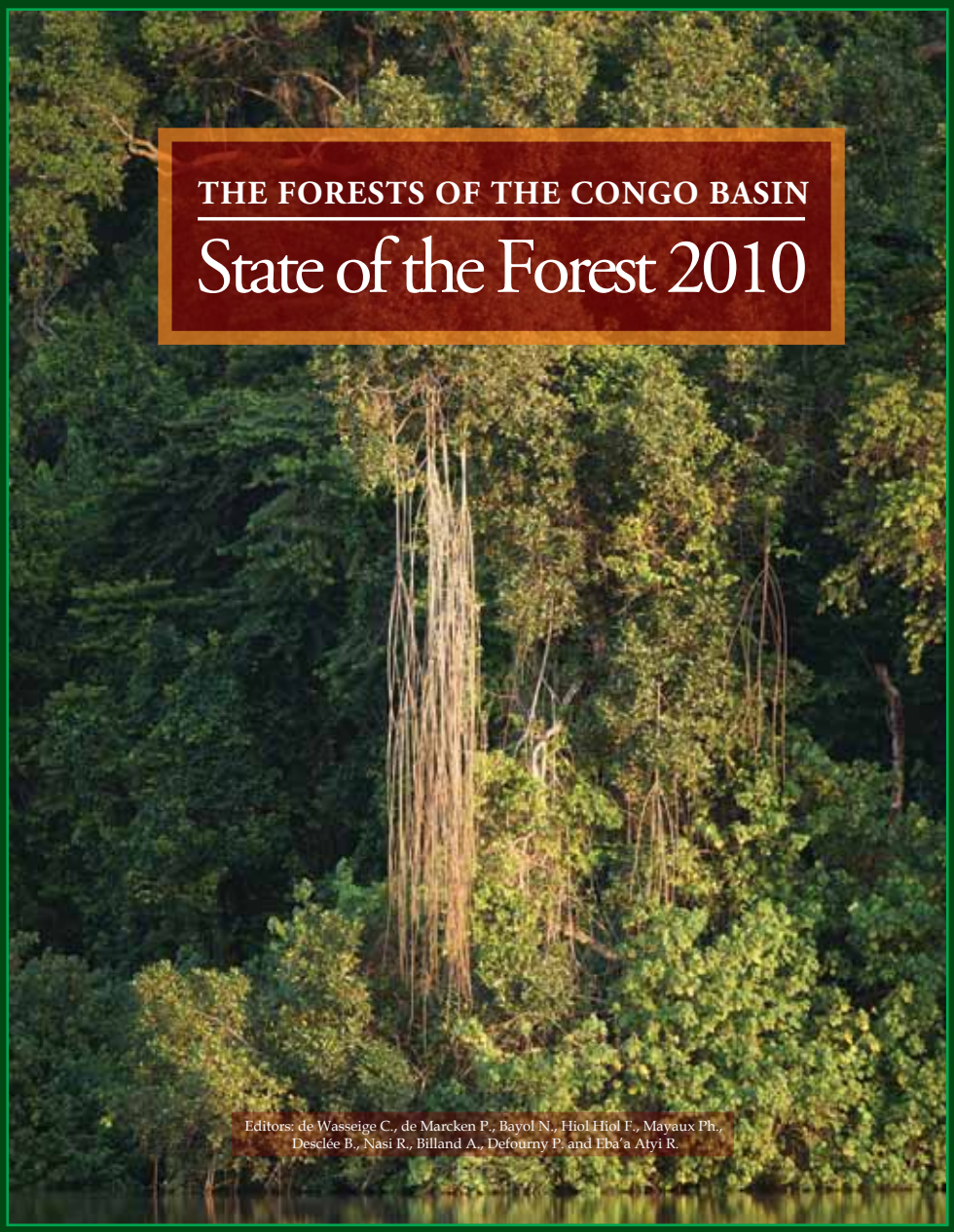

THE FORESTS OF THE CONGO BASIN
State of the Forest 2010

Editors: de Wasseige C., de Marcken P., Bayol N., Hiol Hiol F., Mayaux Ph., Desclée B., Nasi R., Billand A., Defourny P. and Eba'a Atyi R.

The State of the Forest is a publication intended for the Central African Forests Commission (COMIFAC). This book is produced under the framework of the Observatory for the Forests of Central Africa (OFAC) and the Congo Basin Forest Partnership (CBFP).

