

CHAPTER 6

THE FORESTS OF CONGO IN 2008

Nicolas Bayol and Richard Eba'a Atyi

With contributions from: Georges Claver Boudzanga, Grégoire Nkéoua and Claude Etienne Massimba

Introduction: The Macro-Economic and Political Context

Demography

Congo covers 342,815 km² and has an estimated population of 3.6 million (UNPP, 2006),²⁵ corresponding to a relatively low population density of 10.5 inhabitants per km². This population is mostly urban, with more than half of all Congolese living in the 6 largest cities. Population growth remains high, although in slight decline to 2.9 % per annum (CNSEE, 2006).²⁶ There are strong disparities, the forest area in the north be-

ing very sparsely populated, with fewer than 1.5 people/km² in the *départements* of Sangha and Likouala.²⁷ This population is distributed along the main communication axes, leaving vast areas uninhabited. The forests in the south are more populated and there are more serious threats to resources: subsistence farming, hunting, intensive logging for many years without any management planning to date.

Economy

Gross National Income in the Congo amounted to \$ 6 billion in 2006, representing a *per capita* gross national income of \$ 1,370 (World Bank, 2006). Growth remained high even during the period of conflict, and reached more than 7 % in 2007. The economy depends heavily on the oil sector, which accounted for 64 % of GDP in 2005. The country enjoys a favorable economic climate, with rising crude oil prices and growing domestic oil production (OECD, 2007). Despite

this strong growth, with a growth rate of 6.8 % in 2006, Congo is still classified as “low human development” by the UNDP, with low life expectancy (52 years), and persistently high infant mortality albeit in considerable decline (approximately 70 per 1000) (ADB, 2008). The country lacks infrastructure. Rural people live mostly in isolation and the public health and education structures lack adequately trained staff.

Political Context

Congo suffered an armed conflict between 1997 and 2003, which greatly impoverished the country and caused considerable damage to in-

frastructure and the national economy. Thanks to regained stability, the country is gradually recovering from this painful episode in its history.

Contribution of the Forest/Environment Sector to the National Economy

The forestry sector contributes significantly to the national economy, although less in relative terms than the period up to the early 1970s. In 1974, timber generated 85 % of export earnings and accounted for 10 % of GDP.

The rise of oil has diminished the importance of the forestry sector. Production of timber and processed products represents the major part of the formal sector's contribution to the economy.

In 2006 forestry products made up only 5.6 % of the GDP (Anonyme, 2007). This figure masks the fundamental role played by the forest sector in terms of job creation and regional development in the most disadvantaged rural areas. The large informal forest sector is not reflected in this statistic. In 2007, about 7,400 direct jobs and 14,800 indirect jobs (MEF-FORAF, 2008) were generated from forest production. Many of these

²⁵ CNSEE, www.cnsee.org, provides population figures of 3,6 million for 2006 (estimate based on the last available census in 1984).

²⁶ According to UNDP, 2005. 2.8 % for the period 1975-2005.

²⁷ Calculated using CNSEE data.

employees reside in rural areas, with, for example, about 4,000 employees²⁸ in the forestry and timber sectors in the *Départements* of Sangha and Likouala (out of 140,000 inhabitants). The forestry sector is by far the largest provider of private employment in rural areas.

The strong contribution to the development of northern Congo is manifested *inter alia* by the recent establishment of a road network within the region, linking it to Cameroon and the Central African Republic. In addition, logging operators finance social infrastructure, facilitating the exchange of goods and people, and inject money into a previously under-monetized economy.

Forest Resources and Land Cover Change since 1990

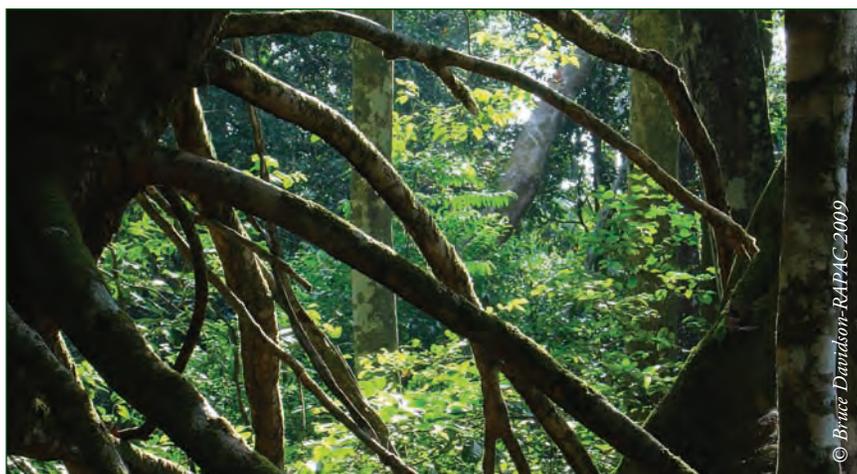


Photo 6.1: Stilt roots are common in the dense forests of Central Africa.

