

Full Length Research Paper

Forest management in the Congo: Example of the forest unit of Kimongo-Louila in the department of Niari

Clotaire Claver OKOUYA

Assistant Professor, Université Marien NGOUABI (Brazzaville-Congo)

E-mail: cokouya@gmail.com

Abstract

The sustainable management of the forests of the Congo Basin forest is a major issue in the preservation of the environment. Due to the persistence of threats of deforestation of these forests, several instruments and management mechanisms are promoted to reverse the trend. The implementation of forest to development (UFA) units, such as that of Kimongo-louila in Niari region, to the southwest of Congo is part of this policy. This article aims to show the advantages and limitations of current forest governance by this mechanism. To achieve this, in addition to the literature search focused on official data on forest concessions managed or under development produced by public institutions in charge of forest inventory and afforestation, the study focused on the results of field investigations and a population census of the trees by species on 15 galleries in 2014 by us under the label of group Ekasi Bongo (GEB), small structure attribute of the forest licences to the selected area. The results of the study indicate that in the Congo, farms corporations forest attribute to permit operate in 67 UFA spread across 10 departments and that 77% of appointed concessions are located in the North of the country. Factors limiting regulatory, as well as the lack of material, technical and financial means sufficient prevent small and medium operators achieve an effective development of their reforestation plan, to the point that the issues of forest management remains both from the point of view of the typology of the woods to plant than by land to promote management model.

Key words: Congo Basin, Forest management unit, Kimongo-Louila, Reforestation.

Introduction

The Congo Basin is the second largest tropical forest after the Amazon, in front of Borneo-Mekong. It covers an area of 180 million hectares for a large part in Central Africa, from the Gulf of Guinea in the Atlantic Ocean in the west to the Albertin Rift Mountains in the East. Its dense, humid forests account for one fifth of the remaining closed-canopy tropical forests in the world. Ten countries bound by the Central African Forests Commission (COMIFAC, 2005) work together to implement common policies and strategies, including: Burundi, Cameroon, Gabon, Equatorial Guinea, Republic of Congo, Democratic Republic of the Congo, Central African Republic, Rwanda, Sao Tome and Principe and Chad. For the Republic of the Congo, as indicated in a report published in L'Araignée (2011), the per capita share of forest is high (5.23 ha) compared to the large countries such as Russia (5, 7 ha), Brazil (2.5 ha), Canada (9.5 ha),

the USA (1 ha), the DRC (2.5 ha) and China (0.2 ha). However, the phenomenon of deforestation is growing, with a rate of deforestation of 30 to 40 thousand hectares per year (Africa environment plus, 2014). Continuous calls for restraint and restrictive measures are taken by public authorities against loggers who hold deforestation permits to ensure the sustainable and sustainable management of forest ecosystems. The forest management unit (UFA) mapping shows the efforts undertaken by the public authorities to restore the plant heritage by planting the sorted species (PRONAR, 2014). There are 38 of them, covering 18,561 million hectares of the 22,471 million hectares of all the Congolese forests.

Given that issues related to "environmentally sustainable forest management" (BERGER A., C. DE PERTHIUS and PERIN N., 2015) are now incorporated into poverty reduction policies and programs, a strong political marketing as a national priority, FMUs are essential elements of this policy. Concessions have a

number of forest management functions and parts of the land, as well as local income redistribution (KARSENTY A., 2005). Among the UFA is the Kimongo-Louila forest zone, located in the south-west of the Congo, in the department of Niari. The overall problem of this study revolves around the following research questions: how is the spatial organization of forest management in Congo? What are the natural assets of a forest management unit and the constraints faced by small-scale forestry operators? What are the solutions proposed for sustainable and responsible management of forest ecosystems in Congo?

This study aims to analyze the problems and prospects for sustainable management of a forest unit in the Congo Basin, taking into account public policies and strategies promoted at international, regional and national levels.

Specifically, it seeks to:

- (i) describe the spatial organization of forest management in Congo through forest management units (FMUs);
- (ii) analyze the natural assets and constraints of a forest management unit (FMU), using the example of Kimongo-louila;

iii) present the challenges and prospects for the conservation of forest ecosystems in the Congo, in the light of the conclusions of the international conferences on these subjects.

Geographic focus of the study

The Republic of Congo, a country in the heart of Congo's forest basin, is the general framework for this study. It is on the whole territory that an overview of forestry players and forest units is made. But the detailed analysis of the phenomenon studied was done from the subspace of the forest management unit of Kimongo-louila.

This UFA is located between latitudes 04°40'30." South, 04°34'30.0" South and longitudes 13°09'00.0" East, 13°15'30.0" East, in the district of Kimongo (department of Niari) in the south-west of the Congo. It is bounded on the north by the Mangola - Koumbou Diambou road, on the south by the Kimongo - Londela Kayes road; to the east by the road Kifouma - Koumbou Diambou, to the west by road Koumina - Mangola. The reforestation zone is accessible by two national roads: the Dolisie-Kimongo-Londela Kayes axis and the N'kayi-Paka-Mangola axis (Figure 1).

