, or about 106 percent of GDP. Some of the impacts of this on the overall economic situation and consequently forestry are as follows:

- since 1990 external debt has increased substantially: in 1990 the total external debt for all the Central African countries was US$29.1 billion, but by 2000 this had risen to US$33.3 billion - an increase of about 14 percent. Only in the case of Equatorial Guinea and Gabon has there been some reduction in the debt burden, while it has increased significantly for all the other countries;
- the debt burden of some of the countries is extremely high. For example, the 2000 external debt of the Congo and the Democratic Republic of the Congo accounted for 243 and 172 percent respectively of their GDP. In the case of several countries a substantial proportion of export income goes for debt servicing[9].

The high debt burden has the following direct and indirect consequences:

- the debt burden reduces the freedom of choice of governments and pushes them into a narrow path of development, with very limited resources available for long-term development of the social sectors, especially education, health care, etc.;
- under pressure from international financial institutions, the economies are further liberalized, increasing exploitation of resources, but with very little of the income available for reinvestment;
- as long as the debt burden persists, the compulsion to manage forest resources unsustainably will persist. Much of the emphasis will be on extracting the maximum quantity of timber with minimum investment.

Addressing the debt-burden is a critical issue for all the Central African countries (see Box 11). Although there have been some initiatives to reduce the debt burden under the Heavily Indebted Poor Country (HIPC) Initiative, only four countries - Cameroon, Chad, Rwanda and Sao Tome and Principe - are currently covered under the initiative. The decision is yet to be taken on the inclusion of Burundi, the Central African Republic, the Congo and the Democratic Republic of the Congo. There are contrasting views on the effectiveness of HIPC, some saying that the initiative is not making an adequate impact and that most of the countries receiving support under HIPC still allocate a substantial part of their income to debt servicing.

BOX 11

INDEBTEDNESS: THE CONSTANT BURDEN

Debt cancellation, simple as it sounds, holds the key to Africa's future. All efforts to find out why stabilization or adjustment has not worked, why investment has not resumed, and why the state capacity has been further eroded will fail unless this single but dominant issue - debt overhang - is addressed.

(Mkandawire & Soludo, 1999)

Changing significance of the various sectors

Structural shifts

Agriculture has historically been the most important sector in all the Central African countries, accounting for most of the GDP and employment. This situation is changing depending upon the relative development of the different sectors. In 1999 agriculture employed 86 percent of the men and 98 percent of the women in the labour force in Burundi and Rwanda. And between 1980 and 1999, there has been very little change in the proportion of employment in the agricultural sector, although agriculture's share in GDP has declined in these countries. In contrast there have been significant changes in the share of different sectors as regards employment generation in countries like Congo and Gabon. This is almost entirely due to the rapid expansion of opportunities in the services sector and to a limited extent in the industry sector.

The agriculture-forestry linkage is undergoing change in the subregion, although the pace of change differs between countries. Depending on the growth of other sectors, the relative importance of agriculture is changing with its consequent impact on forests and forestry. Broadly, the following patterns of change can be observed in Central Africa:

- Burundi, the Central African Republic, Chad, the Democratic Republic of the Congo and Rwanda are highly dependent on agriculture for income and employment. Although most agriculture is subsistence-focused, some of these countries also have an export-oriented cash-crop sector which accounts for most foreign-exchange earnings and government income. In recent years, the cash-crop segment has declined on account of a reduction in

[9] In the case of Burundi, debt servicing accounts for 40 percent of export income, while in the case of Cameroon the proportion is 23 percent.

prices. This is resulting in changes in the livelihood strategies of the people, with increasing emphasis on subsistence crops, and more particularly on informal-sector activities, including the production of charcoal and bushmeat. With mounting debt, governments will also be under pressure to increase logging, especially to make up the reduction in export earnings from cash crops;

- the other group consists of countries that have been able to diversify their economic base on account of the development of other sectors. Petroleum production and mining have been important sources of income in countries like Gabon, Cameroon and Equatorial Guinea. Income from extractive sectors has led to a rapid development of the services sector and to a limited extent manufacturing also. This has reduced the dependence on land and the need to convert forests to agriculture. In some cases higher wages have reduced the profitability of agriculture. This, coupled with declining global prices for cash crops, has reduced the incentives to clear forest areas for cash crop production. While the situation appears to be positive now, it is difficult to foresee what is likely to happen when the oil boom comes to an end and the dependence on land increases.

Land-use conflicts

Considering that in several countries structural shifts in the economy may not be large enough to reduce pressure on land or may be short-lived, land-use conflicts are expected to persist, with their consequent impact on forestry. This will be particularly severe in countries and areas that are already densely populated. Some of the existing conflicts (which often assume an ethnic tone) are primarily resource-use conflicts and have resulted in large-scale movements of people. Such conflicts are particularly severe in the densely populated coastal areas and the countries or areas around the lakes. The impact of these on forests will largely depend on the characteristics of the farming systems, including their economic viability. Some of the broad trends are as follows:

- subsistence agriculture: This includes slash-and-burn cultivation as well as settled smallholder cultivation. Considering the growth in population and the limited scope for diversification into non-agricultural activities, both shifting cultivation and settled smallholder cultivation are expected to expand in most countries. In the case of smallholder cultivation an increase in tree cultivation can be expected depending on the security of tenure (for example Burundi and Rwanda). In the context of increasing local demand for wood and wood products and declining supply from natural forests, private planting is expected to expand significantly;
- cash crop cultivation: With the decrease in prices, cultivation of conventional cash crops is unlikely to expand significantly, especially in view of declining public-sector support, which previously played an important role in its expansion. However, some expansion of new crops (cut flowers and organically produced foods, for example) aimed at meeting the increasing global demand can be expected. Much of this is expected to take place in easily accessible areas. Forest clearing for cash-crop cultivation is in any case unlikely to be significant;
- animal husbandry: During the past ten years there has been a substantial increase in livestock in some of the countries, for example Chad, Cameroon and the Central African Republic[10]. There are indications of a rapid expansion, especially in view of the growing demand for livestock products. Initially this will be confined to the disease-free zone, but as technology improves, it could expand to other zones. Considering the low population densities, the extensive area available, the low labour requirements and the increasing emphasis on meat and other products from animals grown under natural conditions, Central Africa could witness a rapid expansion of ranching, based largely on outside investment.

Growth of the informal sector

As in other subregions in Africa, there has been a significant expansion of the informal sector during the last two decades. Largely this has been due to the poor growth of the formal sector and the need for finding employment outside the formal sectors. Survival of the majority of the population depends on a wide range of low-income activities. The traditional informal-sector activities - fuelwood gathering, charcoal production, the collection of non-wood forest products, including medicinal plants, etc. - largely cater to the demand from low-income groups and generally create low-income employment. Although such informal employment is often seen as a transition arrangement until people find regular employment in the formal sectors, limited

[10] In the past ten years, the cattle population has increased significantly in Cameroon (+ 31 percent, with 5.7 million head listed in 1998), the Central African Republic (+ 30 percent, 2.9 million) and Chad (+ 32 percent, 5.3 million).

opportunities for employment in the formal sectors have made informal sector employment as the main source of income. There are also situations where low income from formal employment and mounting cost of living have compelled people to seek part-time employment in the informal sector. Declining income from agriculture - especially because of the fall in cash-crop prices - has also contributed to the growth of the informal sector.

In addition to the less organized informal sector catering to subsistence living, there is a more organized and modern informal sector that exploits such resources as timber, bushmeat, endangered plants and animals (as well as other valuable items such as diamonds and coltan), catering to global demand. This informal sector comprises of well-organized networks, and largely stems from the inherent weaknesses of such institutions as government forest agencies. While no quantitative information is available, there is growing concern over the role of these illegal activities in siphoning off resources, destabilizing the livelihood of the people and sustaining armed conflicts in the subregion (see United Nations, 2001b).

Globalization and subregional and regional integration and cooperation

Central Africa is well integrated into the global and regional economies both formally and informally, although institutional and structural weaknesses limit the ability of the countries to take advantage of emerging opportunities from such integration. There are no major barriers to the movement of capital, technology, goods and services, especially between Central African countries and their key trading partners. Trade barriers are already fairly low and any further reduction is unlikely to have much impact. Most forestry investment is from outside, which in a way reflects openness, although there are several institutional factors that prevent countries from taking full advantage of emerging opportunities. In the context of weak policies and institutions, increased economic integration and trade liberalization could have a negative impact on resources, as is already happening (see Box 12).

Significant changes in land use would probably take place as a result of changes in the agricultural policies of developed countries, especially the removal of subsidies. This would make imports from developing countries competitive triggering significant changes in agriculture in Central Africa, especially considering its unutilized or underutilized land and water resources. The direct and indirect impact of this on forests could be substantial, although it is hard to give any indication of the magnitude of the changes.

BOX 12

IMPACT OF TRADE LIBERALIZATION

Removing trade barriers in countries where there are already few protection safeguards, coupled with weak regulation and monitoring and poor enforcement of environmental and social codes, could result in serious negative impacts and ultimately reduce rather than stimulate economic growth. In addition, overinclusive definitions of trade barriers that would involve removing domestic environmental measures could undercut or hinder the adoption of needed safeguards.

(Sizer *et al.*, 1999)

One of the key development that will have an impact on forests and forestry is the ongoing effort to strengthen regional and subregional integration. The establishment of the African Union, replacing the erstwhile Organization of African Unity, suggests the growing commitment to regional integration. Cameroon, Central African Republic, Congo, Gabon, Equatorial Guinea and Chad are members of CEMAC (Communauté économique et monetair de l'Afrique Centrale) and have a common currency. In addition to subregional and regional initiatives focused on economy-wide integration, there are also a number forestry-related initiatives, especially to strengthen policies and institutions and to develop coordinated efforts in forestry and related areas. The CEFDHAC (Conférence des Ecosystèmes de Forêts Denses et Humides d'Afrique centrale), a subregional organization supported by IUCN implements studies and field activities aiming at harmonising policies and strategies in support of conservation and sustainable utilization of forest ecosystems. An important initiative in this regard is the summit of heads of states held at Yaoundé in March 1999 and the establishment of the Conference des Ministres en charge des forêts de l'Afrique centrale (COMIFAC) to strengthen cooperation among the Congo-basin countries for the sustainable management of forest resources (see Box 13). The effectiveness of such efforts will largely depend on developing appropriate institutional mechanisms to implement the initiatives and how they are able to address some of the fundamental issues that are often outside the realm of the forest sector.

BOX 13

YAOUNDÉ DECLARATION, 17 MARCH 1999

The Heads of State of Cameroon, the Central African Republic, Chad, the Congo, Equatorial Guinea and Gabon met in March 1999 at the Yaoundé Summit to reiterate through the Yaoundé Declaration the need for subregional cohesion in particular for resource management and the creation of transborder protected areas. They pledged to:

- accelerate the process of creation of transborder protected areas between the countries of Central Africa;
- develop an adequate forest taxation system;
- adopt national policies that are harmonized in forest-related matters and accelerate the establishment of development tools, particularly certification systems;
- reinforce actions aimed at increasing the participation of rural populations in the planning and sustainable management of ecosystems;
- supervise greater involvement of economic operators in the process of sustainable management and conservation of forest ecosystems;
- take measures to reconcile actions in favour of forest ecosystems with those of other sectoral programmes;
- set up joint actions in order to stop organized poaching;
- promote and accelerate the process of industrialization of the sector;
- promote national and subregional forums of experience sharing, to encourage networking and to reinforce coordination between the organizations involved in the use and conservation of forest ecosystems; and
- set up in each state enduring mechanisms for financing development of the forest sector.

The COMIFAC (Conference des Ministres en charge des forêts de l'Afrique centrale) has been established in 2002 to implement the resolutions of the Yaoundé Declaration. The resolutions have been translated into a series of measures and strategies called "Plan de Convergence". The COMIFAC is formed of the Council of Ministers, a permanent executive Secretariat, a subregional forum and national fora. The COMIFAC meets every two years in one of the Central African countries. The subregional and national for a bring together all stakeholders of the forestry sector to monitor the implementation of the Yaoundé resolutions. The CEFDHAC (Conférence des Ecosystèmes de Forêts Denses et Humides d'Afrique centrale) has been given the responsibility for organizing these for a. The COMIFAC is financed by country contributions and international trust funds.

ENVIRONMENTAL CHANGES

One of the major developments in recent years has been the increasing concern over environmental protection and wider acceptance of the principle of sustainable development. Issues such as biodiversity conservation, the protection of endangered species and desertification control are key issues for Central Africa. Almost all the countries in the subregion are signatories to the United Nations Convention on Biological Diversity, the United Nations Convention to Combat Desertification and the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and many of them are also signatories to the United Nations Framework Convention on Climate Change (UNFCC).

With increasing global awareness of the significance of Congo-basin forests, NGOs (both national and international) and other civil society organizations and interest groups have become active in issues relating to forest conservation and management as well as the rights of forest-dwelling communities. In particular, international organizations continue to exert considerable pressure on Central African countries regarding such issues as the establishment and management of protected areas, the protection of endangered species and the control of bushmeat production and trade. The impact of these on Central African forests will be through:

- setting aside more of the forests as protected areas; and
- increasing emphasis on implementation of sustainable forest management, and certification and labelling in response to the changes in consumer preference in some of the markets.

Much of the problem, however, concerns the management of conflicts and the ability of governments and other organizations to implement the provisions of the various conventions and treaties. Considering the availability of extensive forests and the low population pressures, there is still scope for expansion of protected areas. However, managing the protected areas may still remain problematic on account of resource constraints. Wider application of sustainable forest management faces a similar problem. Although there is a good understanding of the criteria and indicators of sustainable forest management, most of the problems stem from conflicting perceptions and objectives of the

BOX 14

WATER RESOURCES IN CENTRAL AFRICA

The increases in demand for water in Central Africa are unlikely to lead to conditions of water stress or water scarcity, because the estimated withdrawals are still small compared to the available resources. However, reductions in rainfall related to climate change are expected in parts of Northern Cameroon and Chad, and this will exacerbate already inadequate water supply systems. Therefore, localised problems of water supply may be exacerbated.

(UNEP, 2002)

BOX 15

THE SHRINKING OF LAKE CHAD

Lake Chad and the Chari/Logone river system that transports 90 percent of the runoff generated in the area's basin are important water resources for the local population as well as that of N'Djamena. The lake is shared by Chad, Cameroon, Nigeria and the Niger. The warming climate and increasing desertification in the surrounding Sahel region have dropped water levels far below the average dry-season level of 10 000 km^2 to only 1 350 km^2. Moreover, irrigation demands increased four-fold between 1983 and 1994, accounting for 50 percent of the additional decrease in the size of the lake. Regional officials have noticed the dramatic effect the shrinking lake has on its surrounding inhabitants.

key actors and the overall resource constraints faced by forestry agencies to enforce sustainable forest management. While consumer preferences would be an important driving force, the shift in the direction of trade to markets where willingness to pay a premium for certified timber is less evident may limit the scope for certification and labelling.