This document describes the main outputs compiled in the full edition of the State of the Forest 2010. The electronic version and the previous editions are available on the website of OFAC, http://www.observatoire-comifac.net

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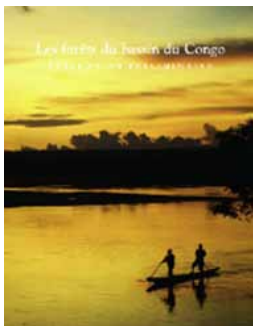
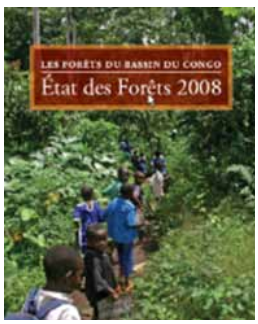
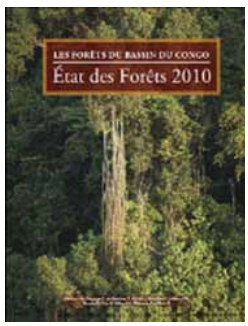
Central African forests represent the second largest expanse of tropical forest in the world. However, these forests are under increasing pressure that could eventually lead to very high degradation and increase poverty among many people who still depend heavily on the resources offered by the forest.

The 2010 report on the State of Central African Forests (SOF 2010), like previous editions, presents as completely as possible the status of the forests of the Congo Basin, its ecosystems, its biodiversity and its socio-economic situation.

It covers the six Central African countries that are home to dense moist forests, namely: Gabon, Republic of Congo (Congo), the Democratic Republic of Congo (DRC), Equatorial Guinea, Cameroon and Central African Republic (CAR).







Data collection was organized from 2009 to 2010 around national groups working in government administrations in charge of forestry in the six countries concerned. These data, which were encoded in an online database, are presented at the end of this document. A multi-actor workshop to validate data was organized in each of the six countries for all stakeholders involved in the sustainable management of forests in the country to cross-check the data.

Based on data collected at national level, synthesis chapters were written by international and regional experts. Each chapter was coordinated by a lead author, surrounded by a pool of top-quality authors. The participatory process continued across the sub-region with the validation of chapters during the sub-regional workshop for the validation of the SOF 2010 on 29 and 30 March 2011.

The final document was then prepared by the OFAC team at the regional unit of Kinshasa, and submitted to the Executive Secretariat of COMIFAC and members of the CBFP at the Douala meeting on 1 March 2012.

Over 100 authors from many institutions collaborated in the study. A complete list is available in the full version, while the logos of the main contributing organizations are presented on the back cover of this document.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From Rio to Copenhagen

The "United Nations Framework Convention on Climate Change", signed in Rio in 1992, underscores the importance of "stabilizing concentrations of greenhouse gases (GHG) in the atmosphere at a level that prevents dangerous anthropogenic disruption of the climate system". This international treaty was followed in 1997 by the Kyoto Protocol and its binding measures to reduce GHG emissions by 5.2 % compared to 1990.

During the 11th Conference of the Parties (COP-11) of Montreal in 2005, several tropical forest countries asked that the forest sector be considered in reducing greenhouse gas emissions from deforestation (RED). COP-13 of Bali in 2007 affirmed the RED, but with the prompting of COMIFAC, extended it to REDD to also include forest degradation.

Without a new comprehensive and binding protocol at the COP-15 of Copenhagen in 2009, 28 countries agreed to the "Copenhagen Accord" which asserts the need to limit global warming to 2°C compared to the pre-industrial era. It recognizes the role of deforestation and forest degradation in GHG emissions but also affirms the need to provide incentives to strengthen the absorption of greenhouse gases by forests through a REDD+ mechanism.

Post-Copenhagen negotiations

In order to consolidate the achievements of the Copenhagen Accord on REDD+, the Paris and Oslo conferences in 2010 helped launch the "REDD+ Interim Partnership", an informal body charged with coordinating preliminary funding for REDD+ and whose objective is to serve as a "temporary, voluntary, legally non-binding framework" to Partners to intensify actions and funding of REDD+ and take immediate steps to improve efficiency, transparency and coordination of initiatives and financial instruments.


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Cancun Conference

Despite the apparent differences between Parties to the Climate Convention during negotiations in Tianjin in October 2010, the Cancun Conference of December 2010 garnered agreements on adaptation, REDD+, technology transfer and mitigation. The "Green Climate Fund" created to fund mitigation and adaptation to climate change, aims to attract, by 2020, $100 billion per year. Following the Cancun Conference, 139 out of 192 countries, representing 88 % of global emissions, pledged to reduce their emissions. However, two ultimate goals of reduction are still under discussion: not to exceed a temperature increase of 2°C or remain below 1.5°C. The Cancun Conference has helped restore confidence in the Climate Convention process, but for many it is not a very significant step forward in the fight against climate change.

Post-Cancun

Explicit recognition of REDD+ in the fight against climate change in Cancun prompted the Parties to outline a framework in which the modalities for implementation of REDD+ can be negotiated.


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Significant guarantees have been recorded in terms of implementation of REDD+ programmes in order to take into consideration environmental, social, socio-economic and legal concerns including the protection of the rights of indigenous people.