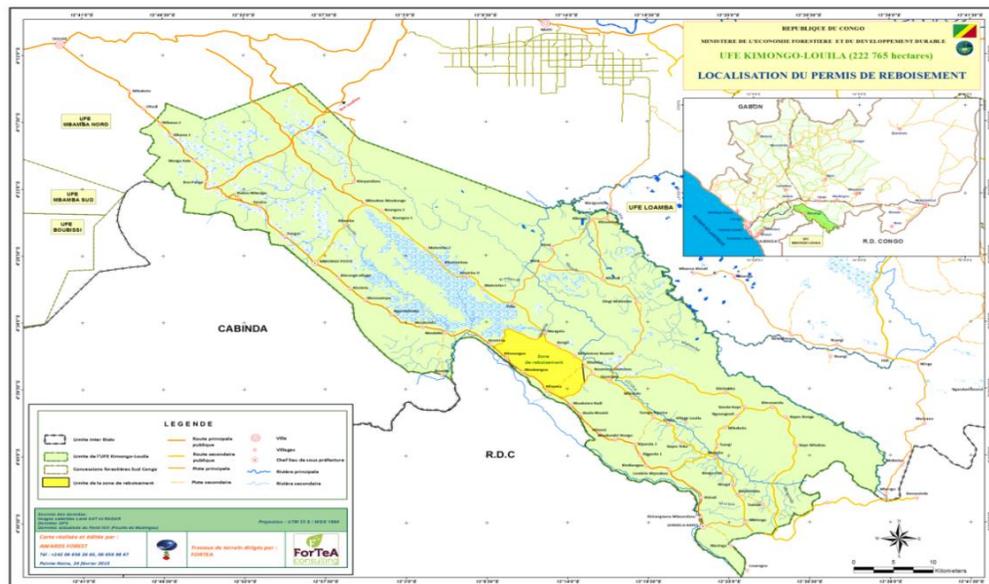


Fig. 1: Topography of the UFA of Kimongo-Louila and the reforestation zone
Source: GEB, Kimongo-louila site study report, 2014

The UFA in Kimongo-Louila has a varied ecosystem that can be distinguished from three main vegetation sectors: the inclusive savanna areas dominated by the *Nauclea*

latifolia (Bilinga), which covers 3153.61 hectares, slightly more than half total area and a dense forest area of 2192.6 ha, or 35% of the total (Table 1).

1: Results of land use stratification

NO.	Occupation of the soil strata	Area (ha)	% Size
A	Dense forest formation of Earth farm		
A1	Dense forest	2192,64	34.99
A2	Clear forest	131,98	2.11
B	Forestry training on floor hydromorphe		
B1	Marshy ground	149.99	2.39
C	Landscapes of bare soil		
C1	Anthropogenic complex (fallow, recruits forest and crops), houses and road	638	10.18
D	Savannahs	3153,61	50.33
	Total	6 266	100

Source: GEB and Field investigations, 2014

Methodology of Research

The completion of this study required a diversified material and two combined collection methods to find the information needed for our work. Taking into account the type of data required we used two collection methods: documentary research and field investigation and a population census of trees destined to be cut by the Ekasi Bongo Group (GEB). The first was carried out in the libraries and documentation centers of Brazzaville, the Ministry of Forest Economy and Sustainable Development, the National Center for Inventory and Management of Forest and Wildlife Resources (CNIAF), and National Afforestation and Reforestation Program (PRONAR), the National REDD+ Coordination and from the Internet. It has made it possible to consult many documents related to the theme, some of which are devoted directly to the study area and to collect data on protected areas, FMUs and various programs related to the management of the Congo's forests.

The field survey was carried out using a methodology combining two methods: direct observations of activities on sites and maintenance with key forestry and intermediary actors in the value chain. In the field, an inventory was carried out under our guidance on a sample of 15 forestry galleries carefully selected from the vast and often inaccessible range. It allowed a counting of 1008 feet in diameter greater than or equal to 60 centimeters, belonging to 24 different species in the area of forest exploitation under review. For that we used to material which consists of a background map of the study area carried out by a forest GPS, forest compacts, ropes, ribbons, counting sheets, small tools (machetes, files, raincoats, boots), various accessories as didactic leaflets,

etc. To carry out this work two counting teams have been set up, consisting of pointers and pointers, botanist counters and mensurators.

The data collected were processed using methods and techniques to visualize major trends in reforestation activity at the national level. The Word and Excel softwares were used to produce the illustrations (tables, figures) presented in this work.

Results

Forest management in the Congo: a fairly well developed policy

The Forest Code adopted by Law 16-2000 of 20 November 2000, as well as its implementing regulations, strongly recommended forestry companies to develop the forest management units allocated to them. For example, several initiatives aimed at the conservation and sustainable use of forest resources has become significant through the process of developing forest concession management plans.

