FORESTRY OUTLOOK STUDY FOR AFRICA

SUBREGIONAL REPORT
WEST AFRICA

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AFRICAN DEVELOPMENT BANK
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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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Foreword

West Africa has a long history of forest management, in some countries dating back almost a century. However, increasing pressures on forests are undermining the sustainable production of goods and services in the subregion. From being exporters of tropical logs in the 1980s and 1990s, many countries are finding that their forests resources have depleted to such an extent that they are unable to meet even the domestic demand for wood and wood products. Further, problems like desertification, loss of biological diversity and watershed degradation have become very critical. The increasing pressure on forests and woodlands manifests as rapid deforestation and degradation. At the same time, new opportunities are emerging, depending upon the effectiveness of policy and institutional changes, regional and subregional cooperation and developments in science and technology.

This report prepared within the framework of the Forestry Outlook Study for Africa (FOSA), provides an overview of the current situation and the likely changes in forestry up to the year 2020 in the West Africa subregion. 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.

Diversity in the ecological and economic conditions is an underlying feature of the subregion and obviously there will be 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. More than outlining the long term prospects for forestry sector development, FOSA should be seen as a process, enabling the different actors to raise appropriate questions, anticipate emerging situations, analyse the various options and identify the paths to accomplish the long term objective of 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.

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FAO also wishes to acknowledge the help provided by the Department of Forestry, Côte d'Ivoire in facilitating the FOSA process through organizing the subregional planning meeting held in Yamoussoukro in December 1999. Support provided by the Department of Forestry, Senegal for organizing the technical review meeting held at Thiès in November 2000 is also gratefully acknowledged.

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Abbreviations

ADB	African Development Bank
ATIBT	Association technique internationale des bois tropicaux
ATO	African Timber Organization
CBD	Convention on Biological Diversity
CCD	Convention to Combat Desertification
CIFOR	Centre for International Forestry Research
CILSS	Permanent Inter-state Committee for Drought Control in the Sahel
CIRAD	Centre international de recherche agronomique pour le développement.
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CDM	Clean Development Mechanism
ECA	Economic Commission for Africa
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the UN
FRA	Forest Resources Assessment
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
IIED	International Institute for Environment and Development
IUCN	The World Conservation Union
ITTO	International Tropical Timber Organization
LPG	Liquefied Petroleum Gas
HIPC	Highly Indebted Poor Countries
NAP	National Action Programme (related to desertification control)
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
NWFP	Non-Wood Forest Product
SFM	Sustainable Forest Management
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNEP	United Nations Environment Programme
UNDP	United Nations Development Programme
WAGP	West African Gas pipeline

Executive summary

The West Africa subregion has a number of unique characteristics as regards economic development in general and forestry development in particular. It has a long history of forest management, in some countries dating back to almost a century, and there are considerable opportunities to learn from successes and failures. This report provides an overview of the trends in forestry in West Africa in the context of current and emerging economic, social, institutional and technological changes in the subregion as well as those at the global and regional levels.

CURRENT SITUATION

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

- forests and woodlands cover only about 72 million ha or 14 percent of the land area of West Africa. Most Sahelian countries have very low forest cover. Owing to a combination of several factors, West Africa is experiencing rapid deforestation, estimated at about 1.2 million ha per year;
- West Africa has been a major source of tropical hardwood. However, in the absence of sustainable forest management, the subregion's ability to be a major producer of tropical hardwood is on the decline;
- several countries in West Africa have long experience in plantation forestry and have been able to take advantage of emerging trade opportunities, especially for valuable species such as teak. However, in view of extreme population pressure and the limited availability of land, the scope for significant expansion of plantations is limited;
- there is, however, increasing interest in tree cultivation on farms and homesteads, and in some countries trees outside forests have emerged as a major source of wood and non-wood products. There is also widespread recognition of the environmental functions of trees and woodlands, especially in the dry zone;
- wood continues to be the foremost source of energy in most countries. In 2000 an estimated 172.5 million m^3 or about 91 percent of roundwood produced was used as fuel;
- in 2000 the production of industrial roundwood in West Africa was estimated at about 18 million m^3. While West Africa as a whole has maintained its level of industrial roundwood production, the share of some of the major producers has declined drastically, while others have increased their production;
- a major development in West Africa has been the growth of wood-based industries, especially sawmilling and panel-products manufacture, stimulated to some extent by policies and legislation discouraging the export of logs. However, West Africa may soon encounter significant problems of capacity under-utilization on account of declining log supplies;
- non-wood forest products play a major role in meeting people's basic needs, including income-generation. However, there have been inadequate efforts to take full advantage of their potential;
- there has been increased recognition of the environmental and other service functions of forests. With population growth, water scarcity will emerge as a crucial issue, and the fact that most major river systems in the subregion are shared by a number of countries could lead to conflicts over how the costs and benefits of watershed protection are shared;
- West Africa has a network of protected areas, including national parks and biosphere reserves covering about 7.2 percent of the land area. However, the management of these protected areas is far from satisfactory.

DRIVING FORCES

A number of driving forces are affecting forestry in West Africa. The most important of these can be summarized as follows:

- the socio-political and institutional environment in West Africa is undergoing significant changes, with a clear trend towards the emergence of more democratic systems of government. Issues such as decentralization and involvement of local communities in resource management are

receiving increasing attention. However, there is considerable uncertainty over the pace of change, especially in the presence of conflicts. All the indications are that turbulence will persist in the political and institutional arena, affecting forestry directly and indirectly;

- demographic changes during the next two decades will have an overwhelming impact on forests and forestry. By 2020 the population is expected to reach about 344 million, an increase of about 110 million from the 2000 figure. West Africa will be the most populous subregion in Africa. Unemployment is also expected to increase considerably, causing significant social problems;
- West Africa is also witnessing considerable population movements, including rural-urban migration and migration from the less productive dry-zone countries to the predominantly humid-zone countries. Increase in urban population is expected to alter the nature of demand on forests and forest products and forests and woodlands in the vicinity of urban centres will be subjected to severe depletion;
- the overall economic performance of most of the countries has been sluggish, and in many cases per capita incomes have decreased during the past ten years. In view of weaknesses in economic fundamentals, savings and investments are low, indicating continued sluggishness of economic growth. This combined with the skewed distribution of income will exacerbate poverty and deprivation;
- there has been very little diversification of the economies, and agriculture and allied activities continue to be the foremost source of livelihood for the majority of people. In the context of the slow pace of technological changes and consequent low productivity, agricultural expansion will be horizontal;
- most West African countries have a commercialized cash-crop sector entirely geared to exports. However, there has been a considerable decline in the price of cash crops, undermining agricultural incomes;
- in the absence of significant growth of the formal sector, the informal sector has been growing rapidly, providing employment and income;
- external debt of most countries is very high, and debt servicing is forcing many governments to adopt resource management systems that ignore environmental and equity aspects;
- West African countries are well integrated into the global economy. However, the ability to benefit from the opportunities provided by globalization seems to be very limited at present and global integration is therefore partial, tending to impose high costs on the subregion's economies;
- considerable efforts are being made to promote regional and subregional integration, especially under the auspices of subregional organizations such as the Economic Community of West African States (ECOWAS). The pace of social and economic development will depend to a large extent on the progress of these efforts;
- the global concern for protecting the environment will impact forests and forestry directly and indirectly. Management practices will have to be modified to accommodate the growing concern about the loss of biodiversity, land degradation, desertification and global climate change. While most countries are aware of the problems, the capacity to pursue effective action will remain limited;
- although there have been rapid advances in technology at the global level, most economic activity in West African countries, including forestry, has not benefited from this, because of the weakness of the indigenous science and technology capacity.

CONSEQUENCES

The consequences of the driving forces for forests, especially in the provision of goods and services, can be summarized as follows:

- forest-cover reduction will persist in West Africa, and there is no reason to anticipate any decline in the rate of forest loss. All the indications are that forests will be subject to intense pressure, resulting in legal and illegal conversion to agriculture and other alternative uses. The growing urban population will exert an increasing demand on forests, especially for woodfuel and timber, thus intensifying degradation;
- despite wider recognition of the importance of sustainable forest management, the rate of its adoption will tend to be slow, particularly in the case of humid-zone forests, which are subject to intense pressures;
- no substantial expansion of forest plantations is foreseen in the next two decades. Governments will find it extremely difficult to manage even the state-owned plantations that have already been established. However, there is likely to be a significant expansion of trees outside forests;

- woodfuel consumption is expected to increase from about 175 million m^3 in 2000 to 235 million m^3 in 2020. Wood will continue to be the major source of energy, especially for rural households but also for a substantial proportion of urban households. Some shifts may take place as regards urban woodfuel use, especially if there is an increase in the availability of commercial fuels when some of the initiatives like the West Africa Gas Pipeline materializes. In general, woodfuel supplies may not pose a major problem, except in urban areas;
- all the indications are that the demand for industrial roundwood and wood products will increase in West Africa. Nigeria has emerged as a major consumer and will increasingly have to depend on imports;
- most wood-producing countries have banned or reduced the export of logs to encourage domestic value addition. This has resulted in the growth of the sawmilling and plywood industries, largely focused on exports. The declining resource base and the inadequacy of efforts to improve sustainable management would compel wood industries to depend on logs of smaller dimensions or imports;
- in view of the growing demand for water, the need to improve watershed management will become critical. However, institutional arrangements are expected to remain inadequate, thus limiting the implementation of effective watershed management. This will be a particularly complicated issue in the case of watersheds shared by a number of countries;
- desertification is a major environmental problem and is expected to worsen in the next two decades. While all the countries are signatories to the Convention to Combat Desertification, the level of efforts is expected to fall far short of needs;
- considering the sluggish growth of the economies and the poor performance of other key sectors, poverty is expected to persist. This will mean an increasing dependence of the poor on forests as a safety net to provide a range of subsistence goods and also as a source of income, especially from a variety of informal activities.

PRIORITIES AND STRATEGIES

Considering the trends indicated above, the two main priorities for the subregion will be poverty alleviation and environmental protection, focusing particularly on the following aspects:

- enhancement of the safety-net function of forests by improving access to a range of forest-derived basic-needs goods, including those that supplement nutrition; this will be particularly important in the dry zone, which is more vulnerable to drought and desertification;
- improvement in returns from the large number of forest-based informal activities, ensuring that they are sustainable and remunerative;
- support for the development of forest-based enterprises to boost employment and income from formal sector activities, especially in urban areas, focusing particularly on labour- and skill-intensive, but less capital-intensive activities;
- stepping up of efforts to protect and manage watersheds through appropriate practices and ensuring that watershed protection and combating land degradation and desertification are integral components of all land uses;
- wider application of simple and easily measurable criteria and indicators for sustainable forest management, both for natural forests and plantations.

Much of the focus will be on institutional changes, primarily to empower the various actors and to expand the space for their initiatives. The following are some of the critical areas requiring attention:

- revitalization of the public sector, including a redefinition of functions and responsibilities, appropriate changes in structure and organization, and the imparting of new skills and capabilities;
- invigoration of community-level initiatives, taking advantage of the lessons from ongoing efforts, progressively building up local capacity in forest resource management;
- empowerment of small-scale producers, especially through the removal of legal and other impediments hindering the operation of small-scale enterprises, including restrictions concerning the transport of wood and wood products, improved access to information, especially on technology and markets, and increased access to credit;
- facilitation of the development of competitive markets, mainly by improving the legal and institutional framework and ensuring certainty over policies;
- strengthening of subregional and regional collaboration, especially to address common

problems through in sharing expertise in research, education and training;
- mobilization of investment, from internal sources, by creating the necessary confidence for people to save and invest;
- enhancement of the role of civil-society organizations.

Chapter 1

Introduction

BACKGROUND

The Forestry Outlook Study for Africa (FOSA) is an assessment of long-term changes in the forestry situation in Africa implemented under the guidance of the African Forestry and Wildlife Commission and the Near East Forestry Commission. As globalization results in growing economic integration, it is essential that appropriate responses to the rapidly changing environment be developed. This report on West Africa is one of the six reports produced as part of FOSA.

OBJECTIVES OF THE STUDY

The overall objective of FOSA is to assess the current situation and trends in forestry and wildlife and evaluate the likely changes, taking into account the major driving forces that affect the future and indicating the overall direction of development of the sector to the year 2020. The present report, covering the West Africa subregion, examines the current trends in forestry (including wildlife) and the long-term outlook, taking into account the wide-ranging changes in the individual countries as well as those at the subregional, regional and global levels. Such a prospective analysis is a tool to help decision-makers in West African countries to anticipate emerging opportunities and constraints and thus develop appropriate responses, especially in the context of formulating and implementing national forest programmes.

SCOPE AND COVERAGE

This report covers 15 West African countries: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, the Niger, Nigeria, Senegal, Sierra Leone and Togo (see Box 1).

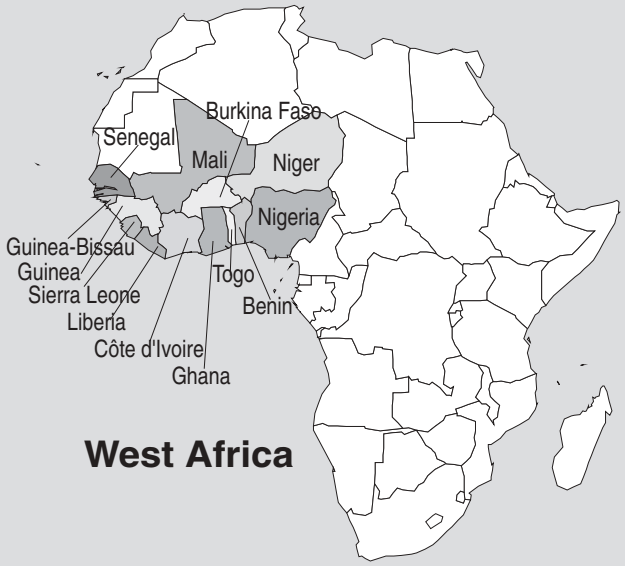
APPROACH TO THE STUDY

FOSA was undertaken as a highly participatory initiative involving all the countries and key organizations in the subregion. To facilitate inputs from the countries, each one nominated a national focal point, who, with the help of a working group, produced a country FOSA report. A baseline study on population, income and forest resources provided the background information (African Development Bank, 2000). 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 preparation of a draft subregional report was undertaken by an FAO consultant expert from the subregion[2]. (Onibon, 2001) 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, 2001a and 2001b).

BOX 1

WEST AFRICA SUBREGION

For the purposes of FOSA, the following countries constitute the West Africa subregion: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, the Niger, Nigeria, Senegal, Sierra Leone and Togo.



[1] The FOSA planning meeting for West Africa was held in Yamoussoukro, Côte d'Ivoire, from 16 to 17 December 1999 and the subregional technical review meeting in Thiès, Senegal, from 7 to 10 November 2000.

[2] Preparation of the draft FOSA report on West Africa subregion was coordinated by Alain Onibon with technical support from Omar Sy and Francis Odoom.

The draft subregional report was presented and discussed at a regional technical review meeting held in Addis Ababa in 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 was 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 the inputs 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 ongoing 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 (Contreras-Hermosilla, 2001). 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 West Africa, specifically focusing on the state of forest resources and the flow of goods and services from them is provided in chapter 2. Chapter 3 discusses the main factors affecting and driving the changes and how they could alter the path of developments in forestry during the next two decades. Chapter 4 explores alternative scenarios, specifically focusing on how the various actors respond to changes in opportunities and constraints. Chapter 5 discusses the consequences of the driving forces and scenarios, especially their impact on key forestry issues. Priorities and strategies for the sector are discussed on chapter 6. Chapter 7 summarizes the main findings and conclusions.

[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

Forests and forestry in West Africa: Current Situation and Trends

The West Africa subregion constitutes about 17 percent of the total land area of Africa and is formed of 15 countries, varying in land area, population and agroclimatic conditions. In terms of land area, the Niger is the largest, while Cape Verde, an island, is the smallest. The most populous country is Nigeria, with about 127 million inhabitants, whereas there are several countries with populations of less than 5 million. Similarly, the population density varies from more than 100 people per square kilometer in the Gambia, Nigeria and Cape Verde to less than 10 per square kilometer in the Niger and Mali.

To a large extent, population and its distribution, as well as the state of forests and forestry, are influenced by the extreme diversity of ecological conditions. Primarily based on rainfall, West Africa is divided into two broad ecological zones, the dry zone and the humid zone. The dry zone includes part of the Sahara (which covers approximately 22 percent of the area of the subregion), with the Sahelian and Sudanian phytogeographic areas. The ecosystem is dominated by steppe vegetation, thorny bush cover and open savannah woodlands. Senegal, the Gambia, Guinea-Bissau, Mali, Burkina Faso and the Niger are included in the dry zone. A substantial portion of Nigeria is also very dry and arid. Cape Verde, although an island in the Atlantic Ocean, could also be included in this zone on account of the extreme dry conditions prevailing there. The humid zone is comprised of Benin, Côte d'Ivoire, Ghana, Guinea, Liberia, most of Nigeria, Sierra Leone and Togo, and presents varied ecosystems consisting of savannah, semi-deciduous tropical forest and tropical rain forest. Each of these two zones has its associated demographic situation and land use, and there is a strong economic and demographic link between the two, especially by way of migration from the north to the south.

BOX 2

VEGETATION PATTERNS IN WEST AFRICA

The region is characterized by three major vegetation biomes. The tropical high forest zone along the southern coast of the region stretches inland for some 300 to 400 km. In the drier inland areas there are savannah woodlands with a wide variation in tree canopy cover, and these give way in the far north of the region to arid deserts. The savannah zone has been further subdivided into a number of subtypes according to rainfall and vegetation cover. Moving from south to north (from forest to desert), these are:

- the derived or secondary savannah zone with a significant evergreen tree component and rainfall of 1 150 to 1 500 mm and a short dry season of three months;
- the southern Guinean zone with similar precipitation to the derived savannah but a long dry season of four to five months;
- the northern Guinean zone with precipitation of 1 000 to 1 250 mm and a dry season of five to six months;
- the Sudanian zone with precipitation of 500 to 1 500 mm and a dry season of five to seven months;
- the dry Sahel zone with precipitation of 250 to 500 mm and a dry season of seven to eight months.

(African Development Bank, 2001a)

FORESTS AND TREE RESOURCES

Forest cover

The total forest cover in the West Africa subregion is estimated at 72 million ha accounting for about 14 percent of the land area. There is considerable variation between countries in the extent of forest cover. Guinea-Bissau, with about 60 percent of its land area under forests, is the most forested country in the subregion, while the Niger, with about 1 percent of its area under forests, is the least forested country (see Table 1). Traditionally, the wood industry in West Africa has relied largely on wood supplies from the humid-zone forests, especially from Guinea, Liberia, Sierra Leone, Côte d'Ivoire and Ghana. The prospects of the wood industry in the subregion will therefore depend on how these forests, including plantations, are managed.

A large extent of land in the subregion is are covered with shrubs and sparse trees and are classified as "other wooded lands". In many Sahelian countries, responsibility for managing these lands lies with the forest department. Although other wooded lands are not included in the forest area figures, these lands have substantial tree growth. They are important in the livelihood of many rural people, especially by way

TABLE 1
West African forests in 2000: Key statistics

Country	Total forest area in 2000	Forest plantation	Natural forests	Percentage forest area	Forest area per capita	Other wooded lands
	(000 ha)	(000 ha)	(000 ha)	(%)	(ha)	(000 ha)
Benin	2 650	112	2 538	24.0	0.4	3 731
Burkina Faso	7 089	67	7 023	25.9	0.6	7 668
Cape Verde	85	85	0	21.1	0.2	
Côte d'Ivoire	7 117	184	6 933	22.4	0.5	6 620
Gambia	481	2	479	48.1	0.4	161
Ghana	6 335	76	6 259	27.8	0.3	
Guinea	6 929	25	6 904	28.2	0.9	5 850
Guinea-Bissau	2 187	2	2 186	60.5	1.8	
Liberia	3 481	119	3 363	31.3	1.2	
Mali	13 186	15	13 172	10.8	1.2	17 020
Niger	1 328	73	1 256	1.0	0.1	334
Nigeria	13 517	693	12 824	14.8	0.1	9 645
Senegal	6 205	263	5 942	32.2	0.7	12 043
Sierra Leone	1 055	6	1 049	14.7	0.2	4 378
Togo	510	38	472	9.4	0.1	348
Total West Africa	**72 155**	**1 760**	**70 395**	**14.2**	**0.3**	**43 768**
Africa	**649 866**	**8 036**	**641 830**	**21.8**	**0.8**	**430 079**

Source: FAO, 2001a.

of providing wood and non-wood forest products including fodder for cattle.

The above area figures, however, do not reflect the qualitative differences in forests, especially the degree of degradation. Although outdated, national statistics that distinguish the extent of openness provide some indication of forest characteristics and the extent of potential for different uses. Almost two-thirds of the forests in West Africa are open. This is further reflected in the differences in growing stock. Growing stock in the humid-zone forests often exceeds 200 m^3 per hectare, as is the case in Liberia. However, the proportion that is actually utilized is very low, partly because of problems of accessibility, economic viability and of course the enormous differences in wood properties. In the dry zone, the growing stock is as low as 3 m^3 per hectare, as is the case in the Niger. In general, the biomass stock in the predominantly dry-zone countries tends to be very low. This has considerable implications for the options and strategies available for meeting the demand for wood and other products.

Deforestation

A major concern of forestry in the subregion is the rapid rate of deforestation. West Africa's natural forests have been largely deforested and degraded, particularly since the 1970s. Table 2 gives an indication of the extent of forest cover change in the subregion between 1990 and 2000.

West Africa has been losing about 1.2 million ha annually since 1990, approximately 24 percent of the annual forest loss in Africa. The overall rate of deforestation in West Africa is much higher than the continental average. Nigeria, Côte d'Ivoire and Ghana accounted for about 62 percent of the forest-cover reduction in the subregion, although these countries account for only 37 percent of the forest area. Several factors have contributed to such high losses, including the conversion of forest land to agriculture - cash crops as well as subsistence crops - logging, mining, infrastructure development and fire.

TABLE 2
Annual forest cover change in West Africa, 1990–2000

Country	Annual Forest cover loss 1990–2000	Rate of change
	(000 ha)	(%)
Benin	-70	- 2.3
Burkina Faso	- 15	- 0.2
Cape Verde	5	9.3
Côte d'Ivoire	- 265	- 3.1
Gambia	4	1.0
Ghana	-120	- 1.7
Guinea	- 35	- 0.5
Guinea-Bissau	- 22	- 0.9
Liberia	- 76	- 2.0
Mali	- 99	- 0.7
Niger	- 62	- 3.7
Nigeria	- 398	- 2.6
Senegal	- 45	- 0.7
Sierra Leone	- 36	- 2.9
Togo	- 21	- 3.4
Total West Africa	**-1 255**	**-1.7**
Africa	**- 5 262**	**- 0.8**

Source: FAO, 2001a.

Apart from a reduction in cover, the most notable aspect is degradation and fragmentation, although no estimates are available to indicate the extent of such

BOX 3

FRAGMENTATION AND DEGRADATION OF FORESTS IN WEST AFRICA

Forests in the humid part of West Africa are highly fragmented and degraded. In Ghana, of the 6 million ha considered to be forest, only 1.6 million ha is considered to be "intact closed forest" and the rest is mostly degraded forest. In Nigeria, of the 13.5 million ha described as forest, less than 1 million ha is considered as productive and 2.3 million ha partially productive. In Côte d'Ivoire 2.5 million ha of the humid dense forests is largely degraded.

(FOSA Country outlook papers)

BOX 4

FOREST MANAGEMENT SYSTEMS

In the subregion, foresters and forest researchers have made considerable efforts to improve their knowledge of forest and tree dynamics and tune up forest management rules and silviculture techniques. Nigeria experimented for some time with the tropical shelterwood system. Various methods were tried in Ghana and Côte d'Ivoire to facilitate forest regeneration. However, the rapid degradation of forest cover, the lack of funds and the pressure for rapid economic return led to a preference for the conversion of a large portion of forest reserves into forest plantations of exotic and indigenous species, instead of managing the natural forests for sustained wood production.

changes (see Box 3). Fragmentation is a problem particularly in humid-zone forests. It is estimated that closed forests, traditionally considered for forest management for production purposes, comprise less than 20 percent of forest land. In addition, civil wars, for example in Sierra Leone, Liberia and Guinea, have created conditions for overexploitation and rapid degradation.

Management of natural forests and woodlands

In the production forests, management systems have largely reflected the specific characteristics of the forests and the nature of the demand for products and services. In the early 20th century, forest reserves were established to ensure that the rights to valuable timber species were secured, and simple harvesting rules - primarily specifying the number of trees that can be removed and the diameter limits - were formulated largely to avoid over-exploitation. As long as the demand was low and exploitation was limited to a few trees per hectare, sustainability was not a critical issue. Harvesting was undertaken by concession-holders - private companies and individuals. However, for a variety of reasons, largely stemming from increased demand and the low ability to implement even simple rules to regulate harvesting, most traditional systems have broken down, resulting in degradation and often outright conversion of natural forests to other land uses.