At the level of COMIFAC, there is a need to ensure supranational consistency, which can help control leakage from one country to another and avoid potentially unfair competition. Thus, in the quest for national and regional consistency, two structuring points prove their importance: one concerns financial enhancement of conservation or sustainable management activities in conjunction with maintaining forest carbon stocks and the other one concerns the definition of "forest" with regard to REDD+.

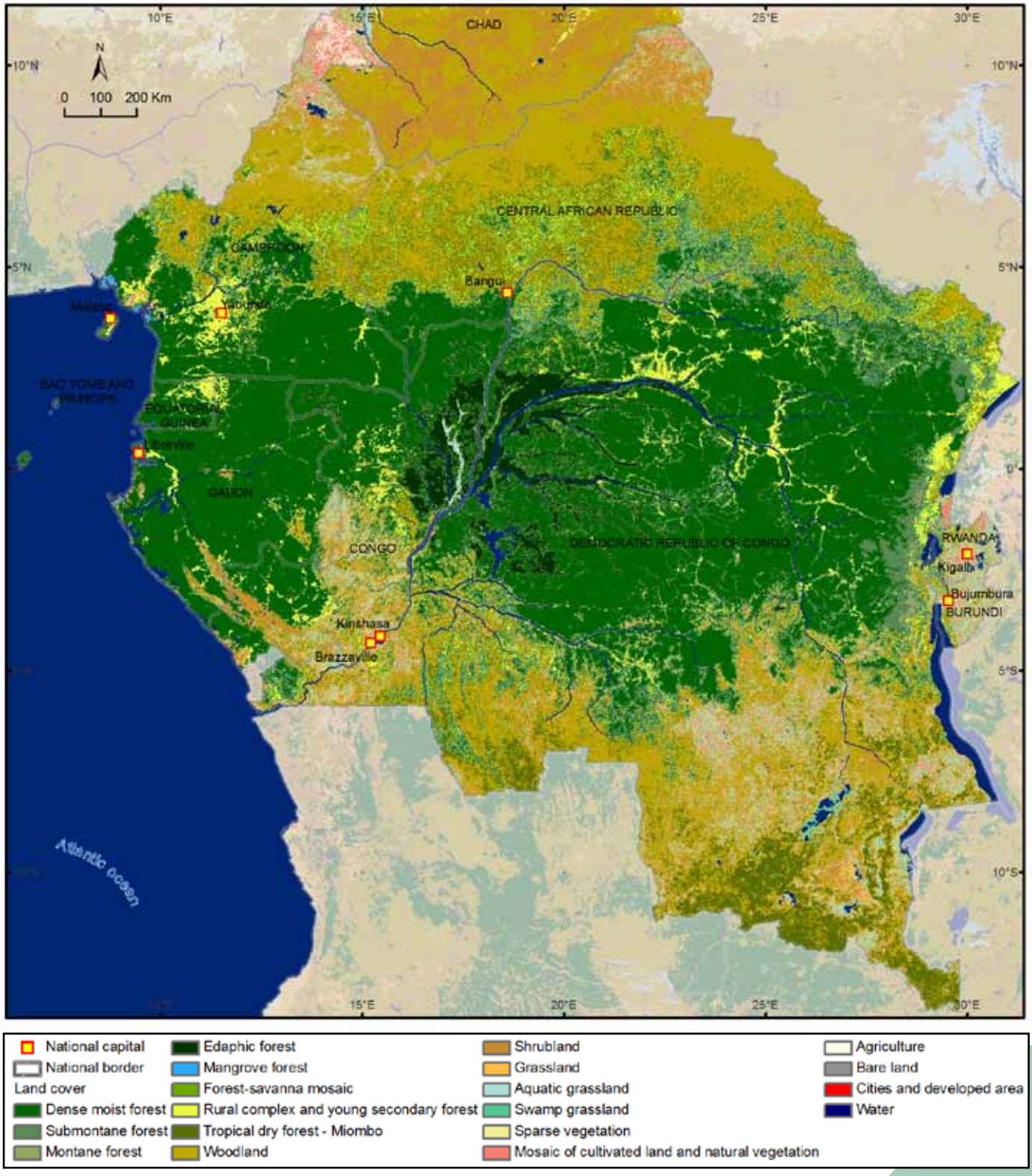
All these difficulties impact surveillance activities at various scales and at various latitudes and important questions remain unanswered such as assessment techniques, carbon accounting and payment for environmental services.

For the purpose of diagnostic and monitoring, one of the important parameters to know is the spatial distribution and typology of Central African forests. Mapping of the Congo Basin forest cover using satellite images is complicated because of persistent cloud cover as well as the fragmentation and variety of the landscape, while field inventories are limited by the vast expanse and inaccessibility of the area concerned. Previous editions of the State of the Forests (SOF) were based on the fusion of various available maps.