Forest Areas

Forests occupy a prominent place in the Congo, with area estimates ranging from 22.4 million hectares (CNIAF, 2008) to 25.9 million hectares (Mayaux *et al.*, 2003).²⁹ This area is now estimated to 18.5 million hectares. The Congolese forest covers two thirds of the Congolese territory.

Table 6.1: Forested area in the Republic of Congo by land cover category

Land cover	Area (ha)
Lowland dense forest	14,384,835
Sub-montane forest (900-1500 m)	612
Mountain forest (>1500 m)	0
Swamp forest	4,108,545
Mangrove	0
Total dense forests	18,493,992
Forest-cropland mosaic	5,805,468
Forest-savanna mosaic	1,351,890
Dense deciduous forest (Miombo)	1,251,531
Other plant formations	6,824,178
Cropping lands	215,514
Other land use (town, villages, industrial sites...)	338,976
Total	34,281,549

Source: compilation of land cover data produced by UCL, JRC and SDSU.

²⁸ Figure obtained using available data from: IFO (950 employees), Mokabi SA (460), Likouala Timber (450), Bois et Placage de Lopola (200), CIB (1750), Thanry CONGO (exact value unknown).

²⁹ The State of the Forest 2006 reported an area of 22.2 million hectares of forest.

The annual rate of deforestation is very low, with a net rate of 0.02 %. Gross deforestation is a little higher, at 0.07 % per year, but this is offset by reforestation of 0.05 % (Duveiller *et al.*, 2008).³⁰ The deforestation rate is almost zero in the north of the country; the south was not included in this analysis due to lack of available satellite images, which can lead to an underestimation of national deforestation rates. In some areas the rate of deforestation is higher, for example around the city of Ouesso there was more than 2 % increase in deforested areas between 1990 and 2003 (MEF-FRM-UT, 2007). Shifting cultivation is the main cause of deforestation. This can be observed on satellite images around the main cities (Brazzaville, Pointe-

Noire, Nkayi, Dolisie, Ouesso) and along roads. Human activities such as logging, firewood harvesting and bush fires can cause forest degradation (a reduction in biomass) and potentially affect biodiversity, without having a major effect on the evolution of forest cover and without compromising forest sustainability. At present, mining and agro-industry have no marked impact on Congo's forests. But many mineral operations currently under way (approximately 60,000 km² in 2005, 17.5 % of the forest estate is designated for mining permits³¹) could result in future extraction of the identified deposits. A revival of agro-industrial activities is possible; for example, re-starting palm production at the Sangha plantation near Ouesso plantation is envisaged.

Legal and Institutional Framework for Managing Biodiversity Resources

Legal Framework

The Congolese forest is made up of state forest and private forest. The state forest domain is divided into three sectors, or zones, and then into Forest Management Units (FMU or *Unités forestières d'Aménagement*). Some FMUs, including forest areas in the south and center are sub-divided into Forest Logging Units (FLU or *Unités forestières d'Exploitation*). Law 16-2000 pertaining to the Forest Code establishes the legislative framework for forestry. Under the code, development plans must be prepared for FMUs. The assignees sign a convention with the Ministry of Forest Economy (MEF) which sets out the obligations of the contractor and general specifications, including a development plan, industrial facilities, vocational training and social and logging infrastructure. Finally, as in other regional countries, the Forestry Code introduced a bidding process for allocating FMU and FLUs.

This law was supplemented by legislation, including decree 2002-437 which establishes conditions for management and use of the forests. It also states that the assignee companies are responsible for preparing management plans for the FMU and FLUs. But in Congo, more than in other regional countries, the Ministry responsible for forests is strongly involved in developing and evaluating management plans. An MEF agent is assigned to each management cell, and steering committees provide technical monitoring of

projects. Approval of reports, preliminary studies and management plans are made after a thorough technical review conducted by the administrations. In addition, there is a clear willingness to achieve the broadest validation: other ministries are consulted to validate the decisions on land use, and ultimately, management plans are approved following a public meeting involving all local stakeholders.

The national planning guidelines adopted in March 2004 set out the broad guidelines for drafting a management plan. They include:

- general management directives for forest concessions;
- specific management directives for zones for production, conservation, protection, scientific research and community development;
- the framework for drafting forest management plans.

National standards for forest management and terms of reference for preparing additional studies (socio-economic, environmental...) were adopted in December 2005. They take into account the implementation and technical organization of the following:

- forest inventories;
- dendrometric studies;
- cartographic norms.

³⁰ The different work carried out recently on deforestation provides estimates ranging between 0.01 and 0.6 % per year. The FAO Forest Resources Assessment 2005 provides an estimate of 0.6 % per year for a 15-year period. The State of the Forest 2006 provides a value of 0.03 %.

³¹ Estimated using data from the *Atlas interactif du Congo* (WRI/GFW, 2007)



Photo 6.2: Transportation of firewood by canoe.