Table 2 below lists the logging companies that are the beneficiaries of the various permits in forest management units (FMUs). As a result, many of them operate at the same time in several departments. Of a sample of 67 identified companies, 15 are of European origin, 11 Malaysian, 14 Congolese, seven Chinese and two Lebanese; 18 concessions were made to unidentified actors at the time the report was drawn up, but there is no doubt that it is no longer the new players such as Ekasi Bongo Group in Kimongo (Niari), Wang Sam in Makoua (Cuvette) Congo Dejea wood industries, Yoka, Ekiama and Maleka to Mokeko (Sangha), etc.

Table 2: Distribution of FMUs by department in Congo

Regions	UFA	Designation of the UFA	Major operators
Likouala	9	Mobola Mbondo, Ipendja, Lopola, Mokabi-Dzanga, Bétou, Missa, Mimbéli, Enyelle, Ibenga	IPC, Likouala Timber, Mokabi, GLP, ITBL, wood Kassa, Thanry-Congo,
Sangha	6	Tala tala, Ngombé, Jua-Ikie, Pokola, Pikounda North, Kabo	IPC, SEFYD, IFO, SIFCO
Bowl	4	Makoua, Ondzala Ondzondji, Ndongo Niama, Mambili	Mambili wood
Bowl-West	4	Tsama, Mbomo, Kelle, Ewo.	Congo best Wood industries
Trays	1	Abala	Sofia
Pool	2	Bangou, Kitembe	
Lékoumou	10	Louadi, Bihoua, Kimandou, Letili, Bambama, Mpoukou-Ogoué, Gouongo, Ingoumina-lelali, Mapati, Loumoungo, Loango	SICOFOR, SIPAM, SPIEX, Asia Congo industry,
Niari	20	Moungoundou, Ségou 2 North, Ségou 2 South, Moutsengani, Nyanga, Mbamba North, Ngongo Nzambi, Mayoko, Kimongou-louila, Kola, Louvakou, Miila - mila, Mounoumboumba, Mouyala, Banda North, Louesse, Leboulou, Iebama, Tsinguidi, Massanga	FORALAC, Asia Congo industry, ADL, SOFIL, CITB FOURSOME, Afriwood, CIBN, SICOFOR, TAMAN industry, SFIB, group Ekasi Bongo
Bouenza	4	Loamba, Mouliene, Makabana, Mabombo	FORALAC, SADEF Congo,
Kouilou	7	Ntombo, Nanga, Nkola, Cotovindou, Boubissi, Kayo, South Mbamba	FORALAC, CITB FOURSOME, SICOFOR, new TRABEC, COFIBOIS
Total	67		

Source: A database of the CNIAF, the MEFDD and personal investigation 2014

There are three types of forest concessions: managed, under development and undeveloped, with or without management plans and under review by the supervising Ministry.

According to recent official data, 29 concessions are underway in the sustainable management process. Of these, 17 are based in four departments and cover an estimated total area in June 2017 at 6.420 million hectares. These are the only ones with development plans (DGEF, 2017). Figure 2 shows the spatial distribution of managed forest areas according to the four departments concerned. It is clear that the Sangha has the largest area planted (2,531,909 ha, or 39% of the total), followed by Likouala (2,410,184 ha, or 38% of the total). The

Lékoumou (20%) and the Niari (3%) closed the list. Thus, the largest area of managed forest concessions (77%, or about 4,942,093 ha) is located in the north and south-west (23% or 1,478,035 ha). Adding the concessions under development (Figure 3), the total area in the north of the country is 10,113 million hectares, or 76% of the total area granted to logging. FMUs under development are identified in six departments, as shown in Figure 3 below. At the head is the Niari department with six UFAs: Louvakou, Massanga, Louessé, Nyanga and Banda-nord, totaling 1,173,328 hectares, or 32% of the area under development. Next comes the Likouala with the UFA of Mimbéli-Ibenga (18%) and the Sangha (17%) with the UFA of Tala-Tala.

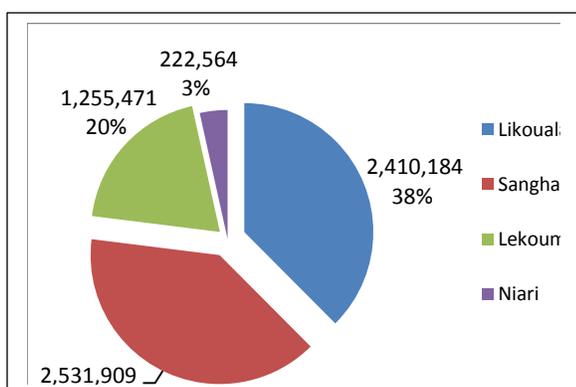


Fig. 2: Distribution of managed forest areas, hectares (June 2017)