For this edition, the juxtaposition of recent time series of satellite images with previous findings yielded a new forestry map covering 8 forest countries of the Congo Basin. The drawing of this new map is based on a semi-automatic method combining statistical classification, consulting experts and manual editing. The methodology used benefits both from the spatial resolution of MERIS (300 m resolution) and time series of SPOT-Vegetation (SPOT-VGT) over a period of 8 years, allowing respectively for a better delineation of small features and improved discrimination of vegetation types. The distinction between the vegetation classes is based on a systematic analysis of seasonal spectral profiles, by distinguishing between classes based on differences in seasonal dynamics of their respective green biomasses. The following table shows the surfaces per forest type and per country.

Estimate of the surface covered by various classes of land cover for the 8 countries (in hectares)

Land cover class	Cameroon	Congo	CAR	DRC	Gabon	Equatorial Guinea	Burundi	Rwanda	Total
Lowland dense forest	18,640,192	17,116,583	6,915,231	101,822,027	22,324,871	2,063,850	8,412	172	**168,891,338**
Sub and montane forest	223,034	10	8,364	4,204,534	19	30,965	93,523	219,320	**4,779,769**
Flooded forest and mangrove	227,818	4,161,587	95	8,499,489	180,507	25,245	0	0	**13,094,741**
Total dense moist forest	**19,091,044**	**21,278,180**	**6,923,690**	**114,526,050**	**22,505,397**	**2,120,060**	**101,935**	**219,492**	**186,765,848**
Forest-savanna mosaic	2,537,713	517,068	11,180,042	6,960,040	51,092	0	70,465	54,405	**21,370,825**
Dry forest	1,292,106	297,824	3,430,842	23,749,066	31,337	172	35,127	4,344	**28,840,818**
Woodland	11,901,697	2,659,375	34,381,438	36,994,935	787,231	4,669	297,137	373,999	**87,400,481**
Total other forests	**15,731,516**	**3,474,267**	**48,992,322**	**67,704,041**	**869,660**	**4,841**	**402,729**	**432,748**	**137,612,124**
Other vegetation and agriculture	11,025,821	9,140,759	5,887,863	46,190,470	2,708,842	511,005	1,973,353	1,956,178	**79,394,291**
Other land surfaces	38,507	2,941	7,199	83,651	18,332	401	0	381	**151,412**
Water surfaces	276,637	296,726	35,452	3,944,206	325,017	27,861	20,433	142,591	**5,068,923**
Total countries	**46,163,525**	**34,192,873**	**61,846,526**	**232,448,418**	**26,427,248**	**2,664,168**	**2,498,450**	**2,751,390**	**408,992,598**



Congo Basin land cover map derived from 300 m resolution data

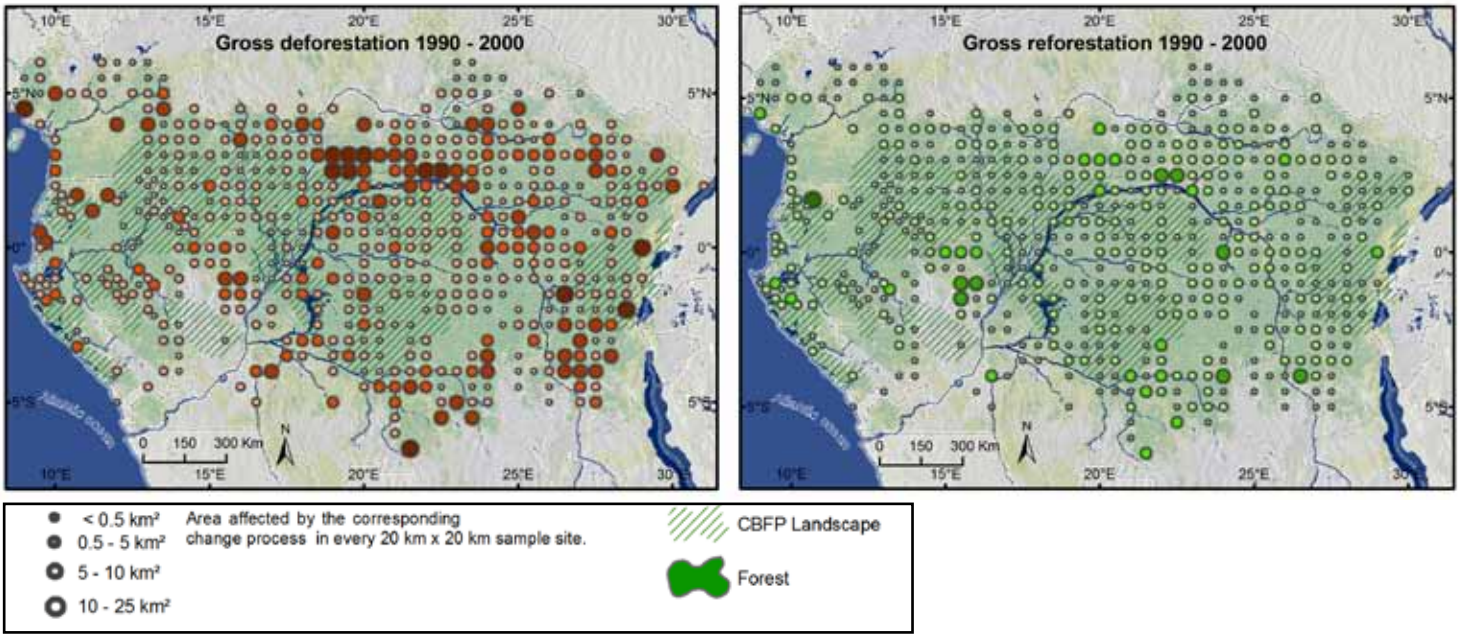
In order to describe as accurately as possible forest dynamics that characterized the Congo Basin in recent decades, an analysis by sampling of satellite images was done in 6 countries that have dense moist forest. Statistical work was done based on a systematic sampling step of 0.5° above dense and flooded forests. From each sample of 20x20 km, a series of Landsat images acquired around 1990, 2000 and 2005 was analyzed (corresponding to a sampling density of 16 %), by combining both automated processes of classification and an interactive validation by national experts. This approach made it possible to identify four dynamics involved in the forest cover change: deforestation, degradation, reforestation and regeneration.