In the end, this is a series of normative rules aimed at establishing conditions for implementing technical operations, with a view to facilitating the implementation and monitoring of technical works, while ensuring optimal performance.

Environmental and Wildlife Laws

Laws governing wildlife management (Laws 48/83 and 49/83 of 21/04/1983) and the environment (Law 003/91 of 23/04/1991) are in revision. For hunting, the law defines the conditions for subsistence hunting (considered as a right of use), the procedure for obtaining a hunting license, the closed seasons for hunting, the fully or partially protected species, and prohibited hunting techniques.

Land Use

The Republic of Congo has not implemented a national land use plan. A National Master Plan for land use was developed in 2005 (Ministry of

Planning, Land Development, Economic Integration and NEPAD, 2005), which defines the priority vocation of each development areas but without enacting local land use.

In forest areas under development, the zoning is determined by the forest management plan. Management and use of forests is determined in accordance with the provisions of decree 200-347 of 31/12/2000. Based on article 24 and results of baseline studies, the FMUs, are divided into different development zones. For each forest management plan, this involves defining a series of zones, including production zones, conservation zones, protection zones, community development zones and scientific research zones. Other zones may be created according to the specificities of each forest concession. Of all the FMUs already managed, the areas were divided into community development zones, with a mixed goal of agricultural production and timber supply for local people.

Institutions and Capacity

As is the case in other countries in the region, the functions of the former Ministry of Forest Economy and the Environment have been reassigned to two different ministries: the Ministry of Forest Economy (MEF) and the Ministry of Tourism and the Environment. The main tasks and functions of the MEF are:

- management of the forestry sector (formulation and monitoring-evaluation of policies and strategies...);
- management of forest resources and forest management;
- the forest economy (promotion of forest product development, statistics, support for the professionalization of the artisanal sector...);
- supervision of rural forestry;
- research and training;
- management of wildlife resources.

In 2008 the staff of MEF included 750 officers, including 350 forest and wildlife technicians. The forestry administration generally suffers from a lack of staff, particularly skilled personnel. It also lacks resources, with only 16 vehicles and 30 motorcycles throughout the territory.

Under MEF supervision, four implementing agencies carry out part of the forestry mission:

- Forestry Fund (FF);
- National Reforestation Service (SNR, or *Service national de Reboisement*);
- National Inventory Center for the Management of Forest and Wildlife Resources (*Centre national d'Inventaire et d'Aménagement des Ressources forestières et fauniques* (CNIAF), responsible for formulating and developing forest management plans and monitoring implementation;
- Service to Monitor Forest and Wildlife Products for Export and Import (*Service de Contrôle des Produits forestiers et fauniques à l'Exportation et à l'Importation* (SCPFPEI), with branches in timber producing areas.

At local level, forest operations are monitored by the Departmental Directorates of the Forest Economy.

Training and research institutions

The General Delegation for Scientific and Technological Research (DGRST) is the body for implementing national research policy. It is responsible for coordinating and monitoring all research activities conducted within the national territory, both from institutions under its direct

supervision and those from other ministries and NGOs.

The main forestry training institutions are:

- the *École nationale des Eaux et Forêts de Mossendjo*;
- the *Institut de Développement rural* (IDR), which houses a forest technology division;

Restructuring programs

In 1997, Congo completed its Tropical Forestry Action Plan (TFAP), launched in 1990. The

plan identified the most important orientations to forest policy with a view to:

- better integration of sustainable development into the Forest Code;
- reviewing the concepts of permanent and non-permanent domain;
- taking ecological biodiversity, as well as social data, into account in forest management;
- reviewing all FMU allocation mechanisms.

A sectoral forest and environment program (*Programme sectoriel Forêt et Environnement-PSFE*) is in preparation.

Forest Logging and the Timber Sector

Timber from Congo forests has been exploited since the early 20th century. At that time, only forests, almost all of them, in southern Congo were affected. The northern forest massif, much vaster, was not effectively logged until the 1970s. The forest of northern Congo, which contains nearly 2/3 of the productive forests in the country, provided only 18 % of national log production in 1974, compared to more than 80 % in 2000 and 65 % in 2004. To date, that zone accounts for over 70 % of production. Much of the productive forest area in northern Congo has never been subjected to logging.

In the 1970s, many projects were conducted to assess the forest resources available in the forests of Congo, much of the Congolese forest was inventoried and high quality planning documents were prepared.

Early on in their development, the FMU and FLUs benefited from a simplified planning regime, with the maximum annual volume (VMA) set for each FMU and FLU. Although this management did not include genuine concern for resource sustainability and forest function, it made the Congo a regional pioneer in the forest management field.