Most of Central Africa, excepting Chad and some parts of Cameroon and Central African Republic, are in the humid zone receiving a high precipitation. Abundance of rains and the presence of important rivers and lakes have led to the neglect of water management issues. As these water resources are tapped for irrigation and power generation, managing the watersheds will become very critical (see Box 14). In the Sahelian zone of Chad the problem of water stress is already very acute and the problem is further compounded by the declining water levels in Lake Chad (see Box 15)

Conflicting objectives and the extreme scarcity of human and financial resources have very often led to a low priority being given to addressing environmental issues. Even if there is a strong commitment, resource constraints have prevented most governments from pursuing the issues seriously, and short-term priorities receive precedence over environmental issues. Most environmental inititatives therefore tend to be driven by outside funding and are thus sometimes unsustainable when such funding dries up.

While there has been an increase in awareness of the environmental role of forests, the long-term conservation of Central African forests will depend on:

- the willingness of the global community to meet the costs of providing global public goods;
- the possibility of making conservation efforts self-sustainable through user-charges; and
- the balancing of the costs and benefits to local communities, developing acceptable trade-off levels.

The implications of these factors and the situation that is likely to emerge are discussed later in the present report.

TECHNOLOGICAL CHANGES

One of the characteristic features of the last two decades has been the rapid growth of technology in almost all spheres of human activity. Developments in information and communication technology, resource assessments, especially remote sensing, improved understanding of ecosystem processes, tree improvement techniques and, more important, techniques for processing wood and non-wood forest products are all of particular interest. Although technological changes have been rapid at the global level, the rate of their percolation and adoption has been very varied, widening technological gaps. Central Africa as a whole and the forest sector in particular have lagged behind in technological changes, for a variety of reasons. Some of the issues that may have a bearing on technological change in Central African forestry are as follows:

- the production of wood and other forest products is based on natural processes and most of those involved in utilizing the forests focus on extracting what is available naturally. Logging and transportation have been hence the main areas where some efforts have been made for technological improvement. Here again much of the effort has been to adopt technologies that minimise the unit cost of production. Even though as many as 60 to 70 tree species are known to be useful, utilization focuses on a very small number of species, largely as a result of economic considerations, especially transport costs;

- although processing technology (of both wood and non-wood products) has advanced significantly, there has been no adoption of recent developments, again as a result of a variety of factors outside the sector;
- in recent years there have been considerable advances in remote sensing and resource assessment technology, and in theory it is possible to monitor changes on a real-time basis. However, the ability to assess resource situations even at long intervals remains poor. The fact that most countries have no reliable data on forest resources indicates the problems in adopting even known technologies;
- in many countries there has been some percolation of communication technology, but vast areas remain unconnected, perpetuating the information divide;
- investment in research has been extremely low, and its effectiveness in improving the science and technology capacity has been undermined by a variety of institutional constraints. Private sector investment in research and development has also been extremely low;
- although there is a considerable wealth of indigenous knowledge, very little effort has been made to improve and build up capacity in this area.

All these would suggest that, despite the overall progress of science and technology at the global level, forestry in Central Africa has not benefited much, and all the indications are that the technological divide is likely to persist and probably even widen if current trends continue. Much of the introduction of new technologies will be made by private investors, largely guided by profitability considerations. Considering the low investments in science and technology in the public sector and the poorly developed state of education and research infrastructure, the prospects for significant technological changes during the next two decades are limited.

POLITICAL AND INSTITUTIONAL CHANGES

Political and institutional changes encompass social systems in their entirety and therefore tend to have far-reaching direct and indirect effects on how such natural resources as forests are used and managed. Meaningful changes in forest-related policies and institutional arrangements thus largely depend on the overall political and institutional environment. As in the case of other countries in Africa, Central African countries are also in the process of political and institutional change. In comparison with the situation a decade ago, there has been some progress towards the emergence of more broad-based and democratic political and social institutions. Some of the key issues that need to be considered in terms of forest management are the following:

- the emergence of democratic decision-making and decentralization;
- participatory approaches in resource management;
- the changing role of the private sector in forestry; and
- the role of civil society organizations in the political and social processes.

There has been some progress in the democratization process, but in several countries the situation is in a flux, with conflicts between past approaches (in which power and authority are concentrated at the central level) and the need to break away from these. In most countries the transition to a democratic system of government has been fairly slow. This is also reflected in the decentralization process. Where the central authority is powerful and largely based on one-party rule, decentralization in all its aspects has been very slow or non-existent. This is particularly true as regards the control of forest resources. Where the resources are valuable, centralized control remains the norm, even when communities have traditionally exercised control over them. Where central authority has been weak outlying regions have come under the control of local groups, so that the control and use of resources rest with those in power at the local level.

In all the Congo-basin countries, the state or government remains the sole owner of forest resources and has the right to alienate resources for conservation and/or development purposes. Local communities generally have user-rights, but the most valuable items invariably remain outside their ownership and control. Probably the only attempt with regard to implementation of a participatory approach in the Congo basin is in Cameroon, as stipulated in the 1994 Forest Law. A Community Forestry Unit has been established within the Ministry of the Environment and Forestry in support of community participation, and there has been some progress with regard to local-community management of small concession areas. However, the role of communities in managing forests largely remains marginal (see Box 16). Also see Forest Monitor, 2001)[11]. On the whole, in a situation where

[11] In the absence of the capacity to manage their concessions, communities often entrust the task to logging companies, realizing short-term profits. The interest in implementing community management in its true sense has been very limited (see CARPE, 2001c).

BOX 16

COMMUNITY PARTICIPATION IN CAMEROONIAN FORESTRY

All in all, therefore, the Cameroonian community forestry legislation is extremely challenging, and the risk of failure is significant. The fact that community forests are restricted to the non-permanent forest is indicative of their marginalization within the system of forest exploitation and there is a strong risk that even when they offer significant timber resources, they will be manipulated by unscrupulous timber operators as a form of fictive vente de coupe.

(Brown, 1999)

resources are extremely valuable, there is very limited interest in community management and the devolution of responsibilities. There have also been some efforts to involve local communities in managing protected areas and to ensure that income from such activities accrue to them. However, the extent of areas covered by such arrangements is very small and maynot have a significant impact. Many communities lack the capacity to manage the resources, especially since it requires access to investment funds and markets and in a way these perpetuates the domination of large logging companies.

It therefore becomes difficult to visualise the widespread adoption of effective participatory approaches. NGOs are sometimes poorly organized, government administration is either too weak or too rigid, and small associations depend on powerful companies. Laws and regulations are formulated on the basis of external support and are not widely accepted and are therefore circumvented or not applied. The political will for real devolution of decision-making and funding to the local level is as yet non-existent. A great deal of effort is needed in order to increase the level of knowledge and capacities for the participatory management of natural resources.

As regards private-sector involvement, nearly all revenue-generating activities, particularly logging but also processing, are under the control of the private sector, especially large transnational logging companies. In recent years there have been attempts to involve the indigenous private sector, but local logging concession-holders often have limited capacity and their concessions are therefore leased or sublet to large international companies. In some cases such subletting dissipates responsibility and makes it hard to enforce regulations regarding logging. Those who weild control over logging, wood processing and trade often does not allow the development of a level playing field, thwarting new public and private sector initiatives.

Although civil society organizations, in particular NGOs and professional organizations, are becoming active in taking up environmental issues, their overall impact is limited by a number of factors. The existing political and institutional framework limits the space for civil society initiatives, especially in forestry matters. Free mass media, a concerned citizenry, a receptive political system and built-in mechanisms to pursue public-interest issues are the necessary conditions for the effective functioning of civil society organizations. In most countries in Central Africa these conditions are yet to emerge. In recent years there have been some efforts, largely at the instance of international NGOs, to create awareness of such issues as illegal logging, the commercialization of bushmeat production and the management of protected areas. Issues such as governance, transparency and human rights have also been brought to the forefront of discussion. The campaign to boycott timber from unsustainably managed areas is also creating global awareness of the issues and leading to some corrective action. These initiatives of civil society are expected to gain momentum, although corrective action on the ground may lag behind on account of political and institutional constraints.

Wars and civil conflicts

The persistence of armed conflicts in Central Africa is a key factor with direct and indirect effects on forests and forestry. Conflicts in the subregion fall into two broad categories. The first encompasses those arising from the efforts of powerful interest groups, often outsiders, to control and exploit valuable resources such as diamonds, gold, coltan and timber. In fact conflicts and the exploitation of valuable resources are mutually supporting. Most efforts to re-establish peace are thwarted by those who gain from the persistence of conflicts.

The other type of conflict is found primarily in the more densely populated regions as an outcome of increasing population pressure and consequent conflicts over resources such as land and water. These most often manifest themselves as ethnic conflicts, especially when the principal livelihood system is the basis of ethnic distinctions (as in the case of nomadic pastoralists and settled cultivators) or when large-

BOX 17

INCREASING LAND-USE PRESSURE AND CONFLICTS

A major feature underlying land conflicts in Africa is linked to large inflows of people seeking land where they can settle and farm. Relations between incomers and the indigenous inhabitants are often tense, with few social and cultural values in common. Uncertainties regarding the rights of different groups are aggravated by the plurality of laws and systems of regulation for control over land. When land starts to become scarce and hence valuable and marketable, such uncertainties generate fears and suspicion between neighbours, and even within families. Government interventions and establishment of agricultural projects and commercial farm enterprises add further elements of instability to land relations.

(IIED, 2001)

scale immigration changes the ethnic balance (see Box 17)[12].

The impact of conflicts on forests and forestry needs no elaboration. Apart from the immediate destruction of life and property, persistent conflicts undermine long-term investment in all sectors, including tree growing. The impact of displaced persons and refugees on forests adjoining temporary settlements has been indicated earlier. Lawlessness makes it impossible to manage forests, while criminal gangs are able to exploit the resources unhindered. Increasing conflicts and the flow of modern weapons are said to be major factors in increased hunting for bushmeat. The recent peace accord to settle the conflict in the Democratic Republic of the Congo provides some hope, provided all the parties abide by their commitment and efforts are pursued to develop a viable democratic framework. All the indications are that it may take sometime to develop mechanisms to resolve the conflicts and to bring stability that is critical to promote social and economic development.

DRIVING FORCES: SUMMARY

Central Africa as a whole is a subregion rich in resources, with immense potential. However, several factors hamper the realization of this potential. Some of the key factors affecting forestry in Central Africa are as follows:

- population in Central Africa is estimated to grow from about 98 million in 2000 to 164 million by 2020. While vast areas are sparsely populated, countries like Burundi and Rwanda, and some of the eastern parts of the Democratic Republic of Congo are densely populated, impacting the forests. Urbanisation, population movements and HIV/AIDS are other factors that will have direct and indirect effects on forest resource use;
- despite the rich resources of the subregion, most people are very poor, largely as a result of the very uneven distribution of income. This is further reflected in the various indicators of social development;
- the growth rate of per capita income in most countries has been negative in the past ten years. Fundamentals such as the rate of savings and investment are weak, suggesting continued sluggishness of the subregion's economies. The situation is further compounded by the very high debt burden of these countries. A significant proportion of export income goes for debt servicing;
- most investment - including that in logging and wood-based industries - comes from transnational companies, and such investment tends to drive the pattern of forest-resource use in most countries in the subregion. The ability of governments to invest in sustainable forest management is seriously limited by low incomes and the need to assign priority to other sectors;
- in most countries there has been very little diversification of the economy, and in countries where this has taken place, undue dependence on extractive resources such as oil and mining has increased their vulnerability. A similar situation is found in countries that have developed export-oriented cash crops as the main plank of their economies;
- technological progress in all sectors, including forestry, continues to be slow. There has been very little investment to build up a strong science and technology base, and this will significantly hamper the future progress of all the countries. Currently there is a very high dependence on imported technology, but this cannot be sustained in the long term;
- in view of the poor growth of opportunities for employment and income in the formal sector, dependence on the informal sector has increased significantly. The production of woodfuel, the collection of non-wood forest products, hunting for bushmeat, etc. have emerged as important informal

[12] A typical example of this is the conflicts between Tutsi and Hutu in Burundi and Rwanda and the problems in north Kivu in the Democratic Republic of the Congo.

sector activities, but there are limits to their long-term sustainability;

- weaknesses in governance and accountability, coupled with the absence of a transparent system for the effective functioning of market forces, have led to the development of a highly organized informal sector, often linked to international criminal networks. These networks often support and benefit from conflicts in the subregion;
- although a number of international and national civil society organizations are involved in pursuing issues relating to forestry and the environment, the overall development of civil society remains very weak. In most countries the necessary conditions for the effective functioning of civil society are yet to emerge;
- persistence of civil wars and conflicts remains a major problem, thwarting progress. Forest management is particularly affected by wars and conflicts as vast areas cannot be subjected to any management. In many cases illegal logging is a major source of funds supporting conflicts. Decimation of wildlife on account of hunting for trophy and bushmeat is a major problem.

Chapter 4

Probable scenarios for forestry development

As discussed in the previous section, a number of driving forces affect forests and forestry, and the major question is how to identify the path or paths for the development of the sector over the next 20 years. Population growth, changes in the economic, social and political environment, technological developments and environmental changes all affect the behaviour of people both individually and collectively. These changes alter opportunities and constraints, resulting in varied responses from society and its different constituents. Understanding the responses thus becomes important in any attempt to visualize what is likely to happen and how future outcomes may be influenced. It is in this context that the present chapter explores alternative scenarios and how they are likely to affect forestry in Central Africa in the next 20 years.

APPROACHES TO DEFINING SCENARIOS

Various approaches exist identifying the future course of developments in the social, economic, cultural and political spheres. Visualizing probable situations at distant time-points helps to clarify issues and to provide an indication of possible outcomes and of how society could respond to unpredictable events. Scenario analysis is one such tool, which helps to develop a storyline connecting a possible sequence of events and leading to the emergence of one or more outcomes, depending on how the various actors influence and respond to the changes.

A scenario is a possible future chain of events and outcomes linking driving forces and actors. There are various approaches to identifying scenarios, which may be quantitative, qualitative or a combination of both. The quantitative approach relies largely on modelling techniques, based on the proven relationship between different variables. Some factors, such as population growth and income changes, have a direct relation to forest product consumption, and in drawing up scenarios concerning wood consumption, these variables could be used to give an estimate of consumption at different time-points. However, such variables are unable to explain qualitative changes, especially those stemming from political, social and institutional developments. It is therefore helpful to combine the two approaches.

In the case of FOSA, the main thrust is to identify the possible actions of various actors under different policy and institutional scenarios. What happens in forestry is largely decided by the actions of a multitude of actors, whose responses are most often guided by the policy and institutional environment. Alternative responses can be envisaged, depending on the freedom of choice and the space for action of the various actors. It is on this basis that FOSA scenarios are defined.