Source: DGEF / MEFDD data, 2017

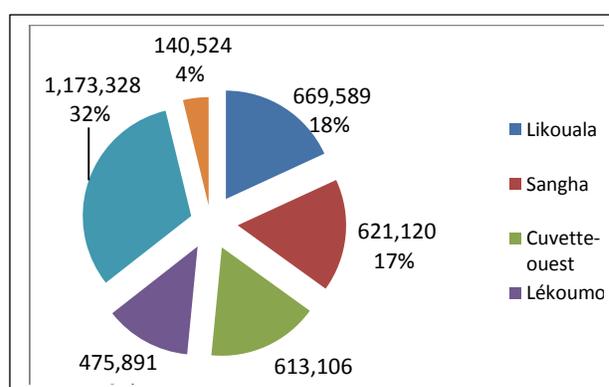


Fig.3: Distribution of forest areas under development by department, ha (June 2017)

Source: DGEF / MEFDD data, 2017

The concessionary companies that stand out in the forest management activity are: the Congolese industrial timber (CIB) with 22% in Kabo UFA; Ngombe and Loundoungou-Toukoulaka, as well as IFO, 18%; SICOFOR, 11% and Likouala Timber, 10% (figure 4). Among the 17 concessions with a development plan, four cover an area

of u.s.\$2.478 million hectares have been certified by the Forest Stewardship Council (FSC), which are marked with a logo that indicates to the public that the product is from certified forest, corresponding to a clear, transparent and verified specifications by independent certifiers.

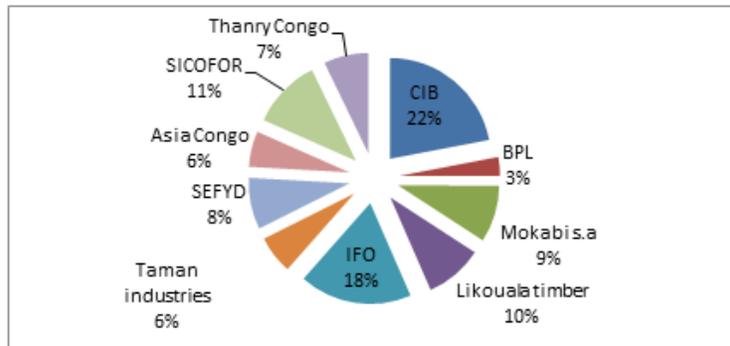


Fig. 4: Share dealers appointed UFA, % of total companies
Source: A database of the DGEF/MEFDD, 2017

FSC certification is an environmental label that claims to ensure that wood production complies with procedures that are supposed to ensure sustainable forest management. The objective is to continue the process of sustainable management of forest concessions, so that all forest management plans are FSC certified (KARSENTY A. and BUTTOUD G., 2001).

The Kimongo-Louila FMU: a forest area rich in wood species

The forest management area granted for reforestation covers an area of 6265.95 hectares delineated in the

Kimongo-Louila FMU, of which 2324.62 hectares of useful area. By means of an operating authorization signed in 2015 by the forestry administration, Groupe Ekasi Bongo (GEB) is carrying out deforestation prior to reforestation. Following ecological disasters and deforestation, the operator is currently installing agroforestry plantations through the deforested area, in order to rehabilitate the degraded lands, in accordance with the reforestation program recommended for this zone of permit. The forest area granted to the farm belongs to the Guineo-Congolese rainforest. It is composed of 15 forest galleries containing about 24 different species (Table 3).

Table 3: Counting results of the pockets of forests prior to deforestation-reforestation

NO.	Wood species	Scientific names	Family	Number of feet	Average volume *	Total volume (m3)
1	Aiele	<i>Canarium schweinfurthii</i>	<i>Burseraceae</i>	59	5	295
2	Bahia	<i>Hallea stipulosa</i>	<i>Rubiaceae</i>	68	4.5	306
3	Bilinga	<i>Nauclea diderrichii</i>	<i>Rubiaceae</i>	48	7.75	372
4	Worked clear	<i>Guarea cedrata</i>	<i>Meliaceae</i>	2	5	10
5	Dabema	<i>Piptadeniastrum africanum</i>	<i>Mimosaceae</i>	116	5	580
6	Douka	<i>Tieghemella africana</i>	<i>sapotaceae</i>	25	7.5	187.5
7	Doussie Bipendensis	<i>Azelia bipendensis</i>	<i>sapotaceae</i>	4	7	28
8	Doussie Pachilouba	<i>Azelia pachyloba</i>	<i>sapotaceae</i>	11	7	77
9	Ebiara	<i>Berlinia bracteosa</i>	<i>Ebenaceae</i>	76	6	456
10	Iroko	<i>Milicia excelsa</i>	<i>Moraceae</i>	111	5.75	638,25
11	Kossipo	<i>Entandrophragma candollei</i>	<i>Meliaceae</i>	14	6	84
12	Limba	<i>Terminalia superba</i>	<i>Combretaceae</i>	126	4.5	567
13	Moabi	<i>Baillonella toxisperma</i>	<i>sapotaceae</i>	23	10	230
14	Mukulungou	<i>Autranella congolensis</i>	<i>sapotaceae</i>	3	9	27
15	Niove	<i>Staudtia stipitata</i>	<i>Myristicaceae</i>	8	4.5	36
16	OLON	<i>Zanthoxylum heitzii</i>	<i>Rutaceae</i>	21	5	105
17	Red Padauk	<i>Pterocarpus soyauxii</i>	<i>Fabaceae</i>	109	6	654
18	Pao-rose	<i>Bobgunia fistuloides</i>	<i>Fabaceae</i>	27	4.5	121.5
19	Safoukala	<i>Dacryodes pubescens</i>	<i>Burseraceae</i>	96	6	576
20	SANOU	ND	ND	4	5	20
21	Sapelli	<i>Entandrophragma cylindricyn</i>	<i>Meliaceae</i>	10	7	70
22	SIPO	<i>Entandrophragma new</i>	<i>Meliaceae</i>	3	6	18
23	Tali	<i>Erythrophleum ivorensis</i>	<i>Fabaceae</i>	14	4.5	63
24	Tiama	<i>Entandrophragma angolense</i>	<i>Meliaceae</i>	30	7	210
TOTAL				1008	6.06	5731,25