Typology of Forestry Titles

The commercial exploitation of all forest products in the state domain, including those that are the subject of a long-established activity among local people, is conducted either by board or by logging permit holders from the water and forest authorities. These titles, referred to in article 65 of Law 16-2000 of 20/11/2000 pertaining to the Forest Code, are the industrial processing convention (CTI or *Convention de Transformation industrielle*), the management and processing convention (CAT or *Convention d'Aménagement et de Transformation*), timber cutting permits from plantations (PCBP or *Permis de Coupe des Bois de Plantations*) and special permits (PS or *Permis spéciaux*).

An industrial processing convention (for a FMU or FLU) covers a period of 15 years. A management and processing convention (for a FMU) covers a period of 25 years. Both types

of agreements include an obligation to prepare a management plan for the licensed area and may be renewed.

The permit for long term allocated areas concern FMUs, which “constitute the basic units for the execution of the tasks of planning, management, conservation, recovery, and production.” Some of the FMUs were subdivided into FLUs.

The cutting permit for plantation wood only concerns forest plantations in the state forest domain.

Finally, the special permit relates mainly to forest products other than timber (called in Congo accessory forest products), but may, exceptionally, be eligible to operate a fixed and limited number of timber units. This type of permit is reserved for Congolese citizens, NGOs and associations, and aims to supply local communities (art. 70 of the Forest Code).

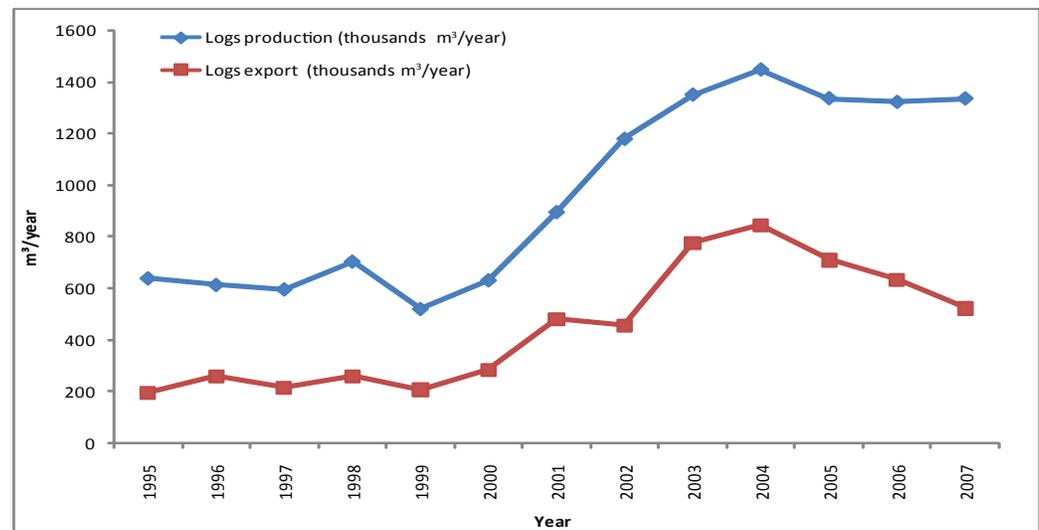


Photo 6.3: The fruit of the *Aframomum*, one of the many non-timber forest products.

At the end of 2008, 52 FMUs or FLUs, covering nearly 12 million hectares of forest had been allocated with a planned area for production forest of 15.2 million ha. Some FMUs are still awaiting allocation.

The average area allocated per operator is close to 400,000 ha with large disparities, for example concessions in northern Congo are significantly larger than in the south. IPC (DLH Group) and IFO (Danzer Group) each manage more than 1 million hectares; Mokabi SA (Groupe Rougier) and Timber Likouala more than 500,000 ha.

Formal Logging in Natural Forest



Source: Data collected from the Ministry of Forest Economy in 2008.

Figure 6.2: Change in roundwood production and exports (m^3/an)

Current production grew sharply between 2000 and 2003, from 630,000 m^3 to 1.35 million m^3 (MEF-FORAF, 2008) before stabilizing at this level. This increase is very marked in the north, with the rise in production in several FMUs (Mokabi, Ngombe, Lopola, Mimbéli). The southern region has also experienced strong growth over this period, largely due to the start of activity for TAMAN, which became one of the largest producers in the country in just a few years. No statistics are available for special permit production.