PROBABLE SCENARIOS

The overall approach to defining scenarios and their characteristics has been indicated in the FOSA regional report, and the present report therefore focuses on the specific features of these scenarios insofar as they are relevant to the situation in Central Africa (see Box 19). The five scenarios identified in the context of FOSA are:

- public sector dominance;
- market forces;
- informal sector ;
- fortress scenario; and
- the Great Transition.

In most situations in Central Africa, we find various combinations of the first three scenarios, with a tendency to move into the fortress scenario or the Great Transition. Two aspects that need to be emphasized in the discussion of scenarios are as follows:

- scenarios indicate a wide range of possibilities. They are not dead ends, but are constantly evolving over time, depending upon the nature of interventions, or lack thereof;
- elements of different scenarios can coexist. For example, market forces may dominate commercial plantations and the logging of natural forests, while the informal sector (especially in the form of illegal logging) may be dominant in the case of natural forest management or the collection of non-wood forest products.

Some of the key features of the above scenarios and the possible paths of development in forestry under them are discussed below.

BOX 18

A GENERAL ACCOUNT OF SCENARIOS

Public-sector dominance has been the most prevalent institutional framework in Africa. In this paradigm, key responsibilities for managing the economy, including the forest sector, are assumed by the government. In addition to regulating the development of all key economic sectors, government involvement in the forest sector is substantial. Activities include forest reservation, logging, processing, trade, research, education and training. Governments are also responsible for the formulation of policies and legislation that define the nature of action by other actors.

In recent years, the role of the public sector has been intensely scrutinized. Its alleged economic inefficiency, especially in responding to rapidly changing economic conditions, has led to emphasis on market forces, the basic premise of which is that market mechanisms provide appropriate signals to all economic actors, resulting in more efficient and rational resource allocation. Most countries are in fact making an effort to pursue the market-oriented approach. International financial institutions and the stipulations of the World Trade Organization often force them to pursue this option.

Neither the public sector nor market forces can encompass all economic activities. This is particularly the situation in Africa, where a large number of actors operate in the informal sector, which is often much larger than the formal sector. Hence the need to consider it as a distinct scenario. However, there are limits to the ability of the informal sector to grow and provide all the goods and services. At least in certain situations, resource-use conflicts lead to the development of a fortress scenario to safeguard benefits that accrue from the operation of market forces or the public sector.

In the long run, the fortress scenario is also unstable, since it can degenerate into a state of barbarization, a complete breakdown of state and related arrangements when control passes to warring groups, as has happened, for example, in Somalia or certain areas in the eastern Congo. Although this could last for a long time, society is often able to pursue a path of reconciliation and move to a scenario of the Great Transition in order to develop and implement a much larger vision. There are already some indications that this scenario is taking hold in Africa. Discussions of an African Renaissance, developing democratic institutions, decentralizing resource management responsibilities and encouraging community participation, could be interpreted as movements towards the Great Transition.

PUBLIC SECTOR DOMINANCE

During the colonial period and the post-colonial period, the public sector emerged as a major player in the economic development of the countries of Central Africa, although its reach and effectiveness have varied widely. In the absence of a large, developed private sector and with a preponderance of subsistence production, public sector intervention was inevitable to promote social and economic development and to tap natural resources. The development of infrastructure (roads and railways to improve access to resources), cultivation of cash crops such as cocoa, coffee and rubber and the extraction of timber were all undertaken with the active involvement of public sector institutions specifically established for the purpose. The role of the public sector in economic development became more pervasive after independence, and came to include all activities such as provision of the health care, education and rural development. The model of centralized planning adopted by some of the countries further strengthened the process. Thus, the public sector in many countries decided and influenced the actions of all the other actors and in many cases reduced the freedom of choice as well as the space for other actors.

Public sector involvement in forestry

Forestry has been one of the key areas where the public sector has played a major role in defining, regulating and managing resource use. Much of earlier policies and legislation was designed to increase direct control of resources, facilitate their exploitation, support other government objectives or raise income in support of other activities. In essence this approach continues even now in most countries. The public sector has been the most important player in almost all forestry activities so far as the resources at its disposal have permitted. These activities have included:

- formulation of policies and legislation;
- reservation of areas to ensure exclusive use for public benefit;
- enforcement of legislation;
- logging, processing and marketing;
- establishment and management of plantations;
- management of protected areas; and
- research, education,training and extension.

Governments have also influenced the behaviour of other actors - the private sector, individuals, communities and so on - through policies and legislation. In most cases these interventions have largely focused on reducing the space and freedom of choice of others in order to maintain the dominant role of the public sector.

BOX 19

PUBLIC SECTOR FOREST PLANTATIONS

In the Democratic Republic of the Congo, in 12 years of a plantation campaign from 1986 to 1998, the national forestation company succeeded in planting only 2 065 ha of forest trees, or 17.1 percent of its initial objective.

In Congo, 6 000 ha of *Terminalia superba* planted in the 1980s have been reported as abandoned its production at the rotation age will be far below what was initially expected.

In Cameroon, the regeneration programme to be realized by the state company ONADEF in accordance with forest policy has achieved only 10 to 20 percent of the objective fixed for the last six years. In the forest zone, 1 140 ha or 190 ha per year have been planted, as against the objective of 2 500 ha per year. In the humid savannah zone, 1 400 ha have been planted in six years, or 235 ha per year, as against the initial objective of 13 500 ha per year. In the dry savannah zone, 115 ha per year have been planted, as against the 1 000 ha scheduled per year.

(FOSA Country Outlook Papers, 2001)

In recent years, however, there have been indications that the pre-eminence of the public sector is on the decline. Due to intense pressure on resources and the inability to expand its capacity, the overall performance of public sector institutions has been on the decline. By reducing the space and freedom of other actors, it has curtailed initiatives by others, or at worst has encouraged negative behaviour. By attempting to take responsibility for all functions, it has spread the resources too thinly, resulting in considerable inefficiency. It is in this context that we have to examine the probable paths of development of the public sector in the next two decades and assess their likely consequences.

A change in public sector dominance is largely dependent on overall changes in government, especially the democratization process. Such changes could take place for a variety of reasons, including a declining resource situation for the government, or the realization that other actors such as private-sector and community-based organizations are in a better position to accomplish some of the tasks. Where decentralization has been accepted as an integral part of public policy, the responsibility for forest management is being transferred to subnational levels, reducing the responsibility of the central forest administration. The downsizing of public sector organizations is most often being carried out as part of structural adjustment programmes to reduce budget deficits. The possible direction of change as regards public sector involvement in forestry in Central Africa could take two broad paths as described below.

Declining capacity of the public sector

In almost all countries in Central Africa, the dominant trend is towards a continuous erosion of the capacity of the public sector (see Box 20), stemming particularly from the following factors:

- while the complexity of resource management has increased enormously over the last many years and is likely to increase still further, the human, material and financial resources available to the sector have at best increased only marginally;
- the situation has further worsened in the context of implementation of structural adjustment programmes, which have in most cases drastically reduced the capacity of public sector institutions;
- in several countries public sector forestry organizations have become highly dependent on outside support. Apart from the uncertainties arising from such dependence, this has often also distorted priorities, especially in view of the reduced capacity of the institutions. Even critical functions such as policy formulation, the revision of forestry legislation and the preparation of national forest programmes have become dependent on outside support, undermining the sustainability of such initiatives;

BOX 20

DECLINING CAPACITY OF PUBLIC SECTOR FOREST AGENCIES

In Cameroon, "the working conditions of the forest administration in charge of forestry in 1999 were difficult. The Ministry of the Environment and Forests has stopped all recruitment of personnel since 1992 and loses 10 to 15 employees per year. In the Eastern province, 116 agents are supposed to monitor more than 20 million ha with the support/aid of one single cross-country vehicle and a few motorbikes. The transport of agents in the field depends on the goodwill of the companies they are supposed to monitor"

(World Resources Institute, 2000).

In Rwanda, the working capacity of the forest administration is handicapped by the lack of human resources and equipment. Only five professional foresters (degree holders) fill the 11 programmed positions. In 1999, there were 46 forest agents available of the 189 requested. All positions of forest guards and monitors have been cancelled

(FOSA Country Outlook Paper - Rwanda, 2001)

- technical capacity has remained very weak and there has been very little investment in building up science and technology capacity, with the result that many countries continue simply to be producers of raw materials. Neither have there been any significant efforts to develop indigenous capacity based on technology transfer or the strengthening of indigenous knowledge;
- often the public sector forest agencies are perceived as corrupt and inefficient, and largely as instruments enabling those in power to appropriate public resources;
- the poor economic situation of most countries is unlikely to permit improved investment in the forest sector. As indicated earlier, the increasing debt burden, the reduction in the prices of oil and other traditional export crops and the declining industrial base on account of liberalized imports are all expected to have an impact on forestry. While the compulsion to expand logging will increase, there will be very little investment to build capacity to implement sustainable forest management. All the indications are that income from export of wood and wood products is unlikely to increase in view of the increase in global supplies.

All this would suggest a declining trend in the capacity of the public sector to fulfil most of its key functions. As its ability to function effectively as a regulatory and implementing body declines, although it still maintains *de juro* authority, other genuine actors will be dissuaded from taking positive action, while those operating in the illegal realm are likely to increase their influence. This situation is already evident in many countries.

A re-engineered public sector

An alternative path would be to redefine the roles and responsibilities of the public sector and to focus on areas that are socially and economically important and where the public sector has a definite comparative advantage. Many countries have already initiated this process of institutional reform, which takes various forms depending on the specific circumstances. In several countries most productive activities - including forest plantations and wood-based industries - are being commercialized or transferred to the private sector. There are also efforts to facilitate community participation so that some of the problems such as those of resource protection could be overcome.

Public sector agencies would thus be able to focus attention on policy-making and regulatory functions.

BOX 21

THE ROLE OF ADMINISTRATIVE AUTHORITIES IN THE DEVOLUTION PROCESS

Administrative authorities, especially at the local level, have a pivotal role to play in implementing new laws and policies involving forest and wildlife management. In practice, however, shortages of both material and human resources have rendered many such authorities redundant, leaving some as passive spectators. Their training has not prepared them to respond to the demands of developed natural resource management, and projects and NGOs have tended to sideline or even ignore them in their attempts to foster new partnerships with communities. Yet, unlike projects and NGOs, administrative authorities have a permanent stake in the process.

The casualties of this trend are many and varied. First, the state is missing a unique opportunity to take centre stage in the devolution process and reconcile itself with marginalized forest communities. Indeed, some communities may regard new laws and policies on devolution as emanating not from the government but from projects and NGOs. Second, administrative staff receive inadequate field training in participatory resource management, which partly explains their inability to participate actively. While their conflicts of interest may generate some resistance to change, this does not justify attempts to sideline them. Participatory resource management requires stakeholders to work together in establishing objectives and developing programmes to meet these. As members of the Land Consultative Board (which manages national land) and as mediators in local disputes, district heads, subdivisional officers and prefects are crucial stakeholders in this participatory process. Building dialogue and trust between administrative officials and the traditional custodians of forest and wildlife resources might help to reduce current competition for immediate and unsustainable resource exploitation.

(Egbe, 2001)

However, the situation likely to emerge in the long term depends on a number of social, economic and institutional factors. The following situations could emerge as the public sector's role is changed through a reorganization programme:

- public sector reform could lead to the development of a lean but efficient organization, providing substantial investment is made in improving its capacity to fulfil the core functions of providing a policy and legal framework and to take up activities that are unlikely to be implemented by the private or other sectors. These will particularly include the

provision of public goods and the fulfilment of social and environmental objectives;

- in many countries, restructuring may not necessarily result in the development of an efficient organization. With most of the productive functions transferred to the private sector, governments may not be able to maintain a public sector even to implement core functions. Under restructuring programmes, responsibility for resource management is in many cases decentralized. However, such decentralization is often not accompanied by concomitant investment in enhancing capacity at decentralized levels (see Box 21).

All this would suggest a very uncertain period ahead for the public sector, largely marked by a declining capacity to carry out its traditional functions. While there is a great deal of discussion on developing an effective and lean restructured public sector, current indications suggest serious limitations to this. In all likelihood, public forestry organizations in most countries will not change significantly in the next two decades, and even if change does take place, their capacity is unlikely to increase to fulfil their new responsibilities effectively.

MARKET FORCES

Parallel to efforts to reduce the role of the public sector, an increasing role is being assigned to the private sector. It is assumed that a private sector operating in response to changing market opportunities would result in improved efficiency. As part of overall economy-wide efforts, there have been increased efforts to involve the private sector and thus enable market forces to play a lead role in resource-allocation decisions. Almost all Central African countries have initiated and are in the process of implementing economic reforms. The liberalized global trade environment, especially in pursuance of the stipulations of the World Trade Organization and the economic pressure exerted by international financial institutions to implement structural reforms and to liberalize the markets, have played a key role in the emergence of the market forces scenario. In several countries utilities such as water and electricity supplies, transport and health care have already been privatized. And as part of these economy-wide efforts, privatization has been pursued in the forest sector too.

The private sector is most active in Central African forestry in areas such as the logging of natural forests, wood-based industries, tree planting on farms and the collection of non-wood forest products. It is important to consider the current situation and tendencies in each of these areas and how market forces are likely to affect future developments.

Logging of natural forests

Much of the industrial roundwood production in Central African countries, especially in the Congo basin, is in the hands of the private sector, particularly transnational companies. Most industrial roundwood production has in the past been under the control of European logging companies, although there has been an increase in the involvement of Asian logging companies in recent years. Some of the specific features of the logging of natural forests in Central Africa include the following:

- most logging focuses on a very small number of species, with the aim of maximizing income in the short term. Since access to most forests is poor, it becomes imperative to invest substantially in developing infrastructure, especially roads and logging camps. This inevitably means a dependence on firms with access to capital, thus restricting the involvement of local investors;
- this results in monopolistic tendencies, which, in the absence of a transparent system, results in significant imperfections. Much of the focus is on current markets, and more particularly the timber demand from affiliates or subsidiaries of the logging companies, and there is very little effort to adopt sustainable forest management practices;
- in the absence of development of an effective regulatory framework, current imperfections in market mechanisms are expected to persist. In many situations, what is in fact seen is the operation not of market forces but of a more organized informal sector arising from imperfections in the sociopolitical environment.

In the present context, the operation of market forces with all their imperfections is unlikely to encourage adoption of sustainable management of the forests of Central African countries. There are still extensive tracts of timber-bearing natural forests, and the cost of extraction will be largely determined by physical access to the resources. As long as the total costs are within the prices obtainable on international markets, all the indications are that logging will continue. Logging companies will attempt to keep the costs down and the rate of logging will largely be determined

by the demand for African timber in competition with timber from other sources. Demand from international markets will thus be a key determinant for the scale of logging operations in Central Africa. All other aspects of logging will be decided by the political, social, institutional and economic factors facing the logging companies.