While much work has been done in the past, the current situation as regards management of natural forests can be summarized as follows:

- very little information is available on the area under sustainable management. Nevertheless, the area under management plans and under sustainable management is negligible at best. Other than small experimental areas, very little natural forest is under sustainable management (see Box 4).
- several countries have embarked on large-scale logging in recent years, often by granting large concessions to overseas investors. In most cases governments lack the capacity to enforce principles of sustainable management;
- in the absence of an adequate capacity to manage the forests and appropriate institutional mechanisms, transparency is affected, favouring large-scale illegal operations;
- most of the humid forests have alternative uses, and this has resulted in their diversion for other more profitable land uses, especially the cultivation of such cash crops as cocoa, coffee, rubber and oil palm;
- most of the productive forests are under public ownership and there is very little effort to apply participatory approaches to managing high-value humid-zone forests;

Although there have been some efforts to apply sustainable forest management, both the public and private sector face a number of constraints, connected with land and tree tenure, inadequate incentives to adopt sustainable forest management and more particularly the absence of an appropriate legal and institutional framework that will ensure compliance with sustainable forest management principles.

The situation as regards the mangrove forests that stretch from Senegal to Nigeria, covering more than 2 million ha, is not very different. Mangroves are found in the most densely populated coastal belt. This forest formation plays an essential environmental role in protecting the coasts and river mouths. In addition, it supplies woodfuel and poles for construction. The

BOX 5

A SUCCESS STORY: COMMUNITY FOREST MANAGEMENT IN THE SAHEL

In the Sahel, the first implementation of community management took place under the Forestry Land-Use and Planning Project in the highly degraded Guesselbodi Forest close to Niamey in the Niger. A cooperative incorporating the nine villages surrounding the forest was set up in 1986 and a management plan was developed and discussed with representatives of the cooperative. Under agreed conditions for restoration work and guarding activities, the village was offered a share in the sales of fuelwood as well as access to the forest for grazing and the collection of forest products.

mangroves are, however, threatened in many places by urban development, conversion to farmland and overexploitation.

The situation as regards woodlands and other forests, especially in the Sahelian zone, is very different. There is a preponderance of community or customary control over woodlands in the dry zone. While population growth and the concomitant increase in demand have led to depletion of these woodlands, there are increasing efforts to promote community participation in resource management. Much of the emphasis in management of dry-zone savannah woodland is on increasing the production of a variety of products and services. Although there are some success stories (see Box 5), a large extent of the woodlands in the Sahel remains an open-access resource, with customary systems becoming increasingly inadequate to deal with the emerging problems[4]. In many cases, increasing resource use conflicts and the exposure to market forces have undermined traditional systems of resource management.

In short, it is hard to give a clear assessment of the overall situation of the management of woodlands in the Sahelian zone. The crux of the matter is the building or strengthening of local community organizations to manage the resources. Efforts in this regard are far from adequate.

Plantation forestry

West Africa has a long history of plantation forestry, which was initiated in the early 20th century. The total area of tree plantations in the subregion is

[4] It is to be noted that where natural resources are seen to be of relatively low value, rural Sahelians do not tend to involve themselves in the time-consuming task of managing them.

BOX 6

TEAK PLANTATIONS IN CÔTE D'IVOIRE

Teak is the main plantation species in Côte d'Ivoire. Teak plantations covered almost 52 000 ha in 1998. In terms of the extent of plantations outside Asia, Côte d'Ivoire is second only to Nigeria which has 70 000 ha. In 1997, Côte d'Ivoire exported nearly 130 000 m^3 of teak timber, mainly to India.

(Maldonado & Louppe, 2000)

1.76 million ha (FAO, 2001a), accounting for about 21 percent of plantations in Africa. The annual planting rate in the subregion is fairly modest - about 58 000 ha, largely confined to Nigeria, Senegal, Côte d'Ivoire, Burkina Faso and Cape Verde. In the humid zone, there are extensive rubber plantations, concentrated in Nigeria, Liberia and Côte d'Ivoire. Teak has been extensively planted in humid West Africa, particularly in Nigeria, Ghana and Côte d'Ivoire (see Box 6). Apart from many technical advantages related to its wood quality and its resistance to fire, teak offers promising commercial opportunities on the international market (see Table 3 for details of plantations).

The objective of plantation establishment, and consequently the species planted and the intensity of management, vary between the two ecological zones. In the humid zone the emphasis has been on high-value industrial plantations. Most plantations are in the public sector, managed by forest departments. Public sector organizations, however, face severe financial strains, and this has affected plantation management, undermining intensity of management and consequently productivity. Industrial timber plantations were often established to compensate for the loss of natural forests. The pace of plantation programmes has slowed drastically on account of financial constraints. Some countries, such as Côte d'Ivoire, have tried to counter this decline by regulations requiring concession-holders to implement a replanting programme.

In the Sahelian zone, plantations are established mainly for woodfuel production, as well as to improve environmental conditions, including desertification control and sand dune fixation. eucalypts, neem (*Azadirachta indica*) and Australian acacias are the main species that have been used. *Casuarina equisetifolia* has been used extensively in Senegal to stabilize dunes along the coast. Green-belt plantations have also been established to protect cities such as

TABLE 3
Plantation forestry in West Africa

Country	Total forest plantations	Annual planting rate	Plantation area by species group						
			Acacia	*Eucalyptus*	*Tectona*	Other hardwoods	*Pinus*	Other softwoods	Unspecified
	(000 ha)	(000 ha)	(000 ha)	(000 ha)	(000 ha)	(000 ha)	(000 ha)	(000 ha)	(000 ha)
Benin	112	1	5	5	15	8	-	2	77
Burkina Faso	67	5	-		-	-	-	-	67
Cape Verde	85	5	7	3	-	73	2	-	-
Côte d'Ivoire	184	5	-		58	126	-	-	-
Gambia	2	-	-	-	-	2	-	-	-
Ghana	76	2			40	36			
Guinea	25	1							25
Guinea-Bissau	2		-						2
Liberia	119	0.1			2	115	2		
Mali	15	1	-	-	-	10	-	-	-
Niger	73	3	36	4	-	33			-
Nigeria	693	23	2	41	74	566	10		5
Senegal	263	11	32	63	5	129	-	34	
Sierra Leone	6	-				2			4
Togo	38	1		17	11	10			
Total West Africa	**1760**	**58**	**82**	**135**	**205**	**1 110**	**14**	**36**	**180**

Source: FAO, 2001b.

Niamey from dust and to stop the advance of sand dunes. In general, the current situation of forest plantations in the subregion can be summarized as follows:

- the scale of plantation establishment is very low, and at this rate plantations are unlikely to become a major source of wood supplies;
- most plantations are in the public sector, and this has in a way affected their management. Fire, illegal harvesting, encroachment, etc., have undermined productivity;
- in the case of some high-value plantations such as teak, domestic demand is limited, and this has resulted in dependence on overseas markets. Some countries, such as Côte d'Ivoire, have been able to take advantage of the growing demand from markets in Asia;
- there have been some attempts at privatization of plantations, although with very limited success.

In the Sahelian zone most planting has been done for the production of woodfuel and environmental protection. Here again, the scale of activities has been far from sufficient to make a significant impact on the problems.

Trees outside forests

Trees outside forests form a major source of wood and wood products in all the ecological zones, but particularly the humid zone. They are mainly comprised of:

- relics from the continuous forest cover that existed prior to large-scale conversion to permanent farmland (for example in Ghana, Côte d'Ivoire, Guinea, Liberia, Nigeria, Benin and Togo);
- sacred forests, usually protected from exploitation by customary edicts;
- forest patches established by local villagers to provide protection, fruits, building materials, woodfuel, fodder, etc.;
- trees grown in home gardens and on other farmland under various agroforestry systems;
- village trees;
- trees growing on forest fallows, shrubs and bush growth on other wooded lands (see Box 7).

In the semi-arid and sub-humid zones of West Africa, farmers have for many generations maintained a traditional land use system, referred to as

BOX 7
BIOMASS PRODUCTION IN FOREST FALLOWS

As a reaction to the degradation of forests, many farmers in the Sahel have started to protect naturally generated seedlings in their fields and fallows, instead of removing them as was done traditionally. Biomass production on Sudano-Sahelian fallows has been estimated by researchers as follows:

Estimated yearly biomass production on fallows in the Sahel

Author	Ecological area	Rainfall (mm)	Estimated biomass production (tonnes/ha/year)
Clement, 1983	Southern Sudanian	1 000 – 12 000	2.5 – 4.7
Kaïré, 1999	Sudano-Sahelian	700	2.15
Kaïré, 1999	Sudano-Guinean	1 200	4.0
Montagne and Mato, 1998	Niger		4.7 – 6.8

(African Development Bank, 2001a)

"agroforestry parklands", characterized by the deliberate retention of trees in cultivated or recently fallowed land (see Box 8). Trees are an integral part of the system, providing a range of products, as well as contributing to the maintenance of soil fertility, water conservation and environmental protection. In many cases population increases and the extension of cultivation have also led to increased efforts to cultivate and manage a number of multiple-use tree species, and often the area under tree cover has increased. Already most rural communities rely on trees outside forests as the foremost source of woodfuel, poles, construction material, etc. In view of the declining area under forests, all the indications are that trees outside forests will become a major source of wood supplies to meet the growing rural and urban demand, provided issues such as tenure and access to markets are sorted out.

Parkland systems respond dynamically to various factors such as droughts, pests, and socio-cultural and economic pressures. Agricultural development policies promoting the clearance of trees to facilitate animal traction have contributed to a decline in tree density on parklands. However, when farmers see that trees and their products are becoming valuable, they actively invest in the protection and management of parklands. Contrary to prevailing assumptions, population growth can lead to more intensive sustainable land management practices, including an expansion of tree cultivation, provided that farmers perceive their economic, social and environmental significance and that tenurial conditions are favourable.

BOX 8

FUTURE OF AGROFORESTRY PARKLANDS

"… agroforestry parklands are a rational land use system developed by farmers over many generations to provide them with subsistence and income-generating products. The many different types of parkland existing in sub-Saharan Africa today reflect the dynamic nature of these systems and the ability of farmers to adapt them to changes in the natural and socio-economic environment. Their importance as a livelihood buffer, particularly for vulnerable groups in society, and their significance as a rich pool of forest genetic diversity, have increasingly brought them to the attention of the policy-making and research community in recent years. There is a growing interest in promoting the conservation of parklands and in further improving their management to increase the benefits they provide to farmers .... And the promotion of markets and improved processing for parkland products will encourage farmers to invest in the development of their parkland systems. Together these initiatives will enable an already resilient and productive system to play an even greater role in the future livelihoods of rural populations in semi-arid West Africa."

(Boffa, 1999)

The major problem with trees outside forests is that there is still very little information on their significance to the economy and they have largely fallen into a no-man's-land neglected by government agencies dealing with agriculture and forestry. Most important, the dynamics of tree cultivation in the context of changing economic opportunities are not understood, so that most government interventions narrowly focusing either on the forest or agricultural sector tend to have a negative impact. In many cases conventional support mechanisms for promoting agriculture - for example mechanization and the subsidized supply of such inputs as fertilizers - have encouraged the removal of trees from farmland.

SUPPLY OF WOOD AND WOOD PRODUCTS

Woodfuel

Undoubtedly the most important product derived from forests and woodland is woodfuel, which accounts for over 85 percent of the total energy consumption of West African countries and provides most household energy needs. Woodfuel consumption grew from about 114 million m^3 in 1980 to about 175 million m^3 in 2000, largely in response to population growth (see Table 4). Over the past 20 years the proportion of woodfuel in total roundwood production has remained very high, even registering an increase from about 86 percent in 1980 to 91 percent in 2000. All the indications are that this trend is likely to persist, maintaining the primacy of woodfuel production. A substantial proportion of biomass energy is derived from a number of other sources, including agricultural residues, shrub growth on fallows, etc.

Although the annual growth of wood is more or less adequate to meet the growing demand, there are areas of high deficit, especially in urban areas. Most production and consumption takes place in the subsistence sector. However the increasing urban demand has resulted in the development of informal markets with a network of collectors, procurers, transporters and distributors.

Rural communities are however confronting

TABLE 4
Trends in woodfuel consumption in West Africa

Country	1980	1990	2000
	(000 m^3)	(000 m^3)	(000 m^3)
Benin	5 261	5 977	6 453
Burkina Faso	8 655	10 393	12 660
Cape Verde	106	130	194
Côte d'Ivoire	7 636	8 132	9 284
Gambia	407	571	777
Ghana	12 228	18 424	26 725
Guinea	8 744	10 443	12 248
Guinea-Bissau	1 637	1 996	2 395
Liberia	2 451	3 750	5 173
Mali	3 086	3 942	4 731
Niger	4 466	6 698	9 356
Nigeria	45 863	56 749	67 789
Senegal	4 095	4 687	5 114
Sierra Leone	5 257	5 115	6 018
Togo	4 055	5 049	6 168
Total West Africa	113 948	142 057	175 086

Source: Broadhead *et al.,* 2001.

BOX 9

INTERVENTIONS ADDRESSING THE WOODFUEL PROBLEM

Many initiatives encouraging Sahelian countries to develop strategies for the traditional energy sector were implemented in the 1980s and 1990s, the most important being by the World Bank under its ESMAP and RPTES household energy programmes.

The main elements of these programmes included the revision of national policies on household energy and forest management, strengthening of the legal rights and responsibilities of local communities, promotion of participatory approaches, liberalization of woodfuel markets, promotion of fuel-saving technology, improvement in the capacity of various institutions and coordination of the activities of different agencies.

While these initiatives did help to highlight the critical nature of the wood energy problem, they faced a number of problems. Institutional and legal reforms, especially in assigning legal rights to local communities for the management of local resources, have not been achieved. Woodfuel plantations have not been managed properly, and the spread of improved cooking devices has been rather slow. However, participatory methodologies for forest management by local communities have been elaborated and implemented in several countries. Experiences in the Gambia, the Niger and Burkina Faso exemplify the main types of participatory natural forest management models recently implemented with the principal purpose of producing woodfuel.

inadequate supplies, which is largely reflected in the increasing time required to collect wood. This is all the more so in towns and cities in the ecologically less productive dry zone. As resources closer to the towns are depleted, distant resources are tapped. For example, Ougadougou currently obtains woodfuel from about 150 km away. Intensive woodfuel harvesting for the Dakar market has pushed the current area of supply as far as more than 400 km away. Lagos is supplied with charcoal originating from an even greater distance.

The "wood energy crisis" of the 1970s led to a number of initiatives to address the various problems (as understood then), intervening on both the demand and supply sides (see Box 9). Demand reduction was attempted largely by improving the efficiency of devices and encouraging substitution with alternative fuels such as kerosene, LPG and electricity. Efforts to enhance supplies involved the establishment of woodfuel plantations and improved management of natural forests and woodlands. The overall impact of these efforts has been far from satisfactory, with no significant increase in supply and no reduction in demand. Alternative fuels have proved too expensive for the majority of the population, and improved stove designs, while proving popular in some areas, have been found less acceptable for a variety of reasons. In most cases, there are fundamental differences of perception between local communities and those attempting to address the wood energy crisis.

Local crises are likely to persist, especially in urban areas, and the increased demand could have a significant negative impact on forests and woodlands in West Africa, especially in the Sahelian countries. While there is potential to improve the availability of alternative energy sources, especially the vast unused natural gas stocks in Nigeria (whose distribution in the subregion is expected to improve when the West Africa Gas Pipeline is completed), an important issue will be access to it for the majority of the people, whose purchasing power is limited. Much of the potential substitution will depend on relative prices and on access to woodfuel in comparison with commercial fuels.

Production and utilization of industrial roundwood

Industrial roundwood production in the subregion increased between 1980 and 2000 at an annual rate of 0.4 percent, which is somewhat less than the population growth rate. The volume produced

TABLE 5
Trends in industrial roundwood production in West Africa

Country	1980	1990	2000
	(000 m^3)	(000 m^3)	(000 m^3)
Benin	197	274	332
Burkina Faso	308	399	594
Cape Verde	NA	NA	NA
Côte d'Ivoire	5 361	3 548	3 416
Gambia	10	67	113
Ghana	981	1 440	1 087
Guinea	491	541	651
Guinea-Bissau	127	145	170
Liberia	860	1 128	337
Mali	267	357	413
Niger	221	306	411
Nigeria	7 360	8 263	9 418
Senegal	452	638	794
Sierra Leone	158	138	124
Togo	130	185	306
Total West Africa	**16 923**	**17 429**	**18 166**

Source: FAO, 2002.

increased from 16.9 million m^3 in 1980 to 18.2 million m^3 in 2000 (see Table 5). Most countries registered a rapid increase upto the 1980s, but since 1985 the increase in production has been rather marginal.

A key feature of industrial roundwood production is the slow growth rate of production, especially in comparison with other wood producing subregions. In 1980 West Africa accounted for about 34 percent of the African industrial roundwood production. However the subregion's share declined to 31 percent in 1990 and to 26 percent in 2000. Declining trend is particularly noted in the case of the traditional producing countries such as Côte d'Ivoire and Ghana. This has been offset to some extent by the expansion of production from countries such as Nigeria. A major difficulty in assessing the actual trends in production and trade of industrial roundwood is the prevalence of illegal logging (see Box 10). It must be noted that most of the industrial roundwood is obtained from natural forests in the humid zone, and in view of inadequate efforts to implement sustainable management, a further decline in supplies is anticipated.

In assessing future trends, it is important to distiguish between countries in terms of the level of production and consumption and the degree of self-sufficiency. Nigeria accounts for about 50 percent of industrial roundwood production, but is also a major consumer on account of its high population. The other main industrial roundwood producers are Côte d'Ivoire, Ghana, Liberia and Guinea. Although Senegal is also a major producer, its internal demand, like Nigeria's, is high, so that it is a net importer.

BOX 10
ILLEGAL LOGGING AND OFFICIAL STATISTICS

It has to be noted that the figures provided in Table 5 are those reported by the countries on the basis of recorded figures. Obviously this could significantly diverge from the actual production, depending on the extent of illegal logging. In the case of Liberia, for example, the reported production in 2000 was 337 000 m^3. However, during the same year Liberia exported 637 000 m^3 of industrial roundwood, indicating significant under-reporting of production. According to a report prepared by Global Witness, between January and June 2000 alone the various logging companies produced about 679 000 m^3 of timber.

In several situations reporting systems are absent or at best ineffective. Civil wars and conflicts have undermined institutional capacity in most fields. This makes the reported statistics unreliable as a basis for drawing conclusions.

The largest industrial roundwood exporters in the subregion are Liberia and Côte d'Ivoire, the former accounting for about 75 percent of exports in 2000. This is in sharp contrast to the situation in 1980, when Côte d'Ivoire was the leading exporter[5]. A decline in supply and the policy of encouraging local processing has significantly altered the situation. Ghana, another major exporter in the 1980s, has also put a complete ban on log exports, promoting the development of local processing.

The general trend as regards production and trade in industrial roundwood and other products can be summarized as follows:

- a decline in the production of industrial roundwood in the traditional producing countries (for example Côte d'Ivoire), largely reflecting the depletion of resources;
- a reduction in exports of logs from some of the traditional producers, as a result of increasing emphasis on local processing, with supporting policy and legal stipulations;
- substantial increases in exports of sawnwood from

[5] In 1980 industrial roundwood exports from the subregion were 3.645 million m^3, with Côte d'Ivoire accounting for about 84 percent of this. A significant reduction in the output of industrial roundwood (which declined from 5.36 million m^3 in 1980 to 3.42 million m^3 in 2000), coupled with a policy curtailing the export of logs in order to encourage domestic processing, has reduced Côte d'Ivoire's share to about 16 percent.

some of the traditional producers, such as Côte d'Ivoire and Ghana;

- although no disaggregated data are available to indicate the share of plantations in industrial roundwood production, most industrial roundwood is obtained from natural forests and woodlands and the proportion contributed by plantations is still fairly low; with the low scale of plantation activity, the future role of plantations is unlikely to be large, and there are no indications of a major surge in investment in plantations.

Wood industries

West Africa has a well-developed sawmilling industry, largely based in Nigeria, Côte d'Ivoire and Ghana, which together accounted for about 93 percent of sawnwood production in 2000 (see Box 11). The overall level of production of sawnwood declined in the subregion from about 3.9 million m^3 in 1980 to 3 million m^3 in 2000. Much of this decline can be attributed to reduced production in Nigeria, where, after peaking at 3.3 million m^3 in 1985, it declined to about 2 million m^3 in 2000. The export of sawnwood has emerged as a key activity in the subregion, largely centred in Côte d'Ivoire and Ghana. Between 1980 and 2000 the export of sawnwood increased by about 93 percent - from 398 000 to 769 000 m^3. Côte d'Ivoire and Ghana together account for about 92 percent of the exports of sawnwood from the subregion. Senegal has become the most important importer of sawnwood, accounting for about 73 percent of the imports in 2000.

One of the major problems facing the sawmilling industry is the large unutilized capacity. The encouragement given to local processing has resulted in the rapid expansion of processing capacity, and in many cases the rate of capacity utilization has declined, largely because of the limited supplies available. Some of the major problems confronting the sawmilling industry can be summarized as follows:

- in many cases the machinery is outdated and the rates of recovery are low;
- most sawmills are geared to the processing of large logs. However, as most old growth is harvested, there will be increasing reliance on secondary forests and plantations producing small logs. While some sawmills are adapting to the change, several are unable to do so. This will result in lower production;

BOX 11

WOOD INDUSTRY IN WEST AFRICA

The wood-processing industry is concentrated in Nigeria, Ghana and Côte d'Ivoire, while Liberia and Sierra Leone have a small forest industry base. Nigeria has about 1 000 wood-processing units (sawmills and units producing panels and matches) and three paper factories for local consumption.

The Ghanaian forest industry is formed of 130 wood-processing units. About 200 other enterprises make furniture. It is reported that new factories have been installed recently, bringing the processing capacity to about 3.7 million m^3, which is far in excess of possible wood supplies. Côte d'Ivoire has about 150 wood-processing units mainly engaged in sawnwood production.

(FOSA country reports, 2000-2001)

- with the high capacity of the sawmilling industry, there is likely to be increased pressure to log forests unsustainably. To a large extent, illegal logging is an outcome of the excess processing capacity of the industry, which means that smuggled and low-priced logs can easily find places to be processed.

In contrast to the development of the sawmilling industry, processing at the higher end of the value-added spectrum, namely panel products and pulp and paper, are less developed in West Africa. The production figures and the share of West African production given in Table 6 provide some idea of the relative state of development of key wood industries in the subregion. Veneer and plywood production is limited to Côte d'Ivoire, Ghana, Liberia and Nigeria, with most of Nigeria's production being geared to the domestic market, while in the case of the others a high proportion is exported. The pulp and paper industry in the subregion is confined to Nigeria, and subregional

TABLE 6

An overview of the wood industry in West Africa

Product	Production	West Africa's share in African production (%)	Largest producers
Industrial roundwood (000 m^3)	18,166	26	Nigeria, Côte d'Ivoire, Ghana, Senegal, Guinea
Sawnwood (000 m^3)	3 057	40	Nigeria, Côte d'Ivoire, Ghana, Liberia
Plywood (000 m^3)	230	33	Côte d'Ivoire, Nigeria, Ghana, Liberia
Newsprint (000 tonnes)	31	8	Nigeria
Printing and writing paper (000 tonnes)	1.0	0.2	Nigeria
Paper and paperboard (000 tonnes)	19.0	0.6	Nigeria

Source: FAO, 2002.

production covers only 6 percent of subregional consumption[6]. Almost all the countries are dependent on imports to meet the demand for printing and writing paper, newsprint and other paper and paperboard products. During the past few years, the quantity and value of these imports have increased considerably. The situation as regards production and consumption of forest products in West Africa can be grouped as follows:

- countries that are major producers and consumers, whose internal demand tends to be high largely owing to the high population; a typical example is Nigeria;
- countries that have a substantial surplus production, and hence major exporters of wood and wood products; the largest of these are Côte d'Ivoire, Ghana and Liberia; much of the focus of these countries is on sawmilling and plywood production, although Liberia still continues to export a major proportion as logs;
- resource-poor countries in the Sahel, which are neither exporters or importers; apart from Senegal, all the other countries import negligible quantities of wood products.

An important feature of wood-based industries in the subregion is the large number of small and medium enterprises, most of them in the informal sector. These industries are major employers in and around major cities. The furniture industry is in the form of small roadside carpentry shops employing an average of three workers each. In Ghana alone, the Association of Small-scale Carpenters has 41 000 registered members, and their annual wood requirements have been estimated at 219 000 m^3. A large volume of furniture is produced for the national market, mainly from secondary species.

Forest products trade

During the past two decades the major change as regards the trade in forest products from West Africa is the shift from the export of logs to the export of processed items, especially sawnwood and panel products. A number of wood-producing countries have imposed a ban on log exports and encouraged domestic processing. Interestingly, the overall trade surplus for the subregion has declined during the past two decades, as can be seen in Table 7.

As evident from Table 7, there has been an overall decline in the value of forest product exports, especially since 1990. At the same time there has been an increase in the value of imports. This has significantly reduced net export earnings, which registered a notable decline between 1990 and 2000. Much of this is a result of the situation faced by the major importers and exporters in the subregion. Nigeria, which in 2000 accounted for about 43 percent of imports, has registered a steady increase in outlays on imports. Côte d'Ivoire, which had a forest product trade surplus of US$391 million in 1990, saw it declining to US$98 million by 2000, partly because of increased imports and a reduction in the value of exports. Senegal is another country where the demand for various forest products has increased, and it has consequently become a major importer of sawnwood and other products. Among the other exporters, Ghana has been able to increase its net export income over the past ten years.

An important factor that has contributed to the decline in net export earnings is the overall reduction in the prices of primary commodities, accentuated by the devaluation of local currencies. Moreover, most of the countries are dependent on imports of high-value-added items like paper and paper products. Almost 70 percent of the value of imports in 2000 was accounted by paper and paperboard. Despite the efforts of the countries to add value to products, they have not been able to diversify into products such as paper for a variety of reasons. Increasingly, the scope for investment in such value-added items looks less promising on account of trade liberalization and the small size of the markets.