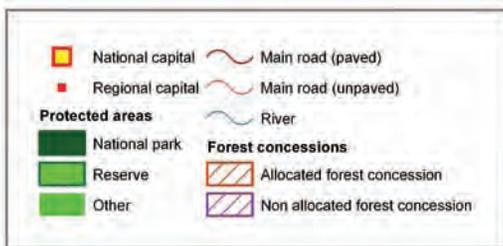
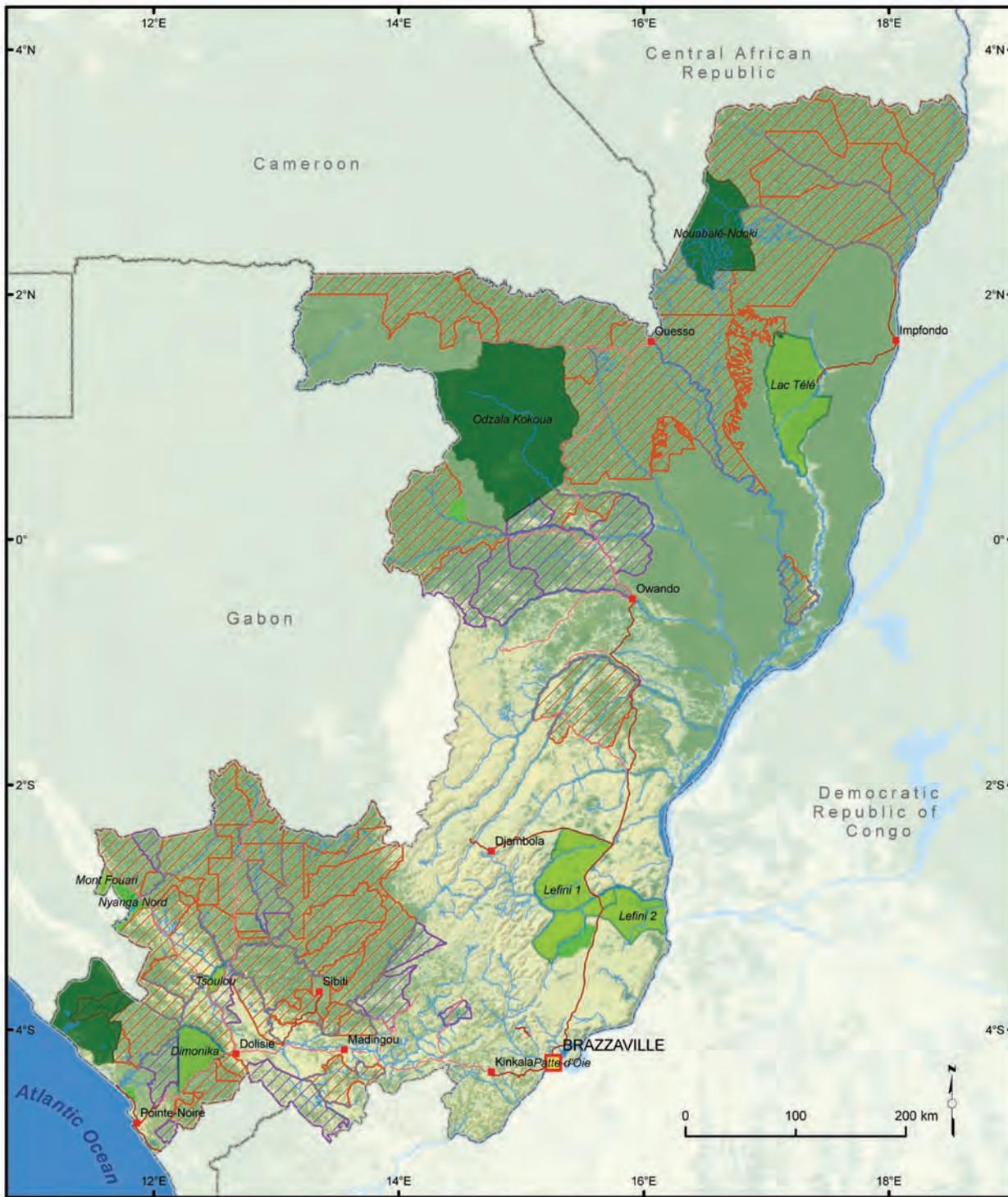
In the north, sapelli still accounts for most log production (39 % of all Congo production (MEF-FORAF, 2008)). Some species, such as wenge, have gained in popularity in recent years. As the first management plans are implemented in the FMUs, production will gradually diversify. Logging in this region of Congo benefits from the abundance and quality of the resources, as well as

fairly favorable logging conditions on flat terrain. In some FMUs, large swamps bordering rivers require the construction of large dams. However, transportation from production remains particularly problematic. At the moment, the only possible route is over 1,000 km through Cameroon and possibly CAR.

In the south, production is much more diverse. Okoumé represents the bulk of production (with 23 % of national production (MEF-FORAF 2008)). Transport from the south by a combination of river/rail is not an option due to the discontinuation of the Congo Ocean railroad.

The Congo forest sector is relatively concentrated, the 6 largest producers³² provide about 80 % of total roundwood production (MEF-FORAF 2008). Alone, the *Congolaise industrielle des Bois* (CIB) generates more than 30 % of the production, with about 350,000 m^3 of roundwood annually. All Malaysian-controlled companies such

³² CIB (DLH group), IFO, CIBN, Taman, Likouala Timber, and Mokabi SA



Sources: WRI and FORAF

Figure 6.1: Forest concessions and protected areas in Congo

as Taman Industries, CIBN and SOFIL, produce nearly 300,000 m³ per year.