The act of undertaking remote sensing of forests at national level was considered from the outset as an essential dimension of the whole process. Some initial steps, such as the selection of satellite images, preprocessing and automated classification were conducted by the Joint Research Centre of the European Commission (JRC-EC) and a team from the *Université catholique de Louvain* (UCL). 15 national experts were then invited for a 2-week workshop to validate the automatic preinterpretation and the forest cover change detection.

The findings of the evaluation of forest cover change through sampling show that the gross deforestation annual rate in the Congo Basin was 0.13 % for 1990-2000 and this rate doubled over the period 2000 - 2005. The trend is similar for the net deforestation rate and for gross and net forest degradation rates. This doubling of the rate of forest cover change between two periods, occurs fortunately for both deforestation/degradation and reforestation, indicating a complex dynamic of cover change across the basin. The table below shows the annual rates of cover change for each country of the basin (except for Equatorial Guinea concerning the second period, because of lack of good quality satellite data). The evolution of gross deforestation between the two periods is quite high in the DRC, Cameroon and Congo, whereas it is stable in Gabon and CAR. Net deforestation decreases in Cameroon and Gabon, it is stable at 0.06 % in the CAR and increases in Congo and DRC.

National annual deforestation and reforestation rates in the dense forest zones of the Congo Basin between 1990 and 2000, and between 2000 and 2005. The number of processed samples (n) and their confidence interval are mentioned for each country

Country	1990 - 2000				2000 - 2005			
	n	Gross deforestation (%)	Gross reforestation (%)	Net deforestation (%)	n	Gross deforestation (%)	Gross reforestation (%)	Net deforestation (%)
Cameroon	51	0.10 ± 0.05	0.02 ± 0.01	0.08	20	0.17 ± 0.14	0.14 ± 0.19	0.03
Congo	70	0.08 ± 0.03	0.04 ± 0.02	0.03	40	0.16 ± 0.06	0.08 ± 0.05	0.07
Gabon	58	0.08 ± 0.03	0.03 ± 0.01	0.05	12	0.07 ± 0.05	0.07 ± 0.07	0.00
Equatorial Guinea	8	0.13 ± 0.09	0.11 ± 0.18	0.02	0	-	-	-
CAR	26	0.09 ± 0.05	0.02 ± 0.02	0.06	23	0.10 ± 0.06	0.04 ± 0.05	0.06
DRC	334	0.15 ± 0.02	0.04 ± 0.01	0.11	242	0.32 ± 0.05	0.10 ± 0.03	0.22
Congo Basin	**547**	**0.13 ± 0.02**	**0.04 ± 0.01**	**0.09**	**337**	**0.26 ± 0.04**	**0.09 ± 0.02**	**0.17**



Spatial distribution of deforestation and reforestation that occurred between 1990 and 2000 over the Congo Basin. The circle size is proportional to the surface affected by the corresponding forest cover change process.

Landsat-scale forest cover loss for 2000-2005 (orange) and 2005-2010 (red) for the DRC

On the other hand, OSFAC and American universities of South Dakota and Maryland have produced a detailed (60 m) and systematic map of the forest cover and deforestation covering the whole of the DRC. The study is based on the systematic exploitation of all available Landsat archives covering the DRC (a "first-of-its-kind" in terms of methodology), in order to counteract the problems of persistent cloud cover over the Congo Basin. A total of 8,881 Landsat images were analyzed to create a time series of a decade around 2000, 2005 and 2010. Estimates of deforestation remain of the same magnitude as those of the first study, but small differences can be explained by legend specificities and classification approach.