TABLE 7
Value of West African trade in forest products

	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	(million US$)	(million US$)	(million US$)	(million US$)	(million US$)	(million US$)	(million US$)	(million US$)	(million US$)	(million US$)	(million US$)	(million US$)
Exports	723	692	475	636	597	704	564	567	432	452	475	480
Imports	298	196	184	158	155	173	152	151	202	253	328	349
Surplus	425	496	291	478	442	531	412	416	230	199	147	131

Source: FAO, 2002.

[6] Nigeria, the only producer of paper in West Africa, has three paper mills, but production from these is on the decline on account of fibre shortages.to about 16 percent.

NON-WOOD FOREST PRODUCTS

Among the group of forest products, non-wood forest products play a crucial role in providing livelihoods and food security, especially for the most vulnerable groups in society. However, apart from fragmented information on specific products or limited area-specific studies, very little information is available on their overall contribution (see Box 12). There is a long list of non-wood forest products collected, processed and traded in West Africa. These include forest-derived foods - especially fruits, roots, leaves, bushmeat and honey - gums and resins, medicinal plants, fodder for livestock, construction materials such as bamboo and rattan, and cultural items. In the absence of access to modern medical facilities, the dependence on traditional medicines is very high. In Burkina Faso, the Niger, Nigeria and Ghana, it is reported that more than 80 percent of the population uses medicinal plants and over 40 percent of the urban population depends on traditional medicine. Fodder is another important non-wood forest product, especially for pastoral communities. Access to forests and woodlands during droughts becomes critical to ensure the survival of the livestock population.

Non-wood forest products can be grouped into the following broad types:

- items that significantly contribute to subsistence consumption by local communities, and are collected from forests and woodlands and used directly; the extent of use of such subsistence products depends on the access of people to forest and woodland resources and varies according to the season; in general, dependence increases during droughts and other natural disasters when agricultural production is low;
- items that are traded on the local market, providing supplementary income; a variety of forest-based foods (including bushmeat), medicinal plants and other products are traded on rural and urban markets;
- items that are traded internationally, such as gum arabic, karité and rattan.

Much of the attention hitherto has been focused on internationally traded items, since they provide substantial income for governments and those involved in the trade. The demand from importing industries has also resulted in substantial investment in research and development regarding cultivation, processing and marketing of the traded items. In contrast, very little attention has been paid to items that cater largely to subsistence use.

The overall trend as regards non-wood forest product management in West Africa is similar to that seen in other subregions. Apart from a few "flagship items" that are traded on the international market, most of the other products receive scant attention, except in cases where local communities take the initiative to manage them, as in the case of various species in agroforestry parklands. In such circumstances, these species are nurtured and managed under traditional management systems ensuring that they are effectively protected. In most other situations, especially in areas where tenure conditions are uncertain or where the products are seen as less important (as in the case of most government-owned forests, where management is largely focused on wood production), there is considerable degradation and resource depletion. Domestication efforts largely depend on commercial potential.

BOX 12

SOME MAJOR NON-WOOD FOREST PRODUCTS IN WEST AFRICA

In arid and semi-arid zones, the main edible plants grow in parklands and include such species as *Vitellaria paradoxa* (karité) and *Parkia biglobosa* (néré). In the more humid zones of the subregion, the main non-wood forest products are such edible plants as *Elais guineensis*, *Cola nilotica* and *Cola acuminata* (Cola). Other products include *Anacardium occidentale* well known for its nuts, while *Moringa olifera* and *Acacia nilotica* are planted and exploited for tannins. Rattan and honey are other important non-wood forest products.

(Boffa, 1999)

BOX 13

RATTAN MANAGEMENT

Long-term indigenous management systems for the rattan resource are unknown in Africa, despite recent optimistic reports of what appeared to be such. Throughout its range rattan is considered an 'open-access' resource; there are very few, if any, customary laws regulating its harvest from the wild. Many national forestry codes still do not regulate the exploitation of non-wood forest products, and the overharvesting of many commercially important products, including rattan, continues unabated and uncontrolled. Even those states that require licences and permits for the extraction of forest products often do not adequately enforce the regulations or monitor the exploitation of the resources.

(Sunderland, 2001)

WILDLIFE PROTECTION AND MANAGEMENT

Protected areas

Because of the steep ecological gradients in the West Africa subregion, there is a high degree of biodiversity both within and between countries. The level of endemism is also high, and some species are facing significant danger of global extinction. The subregion is also important for global bird biodiversity, since water bodies located south of the Sahara in the subregion are important for migratory birds, with many of these being protected under the Ramsar Convention.

The system of parks, reserves and biosphere reserves in the subregion covers about 3.5 percent of the land area. Table 8 gives the extent of protected areas in West Africa in 1997.

The system of national parks and protected areas is aimed at conserving representative areas of the major ecosystems. A major proportion of the protected areas is in the more arid areas. In the humid zone, land use conflicts on account of the increasing population has limited the extent of protected areas. As indicated earlier, there has been considerable fragmentation of forests in the humid zone, breaking the contiguity of habitats. Although extensive forests have been declared as gazetted areas and in theory should enjoy a higher level of protection, in practice this is not evident, especially due to intense population pressure resulting in encroachment, illegal harvesting and hunting for bushmeat.

TABLE 8
Extent of protected areas in West Africa

Country	Extent of protected area (000 ha)	% of land (%)
Benin	1 262	11.3
Burkina Faso	2 855	10.4
Cape Verde	0	0
Côte d'Ivoire	1 986	6.2
Gambia	22	2.2
Ghana	1 268	5.6
Guinea	164	0.7
Guinea-Bissau	-	0.8
Liberia	129	1.2
Mali	4 532	3.7
Niger	9 694	7.6
Nigeria	3 021	3.3
Senegal	2 242	11.6
Sierra Leone	153	2.1
Togo	429	7.9
Total West Africa	**27 757**	**5.5**

Source: UN, 2003.

Many of the approaches to conservation and the constraints on them in the West Africa region are similar to those in other African subregions, although land use conflicts are more intense than in other subregions, which makes management of protected areas extremely difficult. There are frequent large-scale incursions of local communities and pastoralists into parks, especially during periods of drought. Resources allocated for park management are far from adequate to address such problems. In many situations transboundary poaching is severe, although there have been some efforts to address this problem and to coordinate management. One important initiative in this regard is the "W" transboundary park, which facilitates collaborative efforts between Benin, Burkina Faso and the Niger (see Box 14).

BOX 14
THE "W" PARK

The 'W' Park complex is made up of three adjoining protected areas in Benin, Burkina Faso and the Niger with the Niger river as the eastern boundary. The river's course there forms a large W shape, giving the area its name. The elephant population would previously have been fairly evenly distributed in their natural habitat shared among the three countries. In response to human pressure, and its effects on habitat quality in Benin and Burkina Faso, the elephants have become concentrated in the Niger section, and this has implications for habitat management as well as the relative opportunities for tourism in each country. (Magha *et al.,* 2001)

Wildlife-based tourism

In comparison with the Southern and East Africa subregions, wildlife-based tourism is less developed in West Africa. The scale of investment in tourism in the subregion is very limited. The potential for forest-based tourism in the area is substantial, but several factors hamper its realization.

The Gambia and to a lesser extent Senegal both have a small tourism industry based on air charter services from Europe. There are also biodiversity-based tourism operations focusing on trophy hunting in a number of countries. Other countries such as Mali and Côte d'Ivoire have good potential for ecotourism, but this remains untapped on account of poorly developed infrastructure, in particular transport facilities. The development of wildlife tourism in the subregion will depend closely on global economic changes and the perception of tourists, especially as regards the nature of the experience and such aspects as security.

The bushmeat issue

Bushmeat is probably the most important source of protein for a large proportion of the rural people.

Subsistence hunting is widespread in most of the subregion. Urban demand for bushmeat is also on the increase, especially due to the increase in urban population and the perception of its superior qualities. The high value of bushmeat in urban markets has led to the rapid growth of commercial hunting for bushmeat. In Ghana, for example, it is reported that bushmeat has developed into a multi-million-dollar industry mainly in Accra and Kumasi. This activity is poorly controlled and threatens several endangered species of animals. Several primate species in the Upper Guinea forests have been driven to the brink of extinction. Some animals such as the porcupine, seen as symbols or totems of ethnic clans, have almost disappeared. Increasing access to forests, deadly hunting techniques using poison, automatic weapons and snares, and poor enforcement of regulations are all leading to the rapid destruction of the existing wildlife. Wars and internal conflicts have exacerbated the situation. Increasing demand by immigrants settled outside Africa has expanded the market for bushmeat, resulting in well established networks for illegal bushmeat trade. All the indications are that commercialised bushmeat production will significantly reduce wildlife population to such an extent that soon it will undermine bushmeat availability for subsistence consumption with its consequences on the livelihood of rural communities.

ENVIRONMENTAL SERVICES

Watershed protection

The subregion has a number of major river systems, such as the Niger, Senegal, Volta and Chad, with watersheds shared by various countries. Water scarcity is already a major problem, particularly for the Sahelian countries. The issue of the sharing of water resources is already emerging as a major issue of conflict among countries. The watershed protection functions of the high forests and deciduous forests of the region have been recognized by the countries of the subregion. Montane forests such as those found in Guinea are especially important in watershed protection. The primary objective of the forest reserve system established in Ghana and Burkina Faso was to protect watershed resources for the benefit of adjoining agricultural regions.

There is already a recognition of the role of forests in watershed management and the need for collaboration between countries in protecting river sources and managing river basins (see Box 15). For example, the forest complex of the Fouta Djallon highlands of Guinea, sometimes called the "water tower of West Africa", is a key element in maintaining the waterflow of the Niger, Senegal and Gambia rivers. The sustainable management of the Fouta Djallon highlands is a prerequisite for the efficient management of six major river basins - the Gambia, Kaba, Kolenté, Koliba, Niger and Senegal - touching eight countries. External support was obtained to coordinate the preparation of a joint strategic plan for sustainable management. There have also been several country-led initiatives in support of watershed management.

BOX 15

WATERSHED MANAGEMENT IN BENIN

The importance of forests in protecting water resources has been well understood in Benin. In the 1950s, the government gazetted 58 forest areas covering about 1.4 million ha. Since then, at least five major watershed management projects have been implemented with external support. To combat drought and desertification, each citizen is requested to plant a tree to mark important family events such as births and weddings, and to celebrate National Tree Day on 1 June.

(Djohoussou, 2000)

Desertification and land degradation

Desertification is one of the critical problems facing most countries in West Africa. Although there is no evidence of long-term expansion of the Sahara, the periodic fluxes in climatic conditions aggravate the situation, undermining the productivity of crops and livestock and resulting in drought and famine. When the land eventually becomes uncultivable, the population is often forced into internal and cross-border migration, which in turn can further strain the environment and cause social and political conflicts. The indirect economic and social costs suffered outside the affected areas, including the influx of "environmental refugees" and losses to national food production, is considerable. A number of countries have initiated desertification control measures (see Box 16) largely focusing on sand dune stabilisation and establishment of windbreaks and shelter belts.

Most countries in West Africa are signatories to the United Nations Convention to Combat Desertification. Some countries have already finalized their national action programmes, which now need to be integrated with other national strategies for sustainable development prior to

BOX 16

COMBATING DESERTIFICATION IN MALI

In Mali, the main types of forestry activity aimed at combating desertification are afforestation, natural forest management, silvipastoral systems, agroforestry systems, watershed management, and the setting up of national parks. The utilization of trees and shrubs is a widely used method of dune fixation. To control silting and sanding up in the Gao and Timbuctu regions, tree species such as Tamarix aphylla, Balanites aegyptica, Euphorbia balsamiphera, Prosopis juliflora and Acacia radiana, as well as various perennial grasses, are widely used.

(Konate, 2000)

implementation. Resource constraints seem to be the key factor hampering implementation of measures to combat desertification. The Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) is coordinating the preparation and implementation of these national action programmes in West Africa.

FORESTS AND FORESTRY IN WEST AFRICA: AN OVERVIEW

The overall situation prevailing in the subregion as regards forests and forestry can be summarized as follows:

- forests cover only about 72 million ha or 14 percent of the land area of West Africa. Most Sahelian countries have very low forest cover. Owing to a combination of several factors, West Africa is experiencing rapid deforestation, estimated at about 1.2 million ha per year;
- West Africa has been a major source of tropical hardwood. However, in the absence of sustainable forest management, the subregion's ability to be a major producer of tropical hardwood is on the decline;
- several countries in West Africa have long experience in plantation forestry and have been able to take advantage of emerging trading opportunities, especially for valuable species such as teak. However, in view of extreme population pressure and the limited availability of land, the scope for significant expansion of plantations is limited;
- there is, however, increasing interest in tree cultivation on farms and homesteads, and in some countries trees outside forests have emerged as a major source of wood and non-wood products. There is also widespread recognition of the environmental functions of trees and woodland, especially in the dry zone;
- wood continues to be the foremost source of energy in most countries. About 91 percent of roundwood produced is used as fuel. In 2000 an estimated 175 million m^3 of wood was used as fuel;
- in 2000 the production of industrial roundwood was estimated at about 18 million m^3. While West Africa as a whole has maintained its level of industrial roundwood production, the share of some of the major producers has declined drastically, while others have increased their production;
- a major development in West Africa has been the development of wood-based industries, especially sawmilling and panel-product manufacture, stimulated to some extent by policies and legislation discouraging the export of logs. However, West Africa may soon have significant problems of capacity underutilization on account of declining log supplies;
- non-wood forest products play an important role in meeting people's basic needs, including income-generation. However, there have been inadequate efforts to take full advantage of their potential.
- West Africa has a network of protected areas, including parks and biosphere reserves, covering about 5.5 percent of the land area. However, the management of these protected areas is far from satisfactory;
- while bushmeat is critical in providing nutrition to rural communities, its commercial exploitation is having a devastating effect on several endangered species and if the present trend continues it may soon undermine even subsistence consumption affecting the nutritional status of rural communities;
- there has been increased recognition of the environmental and other service functions of forests. The most critical of these functions are concerned with watershed protection, desertification control and biodiversity protection.

With population growth, water scarcity will emerge as a crucial issue, and the fact that most of the major river systems in the subregion are shared by a number of countries would necessitate improved arrangements for sharing the costs and benefits of watershed protection.

Chapter 3

Critical change drivers

From the discussion in the previous chapter, it is evident that several factors outside the forest sector have a critical impact on forests and forestry. It is the collective impact of these factors that will define the path of development of forestry in the subregion. These change drivers are local, national, subregional, regional and global. As economic integration between countries becomes stronger, what happens outside the countries could have significant effects on what happens in the forest sector. These factors can be broadly grouped as socio-political and institutional, demographic, economic, environmental, and technological. A general indication of the factors that are likely to shape the forest sector in the next two decades is given below, specifically focusing on the emerging changes.

SOCIO-POLITICAL AND INSTITUTIONAL CHANGES

Policy and institutional environment

Forests are a critical resource subject to conflicting demands. The overall political and institutional environment within countries influences how the resource is used and benefits therefrom shared by the various stakeholders. The West Africa region has seen significant political and institutional changes, although the pace of these varies from country to country. The changes include efforts to move away from centralized planning and control to more decentralized and democratic approaches. There are signs of the development of a democratic process of decision-making and a major transition from authoritarian regimes to democratically elected governments. Key policy and institutional developments affecting forests and forestry in the subregion include:

- decentralization of administration and increased emphasis on participatory approaches to resource management;
- increasing involvement of the private sector in forestry;
- land tenure changes;
- involvement of NGOs and civil society in forestry and allied areas.

While the overall changes during the past 20 years suggest some progression from authoritarian regimes to democratic systems, progress is often chequered, with occasional temporary reversals. A brief indication of the overall direction of change is given below.

Decentralization of administration and community participation

There are more signs of the delegation of administrative responsibilities to provincial, district and local bodies. Increased economic efficiency and the encouragement of local involvement in decision-making are the most important objectives of decentralization. Several countries in West Africa (see Box 17 for examples) are in the process of implementing decentralization, with varying outcomes.

However, the actual outcome of decentralization, especially as regards natural resource management, has been less impressive to date. Despite policy

BOX 17

SOME EXAMPLES OF ADMINISTRATIVE DECENTRALIZATION IN WEST AFRICA

Burkina's constitution identifies decentralisation as one of the main instruments of development and for fostering local democracy and four laws provide the legal framework for decentralisation. Local government institutions are entrusted with the responsibility for economic, social and cultural development and the management of natural resources within their jurisdiction.

In the case of Senegal, decentralised government has been a de facto situation for many years. The Constitutional Law of 1994, modified in 1998, and various other laws establish formally three levels of decentralisation: the rural community, the commune and the region.

In 1982, the Government of Ghana launched the National Development and Decentralisation Plan. Its main principles were then integrated into the Constitutional Law of 1992. It created two levels of decentralised government: the region and the district. Locally elected officials govern decentralised institutions. The constitution establishes the principles of power-sharing between the central government and the decentralised institutions.

(Contreras-Hermosilla, 2001)

BOX 18

DECENTRALIZATION IN THE FOREST SECTOR IN CÔTE D'IVOIRE

The forest policy of Côte d'Ivoire includes several prescriptions related to decentralization:

- transfer of tree ownership to rural populations to allow them to become economic operators;
- assignment to industry of the responsibility for securing their sources of supply;
- fostering of private investment in forest areas;
- progressive integration of the rural population into national decision-making on socio-economic development;
- opening of the management of national parks, forest reserves and gazetted areas to new partners, particularly NGOs and the private sector;
- development of models for decentralized decision-making and elimination of monopolies.

Implementation of these policies led to some problems. For example the Societé pour le Développement des Plantations Forestières (SODEFOR) quickly escaped the control of the forest administration, concentrated on forest areas without properly integrating surrounding agricultural areas and tended to give more importance to administrative functions than to forest management. There was substantial opposition among government staff to relinquishing their monopoly in some forest management functions to other actors and to dispersion of some of the sources of financing. There was also considerable opposition to the transfer of forest ownership to rural populations and to surrendering the authority to issue permits and the advantages associated with such authority.

(Duchochois, 2000)

directives, there are several instances where a supporting legal framework is absent. Weaknesses of local governments and bureaucratic resistance are said to be major reasons for the slow progress. This has been particularly the case where resource management has been in the government domain, as is the case in the humid zone. In situations where resources are valuable, there is obviously considerable reluctance to give up authority to local bodies. Absence of necessary technical and managerial capacity is often emphasized as a justification not to devolve powers to local bodies. Despite these initial bottlenecks, all the indications are that in due course decentralization will become more widely accepted. Forest and woodland resources will be an important sector for management devolution. In the short term this may often add to the complexity of resource management. Local bodies may adopt an independent approach, often inconsistent with national objectives and priorities, and it will take some time to develop widely acceptable institutional arrangements to help resolve the conflicts.

Decentralization of resource management is likely to pose more problems with regard to humid-zone forests, largely on account of their high commercial value and the fact that in this case decentralization means giving up an income-generating resource. In general, decentralization is readily accepted in situations where resources are less valuable, as in the case of Sahelian woodlands. Decentralization has often failed to address the issue of the transfer of financial powers and responsibilities, which largely remain with the federal or central government. Most decentralized bodies have very limited fiscal powers[7] and are dependent on the allocation of funds from the federal government. This in a way makes decentralization highly vulnerable to power exercised at the central level.

Despite the current weaknesses, all the indications are that during the next two decades the decentralization process is likely to gain momentum. This will be particularly the case in countries that have embraced the democratic path of government. However, there is uncertainty as to whether this will lead to better management of resources, considering the resource constraints confronting local communities. A wide range of situations could develop in West Africa, depending on how the democratic process of decision-making emerges and deepens in the body politic. A range of situations may thus be found:

- persistence of centralized resource management, with the adoption of a sectoral approach and forest departments or directorates playing the most important role in resource use decision-making; this could be the most widespread situation in the humid zone, where the high value of resources and the dependence of the federal organization or government on them act as disincentives to the transfer of management responsibility;

[7] Fiscal powers available to local bodies in the Sahelian countries are limited. Some are able to raise local development taxes, but in most cases the levels of permissible taxation are controlled by national legislation. Financial flows from central to local governments are most often insignificant.

- resources still under the control and management of federal agencies, but with the development of appropriate income-sharing arrangements that enable local bodies to share the income through transfer mechanisms;
- the complete transfer of resource management responsibilities, but the absence of capacity to manage the resources properly results in considerable inefficiency and loss of income; this suggests that merely transferring responsibility may not be enough and that there is a need to develop institutional capacity systematically at the local level; efficiency and equity will be compromised if the local administration is controlled by vested interests;
- successful decentralization followed by more efficient management of forest and woodland resources; this situation is likely to be found where local communities have a long tradition of participatory resource management, institutional structures and capacities are well developed, and the resources are critical to the livelihood of the people so that they take a strong interest in their management.

While there will be some progress in decentralization and community participation, much of this is likely to be limited to the relatively resource-poor Sahelian region. Progress as regards decentralisation of resource management and community participation is likely to be very slow in the humid zone. There is also a danger that unless the foundations of democratic systems of government are strengthened through the emergence of a strong civil society, decentralization per se may not lead to the desired outcome[8].

Increasing involvement of the private sector

Historically, the private sector has been very active in forestry in West Africa, largely in the logging of natural forests, the trade in products, wood processing, etc. - activities that have short pay-back periods. Investment in plantations has attracted much less private sector involvement for a variety of reasons, including land ownership and tenure issues, long gestation periods for investments, and uncertainty especially relating to markets, prices and other risks, including those related to uncertain policies and legislation (Contreras-Hermosilla, 2001). There are, however, indications of increasing private sector involvement in tree growing, often on a small scale in woodlots and home gardens and especially in the humid zone, where growth and profitability are perceived to be higher - particularly on account of the growing urban demand. In some countries, particular efforts are made to promote private sector investment in plantations through the establishment of a plantation development fund, as is seen in Ghana.

Another issue widely discussed in the subregion concerns the privatization of government plantations. As indicated in chapter 2, most countries have undertaken plantation programmes since the beginning of the 20th century. In pursuance of the overall policy of privatizing the provision of goods and services, some initiatives have been made to transfer these plantations to the private sector. Countries such as Ghana have embarked on a programme of privatization of utility services such as water and power. However, efforts at privatizing plantations have not so far been successful. The factors hampering such privatization include the following:

- the limited capacity of the local private sector to invest in acquiring plantations;
- uncertainties over government policies;
- divergent views on privatization (see Box 19);
- the perception of risks and uncertainties by foreign investors and the high (and often unacceptable) risk premiums sought by them to cover potential problems arising from changes in policies.

BOX 19

COMMITMENT TO THE PRIVATIZATION OF PLANTATIONS

One of the largest obstacles to the privatization of forest plantations is likely to be the lack of consensus on the desirability of the process. This translates into weak political support and delays in implementing privatization schemes. Environmental and social considerations may fuel doubts in the public that plantations should be privatized. With few exceptions, the push for privatization has not come from internal political pressure rooted in popular consensus, but from the desire to satisfy international agencies such as the International Monetary Fund and the World Bank and the desire to stem the flow of losses caused by State enterprises.

(White & Bathia, 1998)

[8] In the absence of transparency and public accountability, decentralization has often led to "decentralization of corruption".

Land tenure

The land tenure situation in West Africa also shows a distinction between the dry and humid zone. The relatively high population density and high productivity in the humid zone have largely favoured private ownership of land. The gazetting of forests as reserves has been an important approach adopted by governments to secure the rights for commercial or environmental reasons. In contrast, the low population density and low productivity in the dry zone have favoured customary control by communities. Under customary law, people have the right to use the land. There have been efforts to replace customary law by statutory regulations, but in the absence of the ability of governments to impose these, customary regulations invariably prevail.

Much of the incentive to adopt statutory ownership and titling is related to the productivity and value of land. Where land is valuable, there is a strong tendency for private ownership to emerge. For example, in the case of the Gambia, registration and titling are mechanisms to clarify the ownership of certain areas, especially highly-productive land where these processes are well worthwhile. The advantage of the codified system is that there is a clear delineation of ownership, whereas the advantage of customary law is flexibility in times of hardship.

The probable situation that will emerge during the next two decades as regards land tenure can be summarized as follows:

- in the humid zone, where private ownership is well developed, there will be increasing pressure to hand over government land (including gazetted forests) to the private sector, especially in view of increasing landlessness;
- customary control, now widespread in the dry zone, is likely to face increasing problems and is likely to be replaced in due course by statutory laws of titling and private ownership, especially in more productive and valuable areas. Nominal customary control may still prevail in less productive areas, which are likely to remain open-access resources.

Changes in land tenure will be time-consuming (see Box 20) and could lead to considerable conflicts. Conflict between pastoralists and settled farmers is common. As more of the land is titled and individuals claim ownership, access will be curtailed. While traditional systems did develop mechanisms to manage such conflicts, statutory regulations fail here, often leading to open conflicts. In all the Sahelian countries, changes in land tenure have increased the potential for conflicts. In the humid zone, conflicts are often between the original landowners and people who initially came to work on plantations and later settled in the countries (for example, the recent conflict in Côte d'Ivoire).