Log exports increased in tandem with production until 2004, before falling under the influence of policy incentives for local processing

(including the surcharge beyond 15 % of timber exported as logs).

Collectivities Forests

Article 6 of Law 16-2000 pertaining to the Forest Code provides for public, municipal, and local community or territorial forests within permanent forest estates. The creation of municipal and other collectivities forests³³ is part of the sectoral policy of the Ministry of Forest Economy

and the Ministry for Land Management and Decentralization. In addition, the ongoing decentralization process in the Congo provides for the creation of new communities. However, to date, this section of the Act was not followed up by effective creation of local or other collectivity forests.

Council Forests and Community Development Series

Legislation pertaining to community forests is not addressed by the Forest Code. The National Planning Guidelines provide for the establishment of community development zones around villages within managed FMUs. These are designed to ensure timber is used by local people, and to allo-

cate land to meet new farming land needs for the duration of rotation in an FMU (about 30 years). These zones continue to be part of the FMU managed jointly by the concessionaries, and therefore part of the permanent state forest domain.

Industrial Timber Processing

Congo obliges industrial wood companies to process 85 % of their production in the country,³⁴ under penalty of paying a surcharge. Since 2004, this policy has helped reduce log exports and has been one of the major drivers for intensive industrial production. Lumber production rose from 108,000 m³ in 2000 to more than 200,000 m³ in 2007. If secondary processing is very little developed (11,300 m³ produced in 2007), the trend is to produce dried lumber and greater recovery of

sawn timber (installation of workshops to recover fall-offs) (MEF-FORAF, 2008).

The industry is dominated by primary processing plants, primarily by sawmills. In the north, industrial units have been installed by most FMU licensees. In the south, the abundant richness of okoumé was behind the recent strong growth of the rolling sector and plywood manufacturing. Current production is more than 40,000 m³ of peeled veneer and more than 8,500 m³ of plywood (MEF-FORAF, 2008).

Informal Sector

The informal sector in the forestry sector is relatively unknown. It is present in the sectors of NTFP, wildlife, timber and wood energy. It is

mostly used to supply the main cities (Brazzaville, Pointe-Noire, Dolisie, Nkayi).

Progress Towards the Sustainable Management of Production Forests

Law 16-2000 of 20 November 2000 pertaining to the Forest Code set up an appropriate legal framework for the sustainable management of forests and forest lands on the basis of rational resource management. As such it helps to reconcile forest product exploitation with the requirements of forest resource and biodiversity conservation for sustainable development. The Ministry of

Forests shall ensure that the activities authorized in the national forest domain, are carried out in such a way as to avoid destruction and maintain sustainability, expansion and exploitation in rational conditions. In this way, it applies the principles of sustainable development, and conservation of forest stands and biodiversity.



Photo 6.4: Wood processing operations are increasing in Central African countries.

³³ At present, there are 7 urban communes: Brazzaville, Pointe-Noire, Dolisie, Nkayi, Mossendjo, Ouessou, and Owando

³⁴ Decree 5206/MEFE/MEFB of July 26, 2006

Logging in natural forests in the state domain is either by agreement (CAT or CTI) or by special permit. The operating agreement is applied in accordance with the plan, either over the whole forest development unit, or a part of the unit, when zones are set aside for specific tasks such as environmental conservation, especially for biodiversity.

The forest management process in the Congo involves several stages:

1. signature of a protocol between the contractor, the State and, where appropriate, the design team responsible for developing the plan;

2. performance of work and field studies by the contractor under the supervision of the Ministry of Forest Economy (multi-resource inventory, mapping, and dendrometric, ecological and socio-economic studies);

3. monitoring and evaluation of work and field studies by the technical structures of the forest administration (CNIAF and DGEF) and steering committees (multi-partner committee);

4. validation of study results: report of multi-resource inventory, mapping study report, dendrometric study report, socio-economic report and environmental study report;

5. validation of planning decisions for land allocation: boundaries of the managed FMU and development zones;

6. adoption of a management plan. This phase involves inter-ministerial validation, national workshops and approval by the Council of Ministers.

Table 6.2: Progress in the management process

	2005		2008	
	Number of FMU	Area (x 1,000 ha)	Number of FMU	Area (x 1,000 ha)
Concessions allocated	60	11,387	52	11,976
Concessions committed to a management process	10	4,114	22	6,372
Certified concessions	0	0	2	834
Validated management plans	0	0	3	1,908

Sources: CBFP, 2006 and MEF-FORAF, 2008.

The process of managing production forests has experienced strong momentum since 2005, including the adoption of the first 3 management plans. The process is well underway in most of the northern FMUs. The current process should lead to 4.5 million hectares managed in 2009, 38 % of the allocated area.

However in the south, only one FLU is being managed; the Boubissi FLU, managed by TRABEC. Other companies have signed MoUs with the MEF, but have not started work. A project co-financed by the AFD is currently being put together with the goal to manage the southern Congo forest massif.