Forest based industries

Large forest based industries have developed only recently in Central Africa. In the past, most sawlogs and veneer logs were exported, as is still the case in some countries. Wood processing has been initiated largely as a deliberate policy to increase value addition. While incentives in favour of local processing and disincentives against the export of logs may help in the establishment of wood-based industries, the future performance of these industries will again depend on their global competitiveness and their profit margins. A range of situations may emerge in this regard, altering the economic viability of processing industrial roundwood:

- a high dependence on the importation of machinery, skilled labour, etc. may reduce the profitability of local processing. This would necessitate a reduction in royalties and taxes on logs, thus undermining government income. Processing does not therefore always confer an economic advantage, especially when skills, technology and managerial capacity are lacking;
- in certain industries such as sawmilling, there may often be a rapid expansion of capacity, especially when royalties, stumpage and taxes are low. This often promotes considerable inefficiencies and undermines long-term sustainability in more competitive environments when raw material prices are market-determined.

BOX 22

INDUSTRY INITIATIVES IN SUPPORT OF SUSTAINABLE FOREST MANAGEMENT

A further initiative on the part of the private sector in humid tropical Africa towards sustainable forest management was the creation in 1995 of the "European Foundation for the Preservation of African Resources" by 14 European industrialists, among them the largest forestry and industrial investors in Africa. The objective was to create a discussion group and carry out actions for the better management of the forest heritage entrusted to them.

Conscious of their leadership role, and therefore their responsibility towards an entire profession, these same industrialists decided to propose that their colleagues as a whole join in this dynamic action for better overall management. This resulted in the creation of the Inter-African Forest Industries Association with headquarters in Abidjan and a secretariat in Paris which it shares with the European Foundation. Together the two organizations represent some 300 companies throughout humid tropical Africa. Foundation members pay an annual membership fee, part of which goes towards the financing and development of professional tools for sustainable forest management.

(Landrot & Speed, 2001)

Forest plantation management

Another important area for involvement of the private sector is the establishment and management of plantations. Current efforts for private-sector involvement in many countries (especially outside the Central Africa subregion) have largely focused on the privatization of government plantations. In discussing this, it is important to consider the wide range of actors, their objectives and the situations that are likely to develop over time.

Large-scale plantations to meet the global demand for wood and wood products

By the very nature of the activity and the large-scale investment required, industrial plantations are likely to be taken up mostly by the corporate sector. While the Congo-basin countries have extensive areas that are potentially suitable for plantations, the economic prospects of large scale plantation development are somewhat uncertain for a number of reasons. In the absence of well-developed local industries, much of the output from such plantations will have to be exported, and in this situation the viability of such efforts will depend on the comparative advantages of these countries in competition with other global producers. The situations that plantations in the Congo basin have to face include the following:

- high transport costs, especially to ports;
- possible global increases in wood production from already established plantations and their impact on long-term prices; and
- political instability and other risks, which can increase production costs.

With increasing mergers and acquisitions, the pulp and paper industry is consolidating, and the share of a small number of producers is expected to increase. These large transnational corporations will be drawing

raw material from several countries. The future of large-scale fibre plantations in Central Africa will depend on the perception of profitability and strategic control by the large players.

Small-scale plantations and woodlots

This scenario of private sector involvement, especially that of small farmers, is the dominant one in Burundi and Rwanda. Indeed, most wood supplies in these countries come from farm planting, including trees in home gardens and woodlots. And the decision of farmers to grow trees is influenced to a large extent by the following considerations:

- the profitability of tree growing in comparison with other land uses;
- the local demand for wood and wood products and the prices of these, largely because of the non-availability of wood from public land or imports (stemming partly from the poor accessibility of the area); and
- the security of land and tree tenure.

There are favourable conditions for increased private involvement in tree growing in Burundi and Rwanda, except that the high population density and the need to meet subsistence requirements result in enormous pressure on land. The following factors could also bring about changes:

- increasing social conflict, which makes tree planting risky, thus reducing investment;
- improved access, which increases supplies from other countries and could therefore depress local prices; and
- changes in the demand for products and services that compete with tree growing.

Despite the above problems, all the indications are that market forces are likely to facilitate the cultivation of trees on farms and in other areas, especially outside forests.

Non-wood forest products

The production and use of most non-wood forest products largely take place in the informal sector. However, a number of non-wood forest products are traded, some even on world markets. In view of the varied nature of these products and uses, it is hard to indicate the precise impact of the market forces scenario on non-wood forest products. The general trend, however, seems to be in the following direction:

- as long as products are available from natural forests, the intensity of collection is determined by the prices paid by intermediaries, which is in turn to some extent determined by the global market situation. Domestication starts only when natural production is exhausted or when there are clear economic advantages in domestication, especially stability of supply or lower prices;
- once domestication and organized cultivation of a product starts, then its supply will be determined by the perception of profitability, including the costs of inputs. In such a situation, non-wood forest products are affected by the boom-and-bust cycle, characteristic of most primary products.

Although a number of non-wood forest products from Central African countries are traded on the national and global markets, none of them have been domesticated or cultivated on a commercial scale. Much of the production takes place in the informal sector, and the most probable scenario, in view of the various pressures, would be depletion of resources as the scale of collection grows in response to growing demand.

Impact of market forces on forestry in Central Africa

Ideally, the emergence of market forces should increase the freedom of choice and empower a large number of actors, thus contributing to better resource management. However, in view of the overall political, social and economic conditions in Central Africa, there could be significant distortions, which would hamper the development of efficient and transparent markets. In such a situation, the dominant actors' pursuit of profit undermines equity and sustainability. Some of the key problems that are already evident include the following:

- a failure to address the disempowerment of the weaker sections of society, in particular forest-dependent communities, and outright neglect of their needs, aspirations and values;
- private-sector initiatives are largely guided by market demand and, consequently, environmental, cultural and social aspects tend to be neglected and in the event of a conflict with economic interests, the latter prevail at the cost of the former;
- most investment in Central African forestry are focused on extracting the existing wealth, with very little being reinvested to ensure long-term sustainability;
- the key private-sector actors involved in Central African forestry are transnational companies: Market-orientation policies generally help to

strengthen the position of these companies, while the private sector within the countries faces a number of inherent limitations, including access to capital and technology; in the existing sociopolitical environment, market forces tend to empower a few, while the large majority continues to be powerless, with little freedom of choice.

INFORMAL SECTOR

As is the case in most developing countries, the informal sector has historically been dominant in the economies of Central African countries. As the economies grow and the public sector and market-based transactions develop, the scope and coverage of the informal sector diminishes. However, in most Central African countries there is no indication of any decline in the informal sector, which, on the contrary, continues to be the most important segment of the economy, providing most of the employment and generating most of the income[13]. Considering the failure of the formal economies to grow and provide employment and income, the informal sector continues to play the most important role, providing livelihood for a growing number of rural and urban inhabitants.

The informal sector is particularly dominant in the forest sector, especially considering its share in the production of certain goods. Almost all woodfuel production and trade takes place in the informal sector. This is also the case for the collection and marketing of most non-wood products. As indicated below, in the Central African context, it is possible to identify two types of informal sectors, the traditional, less organized informal sector catering to subsistence consumption and a more organized modern informal sector largely dealing with high value products:

- the traditional informal sector largely deals with low-value products and caters primarily to subsistence needs. Income generated by these activities tends to be low, as most of the activities are aimed at meeting the demand for low-value products that fulfil the consumption needs of people with low incomes. More people are being pushed into traditional informal sector activities on account of diminishing opportunities in the formal sector;
- the modern informal sector arises from the failure of market forces and the public sector to develop a transparent system of resource management, making informal systems more profitable. Large-scale illegal logging, commercial bushmeat production, the illegal collection and marketing of non-wood forest products and the trade in endangered species are some of the typical activities of the more organized informal sector. Well-developed informal networks, operate a system of resource exploitation, including processing and marketing, and these networks have strong transnational links. Much of the organized informal sector focuses on high-value products.

All the indications are that in the absence of efforts to develop an effective formal sector - both public and private - and the supporting legal and institutional framework to provide the necessary space for the various actors, there is a strong tendency for the informal sector to expand. Economic liberalization without an accompanying increase in the capacity of the public sector to regulate activities and ensure compliance with policies and legislation has increased the scale of illegal logging. In such a situation, it becomes unprofitable to operate within the framework of existing rules and regulations, and those who operate legally find that they have to indulge in illegal practices or go out of business. The situations that emerge as a consequence include the following:

- since profit maximization is the main objective and those who exploit the resources do not own them, there is no interest in sustainable management. Resources that are valuable are rapidly depleted and most of the benefits are appropriated by those who control the informal networks;

BOX 23

THE INFORMAL ARTISANAL SECTOR IN CAMEROON

Artisanal sawing, which was initially confined to the forest zones around large towns, is now expanding into the more remote areas of forests. This production is primarily aimed at the local market for construction timber, while industrial logging of timber species is aimed at the export market. Artisanal sawing is generally conducted under customary or pseudo-customary rights enjoyed by populations living alongside forests. The activity of the artisanal sawyers with their chainsaws produces a significant part of the construction timber bought by the domestic market. No reliable data are yet available and often the figures quoted are estimates.

(Rural Development Forestry Network Paper, July 2001)

[13] This depends partly on the relative size of the formal sector. In some high-income countries, the formal sector, largely on the basis of high public spending (facilitated by income from oil), has diminished the size of the informal sector. Where formal-sector growth and income are low, the informal sector remains the dominant component.

- resource depletion can also be an outcome of expansion of the traditional informal sector. With an increasing number of people relying on informal forest-based activities, such as charcoal production, pitsawing and the collection of non-wood forest products - either for subsistence consumption or for local trade - depletion is inevitable. This is particularly so because most of those who operate in the informal sector do not own the resource, and also because of the lack of capacity to invest in sustainable resource management. The fact that they all operate "illegally" is a strong incentive to exploit the resources as quickly as possible.

The growth of the informal sector - both the traditional one and the more organized one - would accentuate resource-use conflicts, as is already being seen in several countries. While the more organized sector may attempt to safeguard resources by strengthening protection, there are situations where the informal sector may dominate resource use. Increasing conflicts tend to lead to a fortress scenario or, in an extreme situation, a complete breakdown of all formal arrangements. In certain areas of Central Africa - for example the eastern Congo - non-state functionaries have become the dominant force, aggravating conflicts, facilitating continued resource exploitation.

THE FORTRESS SCENARIO

The fortress scenario emerges from the intensification of conflicts over the use of resources and the response of various actors to safeguard and protect what they have appropriated. A part of the population, generally privileged, seeks to distance itself from the rest of the population, which it cannot control and from which it must be protected. It therefore locks itself up behind regulations and walls in a kind of fortress. Particularly as the informal sector expands, the resources under the control of the public and private sectors come under increasing pressure and there is generally a breakdown in law and order. Rather than addressing the fundamental problems, those who are better-off then attempt to safeguard their wealth by investing more in protecting what they have. Typically this involves more investment in security services, virtually creating a fortress around their domain[14]. The fortress situation is one of the outcomes of the failure to develop good governance and to create a just and equitable society.

Fortress situation in forestry

Although population density is low and demand pressure is still manageable, there are indications of the emergence of a fortress situation in forestry in a number of Central African countries, spreading from the rest of the sociopolitical environment. With the organized informal sector becoming a dominant force, protection of national parks and other valuable forests is becoming increasingly difficult. Governments and the private sector increasingly have to invest in improved security measures, employing more armed guards and patrols to protect forests and other assets. However, the costs of these protective measures are high and have an impact on economic development. In the case of most of the protected areas, maintaining the level of protection requires increasing outlays on security measures, including fencing critical areas and facilities. Increased poaching of valuable timber is being countered by increasing the number of armed guards and the frequency of patrols.

Evolution of the fortress scenario

The fortress scenario also evolves over time, depending on overall changes in the social, political and economic environment and how the various actors respond to the situation. Broadly, there are three paths for the evolution of the fortress scenario:

- the fortress situation will persist when those in power (who are allied to those who own and control the resources) continue with the policies and approaches that have led to the situation and are reluctant to bring about changes that address the basic causes of the initial emergence of the fortress situation. As long as the resources are valuable (or until all the valuable products are appropriated and transferred to safer havens) and the fortress strategy is less costly than other options, the situation is likely to persist;
- beyond a certain point, the fortress situation also becomes unviable. This is particularly so when the informal sector expands and increases the pressure on the areas that are protected by the government or the private sector. Then the fortress virtually breaks down, resulting in a scenario often referred to as barbarization. Essentially in such a situation, armed gangs and the force of coercion rule society and resource use (see Box 24). The survival of the fittest

[14] The fortress situation can be seen at different levels and is aimed at isolating and protecting households, localities, countries and regions from different kinds of perceived threat. Physical barriers (razor-wire fences, armed guards and guard dogs, for example) and legal barriers (tough immigration laws, for example) are some of the more widely used tools to create and maintain fortresses at different levels.

BOX 24

THE SITUATION IN THE DEMOCRATIC REPUBLIC OF THE CONGO

Exploitation of the natural resources of the Democratic Republic of the Congo by foreign armies has become systematic and systemic. Plundering, looting and racketeering and the constitution of criminal cartels are becoming commonplace in occupied territories. These criminal cartels have ramifications and connections worldwide, and they represent the next serious security problem in the region.

(United Nations, 2001a)

becomes the order of the day. Social fabric and cohesion are torn apart, making economic and social development impossible;

- a reversal of the fortress situation is also possible, provided the society collectively addresses the problem of social and economic polarization and serious efforts are made to tackle inequity, poverty and deprivation. There have been some steps in this direction within the forest sector, and increasing efforts are under way to facilitate community participation in resource management, particularly ensuring that local communities share the benefits. However, in the Central African situation such initiatives are in the early stages, and if they are to make an impact, substantial efforts will be needed to empower local communities and to develop an effective policy and legal framework. Such measures in fact go far beyond the forest sector and would require improvements in governance, accountability and transparency, as described in the scenario of the Great Transition.

THE GREAT TRANSITION

Considering the deficiencies of the earlier scenarios and the strong tendency for the development of a fortress scenario or barbarization, it becomes imperative to move into the Great Transition scenario. African countries are in the process of identifying the options, and there has been considerable discussion within the broad framework of the African Renaissance. A radical transformation of the way in which economies are organized is one of the key concerns of African leadership. These debates focus on such issues as sustainable development and the strengthening of the sociopolitical framework, including the resolution of conflicts, emphasis on human rights, freedom and justice, and the promotion of democracy and wider participation of the people in social, political and economic processes. These ideas have been well articulated in a number of recent initiatives.

The main thrust of the Great Transition scenario is to enable all segments of society to be active participants in the overall development of society and thus to avoid the alienation and deprivation characteristic of some existing arrangements. The desire to pursue the development of such a society is evident from certain initiatives such as the New Partnership for Africa's Development (see Box 25), the New African Initiative and its earlier versions such as the OMEGA Plan, or the Millennium Partnership for the African Recovery Programme.