BOX 20

LAND REFORMS REQUIRE A LONG-TERM PERSPECTIVE

The need to address land issues has become apparent to many governments and donors, and new initiatives are under way in several countries. The reform of land legislation and administrative procedures requires a long-term perspective and commitment, and political willingness at the heart of government. In the Niger, the Executive Secretary of the Rural Code thus describes its design and preparation as a "long, long-term process" and the proposed Land Administration Programme in Ghana covers a 20-year period.

(International Institute for Environment and Development, 2001)

The impact of changes in land tenure on forests is mixed. Where changes in tenure result in security of ownership, landowners do invest in land improvement, including tree planting. This is one of the reasons that there is substantial tree growing on private land in the humid zone in spite of increased population densities. In the dry zone much will depend on how effective community control is and how conflicts between various uses and users are resolved. Where land use pressures are low, the extensive nature of use permits substantial tree growing, both managed and unmanaged, as in the case of agroforestry parklands. However, as the population pressure mounts and land becomes more valuable, private ownership becomes more widespread. There is likely to be a shift away from less profitable extensive land use to more profitable intensive use, often resulting in the removal of trees.

Wars and internal conflicts

An outcome of the absence of a just and widely acceptable process of government is the persistence of wars and internal conflicts, largely stemming from resource use conflicts. Liberia, Guinea and Sierra Leone are involved in conflicts that have destabilized a major part of the subregion, creating refugees and displaced persons. There are also dormant conflicts in countries such as Senegal and Nigeria. The recent conflict in Côte d'Ivoire clearly demonstrates how

latent problems could intensify over time reversing the progress on the economic and social fronts. The impact of these conflicts on forestry includes:

- inability to manage the forests, in as much as forest areas are most often the scene of conflicts and in many cases heavily mined;
- use of forest resources by parties to the conflict as a source of income to pursue conflicts; there are several instances where timber has become a major means of generating income to procure weapons;
- social disruption, including the undermining of agriculture and traditional livelihoods, depopulation of disturbed areas, and the impact of internally displaced people and refugees on forests and woodland adjoining refugee settlements and camps;
- an overall decline in the capacity of governments and local communities to protect and manage forests and woodlands in a situation of high risk and uncertainty.

In many cases the conflicts stem from the competition for resources, for example between settled agricultural communities and pastoral communities. Conflicts get aggravated during periods of drought. Political boundaries between countries drawn on the basis of the administrative convenience of colonial powers seldom take into account the social, cultural and ecological continuities between and within communities, and this often aggravates conflicts. The large-scale expansion of commercial crops (for example cotton and groundnut) has also accentuated conflicts, which often tend to take on an ethnic dimension.

It is hard to forecast changes in the conflict situation in the subregion. Much will depend on the strengthening of democratic processes at all levels and the existence of institutional mechanisms to anticipate and prevent conflicts. Subregional organizations such as ECOWAS are active in conflict management, but it may take some time before effective systems are in place at various levels. While such approaches could help to avoid major conflicts between countires, the avoidance of internal conflicts over resources may depend on the strengthening of democratic processes at all levels.

Emerging role of NGOs and other civil-society organizations

An important change factor is the increasing advocacy and action role of NGOs and other civil-society organizations. A number of NGOs are involved in promoting rural development and related activities, including sustainable forest management, often with support from international NGOs. These organizations play a major role in articulating local concerns and taking up issues with the government and other organizations. Notable areas of NGO involvement include support to community resource management, the management of protected areas, and the implementation of sustainable forest management. Many donor agencies are increasingly channeling their assistance, particularly for area- or problem-specific interventions, through NGOs, especially in view of their flexibility and ability to work closely with local communities.

Civil-society organizations are also emerging as key players in the larger arena of governance, transparency, environmental issues and human rights, influencing the actions of governments, the private sector and other actors. In many countries the emergence of strong and independent local civil-society organizations is hampered by:

- the persistence of authoritarian structures that restrict the emergence of free mass media, thus curtailing the expression of views and opinions;
- very limited access to information, especially on the functioning of governments;
- the absence of a legal and institutional framework that could compel corrective action by governments and other actors, providing protection to individuals or organizations who take up public interest issues.

Civil society organizations are at present inadequately developed in most countries, so that much of the current initiatives related to governance, the illegal exploitation of natural resources, etc., are being made by international NGOs such as Global Witness and Greenpeace. This is in a way critical, in view of the international ramifications of the illegal activities and the need for concerted action at the global level. In the long run, the impact of such action will depend on the extent to which governance, transparency and accountability are increased and democratic systems of government find wider acceptance. While there are signs of positive change, it is extremely difficult to give an indication of how civil-society organizations will develop and to what extent they will be able to function effectively as a corrective mechanism, safeguarding the larger interests of society.

Policy and institutional changes: an overview

The political, social and institutional environment is changing, and in general the change is in a positive direction. Although slow, there are efforts to decentralize authority and to adopt more participatory approaches in resource use decision-making. The role of the private sector has been recognized, but the necessary framework for the operation of efficient and competitive markets is yet to emerge. Attempts are also under way to address the issue of land tenure, especially in view of the overlap between customary and statutory arrangements. Democratic institutions are increasingly emerging, although at varying paces. The very process of change itself is bound to have some destabilizing effects, especially when those who have traditionally held power resist such change. The next 20 years is on the whole likely to be a period of turbulence in the political and institutional environment, with attendant uncertainties and possibly increased conflicts.

DEMOGRAPHIC CHANGES

Although there is no one-to-one relationship between population and deforestation, demographic changes affect forests and forestry directly and indirectly. Population growth, urbanization, changes in the age structure and population movements all affect forests. Some of the likely changes in demography and their impact on forests are described below.

Population growth

With a population of about 234 million, accounting for about 29 percent of the region's population, West Africa is the most populous subregion in Africa. Table 9 gives the relative size of the populations of the various subregions and how they are likely to change in the next 20 years.

As indicated, the population of West Africa is expected to reach about 344 million by 2020 - an absolute increase of about 110 million, slightly over the increase during the period 1980-2000. This will have a direct and indirect impact on forests and forestry through the increased demand for land as well as a range of forest goods and services.

TABLE 9
Population changes in Africa and West Africa

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	1045	141.2	182.1	230.0	289.0
Southern Africa	69.6	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: African Development Bank, 2001; World Bank 2002.

TABLE 10
Size and density of population in West Africa

Country	Total population 2000	Density 2000	Estimated population 2020	Density 2020	Rural population 2000
	(million)	(inhab/km^2)	(million)	(inhab/km^2)	(%)
Benin	6.28	54	10. 03	89	58.5
Burkina Faso	11.27	44	20.65	75	82.1
Cape Verde	0.44	106	0.62	155	39.5
Côte d'Ivoire	15.95	46	21. 81	68	54.1
Gambia	1.29	116	1.99	176	68.2
Ghana	19.20	85	33.37	140	62.2
Guinea	7.42	30	11. 52	47	68.0
Guinea-Bissau	1.21	34	1.78	49	76.7
Liberia	3.13	28	5. 85	53	52.7
Mali	10.84	9	18. 95	15	70.6
Niger	10.85	8	19.06	15	79.9
Nigeria	126.91	121	168. 22	182	56.9
Senegal	9.53	48	15.21	77	53.7
Sierra Leone	5.03	68	7. 38	103	64.1
Togo	4. 67	82	7. 61	134	67.3
Total West Africa	**234.02**	**43**	**344. 06**	**68**	**60.4**

Source: World Bank, 2002; African Development Bank, 2001.

The uneven distribution of population, largely reflecting ecological conditions and carrying capacity, is another important aspect of the demography of West Africa. Table 10 gives the distribution of population among West African countries, highlighting differences in size and density.

Nigeria is the most populous country in the West Africa subregion in terms of both population size and density, accounting for about 54 percent of the subregion's population and creating a high demand for forest products. The consequent high demand for land for alternative uses also limits the scope for expanding the area under forests and plantations. Population densities are much higher in the southern parts of the subregion, being particularly dense in the humid zone[9]. In countries such as Mali and the Niger, population densities are very low, reflecting the low carrying capacity.

Population growth need not always result in forest clearance, as is generally assumed. Several studies have shown that communities do develop appropriate response mechanisms to protect and manage trees even in high-population-density situations, as long as the benefits are clearly perceived and there is certainty of land or tree tenure. As indicated earlier, much of the

[9] Density per square kilometer varies from more than 100 inhabitants in the Gambia, Nigeria and Cape Verde to less than 10 per square kilometer in the Niger and Mali.

existing woodlands in West Africa, especially the agroforestry parklands, is anthropogenic and has been developed through careful intervention to produce a range of goods and services.

The size of the population has major implications for the size of markets and the scope for large-scale industries. While Nigeria's internal demand is high and would justify investment in major industries, for many countries the size of the market will continue to be a major limiting factor in establishing large-scale forestry processing units, such as pulp and paper plants. Future prospects for such industries in many countries will depend on the enlargement of markets as a result of subregional and regional integration.

Urbanization and other population movements

Since the West Africa subregion straddles two distinct ecological zones with extremely varying productivity, population movements in response to varying economic opportunities are a major feature of the subregion. Both rural-to-urban and dry zone-to-moist zone population movements are common in West Africa. It is the second most urbanized subregion in Africa (after North Africa), with about 40 percent of the population currently living in urban areas, a figure expected to reach about 52 percent by 2020. Urbanization will in particular lead to the expansion of existing cities, straining the already inadequate infrastructure facilities. For example, the population of Lagos is expected to increase from 8.7 million in 2000 to about 16 million by 2015 (UN, 2002), aggravating the problems relating to the provision of urban services.

The rapid urbanization of the subregion stems from both push and pull factors. Since population densities in the humid zone are already high, most of the migrants from dry zones (both rural and urban) end up in the cities of the coastal areas. Urbanization, particularly in the absence of rapid growth of the industrial and service sectors, is expected to create enormous pressure on natural resources in the adjoining areas. The demand for forest products, especially construction timber and charcoal, is expected to increase considerably. As is already happening in several countries, peri-urban forests will continue to be depleted for their products, as also for agriculture. Urbanization increases the value of land, resulting in the conversion of forests for agricultural and residential uses.

While the urban population is expected to grow rapidly, the absolute number of rural people will also increase, and the consequences for forestry will depend on how people respond to the increasing demand for goods and services, and more particularly on the pattern of agricultural growth. As indicated earlier, there has been a regular movement of people from the less productive dry zone to the more productive humid zone, as is seen in Ghana. Differences in economic opportunities have also resulted in significant migration between countries, as has happened in Côte d'Ivoire[10]. North-south migration is expected to continue, especially in view of the low productivity of the northern zone. Conflict, drought and uneven economic development are expected to exacerbate the situation.

Population structure and its implications

An important demographic feature that will have a far-reaching impact on the economy and on natural resource use in the subregion is the age structure of the population. In most countries in the subregion, almost 45 percent of the population is below the age of 15[11] (World Bank, 2002). Within the next two decades this will result in a swelling of the young adult population. Meeting their aspirations, especially providing remunerative jobs, housing, etc., will be a major challenge. All the indications are that their aspirations will be different from those of their parents, and this will affect the nature of the employment sought. More skill-intensive and remunerative jobs will be required as there is likely to be increasing reluctance to undertake less remunerative unskilled jobs. With the already precarious employment situation in many countries, there are signs of adverse social consequences, such as increasing crime and social unrest. The probability of exacerbation of social conflicts is hence high.

The impact of HIV/AIDS

HIV/AIDS is much less prevalent in West Africa than in Southern and East Africa. At the end of 1999, Burkina Faso, Côte d'Ivoire, Nigeria and Togo had infection rates of over 5 percent (UNAIDS, 2000). The future HIV/AIDS scenario depends on efforts to create the

[10] For example, most labour for cocoa plantations in Côte d'Ivoire came from Burkina Faso and during the boom period these workers were most welcome. The situation has changed during the economic downturn, fuelling conflicts between second-generation settlers and local people, largely related to the ownership and use of land.

[11] The proportion varies from 40.6 percent in the Cape Verde to 48.8 percent in the Niger. Nigeria has about 44.5 percent of the population below the age of 15.

necessary awareness among the vulnerable population and on how effectively preventive and control measures are implemented. Countries such as Nigeria and Senegal are making significant efforts to control the emerging epidemic. The effects of HIV/AIDS on the economy are manifold, and it is important that this aspect be taken into account in defining the future social and economic scenario. The following are some of the probable effects of HIV/AIDS, in addition to a reduction in life expectancy:

- a drastic decline in the household economy, as a result not only of the decline in productivity of the infected person, but also of the need for substantial additional resources to take care of him or her;
- an increase in the number of orphans, who, in the absence of adults to guide them, are unable to contribute socially and economically and often become a major social problem;
- a loss of traditional knowledge and skills, with consequences for agriculture, forestry and other resource uses;
- an increased demand for public resources to undertake preventive and control measures.

All these factors will have a cumulative impact on the eoncomy, including the forest sector, significantly undermining society's capacity to manage forest resources sustainably.

ECONOMIC CHANGES

The overall development of the economy, especially the growth of income, its distribution and the extent of poverty, is a major element affecting forestry. While forestry activities do contribute to economic development, the overall changes in the economy tend to have significant direct and indirect effects on forestry. Some of the key features of the economic situation in West Africa are indicated below.

Economic growth

During the past decade the overall growth of West African economies has been far from satisfactory. In 1990 West African gross domestic product (GDP) at constant 1995 prices was US$57.7 billion, and accounted for about 12.6 percent of African GDP. By 2000, GDP had grown to about US$76.7 billion, increasing its share in African GDP to 13 percent (see World Bank, 2002). The overall annual rate of GDP growth has been about 2.9 percent per annum, marginally higher than the population growth rate of 2.8 percent, resulting in a very insignificant increase in per capita GDP.

Table 11 shows the substantial intercountry variation in GDP and its growth rate between 1990 and 2000. Some of the key features of West African economies can be summarized as follows:

- Nigeria, being the most populous country, also has the largest economy, accounting for about 42 percent of the GDP of West Africa. Between 1990 and 2000 it grew at an annual rate of 2.6 percent. With a population growth rate of 2.8 percent, this translates into a decline in the per capita GDP;
- the GDP of many countries is small - less than US$2 billion - and in many cases their performance in terms of growth has been particularly poor, partly because of their vulnerability to internal and external factors. For

BOX 21

POSSIBLE IMPACT OF HIV/AIDS

The key uncertainty in terms of scenario development is the AIDS pandemic. If governments succeed in maintaining low levels of HIV infection then the level of economic development and the availability of labour will ensure that a domestic industry is viable. If however the levels of infection mirror the development in Southern and Eastern Africa, then an industry based on local demand will be less viable since the level of economic development will be significantly lower. At present it is not clear what the situation will be. Some countries in the region appear to be having success in limiting the spread and effect of the disease while others are suffering badly.

(African Development Bank, 2001a)

TABLE 11

Size of the economy: GDP at 1995 prices in West Africa

Country	GDP in 1990	GDP in 2000	Growth rate of GDP 1990-2000
	(million US$)	(million US$)	(%)
Benin	1 632	2 598	4.8
Burkina Faso	2 002	2 842	3.6
Cape Verde	381	670	5.8
Côte d'Ivoire	9 187	11 890	2.6
Gambia	344	483	3.4
Ghana	5 236	7 978	4.3
Guinea	3 106	4 474	3.7
Guinea-Bissau	217	251	1.5
Liberia	-	-	-
Mali	2 136	3 119	3.8
Niger	1 813	2 197	1.9
Nigeria	24 864	32 184	2.6
Senegal	4 150	5 806	3.4
Sierra Leone	1 370	792	-5.3
Togo	1 304	1 479	1.3
Total West Africa	**57 742**	**76 763**	**2.9**

Source: World Bank, 2002.

[12] Reductions in life expectancy are expected to range from 8.9 years in Côte d'Ivoire to 1.5 years in Benin.

example, Sierra Leone registered a negative growth rate of -5.3 percent between 1990 and 2000 as a result of civil war and the near complete breakdown of government;

- there are a number of countries that have shown positive growth rates higher than the population growth rates, indicating an increase in per capita income. However, such increases tend to be marginal, especially considering the low levels of per capita income.
- a small-sized economy implies low incomes, low purchasing power and small markets for products and services. This also suggests limitations on governments' ability to raise revenue through taxation or other means, and hence on their ability to invest in forestry and other sectors.

Per capita income, income distribution and poverty

While the aggregate GDP gives an indication of the overall size of the economy, a better, although still imperfect measure of comparing the economic situation between countries is the per capita income. Table 12 indicates the per capita gross national income (GNI) and how it changed in West African countries between 1990 and 2000[13].

There are several countries, including Burkina Faso, the Gambia, Guinea-Bissau, the Niger and Nigeria, where the per capita income is less than US$1 per day. In several countries the per capita income declined between 1990 and 2000. This would imply an overall decline in purchasing power and continued deprivation for a sizeable section of the population if the current low or negative income growth rates persist. Even if per capita income were to grow at 5 percent per annum, it would take more than 14 years to double the income - and even then, the absolute level of per capita income would still be low.

TABLE 12
Per capita GNI of West African countries

Country	Per capita GNI in 1990	Per capita GNI in 2000
	(US$)	(US$)
Benin	360	380
Burkina Faso	290	230
Cape Verde	880	1330
Côte d'Ivoire	780	660
Gambia	320	330
Ghana	390	350
Guinea	460	450
Guinea-Bissau	210	180
Liberia	-	-
Mali	280	240
Niger	310	180
Nigeria	270	260
Senegal	730	500
Sierra Leone	260	130
Togo	430	300

Source: World Bank, 2002.

[13] The per capita GNI adjusts the GDP by taking into account the income earned by nationals outside the country, which helps to balance the outflow of income earned by other nationals in the country.

BOX 22
POVERTY IN NIGERIA

The 1996 Nigeria Human Development Report disputes the claim that overall poverty decreased between 1985 and 1992, pointing out that whereas the poorest 40 percent of the population spent 75 percent of total expenditure on food in 1985, they spent 90 percent in 1992. Moreover, measures of private consumption did not take into account the significant drop in social services such as education and health. And since 1993 income poverty and destitution have been on the rise. The absolute number of poor jumped from about 35 million in 1992 to 44 million in 1995.

(United Nations Development Programme, 1998)

Low per capita income combined with a highly unequal distribution of income exacerbates the economic situation. Available estimates on income distribution, although outdated (United Nations Development Programme, 1998), provide an indication of inequalities. For example, the richest 10 percent of the population in Nigeria gets about 40 percent of the total national income. In Guinea, the proportion of the population below the poverty line is 87 percent.

As long as these inequalities persist, the potential for taking advantage of the opportunities provided by globalization remains limited. The consequences of this for forests and forestry are as follows:

- continued dependence of the poor on forest resources, increasing the pressure on limited resources;
- inability of households to invest in conservation and sustainable management of natural resources;
- low purchasing power, limiting access to forest products, even when they could be imported;
- impairment of human resource development by poverty, perpetuating low level of skills and dependency on agriculture and natural resources, while opportunities for diversification are limited.

Given the demographic and economic outlook for the region, it is unlikely that there will be a substantial reduction in poverty during the next 20 years. Studies indicate that the millennium goal of reducing poverty in sub-Saharan Africa from 47.7 percent of the populations to 22 percent 2015 is unlikely to be achieved. According to recent estimates, the

proportion of the population below the poverty line has increased to 48.4 percent. This indicates that for a great majority of the population survival will depend on access to natural resources such as forests and woodlands, although they may not have the necessary capacity to invest and manage these resources.

A related issue is the very low level of human development indicators, such as literacy, life expectancy, access to safe drinking water and infant mortality. Most countries in West Africa have a poor record in improving the situation. Out of the 15 countries in the subregion, nine have a infant mortality rate of over 100[14]. In world terms, Sierra Leone and the Niger rank first and third with regard to the prevalence of infant mortality. In all the countries except Cape Verde, Côte d'Ivoire, Ghana, Nigeria and Senegal, the literacy rate is less than 50 percent. And there are several countries where life expectancy is less than 50 years.

The implications of this state of human development are multiple. Apart from the direct impact on the various sectors, the low level of social development limits the scope of government intervention. For governments concerned with economic and social development, investing in health and education will be a priority during the next two decades, and forestry is therefore unlikely to receive a high priority in public spending. Indeed, in a situation of limited resources, forestry will be expected to subsidize investment in the social sectors.

Indebtedness

Like other African countries, West African countries are heavily indebted to international creditors. In 2000, the total external debt of West African countries was US$72.26 billion, or almost 86 percent of GDP[15] (World Bank, 2002). There are several countries whose external debt is more than the GDP[16]. A substantial proportion of export income is used for debt servicing. For example, Côte d'Ivoire spends 28 percent of its export income on debt servicing, while Guinea-Bissau, Ghana and Sierra Leone spend more than 20 percent. The debt burden forces many countries to export commodities even in the context of declining prices.

The future economic and social performance of most countries in the subregion will undoubtedly depend on how the problem of indebtedness is addressed. Although some efforts are under way to write off part of the debt, many point out the inadequacy of this approach and advocate a total cancellation. The consequences of high indebtedness for forestry could be several, including the following:

- a compulsion to export forest products in order to increase foreign exchange to meet debt-servicing commitments, and the expansion of cultivation of export-oriented cash crops;
- governments' inability to reinvest resources in forestry as debt servicing becomes a primary charge.

Structural changes in the economy

Structural changes in the economies, as reflected in the changing share of GDP contributed by the various sectors, give an indication of the long-term potential and constraints for forestry. As the economies develop and mature, the share of agriculture in GDP and employment declines, indicating the growth of the industrial and service sectors and reducing the pressure on land. In most West African countries, agriculture continues to be the primary source of income and employment. Between 1980 and 1999, the share of agriculture in GDP increased from 25.9 percent to 30.7 percent. Moreover, the share of industry in GDP declined from 35.4 percent to 32.2 percent. The share of the service sector increased marginally from 36.7 percent to 37.1 percent during the same period (Economic Commission for Africa, 2001). All these facts suggest the continuing importance of agriculture and allied sectors.

In assessing changes in the share of the industrial sector, it is important to consider the role of the manufacturing sector. In general, the share of manufacturing in West Africa remains low, increasing marginally from 6.4 percent in 1980 to 8.5 percent in 1999. The rest of the industrial sector consists mainly of mining, oil production and related activities. Among the countries of West Africa, Senegal alone seems to have a high share of manufacturing, which increased from 17.2 percent in 1980 to 19.6 percent in 1999.

The consequences of changes in the sectoral composition of the economy are as follows:

- if the present trend persists, agriculture will

[14] Infant mortality is defined as the probability of dying between birth and one year of age, expressed per thousand live births.

[15] For the purpose of estimating this, nominal GDP (based on current prices) has been used. The nominal GDP at current prices is estimated as US$ 83.47 billion.

[16] This is the case with Côte d'Ivoire, Ghana, Guinea-Bissau, Mali, Sierra Leone and Togo.

remain the key sector in most West African countries. Increase in agricultural production in the context of limited technological changes would imply continued clearance of forests and woodlands;
- with a high proportion of the population dependent on agriculture, per capita incomes in agriculture remain low. This means that dependency on natural resources such as forests and woodlands for a variety of goods and services as well as for employment will continue to be important.

Growth of the informal sector

The above situation leads to a growing importance of the informal sector. National statistics on GDP and employment deal primarily with the formal sector and conceal the actual level of economic activity. All the evidence suggests the growing importance of informal sector activities, which become critical in view of the poor growth of the formal sector. The need to find alternative sources of cash income in view of declining returns from cash crops has increased dependence on the informal sector. Major forest-based informal sector activities include the collection and marketing of woodfuel (including charcoal), the collection, processing and marketing of non-wood forest products, pitsawing, and bushmeat production and trade. Informal sector activities are extremely important in helping local communities to meet subsistence needs.

The future of the informal sector will depend on the growth rate of the formal sector and whether it will be able to meet the needs of the people, and also on the relative costs and benefits of activities in the formal and informal sectors. In the context of the forest sector in West Africa the following situation can be envisaged:
- as long as low income and poverty persist, forests and woodlands will be a major source of products, most of which will be obtained through the informal sector;
- since the growth of the formal sector has been slow - implying less than adequate growth of income and availability of goods and services through formal sector activities - the informal sector will continue to be important.

Agriculture-forestry interface

Considering the critical importance of agriculture to West African economies, the agriculture-forestry interface must be examined in the context of the various farming systems, how these change over time, and their possible impact on forests and trees. The major farming systems in West Africa are the tree-crop system, the root-crop and mixed cereal-and-root-crop systems, the agropastoral millet/sorghum system, and the pastoral system. Each occurs in distinct zones following the rainfall gradient from south to north (FAO & World Bank, 2001). Spread over these are small pockets of cultivation that depend on irrigation. The broad characteristics of the various systems, the changes over time and how they affect forests and trees are indicated below.

Tree-crop system

The tree-crop system focuses on the production of export crops - cocoa, coffee, oil palm and rubber - and is found in the most densely populated humid area of the subregion. Until recently, the expansion of cash-crop cultivation has been an important reason for forest clearance in the humid zone. However, the viability of further expansion has been called into question because of a drastic decline in prices. In most countries the public sector support system that helped in the expansion of cash crops has been more or less dismantled as part of the structural adjustment programme. Although expansion of the tree-crop system involves clearance of primary or secondary forests, such conversion does not always completely undermine all forest-derived goods and services. In many cases, industrial tree crops provide substantial quantities of wood (as in the case of rubber), as well as providing significant cover and thus protecting soil and water, although biodiversity values are lost. The likely situation as regards the tree-crop farming system- forests linkages can be summarized as follows:
- with continued decline in the price of cash crops tree-crop systems will become less profitable, and there is thus likely to be a reduction in forest clearance for their cultivation;
- as income from cash crops declines, many farmers may diversify their sources of cash income. There will be more incentive to collect forest products, often illicitly. Logging, collection of fuelwood, charcoal production and hunting for bushmeat are expected to become more pervasive;
- depending on the perception of profitability, there could be some effort to cultivate trees such as teak on farmlands. With the growing urban demand for forest products, the profitability of growing trees

on farms is likely to improve, although increased imports on account of economic liberalisation could increase competition and depress the prices. Trees on farms are in fact already providing a substantial quantity of wood.