The timber sector in Central Africa: a resource to be used sustainably

Some figures and trends

The spatial extent of concession areas in Central Africa have been relatively stable in recent years, with the notable exception of the DRC where they are in steady decline since 2002. They cover about 44 million hectares, or about 1/4 of lowland dense moist forests.

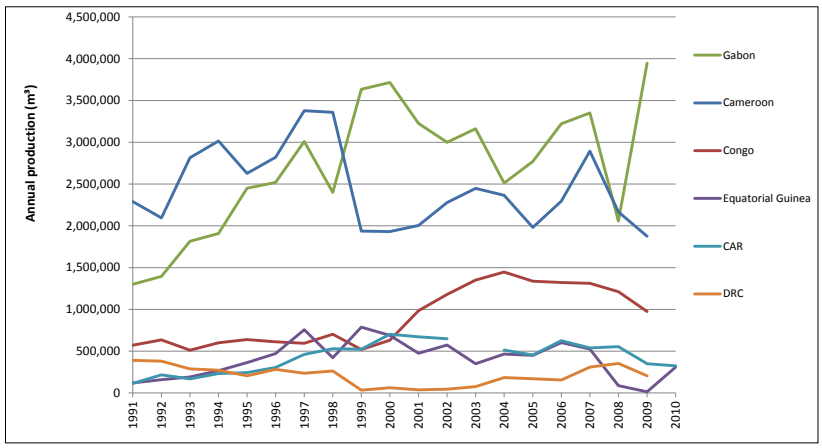
With just under 8 million m^3 estimated in 2009, log production in Central Africa is the lowest out of the three major tropical forest basins and represents only 0.4 % of world production of round timber.

Plantations still occupy a very limited place in Central Africa, both in terms of production and in terms of surface area. But due to increasing local demand, a huge expansion of plantations is expected in the years ahead.

The actual wood processing rate has risen sharply in recent years to attain 54 % over the 2005-2008 period, mainly because of higher demands of States. However, Central Africa still converts less than the rest of Africa, South America and Asia.

Industrial production is mostly exported, mainly to the European Union and Asia. Asia has confirmed its position as number one destination with about 70 % of export volumes in 2009. The local market, on its part, is mainly supplied by the small-scale sector.

The Central African regional market is still very underdeveloped but has huge potential.

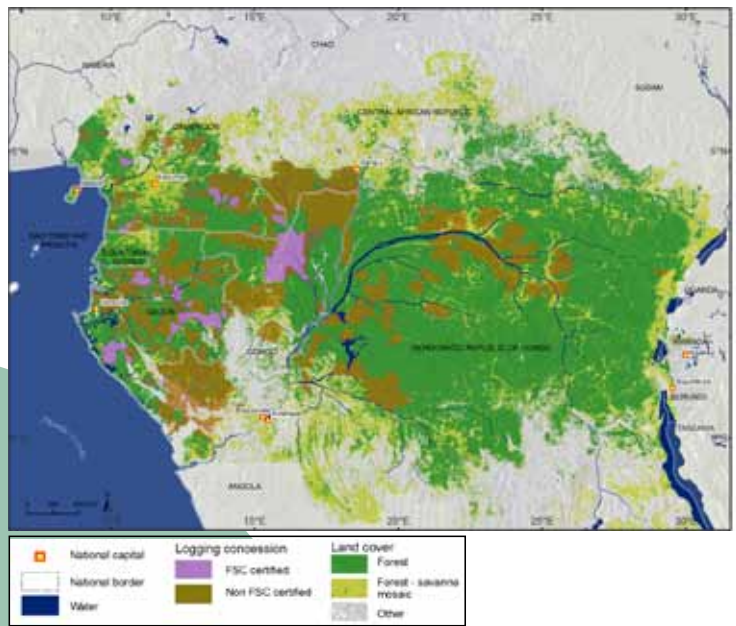


Evolution of annual log production by country (in m^3 per year)

Towards sustainable management of forest resources

Enhancement of forest resources has undergone profound changes over the past two decades. The sustainable forest management process has continued to prevail throughout the region in recent years. There are still some uncertainties as to its generalization to new operators and to concessions with smaller surface areas. The DRC has to catch up on the huge lag that it has on other countries regarding the sustainable management of the forests.

Faced with the growing demand for guarantees as to the origin and legality of timber products from western consumers and distributors, supply of certified timber has been on the rise in recent years in Central Africa. With nearly 5 million hectares of certified forests in 2010, the Congo Basin demonstrates a significant lead over the Amazon basin.