Forestry and the Great Transition

BOX 25

FOCUS OF THE NEW PARTNERSHIP FOR AFRICA'S DEVELOPMENT (NEPAD)

- strengthening mechanisms for conflict prevention, management and resolution at the regional and continental levels and ensuring that these mechanisms are used to restore and maintain peace;
- promoting and protecting democracy and human rights in their respective countries and regions, by developing clear standards of accountability, transparency and participatory government at the national and subnational levels;
- restoring and maintaining macroeconomic stability, especially by developing appropriate standards and targets for fiscal and monetary policies and introducing appropriate institutional standards to achieve these;
- instituting transparent legal and regulatory frameworks for financial markets and the auditing of private companies and the public sector;
- revitalizing and extending the provision of education, technical training and health services, with high priority given to tackling HIV/AIDS, malaria and other communicable diseases;
- promoting the role of women in social and economic development by reinforcing their capacity in the spheres of education and training, developing revenue-generating activities by facilitating access to credit, and assuring their participation in the political and economic life of African countries;
- building the capacity of states in Africa to set up and enforce a legal framework, as well as maintaining law and order;
- promoting the development of infrastructure, agriculture, and diversification of the latter into agro-industries and manufacturing in order to serve both domestic and export markets.

The Great Transition reflects a long-term vision for the African social, political, economic and cultural environment, and it is hence imperative for forestry to take this into account and reorient itself in order to contribute to its accomplishment. The main focus would be to empower all the key actors to play a more positive role in order to reach a "win-win" situation. Most of the prevalent scenarios empower only a small section of society, while the rest are disempowered, drastically reducing their freedom of choice. The Great Transition combines some of the positive options under each of the main scenarios described, within the larger framework of wider empowerment, democracy, transparency and accountability. The key features of the Great Transition would include the following:

- a very active civil society that is able to articulate the larger social, economic, cultural and environmental issues relating to forests and forestry and to influence decision-making at all levels, ensuring transparency and accountability;
- a policy and legal framework enabling all the major actors, especially rural communities, to participate in resource management; mechanisms for resolving resource-use conflicts would be in place and ethical principles would become the guiding factor in decisions;
- an effective market mechanism, especially a level playing field, enabling the private sector to flourish and contribute to overall economic development; and
- a revitalized public sector that effectively plays a facilitating role, enabling other actors to play their roles, maintaining a level playing field and helping to resolve conflicts.

Elements of the above can already be seen in some countries. However, the ideal situation requires much more integrated effort, encompassing all the sectors. Specifically this should aim at:

- integration of the conservation and management of forest and tree resources into the overall policies of economic development, which should be fully reflected in the formulation and implementation of policies in other sectors;
- necessary and sufficient conditions for the effective operation of a market system, while boosting corrective measures that incorporate environmental and equity considerations;
- encouragement of local initiatives and innovation, improvement of traditional knowledge and support for the development of appropriate management practices; those undertaking or supporting such initiatives should be able to visualize the break and branch points and pursue developments that do not preclude future options;
- a situation in which civil society and local community organizations play leading roles in managing resources and improving systems for conflict resolution, and community management becomes more widespread, involving not just the transfer of management responsibilities, but also systematic support to strengthen the capacity of communities to manage resources in a sustainable way;
- a clear understanding of the ground rules for sustainable management, with adequate checks and balances at all levels in order to ensure compliance;
- full recognition of the traditional informal sector, which has been neglected until now, with efforts being initiatied to improve its effectiveness instead of suppressing it as illegal; support to improve

BOX 26

MOTO NA MOTO ABONGISTA (EVERY CITIZEN BRINGS HIS CONTRIBUTION TO THE DEVELOPMENT OF THE COUNTRY)

The development of the forest sector is under the control of citizens' movements, independent syndicates and professional organizations. The public services intervene through economic and forestry policies. They can also regulate users of forest resources (including those who are in the formal sector) through legislation, fiscal policies and/or interventions. Forestry operators play a role in improving the way of life of rural inhabitants.

Public programmes reduce the level of soil erosion, follow up the contribution of the forest sector in the socio-economic development of rural inhabitants and manage better the exploitation of forest products (wood and non-wood) and the production of environmental services, notably around cities, as well as the industrialization of industrial wood production. In this regard, the creation of an "observatory" or watch dog for industrial timber production and innovative agroforestry initiatives ensures the sustainability of forest resources.

The financing of public actions will first be national. Any additional contributions will be considered as extra help so that shortage does not inhibit implementation. Even though public funds are sometimes small and unpredictable, they are better managed. Citizens' movements - which progressively increase in number - monitor and put forward measures to correct distortions.

(Ndinga & Dondyas, 2001)

technology and skills helps to make it more efficient as well as improving the livelihood of those who depend on it; most informal activities should eventually be brought under more transparent formal systems;

- coordinated efforts at the national, regional and global levels, involving governments, the private sector, civil society organizations and international agencies, in order to combat the development of the organized informal sector, which has perverted the system of resource exploitation in Central Africa;
- elimination of the feeling of alienation characteristic of the total domination of market forces or government control, with society at all levels seeing the strong link between social welfare and the sustained production of goods and services from forests and other natural resources, while the social, cultural, aesthetic and spiritual dimensions of forests receive adequate recognition at all levels and are not set in second place to economic values;
- development of information technology - through concerted action by governments, NGOs, the private sector, community groups and civil society - so that it responds to the needs of the poorer sections of society, thus enabling them to take resource management into a more sustainable path; with improved access to information, individuals and communities are able to take advantage of emerging opportunities and avoid some of the negative outcomes.

Many options are available to achieve the objectives of the Great Transition. Long-term planning will certainly help decision-making to select the best option for a specific situation. A good balance between the conservation and use of forest resources - as well as between the responsibilities of the various players involved in sustainable management - will be required. For example, development policies concerning the wood-processing industry, intersectoral cooperation and the harmonization of forest laws and regulations will have to be regularly updated and reformulated. New mechanisms and tools to implement policy objectives and lead progressively to a better vision of the forest sector in 2020 are still to be identified and developed.

THE REAL WORLD SITUATION

All the scenarios are dynamic and change in response to their specific limitations, depending on how the driving forces change over time. Failure to address the problems in each of the scenarios could result in increased resource-use conflicts, often ending up in a fortress scenario, which, if not addressed, could even lead to complete socio-economic breakdown. Addressing these problems provides an opportunity to move towards the Great Transition:

In reality, all the above scenarios could exist together. This is especially true in forestry, which has many objectives and functions. With the passage of time, and depending on the changing strength of the various actors, one scenario could lead into another.

The scenarios described earlier provide a broad framework for analysis of specific issues and indicate what may happen under different circumstances. However, it is hard to indicate the precise path and nature of any transition, especially considering the unpredictability of events. Broadly speaking, analyses of the scenarios help to indicate what is likely to happen given the various driving forces, and what may be done to move from a less desirable situation to a more acceptable one, the ideal being the shift to the Great Transition. These are discussed in the next two chapters.

Chapter 5

Consequences for forestry and wildlife

Considering the driving forces and the scenarios discussed in the previous sections, it is important to examine what is likely to happen in the forest sector in Central Africa in the next 20 years. In view of the long time horizon, the unpredictability of events and the actions or responses of the various actors, it is hard to give any precise indication of the likely developments. It is also important to make a distinction between what may happen and what ought to happen. Much of the emphasis in the present chapter is on the former, so that decision-makers at all levels gain an idea of the situation that may be reached if the driving forces and scenarios described earlier remain valid. Such an analysis provides an indication of what needs to be done to change the course of developments to reach a more desirable outcome.

Central Africa is the most forest-rich subregion in Africa. However, for various reasons this full potential has not been realized. Unlike other subregions, the forest resources do exist in Central Africa, but the question is whether the willingness and capacity to implement sustainable forest management exist or not. The subregion has a real potential to develop strong wood-based industries, taking advantage of the vast area of forests that still exist and contributing to broader development objectives such as poverty alleviation. However, existing political and social dynamics and global changes, especially as regards the markets for wood and wood products, would determine the scope for realising the potential. These aspects are analysed in this chapter.

SOME KEY QUESTIONS

The future of forestry and wildlife in Central Africa can be examined on the basis of a number of questions concerning the state of resources, the flow of goods and services, and the impact of these on key development objectives. The following are some of the most pertinent questions:

- Central Africa is the most forested subregion in Africa. In view of the impact of the various driving forces and the various possible scenarios, what will the situation of forest cover in the subregion be by the year 2020 ?
- What is the likelihood of Central Africa's emerging as a major source of sustainably produced wood and wood products ?
- What scope is there for the development of plantations, and under what conditions are they likely to become viable ? Do Central African countries have any long-term comparative advantage in this regard ?
- What is the likely change as regards demand and supply of industrial roundwood and other products ?
- Central African forests are extremely rich in their biodiversity and other environmental services. What is the potential of these to become a major plank in economic development ? Will there be a significant change in the way they are managed now ? Could Central Africa be in the forefront as a producer of global public goods ?
- What is the potential to enhance the contribution on non-wood forest products to sustainable development ?
- There is considerable dependence on woodfuel as a source of energy in most Central African countries. Is this likely to change in the near future, helping to overcome the problems associated with the energy crisis ?
- How could forestry address the pervasive poverty in the subregion ? What could be its most effective role in this regard ?

Answers to the above questions will provide some indication of the overall outlook for Central African forests and forestry in the next 20 years.

THE OUTLOOK FOR THE FUTURE

Changes in forest cover

Taken overall, the population density in Central Africa is low in comparison with other subregions, and this would suggest a low level of pressure on forests and hence low levels of deforestation. Between 1990 and 2000, however, Central Africa lost about 9.3 million ha of forests, accounting for about 19 percent of Africa's deforestation. The fact that the subregion has the lowest population of all the African subregions (about 12 percent of the African total) and an overall low population density has not necessarily resulted in a low

BOX 27

FUTURE OF CONGO BASIN FORESTS

The Congo Basin is often thought of as a region of vast frontier forests, yet recent modelling studies suggest that over the next 30 years many forest areas in the region will come under much greater pressure from a combination of economic development and increasing population. Given present trends, some large tracts will remain intact, but much of the region's forested area is almost certain to undergo a transformation from old-growth forest to degraded forest or secondary forest, or to agriculture.

(CARPE, 2001d)

rate of deforestation. The belief that it has vast areas available for other land uses is expected to persist, contributing to a high rate of forest-cover removal. Although in terms of the change in forest cover, Burundi and Rwanda have the highest annual rates (9 and 3.9 percent respectively), the absolute change in area is fairly low, largely because most forest areas that are suitable for agriculture have already been converted and there is much less scope for further conversion.

Interestingly, most of the forest-cover reduction in Central Africa has taken place in the Democratic Republic of the Congo and Cameroon, which together account for an annual loss of 754 000 ha or about 80 percent of the subregion's total forest-cover reduction. Both countries have pockets with a very high population density and open to migration from the more densely populated neighbouring countries. The population density in Cameroon and the Democratic Republic of the Congo is expected to reach 50 and 39 inhabitants/km^2 respectively by 2020. The situation is further compounded by the following factors:

- the pressure on land is growing on account of the decline in income from petroleum and cash crops. Unless the industrial and service sectors grow rapidly, the additional population will have to depend on agriculture. The long-term decrease in income from cash crops would suggest emphasis on subsistence agriculture, including shifting cultivation. With their current capacity levels, government forestry organizations may be unable to curtail the expansion of cultivation to forested areas;
- although the current system of selective logging is not in itself an immediate cause of the decrease in the area under forests, it does play a significant role in opening up fresh areas and improving accessibility. Many existing logging concessions could pave the way for more drastic land-use changes in the next two decades;
- how some of the existing and future secondary forests will be managed is an important issue calling for careful consideration. The poor accessibility of primary forests is in a way forcing the adoption of selective logging. However, once areas become accessible and the supply of more valuable species decreases, there will be increasing pressure to use the large number of secondary species as well as smaller-dimension trees. Depending on global demand, some of the more easily accessible areas could be subjected to intensive logging, almost to the extent of clear-cutting. This will be a major factor, significantly reducing forested areas;
- in view of declining prices and the dismantling of support systems, cash-crop production is unlikely to remain a major threat to forests. However, there could be a growing interest in livestock management, especially in view of the increasing global demand for "naturally produced" meat. Some countries with a low population density could become new frontiers for the expansion of cattle ranching, which could emerge as an important contributing factor in deforestation.

All the indications are therefore that forest-cover reduction in Central Africa is likely to persist, quite possibly at a much higher rate than was observed between 1990 and 2000. The unpredictability of the multiple factors involved makes it hard to give a precise forecast of the area that will be deforested. Being a low population-density area with considerable agricultural potential, Central Africa will remain one of the frontiers of agricultural expansion, with a consequent reduction in forest cover.

Sustainable management of natural forests and development of wood-based industries

An important change in the past ten years as regards forestry in Africa is the emergence of Central Africa as the leading producer of tropical timber. Most of the timber produced in the past was exported, and despite the restrictions imposed by governments, a large proportion of wood is still exported as sawlogs and veneer logs. Considering the driving forces and the scenarios discussed in earlier sections, the most important question is whether Central Africa could emerge as a leading producer of tropical wood and wood products. To answer this, it is necessary to examine both the future of sustainable management of

Central African forests and also the technical, economic and institutional aspects of wood processing. Strengths and weaknesses with regard to these issues are discussed below.

Issues relating to sustainable forest management

The main issues relating to sustainable forest management in Central Africa are as follows:

- despite the operational ambiguity as to what constitutes sustainable forest management (which has been made to appear very complex partly on account of disparate efforts to define sustainable forest management and to come up with an all-inclusive set of criteria and indicators), there is some understanding of what is obviously unsustainable. However, the commitment to following even simple guidelines has been inadequate. In other words, the existing situation - a weak forestry organization with inadequate commitment and capacity, combined with widely spread-out legal and illegal logging operations-favours the continuation of unsustainable management;
- current logging focuses on a very small number of high-value species. A selective felling system is in theory sustainable if there is sufficient regeneration and the felling cycles are sufficiently long to permit the filling up of gaps and the maturation of trees from the lower-diameter classes. However, there is no example of the completion of a full felling cycle and most logging companies continue to rely on logging old-growth forests. In all probability, areas logged earlier or being logged now are likely to be abandoned once the logging is completed, remaining unmanaged until the next wave of logging starts; then, as soon as the demand for less-used species increases, they will be harvested fairly intensively, almost to the extent of clear-cutting. Once an area is opened up and accessibility improves, there is a distinct possibility that it will be converted to alternative land uses, especially agriculture. This is already happening in Central Africa, undermining the concept of sustainability. Governments often license concessions with the explicit aim of opening up the area for other land uses, so that some areas are bound to be removed from the forest estate;
- the most important aspect of managing a tropical natural forest sustainably is the regulation of logging operations and the implementation of pre- and post-logging silvicultural operations. There have been several studies on reduced-impact logging, most indicating that in the long run reduced-impact logging is more profitable than conventional logging. However, despite the large concessions of some of the logging companies, most of them operate with a short time horizon, making conventional logging more attractive. More important, implementation of reduced-impact logging requires substantial initial investment, especially in training logging crews, changing the layout of road and extraction paths, etc. The private sector is not keen to invest resources in improved logging, while government agencies do not have the capacity to monitor and enforce sustainable forest management;
- although no precise information is available, illegal logging is a major problem in most Central African countries. This illegal logging has international ramifications, and governments are often not in a position to prevent such activities. In such a situation, it is obviously almost impossible to enforce any kind of regulation, while those who are operating legally and are keen to adopt sustainable management are discouraged from doing so.