Significant progress has been made also in terms of certification, which is now seen by all assignees involved in management as a logical extension of their management plan. Currently, two FMUs are certified by FSC (IPC Company) and another enjoys a certificate of legal production (IFO, which also seeks FSC certification in the short term). Many other companies are in the process of upgrading their management systems: Mokabi SA, Bois et Placage de Lopola, Thanry Congo, and Likouala Timber.

Forest Plantations

Since 1950, the Congolese State has planted about 24,400 ha, managed by the National Reforestation Service (SNR). Since 2002, the SNR has had a mandate to technically assist private forest plantation initiatives and the establishment of orchards. Finally, since 1996, the SNR has set up pilot development, reforestation and agro-forestry units (UPAR), which aim to restore natural forest. These are managed in partnership by the MEF, the SNR and logging companies. Two UPARs are functional in the north.

The vast eucalyptus plantations in the region of Pointe-Noire, planted in the early 80s, have been managed by the Eucalyptus Fibers Congo

(EFC, a subsidiary of the Canadian group Mag-industries) since 2005. The 40,000 ha of plantations (the largest forest plantation area in Central Africa), with planned expansion to 60,000 ha, are under development and are subject to significant investments to valorize this resource to its maximum potential, particularly through the establishment of a manufacturing plant of 500,000 tons of wood chips for export. Eventually, EFC wants to achieve FSC production certification.

The total area under forest plantation in the Congo is approximately 70,000 ha (MEF-FORAF, 2008), producing about 250,000 m³ of eucalyptus.

Biodiversity Conservation and Development

Biodiversity Components in Congo

The Republic of Congo, like all Central African countries, has an impressive diversity of ecosystems and of flora and wildlife species. The report prepared by the Republic of the Congo in accordance with decision II/17 of the Second Conference of the Parties to the Convention on Biological Diversity (Anonyme, 2001) gives a good summary of current biodiversity knowledge.

The Congo has three types of ecosystems: terrestrial, aquatic and marine and coastal. The terrestrial ecosystems are divided into savanna and forest ecosystems.

Dense humid forests cover the country's diverse landscapes that were formed by variations in climate, environmental conditions and man's influence. Forest ecosystems are divided mainly into three main blocks: Chaillu (4.4 million ha), Mayombe (1.5 million ha) and the Haute-Sangha (16 million ha). In addition to these three main blocks, there are coastal forests with semi-deciduous tendencies, transition formations with dense rain forest of Mayombe and contacts with the savanna and swamp formations.

Chaillu and Mayombe Forest Massif

Okoumé forest (*Aucoumea klaineana*) can be found in the Niari and in forests bordering Gabon (UNDP/FAO, 1973). The okoumé is associated with movingui (*Distemonanthus benthamianus*) or sorro (*Scyphocephalum ochocoa*), then disappears in the territories situated to the south, where no species dominates. The other abundant species are *Symphonia globulifera*, *Julbernardia brieyi*, *Gilbertiodendron dewevrei*, *Nauclea diderrichii* and vari-

ous *Caesalpinieae*. The forest resources of this massif are poorly known because existing inventories are old, very partial in both geographic area and the species observed, and almost all of the area has been logged (one or more times) since these inventories were undertaken. The forest resource is largely dominated by two flagship species, the okoumé and limba (*Terminalia superba*).

Forest Block in the North

The northern forest block is by far the largest in area, with 15.99 million hectares (CNIAF, 2007). It consists of flooded forests, about 8 million hectares (CNIAF, 2007), and rainforests. The various facies of the flooded forests include: floodplain forest with *Oubanguia africana*, the forest with *Syzygium*, the floodplain forest with *Sterculia subviolacea* and Raphiales. The rainforest is rather semi-deciduous with evergreen understory. This forest is now well known thanks to the management inventory made in recent years. In these forests, clear forests cover about 600,000 ha, mainly in the Sangha. These forests are characterized by woodland invasion from *maranthaceae* and *Zingiberaceae*. Within the dense forests of northern Congo, the abundance of Meliaceae, particularly sapelli (*Entandrophragma cylindricum*) is a constant. In the southwestern part of the forest massif exist wenge forest (*Millettia laurentii*), further north monghinza forest (*Manilkara letouzei* and *M. fouilloyana*) very characteristic of a band situated on both sides of the border with CAR, and locally relatively young forest with ayous (*Triplochiton sceroxylon*). Pauci-specific stands of limbali (*Gilbertiodendron dewevrei*) are very characteristic and are found occasionally throughout the northern Congo, often on hydromorphic land.

Formal Management of Biodiversity

Formal biodiversity management is mainly carried out in protected areas, which currently number 14 covering a total of 3,513,438 ha and representing over 10 % of the national territory. The typology of protected areas of the Republic

Savanna

Congolese savannas are essentially part of the Guinea-Congolese grassy secondary formations (White, 1986). The National Report on Congo Biodiversity (Anonyme, 2001) distinguishes seven types of savanna ecosystems: coastal grassland formations, savanna of the Niari valley, savanna on the Tekes plateaux, stagnal grassy formations, savanna of the Léfini, savanna of Alima, and the grassy formations of Likouala.