Source: GEB and personal investigations, 2014

The most populated forest galleries are (in parenthesis number of feet): mboudou (90), lungou (81), kissala (79), Yidi (78), Bihissi (75), Mouyembé (67), Moukondzo Ngounga (66), Mounombo (60), Mbinda (51), Mberé (58). The sample of 1008 feet in diameter greater than or equal to 60 centimeters made it possible to estimate a volume of wood of 5731 cubic meters that the company GEB should deforest to the limit of the time limit. The wood species identified belong to a dozen families of which the most encountered are: moraceae, nimosaceae, fabaceae, ebenaceae, burseraceae, sapotaceae, myristaceae, etc. Among the species awarded both for export and for local consumption, the name iroko (*milicia excelsa*), which is 111 feet in diameter, has a total volume of 638.25 cubic meters, or 11.1% of the sample; red padouk (*Pterocarpus soyauxii*) -109 feet or 654 m³; sapelli (*Entandrophragma cylindricyn*), safoukala (*Dacryodes pubescens*) - 96 feet of

a 576 m³ volume, Dabema (*Piptadeniastrum africanum*) - 116 feet (580 m³) or 11.5% of the sample studied. The forest is also populated with white wood or formwork woods such as limba (*terminalia superba*) - 126 feet and the cheese maker, as well as sawdust hardwoods such as tali (*erythrophleum ivorensis*) highly prized in engineering works civil.

The development problems of the Kimongo-Louila FMU

The development of this forest management unit in Kimongo-Louila is delayed in accordance with the requirements of the specifications and at the pace desired by the parent ministry. Several limiting factors explain this.

Legal and administrative factors

The licensing system for a renewable one-year period is very restrictive. In three years of holding deforestation authorization, the company was only able to work effectively nine months (five months from June to December in 2015 and from August to February 2016). The practice of authorizing emptying gives prerogatives to the departmental direction to fill the legal vacuum, waiting for a new allocation that is hardly a given. The operator is put on hold while the obligations towards workers do not stop as long as the often heavy equipment to move remains under their supervision. The risk of losing quality felled wood exposed to the weather is frequent because handling is prohibited under penalty of fines or refused renewal, especially when the relationship to guardianship is not shiny. In addition, administrative burdens in departmental offices and a certain inefficiency of statistical services limit judgments on the actual performance of operators, especially when they are small and medium sized. However, smallholders regularly pay the slaughter fees and the superficial royalty due to the monthly summons applied to them when filing the monthly production report. The regime is not only declarative, but roadmaps are a mandatory filling document that reassures the administration about transparency and good forest governance.

Technical and organizational actors

Smallholder logistics is a challenge. If the operator has sufficient equipment for sawing, handling on the parks and transport to the catchment areas is not easy. The condition of the roads does not guarantee the longevity of the equipment and gear, to the point that the company is obliged to resort to the subleasing of gear and the signing of a contract of technical and commercial partnership. In general, Chinese, Indian, Iranian and other companies offer logistical facilitation to local small and medium-sized farmers. However, they are more preoccupied with this activity because of the vagueness in the procedures of cubing and physical identification of timber species. Errors in the underestimation of volumes of timber, whether cut or uncollated, are numerous, and local partners are torn by various pressures to endorse the flows by signing the parcel bills, even though the transactions do not give them 'full satisfaction. This constraint is greater on exports, on logs, than on timber products which supply the local market as a priority. Timber, especially when it comes to soft woods or formwork wood, which is easy to saw with craftsmanship and craftsmanship, is the subject of another form of services: subcontracting. In this case, the remuneration is in kind, a quota of production (30%) taken by the license holder, which allows individual operators, usually pensioners or disappointed administrators, to regain a level of power 'purchase. GEB has about six under its label to accelerate the process of deforestation, as performance assessment depends on the deforestation rate prelude to reforestation. It goes without saying that a permit is withdrawn from the operator who has not been able to reach the authorized surface within the prescribed

time, notwithstanding the climatic constraints preventing the proper deployment of the activities in real time on the site.