Root-crop and mixed cereal-and-root-crop systems

The root-crop and cereal-and-root-crop farming systems are primarily found in the Guinean savannah area, occurring as a belt in the transition zone between the humid and dry zones. The root-crop system adjoins the tree-crop system, with the cereal-and-root-crop system to its north. Population densities are in general low, and this area has considerable agricultural potential. Although land availability is not a constraint and fallow periods can be extended to maintain productivity, many farms face declining productivity. Most of this system is dominated by smallholder cultivation, partly to meet subsistence consumption and partly to meet the needs for cash income. Both the root-crop and cereal-and-root-crop systems are undergoing changes in response to trade liberalization and the changes in input/output prices.

Most of the root-crop and cereal-and-root-crop farming systems incorporates a large number of trees, providing several wood and non-wood forest products. However, there is a likelihood of substantial changes, depending on the nature of agricultural expansion. The Guinean savannah is probably one of the most important frontiers for agricultural expansion, and the impact will vary depending on the type of farming system, the crops cultivated, the scale of expansion and the technology adopted. The impact of changes in agriculture on tree growth could vary as follows:

- if traditional approaches to farming continue, there is a likelihood that many of the trees on farms will be retained or that the more useful ones providing wood and non-wood products will be protected and managed;
- with improved accessibility, the Guinean savannah also has a high potential for large-scale commercial farming. If this takes place, many of the trees in the area will be removed to make way for intensive agriculture;
- improved accessibility also offers scope for forest plantations, especially of high-value species, depending on the economic viability of such plantations in comparison with alternative land uses.

Agropastoral millet/sorghum system

This farming system is found in the semi-arid zone of West Africa from Senegal to the Niger. Although population density is very low, the low productivity of the system, coupled with vulnerability to periodic droughts, keeps the carrying capacity at low levels. Both crops and cattle are important for the survival of households. Since cultivation is entirely rainfed, there is considerable uncertainty with regard to yields, while poorly developed infrastructure limits access to inputs and markets. Desertification is one of the major environmental problems facing the system.

The agriculture-forestry interaction is both complementary and competitive. Trees are an integral part of the farming system, providing woodfuel, fodder, a variety of non-wood forest products and construction timber, especially poles. They also are important in providing shade and as windbreaks and shelterbelts. Increasing urban demand for woodfuel is putting considerable pressure on tree growth in this zone. The most probable changes in the farming system and their consequences for woodland are as follows:

- on the whole the scope for intensification of agriculture is limited in view of the distance from markets and the limited access to inputs. This means that population growth would require the expansion of cultivation to new areas, with possible consequences for trees on communal land;
- an increasing demand in urban centres for woodfuel and other products (especially construction material) could lead to overharvesting and depletion.

The main goal of land management in these areas will be to reduce the population's vulnerability to falls in productivity on account of land degradation and droughts, and also to ensure the availability of goods and services on a sustainable basis. There are considerable opportunities for managing woodlands and trees as integral parts of the farming system in support of food security.

Pastoral system

The pastoral system is found primarily in the arid and semi-arid areas of the Sahel, especially in the northern parts of Mali and the Niger. Transhumance is a characteristic feature, with pastoralists moving to the south during the dry season. Much of the dynamics of the system stems from seasonal and yearly fluctuations in feed and water availability and the tendency to

increase livestock numbers during favourable periods. Invariably this results in substantial pressure on resources, including trees to provide fodder. Probable changes in the pastoral system and their consequences for forestry are as follows:

- with the increasing demand for meat and other livestock products there could be an expansion of livestock numbers, which is often supported by urban investors. With better accessibility and improvements in processing and cold storage, the livestock sector could expand, which may have a negative impact on forests and woodlands, if the free ranching system continues;
- considering the high inputs required to allow the development of more sedentary systems, no major changes are likely to take place in the pastoral system during the next two decades. Although there may be pockets of modernization, the impact of this is likely to be limited.

Economic liberalization

Historically West Africa is much better integrated with the global economy than other subregions in sub-Saharan Africa. The coastal area provided important trading outposts, all of which have developed into major urban centres on the basis of strengthened trade links with the rest of the world. Much of the formal economy is linked to global markets, especially through the production of cash crops, timber, minerals and, as in the case of Nigeria, oil. Trade liberalization is further helping to strengthen links with the rest of the world. However, as indicated earlier, traditional export items, especially cash crops, have lost their attraction, largely as a result of declining prices.

The key questions concerning economic liberalization are whether West African countries will have access to global markets and whether their production systems will be able to take advantage of emerging opportunities. More particularly, it is important to consider the terms of trade and to what extent improved access to markets and products benefits local producers and consumers. Hitherto liberalization has resulted in the following situations:

- there has been an increase in the availability of consumer goods, largely catering to urban demand. Trade in many of the products is often controlled by outsiders and the surplus usually moves out of the countries of the subregion;
- the limited indigenous production of goods and services is already suffering from a number of constraints, including inadequate power supplies, a lack of spare parts, the high costs of imported inputs, and institutional problems. In many cases the capacity for production remains significantly underutilized, resulting in high costs. Cheaper imports have further undermined the prospects of indigenous production, with a negative impact on local employment and income;
- most exports are based on extractive resources or traditional cash crops. These are extremely susceptible to changes in global demand and supply. And benefits from trade often accrue largely to multinational corporations and trading agencies.

The future direction of change depends on how global trade arrangements emerge during the next two decades. Improved access to developed-country markets is an important prerequisite for benefiting from globalization. Diversification of the product mix requires substantial investment in infrastructure and human resources, but in most cases the capacity of governments to make such investment is limited. Foreign direct investment tends to focus on high-profit activities, and this may often fail to produce the goods and services required by the vast majority of the people, whose purchasing power is limited. These factors indicate that much of the economy will continue to depend on agriculture and allied activities.

Regional and subregional integration

Considering the small size of the markets, an important option available to West African countries is regional and subregional integration. The already considerable informal cross-border trade seems to be on the increase. The increasing demand for forest products in countries such as Nigeria and Senegal, as well as to a limited extent in the Sahelian countries, provides opportunities for strengthening the intrasubregional trade in forest products.

Progress towards regional and subregional integration will be a key factor in the development of West Africa. A number of regional and subregional initiatives are under way to pursue the agenda of African integration. ECOWAS is an important organization promoting the economic integration of West African States (see Box 23), and there are a number of ECOWAS initiatives in this direction, including the development of a common currency, a shared power pool, and a gas pipeline. ECOWAS has also been active in maintaining peace and resolving

BOX 23

ECOWAS - OBJECTIVES AND ACTIVITIES

The Economic Community of West African States (ECOWAS) is a regional group of fifteen countries founded in 1975. Its mission is to promote economic integration in "all fields of economic activity, particularly industry, transport, telecommunications, energy, agriculture, natural resources, commerce, monetary and financial matters, social and cultural issues ...."

The Executive Secretariat of the organization is based in Abuja (Nigeria).

ECOWAS has taken a number of initiatives to promote free movement of people and goods between the member countries, standardization of customs formalities, establishment of a common external tariff, etc. To boost integration, ECOWAS has proposed the creation of a single currency in the subregion, and is promoting programmes of transfrontier road infrastructure, the subregional development of hydropower sites and energy generating plants, the interconnection of electric lines and the shared use of gas pipes between Benin, Ghana, Nigeria and Togo.

(www.ecowas.int)

conflicts. If ongoing efforts succeed, there are tremendous opportunities for industry and trade, and for formalization of the existing informal trade. As regards forestry, this will open up new opportunities for collaboration in industrial development, research and education, and in developing common policies and strategies.

ENVIRONMENTAL CONCERNS

As discussed in the regional overview report, there is growing concern about environmental issues at the national, regional and global levels, and all these factors will have a significant impact on forests and forestry. The main national and subregional issues are desertification, land degradation largely due to unsustainable practices, and loss of biodiversity, including the destruction of unique ecosystems such as mangroves. At the global level, the climate change issue is becoming critical, and most countries are signatories to the United Nations Framework Convention on Climate Change. All these factors are already having an impact on forestry, and the next two decades will see further developments. The overall direction of change will include the following:

- a closer scrutiny of forestry practices and increasing emphasis on undertaking environmental impact assessments, especially in relation to how forestry is affecting biodiversity and other values; this will entail wider adoption of sustainable forest management and possibly increased emphasis on certification and labelling;
- national strategies and policies that will enable prior assessment of all developmental projects in terms of their impact on the environment;
- more areas set aside for the protection of biodiversity and environmental values, although this may face problems in view of the increasing pressure on forest areas; much of the focus will be on resolving conflicts and involving communities in conservation efforts;
- a worsening of the water availability situation, which is already critical for most countries in the subregion; this means that the role of forests and woodlands in regulating water supplies will become a key issue; forestry's impact on water supplies will come under close scrutiny;
- one of the most critical environmental issues facing the subregion, especially the Sahelian countries, is desertification and land degradation; almost all countries are signatories to the Convention to Combat Desertification, although the capacity to implement the convention is still far from adequate; subregional organizations such as CILSS are mobilizing collaborative action, and forestry is expected to find a prominent role in anti-desertification efforts.

TECHNOLOGICAL CHANGES

Technological changes inside and outside the forest sector will have both direct and indirect effects on forestry in the subregion during the next two decades. Their impact, however, depends on the ability to access and adopt technology from elsewhere, and the capacity to invest in science and technology. The overall situation in the subregion can be summarized as follows:

- technological change in agriculture has followed a dualistic pattern, with most of the development taking place with regard to export-oriented crops, largely based on public sector investment. However, public sector research and development capacity has been significantly eroded during recent years. Private sector investment in research has remained negligible;
- much of the industrial development is based on imported technology. Although advantageous in the short run, this has not necessarily helped to

strengthen the indigenous research and development capacity. Some of the problems relating to capacity utilization in existing industries suggest constraints in innovation and a high dependence on imported technology and inputs;

- the subregion has seen a significant growth in the adoption of information and communication technologies, especially in the use of internet and mobile telephones. Although these advances have tremendous potential in improving access to information, their adoption is at present largely limited to urban areas and high-income groups. Wider access to information and communication technology will depend on substantial reductions in costs;
- many agricultural and other livelihood activities, especially in the informal sector, are dominated by traditional techniques, and there has been very little change in this situation.

Within the forest sector technological changes are taking place, mostly outside the region and much less in Africa and the West Africa subregion. Some of the changes likely to have a significant impact on forestry are as follows:

- changes in wood-processing technology: rapid changes are taking place in wood-processing technology, and advances in materials technology could significantly alter the end uses of wood; input requirements for products are already declining; many of the emerging techniques are more environment friendly and less energy-demanding; ongoing research on alternative materials and uses could significantly reduce the consumption and price of wood;
- processing of non-wood forest products: one major area of development would concern the processing of non-wood forest products; while this could improve the use of a multitude of products, including the large number of medicinal plants, there is a danger that in the absence of adequate development of indigenous capacity, many of the benefits will accrue to those able to develop and adopt relevant technology; international patent laws will limit the access to such technology by most countries in the subregion;
- improved understanding of ecological processes: on the whole there are considerable efforts to improve the understanding of ecological processes that could significantly improve silvicultural practices in the management of natural forests and plantations; much of the problem will concern field application of the knowledge, indicating that it may take considerable time to bridge the gap between theory and practice;
- one of the other areas of rapid technological improvement is remote sensing, which in due course will help to assess resources on a real-time basis and enable the detection of major changes, including illicit felling, pest outbreaks and fires; here again, the main bottleneck will be the wider adoption of known technology.

BOX 24

TECHNOLOGICAL INNOVATION IN THE WOOD SECTOR - AN EXAMPLE.

On-line control of sawmilling operations has recently been developed, often using visible, infrared or X-ray imaging techniques. For example, sawmilling machinery is increasingly equipped with sensors such as lasers that take account of the tool's behaviour or the blade's passage through the wood in order to assist and optimize manual control. With the recent arrival of new tools resulting from dynamic analysis and acoustic control techniques, the development of very economical sensors can be envisaged for the structural classification of woods, and even for the detection and pinpointing of certain defects or irregularities. Thus it is possible to foresee quality control based on classification by a variety of criteria such as size, the number of acceptable defects, colour, aesthetic properties and dryness.

(Sales, 2001)

All the indications are that technological changes with regard to the processing of wood and non-wood forest products will be substantial, especially in the private sector. Some technological changes may also take place in the forest plantation sector, especially on plantations managed by private entrepreneurs, whereas technological changes will be slow in areas under government control. A similar situation will persist in the large unorganized informal sector, which will depend mostly on local knowledge and will have very limited access to improved technology.

SUMMARY OF DRIVING FORCES

As analysed in this chapter, the driving forces expected to affect forestry in West Africa during the next 20 years can be summarized as follows:

- the socio-political and institutional environment in West Africa is undergoing significant changes, with a clear trend towards the emergence of more

democratic systems of government. Issues such as decentralization and the involvement of local communities in resource management are receiving increasing attention. However, there is considerable uncertainty over the pace of change, especially in the presence of conflicts and the absence of the conditions for the emergence of an effective civil society. All the indications are that turbulence will persist in the political and institutional arena, affecting forestry directly and indirectly;

- demographic changes during the next two decades will have an overwhelming impact on natural resource use, including forests. By 2020 the population is expected to reach about 344 million, an increase of about 110 million from the 2000 figure. West Africa will be the most populous subregion in Africa. Unemployment is also expected to increase considerably, causing significant social problems;
- West Africa is also witnessing considerable population movements, including rural-urban migration as well as migration from the less productive dry-zone countries to the predominantly humid-zone countries. Some of the existing cities such as Lagos will grow into megacities within the next two decades;
- the overall economic performance of most of the countries has been sluggish, and in many cases per capita incomes have declined during the past ten years. In view of weaknesses in economic fundamentals, savings and investments are low, indicating low growth rates. Progress in addressing the problem of poverty and deprivation is expected to be slow;
- there has been very little diversification of the economies, and agriculture and allied activities continue to be the foremost source of livelihood for the majority of people. However, there have not been significant changes in the application of technology, and this has resulted in the horizontal expansion of agriculture;
- several West African countries have a commercialized cash-crop sector entirely geared to exports. The cash-crop economy is on the decline as a result of low prices, and this has direct and indirect effects on forestry;
- in the absence of significant growth of the formal sector, the informal sector has been growing rapidly, providing employment and income, but there are limits to this growth;
- most countries have a very high external debt, and debt servicing is forcing many to adopt resource management systems that ignore environmental and equity aspects;
- West African countries are well integrated into the global economy. However, the ability to benefit from the opportunities provided by globalization seems to be limited at present, and global integration is therefore partial, tending to impose severe costs on the subregion's economies;
- considerable efforts are being made to promote regional and subregional integration, especially under the auspices of subregional organizations such as ECOWAS. The pace of social and economic development will depend to a large extent on the progress of these efforts;
- environmental issues such as watershed degradation, desertification and biodiversity loss will become more critical. While most countries are aware of the problems, the capacity to pursue effective action is limited;
- while there have been rapid advances in technology at the global level, most economic activity in West African countries, including forestry, has not benefited from this, because of the weakness of the indigenous science and technology capacity.

Chapter 4

Alternative scenarios

As indicated in the previous chapter, a variety of factors collectively influence forests and forestry in West Africa. These factors are constantly changing, creating new opportunities and constraints. Often it is extremely difficult to identify the complex interaction of a multitude of variables on forests and forestry and the extreme diversity of ecological, social and economic conditions encountered in West Africa make this more difficult. Traditional modelling techniques rely on well-established relationships between a limited numbers of variables. However, these are seldom adequate to analyse the complexity of probable changes, especially in view of the multitude of possibilities and uncertainties characteristic of a rapidly changing social and economic environment. It is in this context that an effort is made to assess the alternative scenarios relevant to forestry in West Africa.

CRITERIA FOR DEFINING SCENARIOS

In the ultimate analysis, the state of resources and the flow of goods and services is largely an outcome of the actions of the various actors. At any given point in time a multitude of actors acting individually or collectively in the pursuit of their specific objectives determines the shape of forests and forestry. The freedom of choice available to the various actors, however, varies. For example, the choice available to impoverished people living in close proximity to forests is limited to collecting woodfuel and other products, inasmuch as poverty drastically curtails other options that are available to those with higher income. On the other hand an urban dweller with a high income has more choices relating to what he/she could buy and from where. This being the most critical aspect, it is appropriate that scenario definition focuses on the issue of how the freedom of choice differs and its likely impact on forestry.

A scenario is a chain of events and outcomes linking driving forces and actors. While, as discussed in chapter 3, a number of factors affect forests and forestry, the most critical seems to be the political and institutional environment. Hence, as described in the FOSA Regional Report, the political and institutional situation is used as the framework for defining scenarios. For the purpose of analysing the probable direction of developments in forestry, five scenarios have been identified: the public sector dominance, the market forces, the informal sector, the fortress scenario and the Great Transition.

In most countries in West Africa, the government or public sector has been the dominant force influencing the path of development, including in forestry. Government policies, strategies and plans have had an overwhelming impact on forests and forestry in view of the predominance of public ownership of forests. Examining the probable developments under the public sector dominance scenario would help to assess its potentials and constraints. In the recent years the role of governments has come under intense scrutiny and there is increasing emphasis on giving a greater role to the market mechanism in resource-use decision-making. The ongoing privatization of even utility services such as water and electricity and efforts to involve the private sector in forest management are indicative of the shifts in perception. The market forces scenario is proposed specifically in order to examine how forestry may respond directly and indirectly to these emerging changes.

Neither the public sector dominance nor the market forces scenario is capable of capturing the role of all the actors, many operating outside the formal sector. As discussed earlier, forestry is particularly dominated by a large number of informal activities. The likely changes in this vast segment of activities will be assessed by treating it as a distinct scenario, namely the informal sector scenario. However, in many West African countries, resource use conflicts have become intense, and often those who currently own or control the resources adopt a fortress approach to protect them. The implications of this are indicated in the discussion of the fortress scenario. Evidently the fortress scenario also has built-in instability, and it could further degrade into a situation of complete breakdown, as is being seen in several places[17]. However, there is considerable

[17] A situation of complete breakdown could be referred to as a barbarization scenario. There are several examples of the emergence of barbarization scenarios in West Africa, with armed groups taking control of countries or areas and terrorizing people.

discussion on the development of a more progressive and equitable society, and African leaders are considering ways and means of stimulating an "African renaissance". This would entail a significant departure from the scenarios described earlier. Considering its consequences for forests and forestry, this is discussed as a distinct scenario, namely the Great Transition.

PUBLIC SECTOR DOMINANCE

In general, the public sector has dominated most economic activities, including the provision of goods and services, in all West African countries. Government involvement and control have been particularly substantial in countries that had earlier adopted centralized planning, for example Ghana. In many countries markets continue to be regulated through administered prices and quotas, purportedly to meet various social objectives. Since cash-crop cultivation has been an important economic activity, substantial public sector support has been provided through price stabilization strategies, incentives for cultivation and the provision of research and extension services.

The situation in the forest sector should be viewed in the context of the overall dominance of the government in policy formulation, planning and resource management. Forests have been a valuable resource, especially in the humid zone, and much of the initial effort was focused on gazetting them in order to facilitate government control of resource use. A system of licensing and concessions allowed the government to extract income from forests and woodlands. In most countries, forest agencies attempted to fulfil the following functions (see Box 25):

- management of gazetted forests to increase wood supplies and generate income for governments;
- formulation of forest policies and laws;
- regulation of the movement of timber from public and private sources, to counter illegal collection;
- establishment and operation of forest industries;
- protection of forests to safeguard environmental functions, including wildlife management;
- establishment and management of woodfuel plantations to meet urban and rural demand;
- research, education, training and extension in support of the activities indicated above.

In situations where forest agencies were not able to manage (or log) forests directly, a system of granting concessions or licensing the private sector to log (and manage) forests on the basis of royalies was adopted. Although over time the complexity of these functions increased, the capacity of the system did not improve, resulting in reduced efficiency and loss of income.

While the public sector (especially forest departments) has played a dominant role in the past, several changes are taking place, leading to the evolution of the public sector in various directions:

- the public sector's maintainance of its dominant position in the provision of all goods and services;
- declining efficiency and effectiveness of the public sector, so that it is no longer able to provide the goods and services to the other stakeholders;
- a revitalized public sector that moves out of many of its traditional functions and concentrates on its areas of core competence.

In almost all West African countries (and for that matter in most countries in other subregions in Africa) it is hard to find a situation where the public sector is maintaining its dominant role and is able to provide the goods and services effectively. The most likely changes seem to be towards a weakening of the public sector as elaborated below.

BOX 25

PUBLIC SECTOR DOMINANCE IN CÔTE D'IVOIRE

In Côte d'Ivoire, the Ministry in Charge of Forests is responsible for the formulation and implementation of forest laws, regulations, prices and timber extraction and export quotas. For its plantations and management operations, the ministry has the support of public organizations. The Société de développement des forêts (the Forest Development Company, or SODEFOR) has planted a total of about 200 000 ha since its creation in 1966 and is responsible for managing gazetted State forests. The Directorate for the Protection of Nature is responsible for management of national parks and natural reserves.

(Kadja, 2001)

Declining public sector capacity

Without exception, almost all public sector forest agencies in Africa face the same situation, namely declining technical and financial capacity (see Box 26). This is partially a result of:

- the emergence of other more efficient actors, especially the private sector, in certain key areas such as wood industries thus undermining the relevance of government in such functions;
- increasing pressure on forests, thus affecting the resource base and consequently the income of the public sector; in several situations, forest agencies

BOX 26

GHANA - DECLINING CAPACITY OF THE PUBLIC SECTOR

The weak institutional structures of the government are also a major contributory factor to the high rate of deforestation in Ghana. The failure of forest authorities to adequately control and manage the forest sustainably has resulted in large-scale encroachment in the forest reserves .... Until 1998 the FSD was able to collect less than 58 percent of its potential revenue due to be collected. The service was therefore unable to cover the full cost of management. It could not acquire the basic equipment needed for forest management and monitoring. This gave rise to widespread illegal timber operations across the country. The illegal operator became very sophisticated and could outwit the forest authorities.

(Agyarko, 2000)

have had to relinquish control of extensive areas; this has reduced the income of forest departments;

- the continuing weakness of forest revenue systems in several countries; royalties and stumpages have not been revised regularly even to adjust to the rate of inflation, so that the real income has declined; governments are reluctant to modernize forestry organizations in view of low perceived incomes;
- even when the forest sector yields a reasonable income, much of it is used to support other priority activities; sustainable forest management receives a low priority in comparison with investment in social sectors such as health care and education;
- poor governance and lack of transparency; in many cases the rent-seeking behaviour of individuals depletes the efficiency and effectiveness of public sector agencies.
- negligible investment in human resource development; where technology is imported, there is very little effort to adapt it to local conditions; in most countries the public sector capacity to undertake research has declined, as is the case for education, training and extension;
- one of the major factors contributing to the decline of the public sector is structural adjustment programmes that has led to an overall decline in the capacity of government agencies; proponents of structural adjustment programmes emphasized a reduction in government expenditure, thus significantly undermining public sector capacity to perform its functions; the assumption that the private sector would step in to provide the goods and services has proved to be erroneous in most West African situations.

While the above situation will prevail for some time, there are indications that the declining capacity will trigger pressures to reform the public sector. A number of countries have made efforts towards such reforms.

A restructured public sector

A restructuring of the public sector largely focuses on redefining its functions and making appropriate changes in its structure. There are already some indications of change in the case of forestry organizations, in view of the constraints indicated above. The overall direction of change is most likely to take the following course:

- growing focus on the functions that the public sector is most competent to perform, with efforts being increasingly devoted to policy formulation and regulatory functions; with the private sector and other actors emerging as major players in fulfilling productive functions, there will be a growing need to provide a clear policy and regulatory framework, as well as to ensure that a level playing field exists for the other actors to operate;
- improvement in the fiscal policy and revenue system and the correction of distortions, thus enabling the market mechanism to play a more effective role in resource allocation;
- considerable public-sector focus on the provision of public goods - environmental goods and services - that are unlikely to be provided by the private sector;
- the development of public goods research as another important function of the public sector, for several areas of research - especially basic and strategic - that are unlikely to attract private investment;
- increased public accountability as regards the fulfilling of policy and regulatory functions.

This would entail considerable changes in the structure and functions of forestry organizations. In countries such as Côte d'Ivoire and Ghana there have been efforts to separate commercial functions, especially management of plantations and industries from other functions, like the provision of public goods and services. While much of the focus in the early stages of change has been on retaining plantations under government control and making their management more efficient and flexible, this should be seen as part of

a long-term transition, with the private sector becoming an important player in the establishment and management of plantations and industries..