The above situation would imply that sustainable forest management may not be adopted widely and will at best find a place in some of the donor-initiated and -supported activities. There are several issues here, such as the strengthening of policies and institutions, the improvement of governance and increased pressure from civil society organizations. If the current trends are any indication, unsustainable logging may continue to sweep through most of the productive forests of Central Africa in the next two decades and a significant shift towards sustainable use may not emerge for another 10 or 20 years.

Wood-based industries in Central Africa

There is an increasing emphasis on the development of wood-based industries in Central African countries and thus on increasing domestic value addition. A number of governments have imposed a complete ban on log exports, primarily with the objective of encouraging domestic processing. In countries such as Cameroon there has been significant growth of the sawmilling industry in the last few years. Since most wood-based industries cater to export markets and most investment in these industries comes from outside, the perception of the private sector with regard to the comparative advantages of domestic processing vis-à-vis exporting logs will be a primary determinant of the growth of

BOX 28

TRENDS IN THE PROCESSING OF TROPICAL TIMBER IN EUROPE

In general, production of tropical sawnwood, veneer and plywood within Europe, from tropical logs, is thought likely to decline in the future. The reasons for this are primarily restrictions on log exports by producing countries and the development of processing industries in the exporting regions (often owned or managed by European companies). Additionally cheaper labour supplies in the producer countries compared to the relatively high labour and production costs in Europe, make imports of processed products more competitive. Where conversion does still take place in Europe this is likely to become more specialized, with sawmills producing more and more finished products for manufacturers or end users within Europe.

(FAO, 2001b)

wood-based industries in Central Africa. Many logging companies have subsidiaries or affiliates in log-importing countries, and their willingness to relocate processing to Central Africa will be determined by their perception of the comparative advantages of doing so. Some of the probable directions of development in this regard could be as follows:

- a substantial increase in investment in processing, especially sawmilling and veneer production, could be expected in most countries, especially in those seen as politically stable;
- much of this would be technology- and skill-intensive, and to this extent employment-generation within the countries would tend to be limited;
- to encourage such investment, most governments are likely to provide incentives, including tax concessions and low royalty rates for timber. The ongoing process of economic liberalization would encourage this;
- while the traditional Western European markets will tend to be selective and there will be increasing pressure to produce products from wood obtained from sustainably managed areas, changes in the direction of trade, with Asia becoming the main destination, may have an adverse effect.

All the indications are thus of a boom in wood-based industries - mainly sawmilling and plywood production, and possibly medium-density fibreboard production - in Central Africa, concentrated particularly in countries that are politically stable and economically more open. Unless a clear long-term strategy is developed, this boom will have the following weaknesses:

- in their pursuit of the development of wood-based industries, governments may be inclined to give a number of incentives to industries - including wood supply at reduced royalty rates, tax incentives, etc. - so that the net effect on the economy in terms of income and overall contribution to social and economic development may be insignificant;
- much of the industry will be technology- and skill-intensive, and unless efforts are made to improve the professional and technical capacity of local workers, much of the benefit of employment-generation will accrue outside the country;
- this forest industry boom may last for one or two decades, after which, as has happened in other regions or countries, a decline will set in when the supply of cheap wood from easily accessible areas diminishes.

In conclusion, all the indications are that Central Africa may lag behind in establishing a strong and effective system of sustainable forest management over the next 20 years. A substantial proportion of logs will continue to come from unsustainably managed areas or from land made available for non-forestry land uses. Also there is likely to be a rapid growth of wood-based industries in some countries. The overall situation is unlikely to be conducive to the development of strong, sustainable wood-based industries. Benefits accruing to governments by way of income and to local people by way of employment may not be commensurate with the incentives that governments will have to provide to attract investments.

Prospects for industrial plantations in Central Africa

As indicated in chapter 2, plantations now account for a very small proportion of the area under forests and most of them are in countries with high populations and low forest cover, such as Burundi and Rwanda. While most Congo-basin countries have the distinct advantages of land availability and a low population density, large-scale industrial plantations are unlikely to be developed for a number of reasons:

- since traditional industries such as sawmilling and plywood production will be largely catered to by timber supplies from natural forests, there will be no incentive to establish plantations to produce sawlogs or veneer logs. The only probable area of investment would therefore be that of the production of short-rotation pulpwood;
- considering the large global pulp and paper capacity, Central Africa is unlikely to become the site of investment in the pulp and paper industries in

the near future, particularly in view of the very limited internal demand. Investment in this sector has to come entirely from transnational corporations, and Central Africa is unlikely to attract such investment at present, considering the long pay-back period, the high investment required and the political instability in many countries. If plantations are established, they will therefore be geared to producing pulpwood for export;

- with a significant increase in the global area under industrial plantations in the past ten years, world pulpwood production is expected to increase considerably in the next ten to twenty years, as some of the large plantations reach maturity and are harvested. There are indications that prices may drop significantly. The experience of the Shell plantations in the Congo is an indicator of what may happen in the future. Considering this situation, the private sector is unlikely to invest in large industrial plantations in Central Africa;
- another factor that may limit the scope of large-scale plantation development in Central Africa is poor accessibility and consequent high transport costs. Transport infrastructures and distances from ports will be of critical importance, particularly if the wood is to be exported.

All these factors would suggest that the weaknesses (inaccessibility and distance from markets) and threats (a large increase in global supplies, a decline in prices, and political and institutional instability) would significantly outweigh the strengths (availability of land) and opportunities (high productivity).

In the more densely populated countries, there may be increased efforts by landowners to establish small woodlots and raise trees on homesteads, largely in response to the increasing local demand. This is already evident from the extensive tree planting undertaken by landowners and often supported by governments. As long as there is security of tenure and political stability, such planting is likely to increase, boosting the supply of wood for local consumption.

Demand and supply of forest products

Production and consumption of wood and wood products

The overall trend in the production and consumption of important forest products in Central Africa during the next 20 years is given in Table 13.

The above estimates, although have their limitations, indicate some broad trends. On the whole, Central African forest industry is focused on production of low-value added items like industrial roundwood, sawn timber and wood-based panels. A substantial proportion of this will be exported, because investments in these industries are primarily aimed to cater to external markets. Also the internal demand is low on account of the limited purchasing power. As regards higher value added items like paper and paper products, Central Africa is almost completely dependent on imports and all the indications are that this situation will persist during the next two decades.

TABLE 13
Estimated production and consumption of selected forest products*

Product	2000	2010	2020
Industrial roundwood (million m^3)	12.7 (9.4)	15.7 (11.2)	19.2 (13.2)
Sawn timber (million m^3)	1.15 (0.40)	1.26 (0.45)	1.35 (0.52)
Wood-based panels (000 m^3)	326 (118)	404 (156)	429 (184)
Paper & paper-board (000 tonnes)	3 (46)	0 (55)	0 (66)
Printing & writing paper (000 tonnes)	0 (15)	0 (23)	0 (27)

* Estimated consumption is given in parenthesis
Source: FAO, 2002; Rytkönen, 2001.

Global changes in demand and supply

Considering the high dependence of Central Africa on global forest products markets, it is important to consider the likely changes in global demand and supply and the emerging opportunities and challenges that the wood and wood products exporting countries in the subregion have to address in the future. As noted earlier, during the last one decade there has been a significant change in the direction of forest products trade from Central Africa in response to the growing demand from Asia, especially China. Largely this has been due to the rapid growth of the Chinese economy and the logging ban imposed there in response to the environmental problems. All the indications are while there may be some increase in wood supplies, demand is unlikely to grow very much and this may depress the prices affecting the income from export of wood and wood products.

- currently the annual harvest from several countries, especially Russia and Eastern Europe, is far less than the increment. Russian harvest is about 16 percent of the annual increment and in the case of Baltic countries it is only half of the increment. As investment in infrastructure improves, there is likely to be a substantial increase in the wood supplies from these countries. The net annual

incremental growth of US and some European hardwoods is also exceeding the annual cut (see Adams, 2003) and this could enhance the competition in some of the higher-value markets, affecting the prices of African timber;

- there has been a rapid expansion of plantations, notably in the Asia-Pacific and Latin America. As these plantations are harvested, there will be a substantial increase in the wood supplies and this could significantly depress the global wood prices. As wood supplies from plantations increase, even China's import requirements are likely to decline (see Box 29).

This would suggest that Central Africa and other wood producing subregions will have to look for new markets. Increasing demand from adjoining subregions, especially North Africa and West Africa seems to provide an opportunity. Trade of wood from Central Africa to North Africa has increased in the recent years. With improvement in access, there is further scope for boosting trade, although Central African timber will face very stiff competition from imports from Europe, especially when the Euro-Meditarranean Free Trade Zone becomes functional. West Africa, especially Nigeria, will be another potential market, provided there is significanrt growth in income.

In short Central African countries will be facing a very different market situation than what its is today. Prices of most wood and wood products are likely to decline, and an increase in the logging is unlikely to result in an increase in the income. There is however an opportunity stemming from the increase in demand from North Africa and West Africa and it may be advantageous to explore the future potentials of these markets.

BOX 29

ASIA AND THE DEMAND FOR TROPICAL TIMBER

The prospects for growth in demand in Asia are very mixed. In Japan, for example, the consumption of wood and especially of tropical wood products has been declining for several years and demand in the tropical-timber consumer countries of India, Korea and Thailand is also weak. It is only in China that demand for commodity wood products is growing.

Every producer, tropical or not, will look to the Chinese market for growth and there is no doubt that the opportunities are good. But a word of caution: China already has a huge plantation stock. It is working hard to improve the productivity of these plantations and at the same time is investing heavily in new plantations. The challenge for both hardwood and softwood producers looking to the Chinese market will really begin when China invests in new capacity for producing manufactured boards such as oriented strand board, laminated veneer lumber and high-end fibreboards to absorb the plantation timbers and provide a substitute for imports.

(Adams, 2003)

Central Africa and the provision of global public goods

The Congo basin harbours the second largest block of tropical rainforest in the world and is known to be extremely rich in biodiversity, although the absence of detailed studies prevents any estimate being made regarding this diversity, especially in terms of species and genetic stocks. There is considerable interest at the global level in conserving Congo basin forests for the provision of global public goods, especially their biological diversity and their role in global climate improvement, notably through their function as a carbon sink. Without going into the merits of the claims, the critical question is whether Congo-basin forests can maintain their importance as a source of global public goods in view of the driving forces and scenarios described in earlier chapters. The following issues are important here:

- the basic question is that of who will pay for the public goods, including the costs that the Congo-basin population has to bear in order to ensure the flow of global public goods. The costs could be substantial, inasmuch as people have to alter their behaviour significantly and forgo some of the benefits they currently enjoy. International support through official development assistance and non-governmental organizations has had only limited overall impact. Even when international support has brought about policy changes, these have not been sustained when such support comes to an end;
- protecting biodiversity and maintaining the provision of global public goods would require a significant shift in the approach to development. The most prevalent scenarios of resource use - public sector, market forces, informal sector and fortress dominance - are not conducive to sustainable development and the prospects of orienting Congo basin forest development primarily to the provision of global public goods are therefore extremely limited;
- Central Africa already has a large extent of protected areas. However, there are limits to the

strategy of expanding such areas on account of resource constraints, and the quality of protection is often far from satisfactory. A variety of factors, such as poor accessibility and the lack of security, undermine the revenue-earning potential of even some of the unique protected areas. Under these conditions, the further expansion of protected areas is unlikely to be a viable option. Hunting for bushmeat, both for subsistence consumption and trade, has become a major issue in the conservation of wildlife. As is the case with other problems, the bushmeat crisis is a symptom of a larger problem, suggesting a worsening of the situation unless there are efforts to improve the overall socio-economic conditions of the people;

- most important, international stakeholders tend to focus more on such issues as the role of Congo-basin forests in the provision of global public goods, while the perceptions of the main actors - the people of the Congo basin - are seldom taken into account. This often results in simplistic and impractical approaches that are unlikely to find wide acceptance.

While recognizing the significance of Congo basin forests in the provision of global public goods, it is therefore important to bear in mind that unless some of the fundamental problems relating to poverty and the inequitable distribution of wealth and power are resolved and the people of the Congo basin see the advantages of being key players in the provision of global public goods, the current level of efforts is unlikely to have any significant impact.

Potential of non-wood forest products

As discussed earlier, the rich biodiversity in the subregion forms the base for a variety of non-wood forest products, providing sustenance to a large number of people, especially forest-dwellers. Changes in the nature of use of non-wood forest products will largely depend on changes in income and lifestyles of the people, demand for different products and the nature of investments that the demand will result in. The overeall situation that may emerge in the next two decades could be summarised as follows:

- since income of the majority of the population living in rural areas, is unlikely to increase substantially, the dependence on forests to provide a variety of products will continue. Most extraction of non-wood forest products will be to meet subsistence needs. There will be neither the incentive nor the capacity to invest in the sustainable management of most of the non-wood forest products. However, in view of the low population density and the limited level of subsistence consumption, demand is unlikely to exceed supplies;
- there will however be a rapid expansion of exploitation of a limited number of commercially valuable products. Uncertainty of tenure, insecurity and the lack of information on long-term demand and supply would however result in over-exploitation (as is the case with bushmeat - see Box 30);

BOX 30

ISSUES IN RESOLVING THE BUSHMEAT CRISIS

The following are some of the important issues identified by the Alternative Protein and Income BCFT (Bushmeat Crisis Task Force) Working Group:

- hunting of wildlife for food is a greater immediate threat to wildlife than is deforestation in most tropical forest areas;
- if per capita consumption doesnot change, demand for bushmeat is likely to double with the human population by 2025, and may be 16 times higher than it was in 1990;
- most bushmeat is consumed because it is less expensive or more (readily) available than is the meat of domestic livestock. Some bushmeat is however, eaten as a luxury item by wealthy consumers during festivals;
- as most wildlife populations are not growing as fast as human populations, hunting and eating of bushmeat will become increasingly untenable, unless a significant portion of demand for meat is supplied by livestock;
- hunting is vital to families without access to agricultural markets, or to those too poor to purchase other sources of meat;
- rising crop shipping costs associated with the progressive collapse of the region's road system since the 1960s, falling agricultural commodity prices, devaluation of the Central African Franc in 1994 and a reduction in the petrodollar fuelled urban jobs, have combined to limit the economic options of rural farmers and increase the value of bushmeat both as a food and a source of income;
- without major road construction and reconstruction and without agricultural commodity pricing reforms it is unlikely that hunters, traders, market resellers and restauranteurs will find alternative economic options and thus will have little incentive to cease their participation in the relatively lucrative bushmeat trade.