As for reforestation, the company is struggling to develop an autonomous nursery from grains of felled natural essences or fast-growing species such as *urophila grandis* (eucalyptus), as do major concessionary companies (CIB, IFO) aligned with certification standards. Although it has begun to build the base of life to be used as a reception center for reforestation experts, technical assistance is essential to align with the typology of species to be developed in savannah or forest areas. If there is a strong temptation to replant with the oil palm, cash crops such as coffee and cocoa may well be the cause of the rebirth of the planters' craft, noble in some countries such as Côte d'Ivoire and Ghana. However, the problem of the availability of seedlings and the influence of lineage on the soil will still limit the action of companies holding forestry permits. Governments have a role to play in articulating the interests of the various actors involved, as conflicts with landowners in the surrounding villages are legion when they see the cargo of wood from their sites. They do not pay much attention to the financial burden on the operator due to the annual turnover period.

Financial Factors

In the absence of an adequate funding body for a highly capital-intensive sector that also requires substantial working capital (fuel, spare parts, personnel costs, etc.), small and medium-sized farmers face three financial pressures. Indeed, they struggle to honor their commitments vis-à-vis the bank, if the operating equipment has been acquired on credit; secondly to the tax authorities, since in proportion to the debited or non-debited volumes of the taxes are levied, often with an advance on the annual period; and finally, pressure from the various forestry trades, from the prospector and forest marker to sawyer, through the slaughterer, the guide, the declassator, the driver. These agents are supervised by a site supervisor and a site coordinator who, together with an administrative, commercial and financial staff, constitute a mass (28 agents for the case of GEB) of income holders who contribute to the overall demand in a country where unemployment reaches more than 23.7% of the young population. The monthly wage bill is over 5.6 million CFA francs, not including basket and food subsidies to demonstrate the solidarity of the indigenous neighbors who express their desire to belong to society even if their qualification in the trades wood is not proven.

National Reforestation Outlook

The national reforestation outlook is aligned with the requirements of the international (UNEP, 2016) and regional (COMIFAC) bodies set up to ensure the preservation of the world's forest ecosystems. The country's forest management policy is based on relevant institutional, technical and financial tools, the scope of which goes beyond the national framework, due to the

strong diplomatic interest in preserving forest ecosystems, particularly in the Congo Basin.

Institutional tools to promote reforestation

For a long time, the public institutional reforestation tool was the National Reforestation Service (SNR), which was equipped with nurseries and pilot plantation, reforestation and agroforestry units (UPARA). From 1992 to 1998, the SNR had set up 2.911 million hectares in dense forest, forest galleries and savannas (Africa Environment Plus, 2014, p.19). Among the most well-known sites is the Ngondji nursery, located 18 km from Pointe-Noire, which has been disseminated with the support of the Industrial Planting Research Unit (UR2PI), eucalyptus-based cuttings high-performance clones, pines and acacias, as well as seedlings of local species that inhabit forest galleries. UPARA, developed in 1996 with the company CIB in the Sangha, has reforest diversified species such as sipo, sapelli, tiama and wengue. In the same direction, 51 000 ha of eucalyptus plantations developed after the cuttings were controlled in 1974 by the Industrial Agroforestry Unit of Congo (UAIC) and the Congolese Forest Development Corporation (CDF) gave birth to Eucalyptus of the Congo (ECO sa), to this day in loss of speed.

The current ecological vision of the Congo (Brazzaville) is reflected in the implementation of the National Afforestation and Reforestation Program (PRONAR), which promotes and develops forest and agroforestry plantations. Developed for a first ten-year horizon (2011-2020), the program recommends the planting of one million hectares (about 3% of the total forest area), divided between the different administrative departments of the country according to their natural specificities. The proportions of land intended for afforestation or restoration of degraded areas vary from 20 to 50 thousand hectares for the least landed (Likouala, Sangha, Lékoumou, Kouilou), from 75 to 125 thousand hectares for the moderately provided (Niari , Cuvette and Cuvette-ouest), then 200 to 250 thousand for the savannah-dominated zones (Plateaux and Pool), as shown in Table IV below. The multi-stakeholder approach allows to mobilize three categories of actors and to draw a varied typology of plantations so that besides industrial plantations on a large scale (70% of the program), the green economy is promoted by public administrations including SNR (20%), and small promoters (10%) through the establishment of small community farms (NGOs, associations, religious denominations) and family farms (www.pronarcongo.org).