MARKET FORCES

In the above context it becomes important to identify the development of market forces and how they will affect the behaviour of the various actors. In West Africa market forces have been particularly playing an important role as regards cash crops and timber. Most wood industries are under private ownership.There are industry associations and unions that articulate the concerns of private entrepreneurs. With increased globalization and subregional integration, the scope for development of market forces is substantial. However, markets are imperfect because of a number of distortions and the absence of an appropriate legal and policy framework. Some of the major areas where market forces are dominant and how they are likely to evolve are indicated below:

- although much of the forests in the humid zone is under government control, logging is carried out by the private sector. Taking advantage of the large markets in countries such as Nigeria, the wood and wood industries sector has grown rapidly;
- there has been significant involvement of the private sector in the establishment of woodlots, especially in countries such as Ghana. With favourable conditions of tenure and assured markets, this is likely to expand further, especially in view of the increasing local demand for wood and the declining supply from forests;
- although to a lesser extent, a similar situation is developing in the dry zone, especially as regards woodfuel, poles, etc. Development of woodfuel markets in the Niger and other countries is an indication of the potential. Market forces have been a major determinant in the development of non-wood forest products, especially gum arabic, shea butter, etc;

The major constraints with regard to the development of market forces are as follows:

- the overall capacity of the indigenous private sector to invest in wood industries, especially in technological upgrading, remains low. This would mean that many of the existing industries - large, medium and small - will continue to depend on inefficient technology, undermining their efficiency and competitiveness;
- the unfavourable institutional framework, especially the plethora of rules and regulations, reduces the incentives to invest. Transaction costs are high and this increasingly favours operations in the less demanding informal sector;
- although the situation in West Africa is in many ways better than in many other parts of Africa, the policy and legal framework remains weak, creating uncertainty in decision-making. Imperfect markets dominated by powerful vested interests are often a major disincentive to the majority of entrepreneurs.

These constraints, together with the opportunities described earlier, would shape the path of market force development in different directions. Much will depend on the political and social environment and on how democratic systems of government deepen to enable the development of an efficient and transparent system of market transactions.

Future development of market forces

The presence of a large number of small and medium enterprises in West Africa will not only strengthen the democratic process, but also help to ensure that the market for wood and wood products is not entirely dominated by the large-scale private sector. The presence of industry and trade organizations enables the development of basic ground rules of more efficient and transparent operation. The relatively large internal market further helps in the development of small enterprises. However, instability may arise on account of the following circumstances:

- as economies open up and imports are liberalized, the less efficient producers will be pushed out of production, unless they modernize and become more competitive. Issues such as access to investment funds and technology will become critical. In the long term there is likely to be a tendency for consolidation, especially when small enterprises are unable to adapt to the rapid fluctuations in demand, supply and prices;
- wood supplies are expected to become critical, as most of the old growth and secondary forests are harvested. While plantations and farm woodlots are expected to become major sources of timber, the scale of their expansion may not be sufficient to meet the growing demand;
- with low incomes, a substantial proportion of the people will be outside the purview of market forces, and much of their demand will be met by the informal sector;
- in view of the imperfections stemming from

externalities, the market forces scenario may not be in a position to handle the mounting environmental problems, including the depletion of resources.

In several countries in West Africa such a scenario of private sector growth could persist for a long time, until governments and the public as a whole are able to perceive the problems and steer development into a more acceptable path.

An alternative path

In contrast to the situation indicated above, there is, however, an opportunity for the development of a vibrant private sector in West Africa, taking advantage of the high entrepreneurial skills that already exist. This will involve substantial efforts to channel the development of market forces to fulfil well-defined social and economic goals. Much of the effort will be directed to broadening participation, especially that of small investors as producers of wood and processors of products catering to local, national, regional and global markets. The success of some of the furniture units in taking advantage of imported timber, adapting designs and marketing products locally as well as outside is indicative of the potential. A scenario that has a distinct possibility in West Africa would consist of:

- a network of small- and medium-scale industries catering to the demand for a variety of products from niche markets inside and outside the countries and the subregion;
- a substantial number of landowners managing small woodlots on their farms, often collectively organizing procurement of inputs and marketing products through tree-growers' cooperatives or associations;
- an information system that provides back-up for small-scale enterprises enabling timely access to information on markets especially prices, emerging changes in demand and supplies, etc.;
- a research and development support system that will address the specific technology needs of small enterprises, if necessary supported by sponsored research programmes.

While such a path of development is a distinct possibility in the West African situation, it would require substantial efforts from the government to provide a level playing field and to ensure transparent functioning as well as stability as regards policies and legislation.

INFORMAL SECTOR

As indicated earlier, a substantial proportion of economic activities takes place in the informal sector, outside the scope of the public sector and market forces. In general, the informal sector has been the most dominant in agriculture, animal husbandry, forestry and a whole range of allied activities. The general assumption is that as the formal sector expands, the share of the informal sector declines in importance. However, in the situation that exists in West Africa (and for that matter in most of Africa) the informal sector continues to be important in providing essential goods and services and as a source of employment and income (see Box 27). Although there is a dearth of reliable data, all the indications are that the informal sector will continue to be important.

The most characteristic feature of informal sector activities is that they are not regulated by a transparent market system or by the public sector. Declining income from cash crops has led to an expansion of the informal sector to meet increasing cash requirements, especially in view of increased expenditure on education, health care, etc. There is also a more "organized" informal sector dominated by illegal logging companies that operate outside the formal arrangements[18]. This is also the situation with regard to bushmeat production.

Being a residual category, several activities are included under the informal sector. At one extreme are those that are entirely subsistence-oriented. Forest-dwelling communities collect a variety of products and use them directly. At the other end of the spectrum are activities undertaken by unorganized labour, but with products that move through a system

BOX 27

EMPLOYMENT IN THE INFORMAL SECTOR IN TOGO

In the forest sector, the public sector has a total of about 800 civil servants (2.4 percent of the public administration personnel). The private sector employs about 1 000 salaried staff. The informal sector provides about 90 000 jobs based on the wood trade and processing, and more than 70 percent of these are estimated to be held by women.

(Koffi, 2000)

[18] Much of the more organized informal sector operates in high-value forests. For example, a report of Global Witness outlines the extent of illegal logging in Liberia, linked to international criminal networks. The actual income derived by the country through formal channels is therefore only a fraction of the potential.

BOX 28

FACTORS CONTRIBUTING TO GROWTH OF THE INFORMAL SECTOR

- Increasing population and the growing number of unemployed people
- Low growth rate of employment in the formal sector
- Low skill levels
- Poor purchasing power of the majority of the population
- Limited opportunities for alternative sources of income
- Declining income from traditional income-generating activities such as cash-crop production
- Increasing need for cash income

of intermediaries and eventually end up on markets, sometimes outside the country in question. A key feature of the informal sector is the low investment requirements. Open access to the resources is a major disincentive to investment, especially to improve long term productivity. As in the case of several products, the threshold of depletion is reached whenever a large number of people are involved. The development and expansion of markets usually result in intense exploitation and eventual depletion.

The following issues seem to be the most critical in the evolution of the informal sector:

- overexploitation of resources and unsustainability. Since those who utilize or exploit resources do not own the resources and are unable to regulate their use by others, resource depletion becomes inevitable. As the population grows and informal use intensifies, the productive capacity declines through stock depletion. Even traditional systems of community management usually break down, and the costs of exclusion are often higher than the potential benefits;
- impact on livelihoods. Income generated from informal activities tends to be very low, especially in view of the low investments. More important, a substantial proportion of output caters to the needs of low-income consumers with limited willingness and ability to pay. In the case of high-value products (especially catering to the demand of high-income consumers in distant markets), much of the benefits accrue to intermediaries.

Left to itself, the development of the informal sector will soon face obstacles, especially on account of resource depletion. Moreover, in view of the limited resources available to those involved in informal sector activities, there are unlikely to be any technological improvements. In the context of West Africa, where the population is highly mobile, the opportunistic exploitation of resources in the informal sector is likely to result in increased conflicts. This would indicate that the current pattern of development of the informal sector cannot be pursued, especially as the population increases. The introduction of more rational systems of resource use will become imperative, specifically ensuring sustainability and improvements in resource use technology. Most important, those involved in the informal activities must be involved in managing the resources.

In the case of the "organized informal sector", much depends on the political environment, especially the development of democratic institutions and civil society. Since this type of informal sector has international ramifications, curtailing its activity also depends on concerted international action.

FORTRESS SCENARIO

The overall situation in most countries is an outcome of the combined evolution of the three scenarios described earlier - the public sector, market forces and informal sector scenarios. Depending on the share of each of the above and how this changes, the role of the various actors and their actions will vary, with varying effects on forest resources. While a planned and balanced development of each of the three, recognizing their potentials and constraints, could help to minimize the conflicts and expand the positive role of the various actors, the situation could deteriorate when the negative tendencies dominate.

The emergence of a fortress scenario is an outcome of increasing conflicts, necessitating the adoption by government forest agencies or the private sector of stringent protective measures against the expanding informal sector. Some of the typical strategies of the fortress scenario include:

- legislation prohibiting a number of activities (including sometimes entry into public forests) and stipulating stringent penalties for violation of the rules;
- strengthening of protection measures, especially by employing more staff to patrol the property and equipping them adequately to improve their effectiveness (especially by providing vehicles, arms, etc.);
- improving the capacity to detect violations and punish offenders.

In extreme cases, a fortress is literally erected by fencing the area, as is the case for some protected

areas. The investment in protection is largely based on perceived values and the likely loss of benefits if the area or property is not protected. In most cases the fortress situation in forestry is a reflection of the overall economic, social and political situation. The failure to address social and economic inequity is reflected in increased crime and consequent responses, with private security services becoming the most rapidly growing sector.

The fortress scenario is inherently unstable, especially as it is an outcome of unresolved conflicts. No fortress is impenetrable, and if the fundamental problems are not addressed, conflicts are bound to intensify. Maintainance of the fortress situation will eventually become untenable. While there is an opportunity to reverse the process by addressing the deficiencies of the public sector, market forces and informal sector scenarios, those in power (who benefit from status quo) are seldom prepared to address the fundamental issues. As conflicts build up, fortresses tend to collapse, resulting in a complete breakdown of society leading to a scenario often referred to as barbarization.

If the fortress scenario and its further deterioration into barbarization are to be avoided, the deficiencies of the main scenarios - public sector, market forces and informal sector - must be addressed. Much of this involves the development of a just and equitable society in which no one is marginalized in the process of development. Correcting the deficiencies of the three scenarios can be seen as the starting point for the emergence of the Great Transition scenario.

THE GREAT TRANSITION

The only long-term option seems to be a move to a scenario that could be described as the Great Transition, which has been expressed in various initiatives in the African context. The complexity of the situation in Africa requires fundamental solutions rooted in African perceptions, visions and capabilities. The need for an African renaissance has been well articulated, and in recent years there have been a number of efforts to develop an operational framework to address the problems comprehensively. The most recent of these is the New Partnership for Africa's Development (NEPAD)[19]. This envisages an African renaissance driven by Africans, strengthening the basic foundations of development by deepening the democratic process, upholding human rights, improving governance and public accountability, addressing critical issues such as human resource development, especially education and health, and protecting the environment. Regional and subregional integration is another key element of NEPAD, and it is hoped that this will help to expand the market base in Africa, improving the competitiveness of its industries and paving the way for improved efficiency and global competitiveness.

Much of the emphasis of the Great Transition would be on increasing the freedom of choice of all the actors to play a positive role in society's and their own development. Key issues would include the improvement of land tenure and access to knowledge and information and the removal of historical impediments. Pro-poor policies and increased government investment in human resource development could help countries take advantage of the emerging opportunities of globalization. While strengthening the democratic process, considerable stress is to be laid on civil-society organizations, which will provide the necessary checks and balances.

In forestry, the Great Transition will draw on some of the positive tendencies in the public sector, market forces and informal sector scenarios. The key features - assuming that the Great Transition is widely accepted and pursued - (see Box 29 for an elaboration of a scenario story-line) will involve the following developments in the forest sector:

- decentralization of resource management and participatory approaches will become more widely accepted. A number of countries in West Africa have made a beginning in this direction, and it is hoped that the pursuit of the Great Transition will result in increased emphasis on participatory approaches in resource ownership and management. As discussed earlier, several countries have brought about policy and legal changes to strengthen community participation. Although the extent of land area currently under community management is still low, it is expected to grow considerably during the next two decades;
- in addition to providing the policy and legal framework for transferring responsibility for resource management to local communities, there is a need for improvement in the institutional, organizational, financial and technical capacity of

[19] Earlier efforts, essentially adopting more or less the same fundamental principles, include the Millennium Partnership for the African Recovery Programme, the OMEGA plan and the New African Initiative.

BOX 29

THE VISION OF A BETTER TOMORROW

"Asiko Ola" (an era of prosperity) and "Imura" (prepare to manage the benefits of shrewd foresight)

The premise for demography is of a fast growing population, half urban, but with a rural population still growing in real terms. Fortunately, economic growth outpaces demographic growth and the subregion enters a period of wealth accumulation. Governments are introducing major political and institutional reforms, tactfully presented. Structural and financial reforms, public spending reforms, social and conservation reforms show conclusive positive results. Governments persevere successfully in their drive for democracy and devolution. Appropriate privatization measures have noticeably improved the quality of governance. Market rules have been introduced, while policies of regional integration show encouraging results. Infrastructures, communications and information technology improve significantly. The mastering of technology and the taming of science are nearing reality. Social policy reforms enable a better wealth distribution. Poverty and ignorance are decreasing. Significant increase in agriculture productivity is due to research efforts. Crops and livestock still require more land, even if their rate of expansion is slowing down. A suitable legal framework applying to forest management and new institutions improves the synergy of public-private partnership in managing the forest sector. Successful reforms were introduced to reinforce local management powers, implement the principle of managing all land areas, and protect the rights of landowners.

(Onibon, 2001)

communities and decentralized bodies to implement sustainable practices and more important to take advantage of emerging opportunities;

- the creation of a favourable environment for the functioning of civil-society organizations is critical for sustainable resource management. This would require clear recognition of their corrective role and improved access to information. Legal mechanisms should be in place to ensure that civil society's efforts are not hampered;
- sustainable forest management practices must be more widely adopted, making them mandatory at all levels. Considerable stress must be laid on strengthening the field-level capacity for implementing sustainable management;

Constraints that could slow the process of the Great Transition include the following factors:

- effective policy reform and implementation require a strong democratically functioning government, a proactive civil society and a well-informed public. This situation is yet to emerge in several countries in the subregion;
- considering the low income from forests, the resources available to implement corrective policies and strategies are likely to remain small. This means that, apart from some efforts to increase the role of communities, policy reforms may not be able to bring about a significant reduction in the negative effects of the market forces scenario;
- although most countries in the subregion are signatories to most international conventions and processes that have a bearing on forests and forestry, implementation remains very weak. Many policy reforms are initiated at the instance of donors, making them unsustainable in the long term.

Despite such problems, pursuit of the Great Transition could lead to the following results, although attainment of these may sometimes be later than the FOSA horizon of 2020:

- conservation and management of forest and tree resources become well integrated into the overall policies of economic development, and this is fully reflected in the formulation and implementation of policies in other sectors.
- although markets continue to play a major role in resource use decisions, corrective measures are built into the system, incorporating environmental and equity considerations;
- local initiatives and innovation are encouraged, improving traditional knowledge and enabling the development of appropriate management practices. Those undertaking or supporting such initiatives are able to anticipate the break and branch points and pursue developments that do not rule out future options;
- civil society and local community organizations play a lead role in managing resources and improving conflict resolution systems. Community management becomes more widespread and involves not just the transfer of management responsibilities, but also systematic support to strengthen the capacity of communities to manage resources in a sustainable way;
- the ground rules for sustainable management are well understood, and at all levels there are

adequate checks and balances to ensure compliance (see Box 30);

- the role of the informal sector, which has been neglected in the past, is fully recognized, and efforts are initiated to improve its effectiveness, rather than suppressing it as illegal. Support to improve technology and skills helps to make them more efficient as well as improving the livelihood of those who depend on them. Eventually most informal activities are brought under more transparent and formal systems. At the same time improved transparency and accountability would help to curtail the activities of the "organized" informal sector;
- the feeling of alienation characteristic of the total domination of market forces as well as government control disappears, and society at all levels sees the strong links between social well-being and the sustained production of goods and services from forests and other natural resources; the social, cultural, aesthetic and spiritual dimensions of forests receive adequate recognition at all levels and are not relegated to second place to economic values;
- through concerted action by governments, NGOs, the private sector, community groups and civil society, information technology develops in such a way as to respond 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 consequences.

Understandably, there are a number of obstacles in the way of accomplishing the Great Transition, especially in the form of opposition from those benefiting from current inequitable arrangements. However, as countries strengthen democratic systems and civil society plays a lead role in facilitating the changes, the transition becomes attainable.

BOX 30

CERTIFICATION PROCESS IN GHANA

In 1996 a national stakeholder forum agreed that certification of sustainable forest management was desirable for Ghana, both from an internal audit viewpoint and to reassure consumers in environmentally sensitive markets. A National Committee on Forest Certification was set up. It is chaired by the Technical Directorate of the Ministry of Lands and Forestry and is made up of stakeholders from trade associations, unions, NGOs, traditional landowners, research and development organizations and universities.

SCENARIOS: THE REAL-WORLD SITUATION

In outlining the various scenarios, FOSA takes into account what is likely to happen if the present trend continues and what ought to happen if a more desirable situation is to be reached. The three core scenarios indicate what is likely to happen if things continue on their present course with their strengths and weaknesses. The fourth scenario, the fortress situation, depicts a highly negative situation that could further deteriorate into a complete breakdown. On the other hand, the Great Transition is a normative scenario indicating the direction of development that a society may strive to pursue.

In the real-world situation, elements of all the scenarios may be seen to varying degrees and at varying stages. Much of the variation is related to the diversity of the countries and subregion. In West Africa there is some indication of a strengthening of democratic systems. In many countries there has been a smooth transition of power through a democratic process. On the whole the population is relatively more mobile and has more developed entrepreneurial skills than in other subregions. The resource situation is also relatively better. With the increasing efforts for economic integration under ECOWAS, there is considerable potential for rapid social and economic change. All this would suggest that the overall conditions for moving towards the Great Transition are better in West Africa than in other subregions[20].

[20] This assumes that the current problem in Côte d'Ivoire will be resolved soon and that it will not have a destabilising effect in the rest of the subregion.

Chapter 5

Consequences for forestry and wildlife

In view of the driving forces expected to prevail in West Africa during the next two decades and the scenarios described earlier, it is important to examine the emerging state of forests and forestry, specifically considering changes in the flow of goods and services. As indicated earlier, the situation in the forest sector will be determined by the multitude of actors, acting in the context of the driving forces and scenarios. The unpredictability of the chain of actions, outcomes and responses of the various actors, especially over a period of two decades, makes it hard to give a precise indication of likely changes. In considering the changes, a distinction needs to be made between what may happen and what ought to happen. In this chapter, the emphasis is on the former, to give an idea of what is likely to emerge in the context of the persistence of existing trends. What ought to be done is discussed in the chapter on priorities and strategies.

West Africa is one of the most vibrant subregions in Africa, and all the economic and ecological diversity of the region is fully represented. During the past two to three decades, the subregion's forest resources have been depleted considerably as a result of several factors. The forces affecting forestry, such as population growth and changes in economic situation, continue to persist, straining forest resources. The flow of goods and services is likely to be altered depending on the relative impact of the various factors. While society is likely to respond to the changes, it is important to consider the adequacy of the responses. This chapter represents an effort to address some of the key issues that are likely to emerge in the future.

SOME KEY QUESTIONS

Considering the present situation, the driving forces and the scenarios that are likely to dominate, some of the questions seem to be relevant in assessing the forestry situation in West Africa during the next two decades and are listed in Box 31. An attempt is made to address the above questions and to provide an indication of the most likely situation expected to emerge in the subregion.

BOX 31

QUESTIONS ON THE FUTURE OF FORESTS AND WILDLIFE IN WEST AFRICA

- What will be the likely situation with regard to forest cover in West Africa by 2020 ? Will forest-cover loss increase, decrease or stabilize during the next two decades ?
- What is the likelihood of wider adoption of sustainable management in the West African forests and woodlands ?
- What are the emerging opportunities and trends as regards plantation forestry, including tree planting outside forests in West Africa ?
- West Africa is highly dependent on wood to meet energy needs. What situation is likely to emerge in the next two decades, considering population growth and the potential for substitution with alternatives ?
- What is the emerging situation with regard to the demand and supply of wood and wood products in the subregion? Will the subregion be in a position to meet most wood and wood product requirements ?
- What will be the general pattern of wood products trade? What is the scope for producing high-quality wood for niche markets ?
- What will be the general trend with regard to the availability of forest-based services? Will there be adequate investment to increase the availability of such services ?
- What is the potential of wildlife-based tourism in supporting and strengthening the rural economy ?
- What will the role of forests be in climate change mitigation through carbon storage and sequestration ?
- Will forests and forestry play an important role in the alleviation of poverty in West Africa, and how ?

FOREST COVER CHANGES

The rate of forest-cover loss is a major indicator of the overall change taking place in forestry in the subregion, specifically in relation to the provision of goods and services. The key factors that are likely to alter the forest situation in West Africa are population growth, the overall economic situation, especially income and its growth as well as its distribution, and the dependence of people on land-based activities. In assessing the possible state of forest cover, the following factors need to be taken into account:

- between 2000 and 2020, West Africa will have an additional population of 110 million, with the total reaching 344 million. In most countries, including the dry zone, the population density is already very high. Nigeria, the most populous country in the subregion, will have a density of over 180 inhabitants per square kilometer;
- currently there is a steep north-south (and interior-coastal zone) population density gradient in West Africa. Productivity, and correspondingly the carrying capacity are low in the north. Much of the forests is located in the middle zone, and will be subject to intense pressure from the north as well as the south;
- most of the humid zone, where the bulk of the forests are found, has been made accessible, increasing the pressure on these forests;
- although several countries in West Africa recorded a GDP growth of over 3 percent between 1990 and 2000, in most countries per capita income did not increase or in fact declined between 1990 and 2000. All the indications available now, taking into account the trends in the rates of saving and investment, foreign direct investment and official development assistance suggest the persistence of low growth rates of GDP (World Bank, 2001);
- in the absence of rapid growth in other sectors, land will continue to be the main source of income and employment, and there will be a corresponding increased pressure on the forests;
- since agriculture is expected to remain the mainstay of livelihood in almost all countries, the key question is whether there will be an intensification of agriculture, resulting in higher productivity and thus reducing the need for expansion to new areas. While there are pockets of very intensive agriculture, the majority of subsistence farmers adopt low-input agriculture, which means that increased production largely depends on the expansion of cultivation to new areas rather than on increased land productivity;
- currently there is extensive cash-crop production both in the humid zone (especially cocoa, coffee, rubber and oil palm) and the dry zone (cotton and groundnut). While declining cash-crop prices and reduced government support are likely to be major disincentives for the expansion of cash crops, many of those involved in cash-crop production are increasingly likely to opt for subsistence farming.

All the above factors would suggest that pressure on the remaining forests will continue to be high, resulting in legal and illegal conversion of forest land to agriculture and other alternative uses. Moreover, the growing urban population will exert an increasing demand on forests, especially for woodfuel and construction timber. Considering these factors, deforestation and degradation are likely to persist in both humid- and dry-zone forests.

The public sector scenario is currently the most dominant, as most forests, especially in the humid zone, are under government ownership. However, the capacity of public sector agencies to manage the forests efficiently has diminished on account of the declining resource situation. Annual recurring and capital expenditure on forestry has declined in many countries, and there is a very high dependence on donor support even to implement routine activities. Moreover, in many cases governments themselves see forests as a type of "land reservoir" to be released for alternative uses. Where there are still tracts of primary forest (as in the case of Liberia), the pressure to open them up and log them persists, and efforts to manage them sustainably are far from adequate. Considering the intense population pressure, those areas that are opened up initially for logging are soon converted to other uses. Most forests have been fragmented, which makes the problems of protecting them all the greater.

Market forces are likely to become increasingly dominant, while land values are expected to rise in view of increasing population. Private sector investment will be guided by profitability and in the case of forestry this may encourage investment in logging and wood processing in view of their short pay-back periods. Where property rights are well defined there may also be some expansion of private tree planting.

The informal sector is likely to dominate in decision-making regarding forests and woodland, in the dry zone where communal ownership is dominant. As the demand for products increases, communal management systems have broken down in many cases, and individuals with free access to resources have responded to short-term opportunities. Considering the prevailing tenure conditions, unless community management systems are improved, the trend towards overexploitation of resources is likely to prevail, resulting in continued degradation.

Unless there are significant departures from the current trends, deforestation is expected to persist in West Africa during the next two decades. In the dry zone, much of the pressure will be a result of grazing and the

collection of wood and other products. There may also be pressure to extend rainfed cultivation, especially cash crops such as groundnut and cotton. In the humid zone, the main factor contributing to deforestation will be the expansion of subsistence agriculture and of export crops such as rubber and cocoa, depending on their global supply and demand situation.

SUSTAINABLE MANAGEMENT OF NATURAL FORESTS

In view of the very limited data available, it is extremely difficult to forecast the trend towards sustainable management. The partial data collected in the context of FAO's Global forest resource assessment 2000 (FAO, 2001a) indicate a very low proportion of forests under management plans[21], although they do not indicate:

- whether management plans have been developed taking into account all aspects of sustainability;
- even if such plans are available, the extent to which they are applied in practice.

The limited data on industrial roundwood production suggest a declining trend for some of the traditional producers, indicating that management has in general not been sustainable. While the aggregate industrial roundwood production from West Africa has remained more or less at the same level, some countries have increased production, while traditional producers have been forced to scale down supplies[22]. This clearly suggests that, despite various efforts, sustainable management is not in place in most countries.