(Wilkie & Somé, 2001)

- there may be some domestication of a few of the non-wood forest products, especially medicinal plants to cater to the growing demand, especially from external markets. Largely this segment of non-wood forest products will be dominated by private investors. Much of this will be geared to produce raw material for exports to overseas markets and therefore the extent of in-country value addition will be very limited.

Energy needs and the role of woodfuel

As indicated in chapter 2, woodfuel consumption in Central Africa accounts for about 90 percent of roundwood production, and all the indications are that woodfuel will continue to be the most important forest product in terms of the quantity produced and consumed in the next 20 years. Table below gives an indication of the projected trend in woodfuel consumption upto the year 2020.

TABLE 14
Estimated woodfuel consumption in Central Africa 2000–2020

Country	2000	2010	2020
	(000 m^3)	(000 m^3)	(000 m^3)
Burundi	8 790	10 456	11 967
Cameroon	9 958	10 990	12 041
Central African Republic	6 357	6 770	7 094
Chad	7 019	8 537	10 083
Congo	1 153	1 336	1 551
Democratic Republic of Congo	72 707	86 114	103 056
Equatorial Guinea	199	221	249
Gabon	531	559	583
Rwanda	9 592	10 512	11 057
Sao Tome and Principe	119	135	147
Total	**116 425**	**137 160**	**157 828**

Source: Broadhead *et al.,* 2001.

All the indications are that woodfuel consumption will increase at an annual rate of about 1.5 percent between 2000 and 2020. Evidently the growth rates will vary across the countries. Woodfuel consumption in the Democratic Republic of Congo and Chad is expected to increase at an annual rate of about 1.8 percent. At 0.4 percent, Gabon will have the lowest growth rate of woodfuel consumption in the Central Africa subregion. The fact that some of the countries like Cameroon, Gabon, Congo, and Equatorial Guinea have relatively low consumption of woodfuel suggests the link between income and availability of alternative fuels and woodfuel consumption. The key questions relating to woodfuel consumption in the future are: .

- Will there be a significant shift away from woodfuel use, taking into account the potential for its replacement with commercial fuels ? and
- What are the consequences of continued dependence on woodfuel for forests and the environment ?

An attempt is made to speculate some answers, taking into account the driving forces and scenarios discussed in earlier chapters.

Replacement with alternative fuels

Since market forces will be the most important determinant of the use of commercial fuels, any shift from woodfuel will depend on changes in the supply of and demand for commercial fuels such as electricity and liquified petroleum gas (LPG). Central Africa has a very high potential for increasing the supply of electricity (primarily from its water resources) and LPG. Hydropower from the Inga dam in the Democratic Republic of the Congo is already supplying electricity to a number of adjoining countries and there is huge untapped potential in the Congo-basin countries. Similarly a number of countries are oil producers and are in a position to increase the supply of LPG.

While there are no major obstacles to increasing supplies of commercial fuels, the main bottleneck will be the low demand on account of the limited purchasing power arising from low household incomes. Countries with a relatively high per capita income and with most of the inhabitants living in urban centres, for example Gabon, have been able to provide commercial energy, so that the per capita consumption of woodfuel is very low. Considering the low levels of income in several countries and the anticipated sluggish growth of their economies, household incomes are likely to remain low for most of the countries. This will be the main factor limiting the wider use of commercial fuels even if there are no serious supply constraints.

Impact on forests

With regard to the impact of woodfuel use on forests, it is important to make a distinction between rural and urban demand. In most rural areas, except the arid zones of Chad, wood supplies are adequate to meet demand, and even though demand is growing, there is unlikely to be any serious problem in meeting it in the foreseeable future. The comparatively better conditions for biomass production in Central Africa would suggest that there will be no serious shortages as regards rural consumption. Even in the more densely populated countries such as Burundi and Rwanda, rural households have adequate biomass growth to meet the woodfuel demand. With security of tenure and the

growing local demand, there has been substantial tree planting to meet the demand for various products.

The situation in urban and peri-urban areas will be different. A substantial number of urban areas in several countries have no access to modern fuels on account of the high recurring and fixed costs, and for them woodfuel will remain the primary source of energy. This is already putting tremendous pressure on forests and woodlands in the vicinity of urban centres. Much of the collection and production will take place in the informal sector, which means that efforts to conserve and manage the resources will be far from adequate, resulting in resource degradation and depletion.

Interventions to reduce the consumption of woodfuel (either by replacing it with commercial fuels or by improving use efficiency) need to focus mainly on urban woodfuel demand.

Forestry and poverty alleviation

In terms of its resources, Central Africa is in a good position to address the problem of poverty and deprivation. However, the wealth of its resources, combined with political and institutional deficiencies, has led to a vicious cycle of conflict, resource appropriation, unequal distribution of wealth, and poverty. Many of the conflicts have strong international links and are the result of efforts to appropriate resources. Poverty eradication largely depends on:

- improved security for the inhabitants and the end of conflicts that critically limit their freedom of choice;
- access to resources, including forests, ensuring that resources are not wrongfully appropriated by vested interests;
- access to markets and information through infrastructure development; and
- access to health care, education and other social services and facilities.

In most rural areas the main scenarios are those of informal sector dominance and fortress dominance. In the first case resources are overexploited or wrongfully appropriated, while in the second case access is denied to the poor. Both result in poverty and deprivation. As long as these conditions remain, there is unlikely to be any improvement in the situation. As discussed earlier, countries such as Cameroon have made some attempt to address the issue through community involvement in forest management, especially by allocating areas for logging to local community groups. However, the most important question is the wider application of the approach and whether this really empowers the communities to pursue resource-use patterns of their choice or whether they are partially incorporated into the existing system of resource exploitation. All the indications are that some of the fundamental causes that have led to poverty may not be resolved in the next 20 years. Forestry may thus remain a source of basic-needs goods and income for the poorer inhabitants, as long as the forests are not seen as valuable and capable of generating profit by powerful groups or interests.

In assessing the role of Central African forests and forestry in poverty alleviation, special attention has to be given to the needs of the forest-dwelling communities. While their resources and livelihood are being undermined, they seldom benefit from any advances such as education and health care, remaining largely outside the mainstream of development. Their future poses one of the major dilemmas of current concepts and approaches to social and economic development. If the present trend continues, the most likely situations that can be expected to emerge are the following:

- as the character of forests changes because of logging and other activities, the livelihood of these communities will be undermined, affecting their survival; and/or
- they will be partially incorporated into the process of development, but will remain on the fringes, helpless, powerless and incapable of making their own choice about their livelihood.

SUMMARY OF IMPLICATIONS

Considering the driving forces and the scenarios discussed in earlier sections, the emerging situation as regards forests and forestry in Central Africa can be summarized as follows:

- in view of the growth in population and the limited scope for economic diversification, agricultural expansion will continue. Central Africa is likely to become an important frontier of agricultural growth, including animal husbandry, and there will be continued pressure from the more populated but resource-poor countries and subregions. All the indications are that the rate of deforestation will continue at the 1990s level or possibly even higher;
- despite ongoing efforts, sustainable forest management is unlikely to be adopted widely in Central Africa. Although policies and legislation

may be in place, the capacity to enforce the principles of sustainable management is far from adequate. In response to the increasing emphasis on domestic processing, a rapid expansion of the sawmilling and plywood industries is expected in the next 20 years. However, the net impact on employment and income generation is unlikely to be significant, and many such enterprises may not survive beyond the first wave of logging of primary forests;

- a number of factors militate against the development of large-scale industrial plantations in Central Africa. However, there is scope for small-scale tree planting under agroforestry systems primarily to cater to local demand for construction wood, poles and woodfuel;
- Central African forests, more particularly those in the Congo basin, are of critical importance in the provision of global public goods, especially as repositories of biodiversity and stocks of carbon. However, there are significant constraints on taking full advantage of this potential, especially as long as fundamental issues concerning the poverty of most of the population - who are dependent on these forests - are not addressed;
- while non-wood forest products play an important role in the livelihood of people, no significant changes are anticipated in the conservation and management of non-wood forest products. A few of the commercialised items will be subjected to intense exploitation, resulting in a decline in their supplies;
- woodfuel will continue to be a major source of household energy in most of the countries, but this is unlikely to be a major cause of forest degradation except in areas close to urban centres;
- while Central Africa is very rich in resources, poverty is widespread and chronic, largely because of the inequitable distribution of wealth and the nature of prevailing resource exploitation that perpetuates and widens inequalities. Much of the poverty arises from disempowerment of the people and the appropriation of their resources. Improving access to forest resources that are unlikely to be appropriated may provide some respite, but poverty eradication will be dependent on more fundamental changes.

BOX 31

CENTRAL AFRICANS' VIEW OF THEIR FORESTS

As part of the FOSA process, a questionnaire survey was conducted to ascertain the views of diverse stakeholders, including government agencies, universities, research organizations, international agencies, non-governmental organizations, private sector, and the general public, who are interested and concerned about the development of forests and forestry in Central Africa. Of the 535 copies of the questionnaire distributed 12 percent were completed and returned. These responses were mainly from Cameroon, Chad, the Congo, the Democratic Republic of the Congo, Gabon and Rwanda. Below is a summary of the perception of the respondents as regards the present and future of forests in their countries.

FORESTS TODAY

Most respondents consider forest management as a responsibility of the governments, but do recognise the role of farmers and local communities could play in improved protection and management of the resource. Judgments are mixed on the adequacy of forest derived goods and services. While those in Cameroon, Gabon and the Democratic Republic of the Congo express satisfaction with wood supply, those in Chad and Rwanda are concerned over the shortage of timber and woodfuel. There is also an increasing recognition of the problem created by the increase in bushmeat demand, especially in Cameroon and the Congo. A large majority (between 60 and 90 percent depending on country) considers that efforts to protect watersheds, wildlife and biodiversity are ineffective.

With regard to the state of forests, deforestation is commonly reported, as seen in a loss of forest area and cover, and an overexploitation of forest products. A loss of biodiversity is also of concern for respondents from Cameroon, Chad and the Congo.

The main cause of deforestation and degradation is identified as wood removal (for timber and woodfuel), although the lack of sustainable forest management, encroachment and illegal activities are also indicated. The underlying factors identified include population growth, poverty, food insecurity and energy needs. These along with the ineffectiveness of policy and institutional arrangements are seen as in resulting in the present state of affairs.

THE FUTURE

With the exception of those from Gabon, most respondents painted a pessimistic outlook. More than 70 percent of the respondents indicated that that forest reduction and degradation will continue. There is concern not only over the loss of biodiversity and ecosystems, but also over the decrease of forest value affecting the timber industry and trade in several countries.

An improvement or stabilization of forest status is considered possible, but would require:

- forest resource management, using a participatory approach;
- extension work on environmental issues, as well as technical training.

Substantial efforts are also needed to:

- fight against corruption and illegal cutting;
- ensure ownership and other land-use rights.

Although Central Africa is often presented as one of the richest forest areas, it faces serious problems of forest degradation. Proposals to improve the current situation do exist and some efforts have been made, but a long-term strategy still needs to be enforced, with coherent, resolute action.

Chapter 6

Priorities and strategies

The previous chapters provided an indication of the main driving forces and scenarios and their consequences for the forest sector in Central Africa. Developments in Central African forestry are closely linked to the global tropical timber market, with all the imperfections inherent in such markets. The overall situation is marked by a weak public sector, imperfect markets and the dominance of informal transaction systems. In many cases the situation has a strong tendency to move to a fortress situation or even a complete breakdown of the system largely because of widespread illegal logging. All the indications are that if some of the current negative trends persist, forestry in Central Africa may not be able to play an effective role in sustainable development of the countries of the subregion. It is in this context that the present chapter attempts to outline a broad strategy to enable the forest sector to move in the direction of the Great Transition described in chapter 4.

In defining strategies and lines of action, it is important to consider the differences between countries in the subregion. The Congo-basin countries are distinct from others on account of their extensive forest resources and low population densities. The densely populated, but agriculturally productive Burundi and Rwanda, together with the islands of Sao Tome and Principe, belong to another group, while Chad, with extensive arid and semi-arid tracts and a low population density, is yet another distinct type with its own specific limitations and potential. These different groups require different strategies, although the larger objective - sustainable development - remains the same.

Central Africa, especially the Congo basin, has one of the richest forest resources in the world, although most of the attention is at present focused on its potential as a source of tropical timber to meet the global demand. Almost all investment has been focused on logging to meet the global demand, and in recent years on a certain amount of processing, largely under pressure from governments and civil society organizations. Very little effort has been made to establish long-term sustainability or to ensure that benefits accrue to the larger public, especially the poorest and most deprived sections of society. This is largely a consequence of the focus on what is valuable on international markets to the total exclusion of what is useful to the people of the countries.

This is the context in which priorities and strategies need to be considered, particularly taking into account the limitations of current approaches. In this regard Central Africa - and more particularly the forest-rich Congo basin - has certain strengths and weaknesses:

- the subregion has one of the richest and most varied tropical forests in the world. However, the pattern of use is largely guided by the global demand for certain timber species to the near-total exclusion of other values. What is valuable to local communities is almost entirely ignored in current economic thinking;
- another characteristic feature of the subregion is the coexistence of the wealth of resources with the poverty of the people. The subregion has been politically, socially and economically unstable, largely as a result of conflicts over appropriation of these resources. Much of the suffering of the people stems from these resource conflicts, which are largely aimed at perpetuating the current system of resource appropriation;
- considering the poorly developed internal capacity to organize and manage the use of forests for timber production for global markets, logging, woodprocessing and trade are largely dominated by transnational corporations. Little of the profit from logging is left in the countries and only a fairly negligible surplus is generated;
- efforts to adopt sustainable forest management, even in the narrow sense of sustaining timber production, are very limited. Although there is a clear understanding of what would be sustainable (and what is unsustainable), current practices are mostly unsustainable;
- all the indications are that the current rapid spread of logging is part of a global wave of tropical logging that has swept across a number of countries, at the end of which most of them are left with a highly depleted resource and very few benefits to show for it;

- considering the favourable situation of global wood supply, most countries are unlikely to increase their income through increasing the volume of exports. This is already evident from the trade data pertaining to the period 1990 - 2000. Many predict a "big bang"of wood supply in the next few years, especially as plantations established in the 1990s are harvested. This would have a tremendous impact on African timber prices;
- the spread of logging concessions has been extremely rapid in Central Africa, while the capacity to regulate and monitor the activities of the concession-holders has not grown correspondingly. Most countries have therefore been unable to draw the full potential benefits from timber production. There have also been substantial leakages of benefits on account of illegal logging, corruption and a lack of transparency in the various transactions;
- in many countries - especially Cameroon, Equatorial Guinea, Gabon and the Congo - the petroleum industry has helped to diversify the economy and promote rapid economic growth, although such growth has most often not percolated very far. However, there are indications of declining production and income from the petroleum sector, and this is resulting in increased emphasis on sustainable management of renewable resources such as forests in order to provide long-term stability and prosperity;
- countries such as Burundi and Rwanda have very limited forest resources, but tree growing is now well integrated into their farming systems and meets most of the demand for timber and woodfuel, although it does not support any large forest-based industries.