Table 4: Afforestation and restoration of degraded areas for 2011-2020

Departments	Area	Area in forests	% of total	Actions to be taken
Kouilou	1 365 000	50 000	3.7	Afforestation in areas grassland of Kouilou for purposes of machining of pulp, particle board, etc.
Pool	3 395 500	200 000	5.9	Afforestation and restoration of degraded areas of the Pool
Bouenza	1 226 000	80 000	6.5	Afforestation in areas of grassland and restoration of degraded areas (pulp and paper)
Trays	3 840 000	250 000	6.5	Afforestation in areas of grassland in the Pool for the purpose of processing of paper pulp, Particleboard, etc.
Niari	2 592 500	100 000	3.9	Afforestation in grassland areas
Bowl	5 085 000	75 000	1.5	Afforestation in areas of grassland, drainage of the flood savannas and palm groves
Bowl-West	2 393 000	125 000	5.2	Afforestation in areas of grassland and palm groves
Lékoumou	2 095 000	50 000	2.4	Afforestation in areas savanicole and restoration of degraded forest areas (pulp, Particleboard)
Sangha	5 579 500	50 000	0.9	Restoration of degraded and palm groves forest areas
Likouala	6 604 400	20 000	0.3	Afforestation of glades and restoration of degraded forest areas, drainage of the flood savannas
Total	34 175 900	1 000 000	2.9	

Source: PRONAR, ecological Vision 2011-2020

Several types of forestry sectors are being developed, such as the production of seedlings, fuelwood (firewood and charcoal, pellets or wood pellets for export, biomass), pulpwood (pulp, textile fiber), fibreboard (plating), service

wood (line poles, gaulettes, poles), non-wood forest products with high added value (essential oils, resins, gum, etc.).

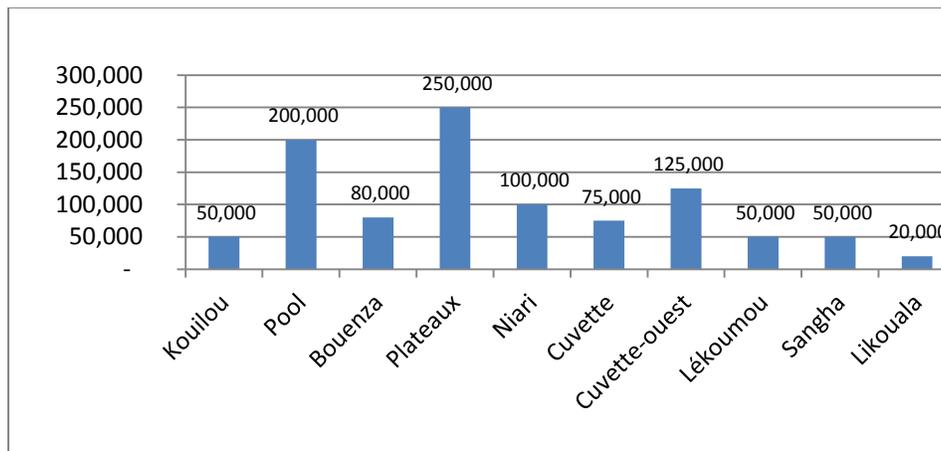


Fig. 5: Distribution of areas to be planted or reforested 2011-2020 (hectares)
Source: A database of the PRONAR

Technical and financial tools

In the register of technical tools to promote forest management, mention can be made of the national and departmental plans for forest management, which derive from the National Land Use Plan (SNAT). Convergence plans drawn up at COMIFAC level naturally have national and local links, but the relevant instruments enacted by the United Nations remain the unavoidable benchmarks to which each country must align, even if the applicability is not guaranteed. International perceptions of COP21 suggest that local initiatives are easier to implement.

If for the FSC Certification Mechanism (ECOFORAF, 2014), the Congo is a good student who respects the set of 10 principles and 56 criteria of good forest management, as discussed above, on the other hand, the process of Reduction (R) of emissions (E) related to deforestation (D) and degradation (D) of forests with (+) inclusion of Sustainable Forest Management, Biodiversity Conservation and Stock Enhancement of carbon (REDD+) is not within reach. The World Bank's Forest Carbon Partnership Fund (FCPF) and the UN-REDD program have selected Congo to benefit from resources to offset the country's efforts since 2008 to reduce deforestation and degradation of forests on its territory, to sustainably manage forests, conserve their biodiversity, and increase forest carbon stock (CN-REDD+, 2015). But the process is so long in its path that the first disbursements (\$ 3.4 million in 2014) in this respect are far from satisfying expectations, judging by the roster of complaints lined up in several interviews with the REDD+ Congo National Coordinator (Africa environment plus, 2014). And the country continues to support the current reforestation initiatives through a budgetary effort.

Undoubtedly, in addition to public funds in the State budget, the country benefits from various technical and financial support from bilateral and multilateral partners, in particular the World Bank, which finances several projects under the Ministry of Forestry and the environment. The National Center for Inventory and Management of Forest and Wildlife Resources (CNIAF) and PRONAR are a perfect illustration. The latest initiative is the creation of

the Congo Basin Blue Fund, launched on 9 March 2017 in Oyo, on the occasion of the COMIFAC Ministerial Conference extended to other countries bordering the Congo Basin. In this context, calls for funds are being made to the international community and the World Bank represented at the ceremony intends to contribute constitutional resources from a budget of \$ 7 billion dedicated to regional integration in Central Africa (Africa environment plus, March-April 2017). Non-governmental donors, including the Brazzaville Foundation for Peace and Environmental Preservation, are calling for renewable subsidies of around € 100 million annually, with long-term commitments to protect the environment. and the reduction of the effects of global warming in the Congo basin covering 220 million hectares (Brazzaville dispatches, www.adiac-congo.com).