What is the likelihood of wider adoption of sustainable forest management during the next two decades ? If it is to be widely adopted, the following conditions need to be satisfied:

- political and institutional commitment to the implementation of sustainable forest management;
- adequacy of human, material and financial resources;
- support from local communities, and their involvement;
- improvements in the technology of forest management.

All the indications are that in most cases the above conditions are unlikely to be met, thus limiting the area brought under sustainable forest management. There may be small-scale efforts, both in the dry and humid zones, especially undertaken with external support, but such efforts are unlikely to be adopted widely. More important, one of the main constraints on sustainable forest management concerns the increasing local demand, which has outstripped local supplies. Considering the increasing demand and the techno-economic limitations on improving the productivity of natural forests, the extent of application of sustainable management is expected to remain modest during the next two decades.

The situation in the dry zone, especially in the Sahel, is different. A substantial proportion of woodland is under communal ownership and some form of management, although not officially recognized, exists. In general these forests are managed for multiple uses, especially woodfuel, poles, fodder, etc. Local community management plans are based on local perceptions (Kerkhof, 2000) and seldom involve any cash expenditure. In most cases there are no written plans or rules, although the local community is familiar with what is permissible and what is not.

Considering the increasing emphasis being placed on support to such local initiatives, and as long as there are no major alternative uses, some expansion of the area under such local-level management can be anticipated. Many of the communities may not have any access to imported timber (especially in view of the high costs of transport), and this may encourage the adoption of improved management, particularly taking advantage of the several ongoing initiatives.

FUTURE OF PLANTATIONS AND TREES OUTSIDE FORESTS

West African countries have long experience in establishing and managing forest plantations of a variety of indigenous and exotic species. The total plantations established up to 2000 are estimated at 1.76 million ha and the current annual rate of planting is about 57 000 ha, which is approximately 4 percent of the deforestation rate[23]. The objectives of planting have varied and include the production of woodfuel,

[21] For example, in the case of Burkina Faso about 10 percent of the total forest area in 2000 is estimated to be under management, while in Côte d'Ivoire the figure is 19 percent and in Nigeria it is said to be only 6 percent.

[22] For example, Ghana and Côte d'Ivoire have reduced their industrial roundwood production, while countries such as Burkina Faso, Guinea and Senegal have shown increased production, although this may also be the result of reporting anomalies.

[23] These estimates need to be used with caution, considering that many plantations are under-stocked owing to fire, illicit extraction and other problems. In most countries the system of monitoring and assessing the condition of plantations is weak.

industrial round wood, non-wood forest products, the rehabilitation of degraded areas and environmental protection, especially in the dry zone. The species planted, the technique adopted and the institutional arrangements have varied considerably depending on the main objectives of planting. In the humid zone, plantation programmes were initiated to rehabilitate logged-over areas and sustain industrial wood supplies. In the dry zone, much of the planting has focused on improving woodfuel supplies and also on protecting farmlands against desertification. The future of plantation forestry in the subregion will be influenced by the following factors:

- availability of land: in view of high population pressure, it will become increasingly hard to find suitable areas for large-scale plantations, especially in the humid zone, where even maintaining already established plantations has become problematic in view of fire, illegal extraction and encroachment, all of which have reduced productivity; in the dry zone, land is not a limiting factor, but in view of low rainfall, productivity tends to be low, making investment in plantations economically less attractive;
- institutional arrangements: almost all plantations are in the public sector, and some past efforts to privatize them (as in Ghana) have not materialized; in the case of Côte d'Ivoire, teak plantations are managed by a parastatal organization; in most cases the capacity of the public sector to manage existing plantations is very limited; reinvestment in improving plantations has been low, while investment in research, including productivity-enhancing technology, has been negligible; more importantly the rate of adoption of known technologies is low, partly because of institutional constraints;
- markets for plantation-grown wood: the internal demand is limited, and for some valuable species such as teak there is considerable reliance on external markets; for example, more than 90 percent of teak logs from Côte d'Ivoire are exported to India, and even the legislation has been modified to cater to this demand, exempting teak from the ban on log exports.

All the indications are that the model of plantation forestry adopted in the humid zone - large-scale plantations, long-rotation high-value species, public sector management and a focus on external markets - is unlikely to remain viable in the long term. Considering the various constraints and potentials, plantation forestry in the humid zone is likely to develop in the following directions:

- small-scale planting, as an integral part of land use, especially by farmers and private investors (see Box 32); this will be particularly relevant for the humid zone, and even more so in view of the declining price of cash crops;
- depending on the market situation, there will be an increasing emphasis on short-rotation management; most output from such plantations will be small-dimension logs; the sawmilling industry, traditionally used to large-dimension logs, will find it difficult to adapt to the change; however, since the technology for processing small-dimension logs does exist, there will not be any major problem with regard to utilization of wood from short-rotation plantations and woodlots;
- emergence of the domestic markets, especially as wood supplies from natural forests decline; there will also be an export demand especially for high-quality furniture and other products; there is already some growth of the furniture industry, and with relatively low wages, as well as increasing access to improved designs and tools, the furniture industry could expand further in many West African countries.

The situation in the dry zone of West Africa will, however, be different, and much of the focus there will be on environmental planting, especially to arrest desertification and to produce woodfuel and small-sized

BOX 32

TREES OUTSIDE FORESTS

Trees outside forests are a key resource for the forest industries and for subsistence in the region. Since the cover of high forest and open forest in the region is less than 25 percent, while there are large areas of wooded savannah, non-forest trees accounting for a high proportion of the resource. Locally these resources are very important to the sawmill industry. In Ghana more than 50 percent of trees to be cut during the next 20 years will come from 'off-reserve' sources. If managed properly, this source of timber can continue to be of importance into the long-term future. If high-value timber species can be introduced into the agricultural land management schemes of the region, then there is enormous potential to supply the industrial roundwood market from this source.

(African Development Bank, 2001b)

logs for construction, fencing and agricultural tools. The key issues that need to be considered in pursuing plantation programmes in the dry zone will be:

- the low productivity of land;
- communal ownership, but the declining capacity of traditional community organizations to improve the management of land and trees;
- the limited resources available to communities.

In general planted trees management in the dry zone will continue to be on a low-investment low-productivity regime, mostly geared to the local demand for woodfuel, fodder and construction material. There may, however, be some limited efforts by individuals to establish and intensively manage woodlots, especially in areas close to urban centres. Rural wood energy supplies will be obtained largely from brushwood on public and communal land - whose supply is unlikely to decline significantly, although there may be localized shortages, especially in areas close to urban centres.

Most environmental planting will continue to be undertaken by public sector agencies, but in view of resource constraints the scale of this activity is likely to remain modest. There may also be localized efforts by village communities to protect and manage woodlands to provide multiple benefits.

WOOD ENERGY: FUTURE TRENDS AND IMPLICATIONS

Table 13 provides an estimate of the trends in woodfuel consumption in the subregion, based on the conventional modelling approach using parameters such as income, population, per capita consumption and the effects of urbanization. Between 1980 and 2000 the absolute increase in woodfuel consumption is estimated at 65 million m^3. Between 2000 and 2020 a further increase of about 60 million m^3 is estimated, resulting in a total consumption of about 235 million m^3. The West African share of African woodfuel consumption is expected to remain more or less the same, at about 27.5 percent.

The most important issues relating to woodfuel consumption are how the projected consumption is likely to be met and what is the likelihood of substitution with commercial fuels. These issues can be summarized as follows:

- the urban proportion of West Africa's population is currently estimated at about 40 percent, a figure expected to reach about 52 percent by 2020. With migration to the humid zone, the rate of urbanization is more rapid in coastal areas than arid inland areas.
- rural areas in the humid zone are unlikely to face any major problem with regard to woodfuel supplies on account of the preponderance of tree crops on homesteads and in other areas. However, this will not be the case in rural areas of the dry zone. While population density in the dry zone is lower, biomass productivity is also low. Since woodfuel is collected from a variety of sources, increasing demand and declining supply will lead to a variety of responses. The precise nature of these responses and their implications are not clearly understood. They may include a reduction in the use of woodfuel, substitution with crop residues, increased efforts to collect woodfuel from distant sources, and substitution with commercial fuels, if these are available and affordable;
- in dry-zone urban centres, the options are far fewer, and most urban dwellers are dependent on woodfuel transported from distant sources or are forced to use commercial fuels. All the indications are that woodfuel is likely to remain a major source of energy for households and other traditional uses such as bakeries and brick-kilns, and this is expected to result in intense woodfuel production in forests and woodlands within the economic range of urban centres;
- urban centres in the humid coastal zone will also exert intense pressure on wood resources in adjoining areas. However, most of these urban centres are also better supplied with commercial fuels such as LPG, kerosene and electricity. Many of the ongoing energy development programmes, such as the West Africa Gas Pipeline, tend to benefit coastal urban centres (see Box 33). While commercial fuels may be available, for a large segment of the population with low purchasing power, they may not be affordable, necessitating dependence on less expensive biomass fuels.

While there is scope for improving the energy situation in West Africa, there are also considerable uncertainties. All the indications are that most

Table 13: Woodfuel consumption in West Africa

Subregion/region	1980	1990	2000	2010	2020
	(000 m^3)	(000 m^3)	(000 m^3)	(000 m^3)	(000 m^3)
West Africa	113 948	142 057	175 086	204 292	235 492
Africa	399 518	501 302	635 116	741 513	850 193

Source: Broadhead *et al.*,2001.

woodfuel will continue to be collected from forests and woodlands, as well as homesteads. Sustainability will depend on the intensity of collection and on investment to improve growth through protection and other means. Some efforts are under way (for example in Mali and the Niger) to regulate the flow of woodfuel to urban centres and to ensure that woodfuel producers receive a reasonable income, encouraging them to protect and manage the resources sustainably. Although these efforts have shown the potential for improving woodfuel supplies, there is uncertainty over their wider adoption. Much will depend on the nurturing of an appropriate institutional framework enabling the functioning of effective markets. There will be more efforts in this direction, but the scale may not be adequate to make a perceptible impact on the woodfuel supply situation during the next two decades. More important, such efforts may bypass the bulk of consumers in rural areas, where most production and consumption is in the subsistence sector. They may also exclude a significant proportion of low-income urban consumers.

BOX 33

WEST AFRICA GAS PIPELINE

Construction of the West Africa Gas Pipeline, conceived in the mid-1990s and strongly backed by Chevron, is expected to start in 2004. Crossing a distance of over 1 000 km, the pipeline will transport gas from Nigeria to Benin, Togo and Ghana. There is also the possibility of extending it to Côte d'Ivoire and even to Senegal, although this will depend on the political stability of the region. The end-use of the gas will bring extra electricity generation capacity on line, as well as promoting the use of mains and bottled gas for domestic purposes, and possibly reducing woodfuel consumption significantly. Nigeria's output potential from associated gas, currently flared off with considerable environmental consequences for the subregion, is estimated at 3 to 4 billion cubic feet per day, or 20 000 megawatts, roughly equalling the entire current output of the region from hydro and thermal sources combined. Moving to gas has been central to thinking at the Economic Community of West African States since the pipeline was conceived. Nigeria's gas reserves are currently viewed as virtually unlimited even in terms of known reserves, leaving aside offshore deposits, which have yet to be surveyed.

PRODUCTION, CONSUMPTION AND TRADE IN WOOD AND WOOD PRODUCTS

Although West Africa is the largest roundwood producer in Africa, accounting for about 34 percent of African production in 2000, much of it is woodfuel, so that its share in industrial wood production is about 27 percent of the African total. Table 14 provides an indication of the trends in the production of some major wood products for West Africa in comparison with the production of Africa as a whole.

TABLE 14

Projected production of important wood products*

Product	2000 (actual)	2010	2020
	(000 m^3)	(000 m^3)	(000 m^3)
Industrial roundwood	18 165 (26.6)	19 738 (25.4)	20 737 (23.4)
Sawnwood	3 057 (40.0)	3 208 (39.3)	3 248 (38.2)
Wood-based panels	716.0 (34.8)	755 (32.2)	876 (31.5)
Paper and paper board (000 tonnes)	19.0 (neg)	19.0 (neg)	19.0 (neg)

* Figures in parenthesis are the percentage of total African production
Source: FAO, 2002; Rytkönen, 2001.

It may be noted that while there is likely to be some marginal increase in the production of industrial roundwood, on the whole West Africa's share is expected to decline. This is largely a result of rapid expansion of production in Central and Southern Africa, the former through the expansion of logging to the Congo basin forests and the latter because of increased production from industrial plantations. West Africa has, however, emerged as the lead producer of sawnwood, largely as a result of the policy of encouraging indigenous processing, partly to cater to increasing local demand, particularly Nigeria. In 2000 Nigerian sawnwood production accounted for almost two-third of the subregion's production, but its share in sawn wood exports was only about 7 percent. On the other hand, Côte d'Ivoire and Ghana export most of their sawnwood, largely because of the limited local demand and the compulsion to earn foreign exchange.

All the indications are that consumption of wood products in West Africa will continue to increase as the population increases. However, in view of the current pattern of distribution of forests and population, there are already considerable imbalances in the supply and demand of wood and wood products, and these are expected to worsen. For example, Nigeria is already accounting for about 50

percent of industrial roundwood consumption, but has only about 19 percent of the forest area and a low per capita forest area[24]. With an annual deforestation rate of nearly 400 000 ha, the situation with regard to industrial roundwood production will become increasingly critical. Considering the total area of plantations (estimated at 690 000 ha[25]) and the current rate of annual planting (estimated at 23 000 ha), meeting future estimated industrial roundwood consumption from domestic supplies will become increasingly difficult. All these factors suggest that Nigeria will have to import substantial quantities of sawnwood and other products to meet the projected level of consumption.

Up to about 1980 West Africa was the foremost source of industrial roundwood exports from Africa, but its share has progressively declined since then and it currently accounts for less than 14 percent of these exports. Liberia has emerged as the foremost source of industrial roundwood exports in the subregion, accounting for almost 75 percent of its exports in 2000. Côte d'Ivoire, which accounted for 84 percent of West African industrial roundwood exports in 1980, had reduced its share to about 16 percent by 2000. Similarly, Nigeria's share declined from about 6.5 percent in 1970 to about 0.8 percent in 2000. While official statistics do not take into account the significant informal trade between the countries, they do provide a general indication of the overall direction of change as regards production and trade in major products, which can be summarized as follows:

- between 1980 and 2000 the West African share of industrial roundwood production declined from about 33.8 percent to about 26.4 percent of African production, although there was an absolute increase of about 1.24 million m^3. The most notable feature is the significant decline in production from Côte d'Ivoire, which decreased by about 1.94 million m^3. Major increases in production have taken place in Nigeria (about 2 million m^3) and a number of other countries such as Benin, Burkina Faso, the Gambia, Guinea and Senegal, whose production was fairly low in 1980;
- although there has been a shift from log exports to domestic processing, this is not fully reflected in the sawnwood production statistics available. Sawnwood production in West Africa declined from 3.87 million m^3 in 1980 to about 3.06 million m^3 in 2000, with most of the decline being accounted for by Nigeria, Côte d'Ivoire and Liberia. However, the proportion of sawnwood exported increased significantly, largely because of higher exports from Côte d'Ivoire and Ghana;
- the most significant development has been the expansion of wood-based panel production which increased from about 378 600 m^3 in 1980 to 716 000 m^3 in 2000. Much of this has taken place in Côte d'Ivoire, Ghana and Liberia, and is primarily focused on exports as all these countries have considerably increased their exports of wood-based panels during the past 20 years. Although Nigeria has a large potential market, the production of wood-based panels in the country has remained more or less unchanged during the past 20 years;
- in the case of pulp and paper products, the current capacity is very low, and there is a heavy reliance on imports for most such items as newsprint, paper and paperboard, and printing and writing paper. There are no indications of any expansion of capacity in the near future. Considering the large excess capacity for pulp and paper production at the global level and the high investment costs, it is important to consider whether there is any advantage in increasing domestic production.

FOREST-BASED SERVICES

As discussed in chapter 2, the most important forest-based services in the West African context are biodiversity protection, watershed management, desertification control and climate change mitigation. The consequences for these services in the context of the persistence of past trends are discussed below.

Biodiversity conservation

Increasing population and the limited scope for diversification away from land-based sources of livelihood suggest that biodiversity - both inside and outside forests - will come under increasing pressure. Although all the countries in West Africa, except Liberia, have signed the Convention on Biological Diversity (CBD), the capacity to protect biodiversity is extremely limited. In view of intense resource use conflicts, integrating biodiversity conservation into all land uses is expected to face severe difficulties. In

[24] For Nigeria the per capita forest cover is 0.1 ha. Only the Niger and Togo have similarly low per capita forest cover levels, while for West Africa as a whole the figure is 0.6 ha.

[25] Nearly 40 percent of the plantations are of rubber (Hevea), established primarily for latex production and unlikely to provide significant quantities of industrial roundwood.

assessing the future prospects of biodiversity conservation, it is important to examine the likely situation in areas set aside as protected as well as outside the protected areas.

The total extent of protected areas in West Africa is about 27.8 million ha, or approximately 5.5 percent of the land area. Biodiversity protection and management lie largely in the realm of the public sector and therefore face a number of problems, including the following:

- inadequate protection is a major problem, with the widespread poaching of animals for bushmeat, encroachment and the illegal collection of wood and non-wood forest products. In view of resource limitations, most governments are unable to invest sufficient resources and are often dependent on external support to manage protected areas;
- there are contradictory priorities within the public sector, and concerns for biodiversity protection are usually ignored by other ministries or departments, especially when new opportunities for resource use (the construction of roads and other infrastructures, mining, etc.) arise;
- efforts are under way to enable wider stakeholder participation, in particular that of local communities. While this approach may meet with some limited success, growing land use conflicts will act as a constraint. The success of community participation will depend on whether biodiversity conservation can generate adequate income for participating communities. In a number of countries in other regions, community interest is largely a result of the income-earning potential of conservation, which is primarily linked to tourism opportunities. A number of factors may limit the scope for generating substantial income from tourism in West Africa, where it may at best be confined to a few well-known protected areas.

The situation will remain very precarious as regards biodiversity conservation outside protected areas. In the absence of any effective institutional arrangements and the growing pressure for a variety of alternative land uses, these areas will be subjected to intensive modification. Some relics of biodiversity will probably be protected in sacred groves and other forests of cultural interest.

Watershed management

As discussed in chapter 2, there is considerable awareness of the importance of improving watershed management, especially in view of the shared use of several watersheds by countries in the subregion. The increasing demand for water, especially due to the growing agricultural, industrial and domestic uses, is expected to mobilize efforts for improved watershed management. The main issues in improving watershed management would be:

- the capacity of governments and other public sector agencies to develop and implement a coordinated programme of watershed management, especially ensuring close collaboration with other countries sharing the same watersheds;
- the willingness of watershed users to adapt land use practices to minimize the adverse effects.

Considering the emerging social and economic situation, there are reasons to believe that if the current trends persist, conflicts relating to water could increase considerably, especially between upland users and those in the lower reaches of the watersheds (see Box 34). These conflicts could be between countries over the sharing of water resources for different objectives or within countries between different sectors of the economy (or water users). While conflict management and the strengthening of cooperative arrangements will be the main issues, at

BOX 34

WATER-SHARING ISSUES IN THE VOLTA RIVER BASIN

The Volta basin is one of the poorest regions in Africa. It is shared by 6 West African states, but over 80 percent of the surface area is located in Burkina Faso and Ghana. With few other natural resources available, rain-fed and some irrigated agriculture is the principal basis of development of the people of the basin. Population growth rates are almost 3 percent, placing increased pressure on land and water resources. Improved agricultural development upstream, in Burkina Faso, depends on the development of surface water resources; such water development programmes could have an impact on the availability of water downstream, in particular at the site of the Akosombo dam on which Ghana relies for almost all its energy supply. Low water levels in the dam in 1998 caused a major energy crisis in Ghana, which many blamed on Burkina Faso's water development, but may have been caused purely by unreliable and poorly understood rainfall variability. A persistent decrease in rainfall in recent years has greatly exacerbated water shortages and competition in the basin.

(Green Cross International & UNESCO, 2001)

the land use level forestry will have a major role in improving watersheds. This will particularly entail the integration of forestry and tree growing into other land uses, clearly understanding their role in regulating waterflows.

One of the major limitations on pursuing an effective approach with regard to improved watershed management will be the capacity of existing institutions to mobilize individual and collective action. While there is considerable awareness of the issues, actions in the right direction may fall short, which means that some of the current problems relating to watershed management may persist for many years to come. These can, however, be overcome through:

- the development of institutional mechanisms to resolve conflicts between countries and to work out acceptable trade-off levels, including resource transfers and the payment of compensation;
- land use planning at the watershed and farm levels and adoption of integrated approaches to the conservation and sustainable management of water resources.

All the indications are that, at least in some critical areas, forestry will have a major role to play in protecting watersheds, whereas in others the role of forests and trees may be less significant.

Desertification control

Desertification - defined as "land degradation in arid, semi-arid and sub-humid areas resulting from various factors including climate variations and human activities" - is a major problem in West Africa, especially in the dry zone. Much of the problem stems from increased human and livestock populations, resulting in increased resource exploitation, in turn undermining the natural resilience of dry-zone ecosystems. There is widespread awareness of the effects of desertification and all the 15 countries in the subregion are signatories to the Convention to Combat Desertification. There have also been considerable efforts at the global, regional and national levels to address the problems, especially to formulate and implement national action programmes and integrate desertification concerns when addressing the food security situation. While awareness is a critical factor, progress in this direction will depend on:

- improved land use, ensuring that resource use is within the limits of sustainability;
- corrective action to prevent the adverse effects of desertification, especially protecting farmlands, habitations and other critical resources.

In the context of forestry the main focus will be on:

- the establishment of shelterbelts and windbreaks, and the stabilization of sand dunes by planting appropriate species, especially under agroforestry and silvipastoral systems;
- sustainable management of woodland resources.

Considering the widespread nature of desertification and its links with all land uses, a variety of actors and institutions are involved in combating it. And effectiveness on the ground will largely depend on the capacity of individuals and institutions and their perception of the problem. While technical know-how is not a critical limiting factor, institutional capacity and resources may remain the main bottlenecks. Resource constraints are expected to persist during the foreseeable future, and the scale of efforts in combating desertification may therefore remain rather modest.

Climate change mitigation

While West Africa's humid forests contain major carbon stocks, its dry-zone forests contain very low stocks and the limited moisture available means that there are inherent limitations on their becoming a major means of sequestering carbon through afforestation. The main problems in this regard relate to the following factors:

- despite the high biomass productivity in the humid zone, intense population pressure results in frequent land use changes, and each time such changes take place the accumulated stock of carbon is released, especially if the change is drastic. While managing natural forests sustainably or establishing long-rotation plantations helps to stabilize carbon releases, in the West African situation this may not be feasible because of population pressure and intense land use conflicts;
- growing conditions in the dry zone are very unfavourable, although land availability is much less of a constraint. Biomass productivity is very low, and since most of the biomass is used as fodder or fuel, the turnover is rapid, making investment in carbon sequestration less attractive.

All the indications are that under the present and emerging circumstances, the contribution of West African forests to carbon sequestration is unlikely to be substantial enough to attract investment in the

provision of global public goods, especially in view of the uncertainty relating to implementation of the Kyoto Protocol, the limited resources that may be available and the competition from better endowed areas in Africa and elsewhere. Even when all the arrangements for instruments such as the clean development mechanism are finally in place, West Africa may not be in a position to attract substantial investment.

While the importance of West African forests in climate change mitigation is uncertain, the predicted global change in climate is expected to have a significant impact on forests, particularly on account of highly fluctuating rainfall and increasing aridity, especially in the dry zone. A major outcome of this will be the increasing frequency and severity of forest fires, whose occurrence is partly aggravated by increasing biotic pressures.

WILDLIFE-BASED TOURISM

The diversity of climatic conditions in West Africa has resulted in a very rich and diverse flora and fauna, with considerable potential for becoming a major ingredient of nature-based tourism. However, the tourism industry as a whole and nature-based tourism in particular have grown very little in West Africa. Although the number of tourist arrivals in West Africa grew at an annual rate of 8 percent between 1995 and 1998, West Africa's share in African tourism receipts is only about 9.6 percent[26]. Prior to the events of 11 September 2001, the World Tourism Organization made estimates of the volume of tourist arrivals both globally and by region and subregion. While the number of international tourist arrivals worldwide is expected to increase from 668 million in 2000 to about 1 561 million in 2020, Africa's share is expected to grow from 27 million to 77 million during the same period. Much of this increase will be in Southern Africa, North Africa and East Africa, while West Africa will have only a small share of about 5 million.

No estimates are readily available on the proportion of tourism attributable to wildlife, but in any case the share of West Africa is expected to remain modest. The factors limiting the potential for expansion include:

- low investments in infrastructure resulting in inadequate accommodation and less reliable air transport;
- the absence of an effective strategy and plan to develop the tourism potential;
- poor promotional efforts.

All this would suggest the scale of tourism may not expand significantly in the next two decades. There is however some scope for high-value adventure tourism, especially focusing on small niche markets and taking advantage of the unique wildlife and cultural and historical diversity of West Africa.