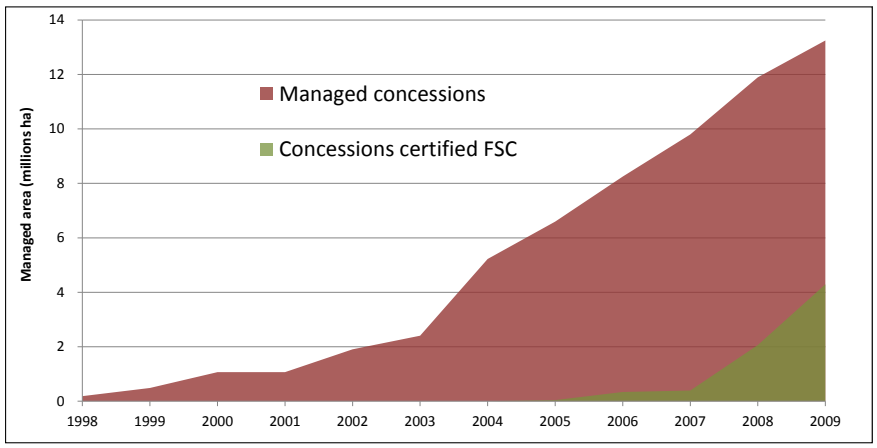
Progress of FSC certification for concessions across Central Africa

Allocated areas by country (in hectares)

Country	Forest area in 2010(*) (ha)	Total area of forest concessions (ha)	Year
Cameroon	18,640,192	6,381,684	2009
Congo	17,116,583	12,669,626	2010
Gabon	22,324,871	9,893,234	2009
Equatorial Guinea	2,063,850	0(**)	2010
CAR	6,915,231	3,022,789	2009
DRC	101,822,027	12,184,130	2011
Total	**168,882,754**	**44,151,463**	

(*) Area of lowland dense moist forest.

(**) In Equatorial Guinea, all the forest concessions were canceled in 2008.



Evolution of managed areas with FSC certification in Central Africa (excluding Controlled Wood certificates)

Under the FLEGT Action Plan of the EU launched in 2003, many Voluntary Partnership Agreements (VPAs) are under negotiation or execution in Central Africa, thus prompting States and economic operators to improve on governance and transparency in the forest sector. The trend continued in 2008 with the adoption of a landmark amendment to Lacey Act in the United States which prohibits the import, export and trade on U.S. soil of any illegal product of plant origin.

Main challenges of the years ahead

In order to perpetuate the cardinal role of the timber sector in the economies of Central African countries and preserve forest ecosystems, there is still to:

- acquire, within forestry administrations, the capacity to fully implement their forestry policies;
- implement sustainable forest management in all production forests;
- further increase and diversify industrial production;
- meet the expectations of western markets by developing national reliable and credible systems of verifying legality;
- improve communication on the benefits of tropical timber and the sustainable management of forests from where they come;
- diversify processed products.

THE 2008-2009 FINANCIAL CRISIS AND ITS IMPACT ON THE FOREST SECTOR IN CENTRAL AFRICA

An unprecedented crisis with major and long-lasting impacts

The particularly harsh 2008-2009 financial crisis profoundly affected the forestry sector in Central Africa, causing a contraction of about 1/3 of world trade in tropical timber. In 2008, while EU countries witnessed an average drop in imports of over 40 %, Chinese purchases that had previously supported the market in turn dropped towards the middle of the year. During the second half of 2008, demand that had become almost sluggish caused prices to collapse. Within weeks, prices fell by 15-30 %.

The response of the private sector and governments

Given the scale of the crisis, companies quickly curtailed their activities and some even closed down their logging sites and processing plants. An estimated 25,000 to 30,000 jobs were suspended or permanently lost due to the crisis. On their part, governments attempted to rein in the phenomenon by adopting exceptional tax measures or by relaxing their restrictions on log exports.

Perspectives

From late 2009, a revival of activities was evident with the return of some European buyers. In 2010, most of the processing plants had resumed their activities. However, the crisis weakened companies that export to European markets, already the most exacting in terms of legality and sustainability of timber production methods. Moreover, the current trend suggests a consolidation of logging companies. The 2008-2009 crisis did not kill industrial logging in Central Africa but it has profoundly reshaped the outlook of the sector. It is too early to know what effect it will have on the sustainable management of forest resources.