Discussion

Forest management in the Congo, as in the Congo Basin as a whole, is a matter of global concern, as the stakes and challenges in terms of ecosystem preservation remain enormous.

The study showed that the state and private companies with forest exploitation permits are the main actors in forest management in the Congo. The first set up the necessary mechanisms for this and the second are active partners in the different farming areas (UFA). These results are in line with those of N. GAMI and Ch. DOUMENGE (2001), which present an overview of forest stakeholders in Central Africa and provide an overview of their roles and interests in the management of this vast forest massif. The authors highlight the diversity of actors involved in the forestry sector in the Congo Basin and the pre-eminent role of state institutions in forest decision-making and management. They point out that this diversity affects management problems, because the interests of the actors are often divergent. Hence the important role played by COMIFAC in bringing together the interests of the different actors towards responsible and sustainable management of the natural resources of Central Africa.

Concerning forest management, the inability of the State monopoly to guarantee the use and sustainable management of forests is often noted. The study has shown that unexploited reserves exist in the Congo and that the flows are more oriented towards export in foreign countries. And we see the growth of exports of logs, dried and wet lumber or even chips, which underlines the strong pressure on wood resources. Having become aware of the weak state monopoly, J.-C. NGUINGUIRI (1999) proposes the exploration of new management approaches in a participatory or institutionalist way. This is in line with the conclusions of J. BALLEET et al (2009) who emphasize that the participation of local populations in forest management is the key to the sustainability of forest resources.

In the study area, GEB operator carries out agroforestry plantations through the deforested area in order to remedy damage to the forest management unit. Major constraints limit its development, due to administrative burdens and rigid forest regulations, as well as governance practices that do not match the need for technical assistance for reforestation with the necessary financial assistance from small holders operators. Emphasis is placed on informal and criminal activities that jeopardize the sustainability of the structures created and distort the judgments on the actual performance of the forestry sector, in terms of production, employment and income.

It appears that the study area is rich in wood species, among which are the highly prized woods on the market, particularly international ones. And at the national level, an afforestation and reforestation program is working to diversify forest tree species so that they can be used in the combination of factors of sustainable development, that is to say, combining the threefold economic imperative, social and ecological development. It can be said that the development of these natural resources will contribute to the economic and social development of the country, because forest management is closely linked to the improvement of the living conditions of the areas concerned. This is consistent with the results obtained by J.-N. MARIEN and B. MALLEET (2004), which indicate that forest plantations can, by their diversity and flexibility, be effective in meeting national needs for timber and agroforestry products and contributing to the economic development of countries. A. BERTRAND (1991), who also reached this conclusion, also stresses the need for good management of the land tenure issue in African tropical forests. This is why multi-stakeholder governance emerges as one of the best approaches to finding the solutions needed for good forest management. This is consistent with the results obtained by LAVILLE B., THIEBAULT S. and EUZEN A. (2015).

But in the Congo, mechanisms and instruments for sustainable forest management are not yet sufficiently popularized to serve the cause of reforestation. And the problem of increasing the contribution of the forestry sector to national socio-economic development will remain as long as the management tools remain sophisticated and inaccessible to small and medium-sized farmers. Whether it is the institutional tools (National Reforestation

Service), the various financial tools put in place (REDD +, carbon credit) or forestry taxation (tax, royalty), there is no incentive for the " emergence of forestry companies, often dealers of LEUs, at the same time in charge of reforestation in UFA. In addition, the policies and strategies promoted at the international (COP21-22), regional (COMIFAC) and national (UFA) levels will have no significant impact on the lifestyles and living standards of the populations in the areas concerned. in these entities the opportunity for economic and social integration.

Conclusion

The study revealed the contrast between the low degree of deforestation and the strength of the political action of reforestation, the latter being fueled by the fear of being included in the pack of polluting countries. It is obvious that a developing country, especially in the agri-food and industrial sectors, cannot fail to colonize natural areas and deploy human settlements and activities there. Preserving to preserve without worrying about human development would be absurd. Congo, which has aligned itself with many global and regional initiatives, has implemented national forest policies and strategies that combine sustainable development requirements.

But the biggest challenge remains how to reach a class of agro-forestry and agricultural entrepreneurs who are able to reconcile national interests with the needs of the population for the consumption of forest products. However, the example of smallholder farming operating in the Kimongo-louila area has shown that regulatory and material factors and the lack of sufficient technical and financial resources limit its development. This poses the problem of the contribution of the forest sector to national socio-economic development. It is hoped that the policies and strategies put in place in the country will contribute to the improvement of the living conditions of the populations of the areas concerned. However, in this area, as underline the Better Growth Better Climate report, "there is no formula or both simple and universal reform. Each country differently will meet the challenge of climate change and development, based on its levels of economic, human and institutional development, its social and political, its history, its geographical position structures and its natural resources. Countries need to experiment new solutions, in a process of learning by doing to find doing the path most suited to their own situation" (Schmitt, 2015).

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