This is the context in which strategies have to be formulated and actions initiated in the forest sector to address the larger social and economic development issues.

PRIORITIES FOR THE FOREST SECTOR

Priorities for the forest sector need to be derived from the overall national development priorities. Most countries explicitly or implicitly subscribe to the long-term goal of sustainable development, and the objectives of poverty alleviation and environmental protection find repeated references in most development policies and plans at the national and regional levels. These are precisely the priorities enshrined in the African Renaissance and the New Partnership for Africa's Development. This would mean that the functioning of all sectors, including forestry, must be reviewed and appropriate action taken to ensure that policies, strategies and actions directly and indirectly contribute to poverty alleviation and the improvement and protection of the environment. The New Partnership for Africa's Development and the Yaoundé Declaration both fully recognize the strong link between poverty alleviation and environmental protection, as well as the fact that one cannot be accomplished at the expense of the other. The FOSA strategies and objectives have been developed in this context.

Accomplishment of the above priority objectives requires the identification of key areas for intervention. In Central Africa these priority areas include the following:

- implementation of sustainable management of natural forests, drawing the full benefits from such management consistent with the principles of equity;
- effective protection of biodiversity and other environmental values;
- development of non-wood forest products;
- integration of tree growing into land use (especially in Burundi, Chad and Rwanda); and
- rehabilitation of degraded areas and the control of land degradation (including desertification control, for example in Chad).

In considering strategies and actions in the context of emerging long-term scenarios, particular attention needs to be paid to the aspects described below.

Increasing future values of forests

In view of their unique features, the multiple values of Central African forests are expected to appreciate considerably in the future, especially as scientific knowledge advances and new technology emerges, and this will be particularly the case with the vast resources of plant and animal wealth. More important, in view of increasing concern for issues relating to climate change and other environmental functions, the values of Central African forests are expected to increase considerably. It will therefore be prudent to conserve these resources, especially in view of the very limited capacity of the countries to draw the full benefits from the current systems of resource exploitation.

Preparing for the post-oil era

A number of Central African countries have been able to diversify their economies by tapping their oil

resources. All the indications are that this oil boom may not last long, and some of the countries are already facing the problem of a declining income on account of fluctuating prices and depletion of oil reserves. A prudent approach would be to bank on forest resources as the backbone of the economy and develop a strategy under which an effective system of sustainable management is put in place by the time the income from oil resources decreases. Considering the unique value of their forests - timber, non-wood forest products, ecotourism potential, etc. - Central African countries could in theory focus on high-value niche markets, providing the necessary capacity is developed. The following strategies and actions are suggested on the basis of these premises.

STRATEGIES

Considering the rich forest resources and the low population density of most Central African countries, poverty alleviation would not be hard to achieve on the basis of appropriate policy and institutional reforms that would empower the poor and increase their access to resources. Policy and institutional reform should also seek to curtail the exploitative behaviour of a very small minority, which is one of the major causes of poverty and environmental degradation in most Central African countries. Some of the possible areas of action to accomplish the objectives of poverty alleviation and to ensure the sustainable use of forest resources are indicated below.

Moving towards sustainable forest management and rationalizing the scale of operations

As indicated earlier, the current level of efforts to implement sustainable forest management is far from satisfactory, and most countries are not drawing the full benefits of what is technically feasible. Much of the logging is extensive, generating low income for the countries, whereas the option of maximizing benefits from a more effective and intensive system should be explored. Some of the suggested areas of action to maximize the benefits to the countries are described below.

Rationalization of royalty rates and improving the efficiency of revenue collection

Many of the countries in the subregion have resorted to forest exploitation as a means of generating investable funds in support of activities in other sectors. In the absence of an effective fiscal policy and revenue collection system, however, the stated objective of using forest resources to support the development of other sectors is not being met. One of the main priorities is therefore to rationalise the royalty rates and to streamline the revenue collection system. In most countries the royalty rates are very low and fixed without any reference to market prices and the cost of extraction. Further, it is important to improve the revenue collection system to prevent leakages, largely stemming from institutional weaknesses.

Scaling logging down to a level that can be effectively regulated and is sustainable in the long term

As pointed out earlier, there has been rapid expansion of the logging industry, and in many countries most of the productive forests have already been allocated to the forest industry as concessions. The expansion of logging has been fairly rapid, while the capacity to monitor the operations of the logging industry has grown only slowly. With the existing resources - human, material and financial - the area that could be sustainably managed is only a fraction of what is currently logged. Either the capacity at all levels - especially the field level - should be expanded or logging should be restricted to those areas that can be sustainably managed. The fact that expansion of logging is not significantly enhancing income to the countries provides some justification for its scaling down. Exporting a smaller volume of wood and wood products to niche markets may generate adequate and stable income to the countries.

Implementation of a strict code of conduct to ensure that logging companies adhere to social and ethical standards

There is no effective regulatory mechanism at present to control the activities of logging companies. At best, most of the regulations under consideration (including those under some of the certification schemes) cover technical matters (for example, reduced-impact logging, regeneration and adherence to environmental standards), while there are no rules and regulations covering violation of the traditional rights of local communities, unethical practices, etc.

Investing in social development

Forest areas are some of the most deprived in social and economic development, and the present system of extraction often transfers most of the benefits outside the area - to urban centres and outside the country.

Investment by logging companies in social infrastructure is minimal and temporary and once logging is over these facilities fall apart.. There is therefore an urgent need to increase investment in social infrastructure, and especially to improve access to education, health care and information. Much of this should be aimed at improving opportunities and freedom of choice, so that communities which hitherto had inadequate access to markets, skills and information are enable to benefit from the investments.

Supporting the traditional informal sector

Much of the livelihood of the people of Central Africa is derived from a range of activities - the collection of woodfuel, non-wood forest products and medicinal plants, small-scale enterprises, etc - that fall under the informal sector. These activities are largely undertaken with the resources and technology available to local communities. Supporting and strengthening informal sector activities will go a long way to improving the livelihood of these communities. Specifically this would require:

- legal protection to ensure that the large scale informal sector - especially large scale illegal logging and commercialized bushmeat production - does not undermine the traditional informal sector;
- support to improve traditional systems of resource management and develop conflict-resolutions mechanisms;
- assistance to communities and individuals to innovate and improve traditional production systems, including support in increasing technological capacity; and
- enhancing the capacity to operate effectively in a market environment.

One of the major informal sector activities is the collection, processing and marketing of non-wood forest products, especially medicinal plants. While much of the collection takes place in the informal sector, trade, both within and between countries, is on the increase. The rise in the global demand for ethnic food items provides an excellent opportunity to produce, process and market unique items in quantities that are sustainable, while ensuring that most of the income accrues to the people involved in production, collection, processing and trade. Specifically this would require support in areas such as improving access to information on markets, trade channels and prices, and streamlining cultivation and collection through community-based organizations.

Strengthening institutional capacity

Improving the capacity of public sector institutions

As indicated earlier, the current capacity of public sector institutions to fulfil their responsibilities is far from satisfactory. In Central African countries, the role of government forest agencies in wood production has been minimal and the implementation of structural adjustment programmes has weakened even the very limited capacity that previously existed. A strong regulatory public sector organization is critical to the effective functioning of market mechanisms, and it is imperative that Central African countries revitalize their forest departments. Specifically this would require:

- re-examination of the organizational structure, taking into account the nature of the functions these agencies have to fulfil in the next two decades;
- improving the policy-making and regulatory capacity of these organizations (specific emphasis to be given to negotiating skills, conflict resolution, the countering of illegal activities, networking with other regulatory bodies inside and outside the country, etc.);
- enhancing the capacity in the social sciences, especially research, focusing on forestry and including such aspects as poverty alleviation and protection of the rights of indigenous communities; and
- functioning as the key public sector watchdog for all forestry activities in the country.

Supporting and strengthening civil society organizations

The vibrancy and health of a society depends on the overall state of development of civil society and the corrective role it plays in political, social and economic processes. National and international NGOs play a very critical balancing role and it is important that the space for their action be increased. Specifically this would require:

- creation of an atmosphere encouraging alternative viewpoints and a mechanism that accepts what is good in the larger interests of society;
- improvement in access to information and enhancement of the transparency of operations of all key players, including the public and private sectors involved in forestry; and
- development of an effective legal system that takes account of the issues brought up by civil society and pursues action.

Regional and subregional cooperation

With the deepening and spread of globalization, most countries in Central Africa are going to operate in a more integrated world, which means that existing mechanisms for regional and subregional cooperation must be strengthened. Policies, legislation and strategies need to be harmonized in order to ensure that countries are collectively able to increase the benefits accruing to them from forests. This is all the more necessary on account of the following considerations:

- most timber and other products are to be sold on outside markets and it is important that the countries in the region know the precise overall prospects of the markets and recognize the role of each country. This is particularly important in order to improve their bargaining power in the global market place;
- most of the logging companies are transnational, operating in countries inside and outside the region, and coordinating the activities of their affiliates or subsidiaries. In the absence of effective regional or subregional cooperation between the countries, it will be extremely hard to regulate, monitor and bring about transparency in the activities of transnational corporations. This will be particularly so with regard to tracking illegal logging, including the prevention of unacceptable practices such as under-invoicing as well as cross-border poaching of wildlife;
- there is considerable potential for taking advantage of economies of scale by sharing facilities and expertise in the subregion. Most technical problems concerning the management of forests are more or less similar in the various countries. In the context of limited human and financial resources, substantial benefits could arise from pooling facilities and expertise for education, training and research.

Chapter 7

Summary and conclusions

The previous chapters have provided an overview of the present forestry situation, some of the driving forces and the various scenarios that are likely to affect forestry in the future. Based on these considerations, the consequences and the nature of priorities and strategies were indicated. This concluding section provides an overview of the main findings and conclusions.

FORESTRY SITUATION

Central Africa is the most forested subregion in Africa and has immense potential to produce a wide range of goods and services and contribute to the sustainable development of the various countries. With the declining supply of tropical hardwood from West Africa, logging has moved to Central Africa, especially the Congo basin, making it the foremost source of tropical sawlogs and veneer logs. Most of these are destined for export either as logs or after processing as sawnwood, veneers or plywood. Forestry in the Congo basin is largely centred on logging. While there has been a rapid expansion of the area under logging concessions, the capacity to regulate logging and effectively implement the principles of sustainable management is far from satisfactory. All the indications are that this situation is likely to persist over the next two decades, particularly in view of the shift in the direction of trade towards markets where consumer pressure to adopt certification is unlikely to be very strong.

The efforts of countries to increase domestic value addition through measures such as banning the export of logs are encouraging investment in processing, especially sawmilling and plywood production. A further expansion can therefore be expected, although this would be unsustainable in the long term. Increasingly the Central African countries will face market saturation, reducing the prices of wood and wood products exported from the subregion. With the projected increase in global supplies, especially from plantations, prices of wood and wood products are expected to decline further. Central African countries will be required to rethink their long term strategy as regards the scale of logging and wood processing. The scope for large-scale industrial plantations is fairly limited, despite the excellent growing conditions. In some of the densely populated countries, however, there is likely to be continued expansion of tree growing under agroforestry systems.

Central Africa has forests rich in biodiversity that also fulfil an important climate-stabilization function. While these global public goods are important, the current situation may not permit an increase in the size of protected areas set aside primarily for the provision of public goods and services. Even if there an expansion of protected areas, their management may be constrained for want of human and financial resources. With the current state of social and economic development, conservation may not receive much attention, despite its long-term advantages.

ISSUES

Despite the wealth of its resources, Central Africa has a large number of poor people, whose access to the resources is extremely limited. The process of appropriation of the more valuable resources by various interest groups has led to severe conflicts - and persistent conflicts have probably been the most destabilizing factor, affecting particularly the poor. Poor economic growth, a very unequal distribution of income, undue dependence on foreign investors and a weak public sector are some of the critical issues determining the state of forests and the development of future scenarios. Most countries are so highly indebted that there is a strong compulsion to pursue overexploitation of resources, although many are aware of its unsustainability.

A number of countries have diversified their economic base, largely on the basis of the extraction of fossil fuels. While such diversification has helped to lessen the high reliance on logging as a foreign-exchange earner, there is a need to prepare for the time when the oil boom ends. Many countries have an opportunity to develop sustainable forestry as an important pillar of sustainable development in their post-oil economies. More important, all the indications are that goods and services from Central African forests could significantly appreciate in value as their

full potential is developed over the next few decades. There are also indications that an increase in the quantity exported is unlikely to increase the income especially in view of the anticipated increase in global supply of wood and wood products and the sluggishness in the growth of demand.

PRIORITIES

The overall priorities for most countries in the subregion in the next 20 years will be poverty alleviation and environmental protection, in particular ensuring that forest management helps to provide the full range of goods and services on a sustainable basis. A number of areas that need to be strengthened have been identified, focusing principally on:

- implementation of sustainable management of natural forests, drawing the full benefits from such management and ensuring their equitable distribution;
- improved protection of biodiversity and other environmental values; and
- development of non-wood forest products.

The main areas of action are:

- a move towards sustainable forest management and rationalization of the scale of operations, taking into account the capacity for effective monitoring of logging, including an improvement in the efficiency of revenue collection, the scaling down of logging to a level that can be effectively managed, and implementation of a strict code of conduct for logging companies in order to ensure their adherence to environmental, social and ethical standards;
- increased investment in social infrastructure in forested areas, in support of local community development;
- support for the traditional informal sector, which plays a critical role in improving the livelihood of local communities;
- strengthening of institutional capacity, especially that of forest agencies to discharge their regulatory functions effectively, while supporting and strengthening civil society organizations to play a more proactive role; and
- promotion of regional and subregional cooperation, especially to develop a common framework to detect and prevent illegal operations and to effect economies of scale in such critical areas as research, education and training.

FOSA FOLLOW-UP

FOSA adopted a highly participatory approach involving all the countries and other stakeholders to articulate a broad perception of current and probable future state of forests and forestry in Africa. While the regional overview report gives an account of the continent-wide situation, the subregional reports outline specific features of each of the five subregions. More than providing an indication of what is likely to happen and what needs to be done, the value of FOSA stems from raising key questions and facilitating a rethinking on forestry development in the larger political, economic and social context. As events unfold changing the opportunities and constraints, the FOSA findings need to be revisited and refined to strengthen the formulation and implementation of national forest programmes. Specifically this would involve the following:

- refine the country outlook papers taking into account the broad framework provided by the FOSA regional and subregional reports;
- use the country outlook papers and the regional and subregional FOSA reports to improve the formulation and implementation of national forest programmes;
- strengthen the country capacity in strategic planning; and
- establish a mechanism for regular review of developments in all the key sectors, assess their impact on forests and forestry and refine the forestry development scenarios.

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