Flora

Because of the wide diversity of ecosystems, the flora is itself very diverse. Congo is home to some stands of afrormosia (*Pericopsis elata*), species listed in Appendix II of CITES.

Wildlife

200 species of mammals have been identified in the Congo, of which 24 are fully protected and 14 are partially protected (Anonyme, 2001). Furthermore, the estimates indicate that there are 700 species of birds, 600 of which have been inventoried.



Photo 6.5: Liana (genus *Paristolochia*) flower in the understory of dense forest.

of Congo is presented in table 6.3 below. Of all these protected areas, only the Nouabalé Ndoki National Park (414,392 ha) has a management plan.

Table 6.3: Typology of protected areas in the Republic of Congo

Type of protected area	IUCN category	Number	Area (ha)
National park	II	3	2,189,161
Wildlife reserve	V	4	87,855
Sanctuary	IV	3	280,300
Hunting reserve	VI	2	346,301
Biosphere reserve	VI	1	148,006
Community reserve	VI	1	461,815
Total		14	3,513,438

Source: MEF-FORAF, 2008.

Outside of protected areas, there are also wildlife management initiatives in forest concessions, with sustainable management in place. Efforts in forest concessions involve assessment of wildlife resources, and assessment of anthropogenic threats (hunting). Assessments result in measures

such as setting up conservation zones within concessions and integration of anti-poaching regulations into internal company regulations. The major protected species, both in protected areas and forest concessions are presented in table 6.4 below.

Table 6.4: Main wildlife species protected in the Republic of Congo

Name of species	Family	Protected areas concerned
<i>Loxodonta africana cyclotis</i>	<i>Elephantidae</i>	Odzala/Conkouati/Nouabalé Ndoki/Léfini/Lac Télé/Mt Fouari/Mt Mavoumbou
<i>Gorilla gorilla gorilla</i>	<i>Pongidae</i>	Odzala/Conkouati/Nouabalé Ndoki/Dimonika/Léfini/Louna/Léssio/Lac Télé
<i>Pan troglodytes</i>	<i>Pongidae</i>	Odzala/Conkouati/Nouabalé Ndoki/Dimonika
<i>Hippopotamus amphibius</i>	<i>Hippopotamidae</i>	Odzala/Tsoulou
<i>Tragelaphus euryceros</i>	<i>Bovidae</i>	Odzala/Nouabalé Ndoki/Tchipounga
<i>Panthera leo</i>	<i>Felidae</i>	Odzala/Conkouati/Nouabalé Ndoki
<i>Panthera pardus</i>	<i>Felidae</i>	Odzala/Conkouati/Nouabalé Ndoki

Source: MEF-FORAF, 2008.

Hunting and Wildlife

Hunting poses local threats to wildlife near the main towns (Ouessou, Pokola, Impfondo, Enyellé), along roads and near the border with CAR where bushmeat is exported.³⁵ The loss of elephants and gorillas in these areas attests to the impact of human activities on wildlife.

The 3 validated management plans, (FMU Ngombe (1,159,643 ha), UFA Pokola (377,050 ha), and Kabo FMU (267,048 ha), include a wild-

life management and hunting component. For successful tenders, the objective is to fight against the impacts arising directly or indirectly on large wild animals in their activities. For this reason, surveillance and anti-poaching units (USLABs) are set up within each company; their operation is governed by a protocol between the company and the MEF, with possible support from an international NGO.

Conservation Measures in Production Forests

The approved plans have created a series of conservation and protection zones. These zones complement the network of protected areas cre-

ated in the country to ensure the preservation of biodiversity in Congo's forest ecosystems.

Economic Development of Biodiversity

Forest products other than timber play an important role in the informal economy.

Tourism and conservation sectors currently generate little income in Congo, with only 4

guides in service in protected areas, and for the formal hunting sector only 36 big game permits granted.³⁶ The conditions to encourage short-term development of these sectors are not in place.

³⁵ Observations made by WCS for the Nouabalé Ndoki Park and periphery, and the results of wildlife inventories carried out by Mokabi SA in the Mokabi-Dzanga FMU.

³⁶ DFAP, 2007

Conclusions

The Congo has a sizeable forest estate. The country is implementing a forestry policy to sustain the many benefits it draws; on the one hand it achieves this through managing a network of protected areas, maintaining exceptional biodiversity and preserving different types of forest, and on the other through the establishment of sustainable forest management for timber production. The progress made in recent years for sustainable forest management in the north of the country is exemplary in the region.

A major challenge for the coming years is to extend this dynamic to forests in the south. Further, there needs to be better development and management of other forest resources, biodiversity and environmental services.



Photo 6.6: Mirador in a bai in Dzanga-Ndoki National Park.