FORESTRY AND POVERTY ALLEVIATION

Considering the overall state of poverty and underdevelopment in the subregion, forest and tree resources will continue to play a major role in the livelihood of the people, especially the poor. The role of forestry in poverty alleviation through the provision of goods and income should be seen in the following context:

- provision of subsistence goods. Throughout West Africa, rural communities have traditionally relied on trees and forests for the provision of a variety of subsistence goods, including forest foods (roots, fruits, bushmeat, etc.), woodfuel, medicine, fodder and construction material. For resource-poor people, access to forests is particularly critical during periods of drought and other calamities, with forests forming a major safety net;
- income-generation through informal activities. Another major safety-net function of forests is as a source of income, largely through a range of informal activities such as woodfuel production and trade, collection of non-wood forest products, and bushmeat production and trade. In recent years, these income-generating informal activities have expanded considerably, especially in response to the reduction in income from cash crops and the increasing need for cash income as economies are liberalized and households have to pay for services such as health care and education. Many informal sector activities are transitory in nature, and they seldom generate substantial surpluses to facilitate reinvestment;
- formal sector employment. Several forest-based enterprises, both small and large, form major sources of employment and income, especially in urban areas. They operate in a market environment, and sustaining employment and income depends on maintaining their competitive advantages, especially through improvement in product quality, diversification of products and improvement in

[26] In 1998 Africa had a total of 26.8 million tourist arrivals, West Africa accounting for just 2.6 million. Within Africa, most tourism is focused in North Africa, Southern Africa and East Africa.

technology and skill. Most formal sector enterprises require substantial investment and entrepreneurial skill, which to some extent limits the scope for further expansion, although creating employment opportunities in the formal sector is extremely critical in view of rapid urbanization and the high proportion of the young unemployed population.

All the indications are that the role of forests in poverty alleviation will continue to be critical in view of population growth, sluggish performance of the economies and persistent poverty. Although forestry will not be able to address the issue of poverty alleviation in a substantial way, it will have to take into account its safety-net function of providing basic-needs goods and income to people who have limited access to other sources of goods and income. However, unless other sectors grow and address the problem of poverty, forestry's capacity as a safety net is likely to be undermined, especially since many of forestry's poverty alleviation functions lie in the informal sector and seldom attract any investment by the users or owners of the resource.

CONSEQUENCES: AN OVERVIEW

The main consequences for forests and forestry of the driving forces and the scenarios described earlier can be summarized as follows:

- forest-cover reduction will persist in West Africa, and there is no reason to anticipate any decline in the rate of forest loss. All the indications are that forests will be subject to intense pressure, resulting in legal and illegal conversion to agriculture and other alternative uses. The growing urban population will exert an increasing demand on forests, especially for woodfuel and timber, thus intensifying degradation;
- despite wider recognition of the importance of sustainable forest management, the rate of its adoption will tend to be slow, particularly in the case of humid-zone forests, which are subject to intense pressure and where the capacity of public sector institutions is weak;
- no substantial expansion of plantations is foreseen in the next two decades. Governments will find it extremely difficult to manage even the plantations that have already been established. However, there is likely to be a significant expansion of trees outside forests;
- woodfuel consumption is expected to increase from about 175 million m^3 in 2000 to 235 million m^3 in 2020. Wood will continue to be the major source of energy, especially for rural households but also for a substantial proportion of urban households. Some shifts may take place as regards urban woodfuel use, provided the proposed West Africa Gas Pipeline materializes. Woodfuel supplies will remain a critical problem for most urban consumers;
- all the indications are that the demand for industrial roundwood and wood products will increase in West Africa. Nigeria has emerged as a major consumer and will increasingly have to depend on imports;
- most wood-producing countries have banned or reduced the export of logs to encourage domestic value addition. This has resulted in the growth of the sawmilling and plywood industries, largely focused on exports. However, in view of the declining resource base and the inadequacy of efforts to improve sustainable management, the long-term prospects for these industries are limited;
- although most countries have established a network of protected areas, growing pressures such as poaching and encroachment undermine its effectiveness. There is very little protection afforded to biodiversity outside protected areas;
- in view of the growing demand for water, the need to improve watershed management will become critical. However, institutional arrangements are expected to remain inadequate, thus limiting the implementation of effective watershed management. This will be a particularly complicated issue in the case of watersheds that are shared by several countries, raising the possibility of conflicts if appropriate institutional mechanisms to manage the watersheds and develop widely acceptable systems of sharing costs and benefits are not in place;
- desertification is a major environmental problem and is expected to worsen in the next two decades. While all the countries are signatories to the Convention to Combat Desertification, the level of efforts is expected to fall far short of needs;
- considering the sluggish growth of the economies and the poor performance of other key sectors, poverty is expected to persist. This will mean an increasing dependence of the poor on forests as a safety net to provide a range of subsistence goods and also a source of income, especially from a variety of informal activities.

On the whole the business-as-usual scenario tends to worsen the situation and this perception is shared by most people as revealed from a questionnaire survey conducted in the subregion (see Box 35)

BOX 35

PEOPLE'S PERCEPTION OF THE FORESTRY ISSUES IN WEST AFRICA

BACKGROUND

A questionnaire survey was conducted within the framework of the FOSA to assess the views of a large number of stakeholders (e.g. government agencies, universities and other academic and research institutions, international agencies, non-governmental organizations and the general public) with interests in forests and the forest sector. Of the 1985 copies distributed in West Africa, 15 percent of the questionnaires were completed and returned. An analysis of these responses from the diverse segments of society provides an indication of their perception of the present situation and what holds for the future.

THE PRESENT SITUATION

Most respondents regard the management of forests primarily as a government responsibility, although many see an increasing role for other actors like farmers, local community groups and the private sector. In general there is a growing concern about the inadequacy of supply of goods and services. Respondents from countries such as Burkina Faso, Gambia and Niger, highlighted their concern about the possible shortages of timber and woodfuel supply, while those in Côte d'Ivoire and Guinea are satisfied with the current state of their availability. Availability of medicinal plants and other non-wood forest products is becoming an issue of concern. Many respondents expressed dissatisfaction as regards addressing the environmental problems, especially desertification, watershed degradation and loss of biodiversity. With regard to the state of forests, deforestation is common concern for most respondents. Much of this is attributed to logging including woodfuel removal, expansion of agriculture and increased grazing pressure. Many respondents pointed out the inadequacy of efforts to adopt sustainable forest management and the negligible afforestation/ reforestation efforts.

The critical factors affecting the state of forests are widely seen as demographic growth, poverty, food insecurity and energy needs. Weaknesses of institutional arrangements, including limited technical manpower, are identified as critical constraints.

THE FUTURE

On the whole most respondents outlined a less optimistic outlook. Respondents from Burkina Faso, Mali, Nigeria or Senegal, believes that forest reduction and degradation will continue. Several respondents emphasized the worsening situation as regards loss of biodiversity, land degradation and water scarcity. Shortage of woodfuel and declining supply of forest products were identified as key emerging problems.

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

- greater emphasis on participatory approaches to forest resource management;
- improving the awareness on environmental issues, as well as technical training.

Several respondents stressed the need for strengthening efforts in the following areas:

- addressing corruption and illegal logging;
- develop a comprehensive land-use policy taking in account the linkages between the different segments of land use;
- develop alternative sources of energy;
- address the issue of land tenure to encourage investment on trees and other crops;

Most participants also drew attention to the need for addressing poverty, which is seen as a cause as also an effect of the current pattern of resource use.

Chapter 6

Priorities and strategies

The previous chapter indicated what is likely to happen if the current trends persist, specifically with regard to certain issues relating to the state of forests and the availability of goods and services. There are evidently a number of negative trends, and all the indications are of a decline in the extent of forest resources and the flow of goods and services. Considering the whole spectrum of driving forces, most of them emanating from outside the sector, it is important to consider what needs to be done to improve the situation and in particular to increase the contribution of forests and forestry to sustainable development. As already indicated, initiatives such as NEPAD envision a number of fundamental changes in the way development issues are addressed. Although the pace of implementation of NEPAD and similar initiatives may vary, they do provide a framework for shifting the path of development on to a new course. It is in this context that the present chapter outlines the strategies and approaches that may be of broad relevance to the West Africa subregion as a whole.

A SUBREGION WITH POTENTIAL

While each country has to define its priorities and strategies in accordance with its specific situation, there are a number of common denominators that help to articulate a broadly relevant framework, which may then be adapted to the specific conditions. The West Africa subregion has a number of specificities as regards economic development in general and forest development in particular. The dry Sahelian zone faces inherent climatic constraints, is economically poorer and, more important, being land-locked has limited opportunities for trade. In view of more favourable climatic conditions, the humid zone has considerable potential for agriculture, especially through crop diversification. It is also closer to the coast and has better-developed infrastructure and most of the large urban centres, enabling it to take advantage of trade opportunities. These differences between the dry and humid zones could also be seen as an opportunity for producing a varied range of products and services, promoting closer integration between the various zones within a country as well as between countries. The similarities of situation between countries also provide immense opportunities for collaboration.

Unlike other subregions, West Africa has a long history of forest harvesting and management, in some countries dating back almost a century, and there are considerable opportunities to learn from successes and failures. Some of the potential strengths of West Africa can be summarized as follows:

- although purchasing power is low, West Africa has the potential to emerge as a large market, especially in view of its large population and the emergence of a middle class. Countries such as Nigeria are already major consumers of wood and wood products, and many of the neighbouring countries could gain substantially by catering to this growing demand;
- despite some ongoing conflicts, there has been some strengthening of democratic processes and institutions, and governments are increasingly being changed through the ballot box;
- in view of the long history of forest management, most countries have better developed technical and institutional capacity than those in other African subregions. The capacity of human resources in the forest sector offers much potential for addressing some of the basic issues, such as sustainable forest management;
- substantial experience has also been gained in involving local communities in natural resource management, especially in the dry zone;
- some of the countries have considerable experience in the management of high-value plantation species and have been able to tap new markets;
- entrepreneurship is well developed in West Africa, enabling people to take advantage of emerging opportunities.

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

DEVELOPMENT PRIORITIES

Considering the current trends, the two major issues that will continue to be relevant for the subregion are poverty alleviation and environmental protection. The low incomes and poor state of social development in almost all the countries will require increased attention to improving people's livelihoods. In view of the limitations of rapid industrialization, improving agriculture, especially to improve food security and address widespread poverty, will be a key concern for all the countries. There is also considerable awareness of the strong link between poverty alleviation and environmental protection. Protecting watersheds, arresting desertification and land degradation, maintaining ecosystem stability, etc. are necessary conditions for sustainable development. However, simple as they may appear, addressing the twin issues of poverty alleviation and improved environmental protection requires considerable efforts, especially in following a path of development very different from the present one and in bringing about critical changes in the institutional set-up at all levels.

FORESTRY PRIORITIES

Obviously overall development priorities will determine sectoral priorities, and the emphasis will be on how forestry can help to accomplish the broader objectives. Key areas of action within the forest sector are indicated below.

Poverty alleviation

As discussed earlier, forestry is already playing a major role in poverty alleviation. Ideally, as economic development progresses, the productive and income functions of forests and forestry decline. However, in the context of Africa as a whole and West Africa in particular, development is likely to be slow and the nature of dependence on forests is therefore unlikely to change very much. Poverty alleviation will largely take the form of the provision of basic goods and services and the generation of basic-needs income that will enable people to procure essential goods and services. In comparison with other subregions in Africa, West Africa is more open, and the emphasis will therefore be on income-generation, focusing particularly on the following elements:

- enhancement of the safety-net function of forests by improving access to a range of forest-derived basic-needs goods, including those that supplement nutrition; this will be particularly important in the dry zone, which is more vulnerable to drought and desertification and consequent low agricultural production;
- improvement in returns from the large number of forest-based informal activities, ensuring that they are sustainable and remunerative;
- development of forest-based enterprises in order to boost employment and income from formal sector activities, especially in urban areas, focusing particularly on skill-intensive activities, requiring low capital investments.

Environmental protection

Within West Africa land use is extremely diverse, each with its own specific problems related to long-term sustainability. The priority areas for environmental protection will be:

- the stepping up of efforts to protect and manage watersheds through appropriate land uses and by ensuring that watershed protection is an integral component of all land uses;
- the arresting of land degradation and desertification, ensuring that all land uses have a built-in provision to adopt conservation-focused approaches;
- wider application of simple and easily measurable criteria and indicators for sustainable forest management, both for natural forests and plantations.

STRATEGIES FOR ACCOMPLISHING THE PRIORITIES

The above priorities are already widely known, and attempts have been made earlier to pursue them, although with limited impact. Many of the initiatives were traditionally in the hands of public sector organizations and efforts to involve other stakeholders were minimal. In recent years, the public sector capacity has declined considerably, while that of other key stakeholders, especially communities and the private sector, has remained undeveloped. In most cases, the technical know-how to improve forest management already exists, but the institutional capacity has declined considerably. It is in this context that the following recommendations are made for strengthening the overall institutional capacity of the forest sector.

Revitalization of the public sector

An efficient and responsive public sector that provides an effective legal and policy framework and helps to resolve conflict in a transparent and just manner is a prerequisite for the development of forestry in all the countries. Specifically this will require:

- redefinition of functions and responsibilities. public sector forest agencies will primarily focus attention on providing enabling conditions for other actors to undertake most of the critical functions. This will largely entail the provision of appropriate policy and legal framework and maintaining a level playing field for all actors to play an effective role. The public sector will undertake only those public-goods functions that are not likely to be performed by the private sector and other actors;
- reorganization of public sector agencies. The change in responsibilities and functions will require significant changes in the organizational structure of most forestry organizations. Some efforts in this direction are being made, but substantial investment is needed in reorganization and capacity development;
- new skills and capacities. Discharging the new responsibilities will require substantial improvement in the skills of all those in forestry organizations. Particular efforts have to be made to increase the capacity for policy analysis, conflict resolution and information management.

Support for community-level initiatives

A major focus will be on taking advantage of the lessons learned from the various community-level initiatives and progressively building up local capacity in forest resource management. This will be particularly critical in the dry zone in view of the need to protect the environment and produce goods and services that are locally important. Specific attention will be required in the following areas:

- strengthening of the policy and legal framework, specifically recognizing and supporting the involvement of local community organizations in the management of forest and tree resources in the public or community domain;
- assistance to local community organizations in developing transparent and participatory approaches to resource management, giving due attention to the needs of disadvantaged sections within the communities;
- improvement in the access to information, especially on the availability of inputs and prices, product markets, etc.

Most of the demand for wood and wood products in the dry zone can be met by strengthening community resource management initiatives. In view of the low purchasing power and the poorly developed transport infrastructure, such local initiatives are crucial for a substantial proportion of people in the dry zone. There are several examples of such community initiatives in Burkina Faso, the Niger, Nigeria, Mali and Senegal, and efforts should focus on wider application of the lessons already learnt.

Empowerment of small-scale producers

Employment generation will be a critical objective of social and economic development in West Africa. With a large proportion of the population below the age of 15, unemployment is likely to increase considerably during the next two decades. One of the characteristic features of West Africa is the large informal sector, which often operates in the "illegal" realm and consequently suffers from a number of constraints. In many cases, informal activities have been made illegal, largely to facilitate the appropriation of public resources by a few. The bias against informal activities has restricted the initiatives of a large number of people and has in a way promoted resource use with no commitment to sustainable management. With burgeoning unemployment, it will be necessary to bring the informal sector into the mainstream of the economy and ensure that informal activities help to enhance employment and income.

In the humid zone of West Africa there are already substantial initiatives in private tree planting, including the planting of trees in home gardens. Experience in a number of countries indicates that such private initiatives could significantly improve wood supplies. Another potential growth area is small-scale wood-based industries, especially furniture production. Higher levels of skill in West Africa and access to markets in Europe and other regions provide immense opportunities for the development of the furniture industry in the subregion. The cultivation and processing of non-wood forest products is another area that offers considerable scope for small-enterprise involvement. Farmlands, especially in the humid zone, would permit the cultivation of medicinal plants. Traditional knowledge already exists on the processing of

non-wood forest products, including medicinal plants, and this could be refined and improved. The promotion of small-scale enterprises will entail:

- removal of legal and other impediments hindering the operation of small-scale enterprises, including restrictions concerning the transport of wood and wood products;
- improvement of access to information, especially on technology and markets; and
- increased access to credit.

Facilitation of the development of competitive markets

While a significant proportion of transactions will remain in the informal sector and subsistence consumption will continue to dominate, efforts need to be made to promote the development of markets and encourage the large number of producers and consumers to take advantage of the opportunities available through the market mechanism. The operation of fuelwood markets in the Niger and Mali has indicated the potential of market development to increase the income of local communities. Specifically this should focus on:

- encouragement of the establishment of cooperative trading networks;
- improvement of access to information on markets and prices;
- facilitation of the development of mechanisms, including a legal framework, that will help to resolve conflicts and ensure that the market mechanism functions efficiently.

Perverse subsidies have often undermine the development of competitive markets. These undermine the capacity of governments to mobilize adequate resources in support of sustainable forest management and increase the availability of public goods. The development of a competitive market under a transparent transaction system is also expected to reduce rent-seeking behaviour.

Strengthening of subregional and regional collaboration

The close economic and ecological links between the various zones and countries require explicit recognition and should be supported through appropriate political and institutional arrangements. There have been strong links between the dry- and humid-zone countries by way of migration and trade. The humid zone has historically depended on migrant labour from the dry northern zone, while most of the dry-zone countries are dependent on products from the humid zone. The ecological link between the various countries is particularly strong on account of the shared river systems in the region. All these elements would suggest the need to strengthen collaboration between countries, especially taking advantage of existing mechanisms such as ECOWAS and CILSS. Specific areas for collaboration in forestry include:

- strengthening of cooperation in forestry research through the development of subregional networks focusing on common problems; there is considerable scope for: collaborative efforts in a number of areas, including plantation forestry, rehabilitation of logged-over areas, domestication of non-wood forest products, etc.; information exchange; and the development of a common pool of expertise to support countries with inadequate capacity;
- establishment of regional centres for training in support of human resource development in forestry and allied sectors;
- strengthening of subregional mechanisms to facilitate collaborative action to address the problems of watershed protection and desertification control.

Investment mobilization

Many past efforts have been top-down, and this has necessitated resource mobilization at the national level to support all the activities. The system did not provide adequate opportunities for the initiatives of the private sector and for tapping the savings of large numbers of people. In many cases individuals have no incentive to mobilize their savings or invest them in more productive activities. The removal of the various constraints and the establishment of a level playing field are expected to increase people's confidence, encouraging them to invest their resources productively. In almost all countries there are opportunities to increase investment in forestry by tapping a variety of sources, particularly encompassing:

- improvement in the collection of revenue by minimizing leakages;
- a focus on the core functions of public forest agencies while most productive and commercial functions are assigned to private or public enterprises that operate on the basis of commercial profitability;

- development of resource transfer mechanisms, especially to support efforts to safeguard environmental functions such as watershed protection and to compensate those who have to bear the costs of protection;
- encouragement of private sector investment in forestry enterprises and increased access to credit;
- mobilization of resources nationally, regionally and globally in support of the provision of public goods that are regionally and globally important.

Enhancement of the role of civil-society organizations

Another key area requiring substantial effort is increased involvement of civil-society organizations in decisions relating to resource management. Such involvement would help to increase transparency and ensure that the long-term interests of society are safeguarded. This will specifically require:

- seeking of the participation of civil-society organizations in discussions on policy and legislation relating to forest resource management;
- improvement of access to information that is of public interest, and development of policies and legislation that explicitly recognize and guarantee the right to information;
- development of mechanisms that enable civil society organizations to pursue remedial measures and ensure that the actions of the various actors - public or private - do not compromise the larger and long-term interests of society.

CONCLUSION

There is considerable uncertainty as regards changes in the next two decades. While it is hard to predict what is likely to happen, we do know that the situation in the next two decades will unfold rapidly, providing opportunities and increasing threats, many of them unforeseen at present. As the economies of West Africa become more and more integrated into the global economy, the opportunities and threats will also change in unpredictable directions. In most cases the available response time will be shorter. It therefore becomes imperative that institutions are geared to foresee changes, face all the uncertainties, adapt themselves and themselves become agents of change.

Chapter 7

Summary and conclusions

The previous chapters provided an overview of the present forestry situation, the major driving forces and the various scenarios that are likely to emerge in the future in West Africa. Based on this, an indication of the consequences and the nature of priorities and strategies was then given. The present chapter summarizes the main findings and conclusions.

KEY FINDINGS

West Africa provides a very complex and challenging situation as far as forestry development is concerned. The diversity of ecological, social and economic conditions and the contrast between the humid and dry zones form critical factors that affect the development process. Some of the major issues highlighted in this study are summarized below:

- all the countries in the subregion are undergoing major political changes, accompanied by social, institutional and economic transition. Democratic systems of government are becoming widely accepted. There is also increasing emphasis on decentralization of administration, including natural resource management. Despite some initial problems, these efforts are expected to bring about significant changes in the overall political and institutional environment;
- West Africa is one of the most densely populated subregions in Africa. With vast stretches of the subregion being arid, the humid zone is under tremendous pressure to meet the growing demands of the population for food and a variety of products and services;
- during the next 20 years the population is expected to increase by about 110 million, accounting for about 28 percent of the increase of all of Africa. The impact of such an increase in population on forests will depend on several other factors, most important being the overall economic situation and changes in the relative importance of various sectors;
- the growing demand for wood and wood products from within the subregion, especially in countries such as Nigeria and Senegal, could significantly alter the direction of trade flows;
- most natural forests, except those in national parks and game reserves, are likely to be overexploited and depleted. However, there is considerable scope for the expansion of tree cultivation, especially under agroforestry systems on homesteads and in agroforestry parklands, which are expected to become major sources of industrial roundwood and woodfuel;
- in view of the high population density, there is very little scope for large-scale industrial plantations, except to a limited extent in the Guinean savannah zone;
- West African countries have invested in wood processing, especially the production of sawnwood, veneers and plywood. There is also a growing small- and medium-scale enterprise sector that has shown considerable potential for growth;
- while there are rapid changes in technology at the global level, most economic activity in West African countries, including the forest sector, has not benefited from this, on account of the absence of a strong indigenous science and technology capacity.

CONSEQUENCES

The consequences of the driving forces for forests, especially in the provision of goods and services, can be summarized as follows:

- West Africa will continue to lose forests at roughly the same rate as now. All the indications are that forests will be subject to intense pressure, resulting in legal and illegal conversion to agriculture and other alternative uses. The growing urban population will exert an increasing demand on forests, especially for woodfuel and timber, thus intensifying degradation;
- despite wider recognition of the importance of sustainable forest management, the rate of its adoption will tend to be slow, particularly in the case of humid-zone forests, which are subject to intense pressures;
- no substantial expansion of plantations is foreseen in the next two decades. Governments

will find it extremely hard to manage even plantations that have already been established. There is likely to be a significant expansion of trees outside forests;
- annual woodfuel consumption is expected to increase from about 175 million m^3 in 2000 to 235 million m^3 in 2020. Wood will continue to be the major source of energy, especially for rural households but also for a substantial proportion of urban households. Some shifts may take place as regards urban woodfuel use, provided the proposed West Africa Gas Pipeline materializes;
- all the indications are that the demand for industrial roundwood and wood products will increase in West Africa. Nigeria has emerged as a major consumer and will increasingly have to depend on imports;
- in view of the growing demand for water, the need to improve watershed management will become critical. However, institutional arrangements are expected to remain inadequate, thus limiting the implementation of effective watershed management. This will be a particularly complicated issue, since several countries share watersheds, and conflicts could intensif;
- desertification, a major environmental problem, is expected to worsen in the next two decades. While all the countries are signatories to the Convention to Combat Desertification, the level of efforts is expected to fall far short of needs;
- considering the sluggish growth of the economies and the poor performance of other key sectors, poverty is expected to persist. This will mean increasing dependence of the poor on forests as a safety net to provide a range of subsistence goods and also as a source of income.

PRIORITIES AND STRATEGIES

The two major priorities for the subregion will be poverty alleviation and environmental protection. Specifically these have to focus on:
- enhancement of the safety-net function of forests by improving access to a range of forest-derived basic-needs goods; this will be particularly important in the dry zone, which is more vulnerable to drought and desertification and consequent low agricultural production;
- improvement in returns from the large number of forest-based informal activities, ensuring that they are sustainable and remunerative;
- support for the development of forest-based enterprises to boost employment and income from formal sector activities, especially in urban areas, focusing particularly on labour- and skill-intensive but less capital-intensive activities;
- wider application of simple and easily measurable criteria and indicators for sustainable forest management, both for natural forests and plantations;
- stepping up of efforts to protect and manage watersheds through appropriate land uses and by ensuring that watershed protection is an integral component of all land uses;
- arresting of land degradation and desertification, integrating this component into all land uses.

Much of the focus will be on institutional changes, primarily to empower the various actors and expand the space for their initiatives. Some critical areas requiring attention are the following:
- revitalization of the public sector, including a redefinition of functions and responsibilities, appropriate changes in structure and organization, and the imparting of new skills and capabilities;
- invigoration of community-level initiatives, taking advantage of the lessons learned from ongoing efforts, progressively building up local capacity in forest resource management;
- empowerment of small-scale producers, especially through the removal of legal and other impediments hindering the operation of small-scale enterprises, including restrictions concerning the transport of wood and wood products, improved access to information, especially on technology and markets, and increased access to credit;
- facilitation of the development of competitive markets, mainly by improving the legal and institutional framework and ensuring certainty over policies in order to build up confidence;
- strengthening of subregional and regional collaboration, especially in addressing common problems and in sharing expertise in research, education and training;
- mobilization of investment, especially from internal sources, by creating the necessary confidence for people to save and invest;
- enhancement of the role of civil-society organizations, especially by providing a more conducive environment for their functioning.

FOSA FOLLOW-UP

The 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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