An estimate of chainsaw milling in the Congo Basin

Preliminary findings of a systematic evaluation of the economic and social impacts of chainsaw milling in the Congo Basin are presented and discussed here. These findings are from research conducted by the Center for International Forestry Research (CIFOR) between 2008 and 2009 in Cameroon, Gabon, DRC and Congo on the one hand, and CAR between 2010 and 2011, on the other hand, through more than 800 surveys.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Informal production and export of sawnwood

Sawnwood (m^3)	Cameroon (Yaoundé, Douala, Bertoua)	Gabon (Libreville)	Congo (Pointe-Noire, Brazzaville)	DRC (Kinshasa)	CAR (Bangui)
Annual consumption on domestic market:	860,000	70,000	109,500	146,000(*)	67,000
- industrial scraps or small scale permits	198,000	20,000	10,500		34,000
- informal chainsaw milling	662,000	50,000	99,000		33,000
Annual domestic consumption *per capita*	0.072	0.064	0.047	0.018	0.083
Sawnwood export - formal sector (2009)	343,000	150,000	93,000	29,000	41,000

(*)This assessment only regards artisanal timber coming into Kinshasa by day, with no consideration for the night inflows.

The vast majority of reforms that led to better forest management and increased tax revenues in Central Africa have targeted large industrial forest operations that are geared towards exports, while neglecting the production of small-scale sawn timber sold mainly on the domestic and regional markets. This sector remains largely unregulated and informal. National ministries are often unaware of its economic, social and ecological impacts, and it is not reflected in national and international statistics.

In all, findings show that the volume of timber harvested by small-scale loggers and the social dynamics generated by this informal sector requires long-awaited recognition by decision-makers. This sector provides thousands of jobs across the sub-region and large financial contributions to rural economies, but it needs to be better integrated into current and future forest policies to become a permanent and sustainable source of development.


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Currently, most small-scale loggers do not consider that their activities have a negative environmental impact, given that the resource is usually readily available at a short distance - 2 to 3 km - from major roads or rivers. However, findings show that the warning signs of what could become an unexpected negative environmental impact may already be there: distances to be covered to find large trees of value are increasingly longer in some countries, while in others, the loggers have begun to fell trees below the minimum authorized diameter.

National and sub-regional strategies are required. In fact, part of the informal production is exported to neighbouring countries in a growing regional market. Among the main "exit" points are the northern and western borders of Cameroon with Chad and Nigeria, the northern border of the CAR with Chad, and the eastern borders of the DRC with Sudan, Uganda, Rwanda and Burundi.

These trends also need to be effectively addressed in present endeavours such as the FLEGT Action Plan of the European Union that Congo Basin countries are putting in place to combat illegal logging. The laws and regulations must be adapted to field realities and the needs of small operators before they are applied blindly, especially when there is a risk of adversely affecting the livelihoods of several thousand people.


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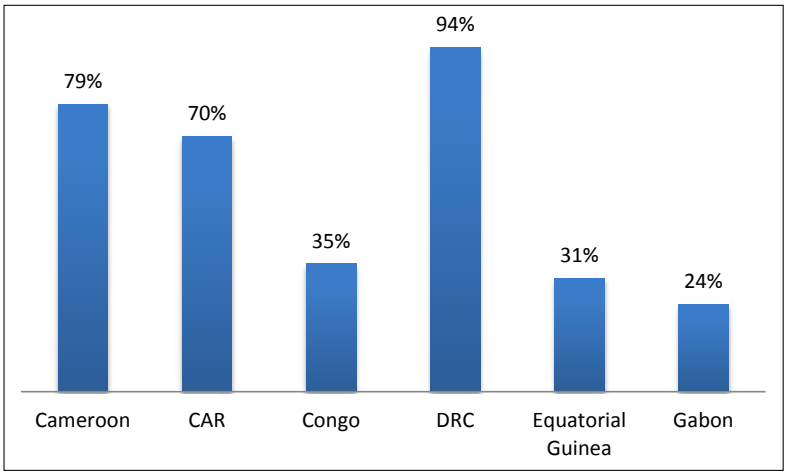
In order to ensure better consideration of the informal sector, it is necessary to:

- formulate government policies and national strategies to lead the informal sector towards formal, transparent and fair growth;
- consider incentives and coercive measures;
- decentralize the process of authorizing felling;
- professionalize the sawyers while simultaneously offering feasible incentives to officials to reduce corrupt practices;
- impose and enforce effective sanctions for those involved in corrupt practices.

Contribution of woodfuel in satisfying energy needs

Woodfuel and related sustainability issues can be seen from two opposing viewpoints: woodfuel is a cause of deforestation and degradation, or it is rather a promising source of renewable energy. Fuelwood and charcoal represent 90 % of all wood harvested from African forests. There are few data on the woodfuel sector in countries of the Congo Basin. Information from recent studies are summarized below for an overview of baseline knowledge in 2010.

This chapter also lays special emphasis on areas where logging for woodfuel is a threat to resource sustainability and the livelihoods of those who depend on them. It also examines possible or implemented management options.



Woodfuel production out of total national round wood production in 2009 (%)


© Jolien Schure

Conditions vary from one Congo Basin country to another. Woodfuel accounts for only 24 % of all timber extraction in Gabon (where 62.3 % of the population use gas for cooking), while in the DRC it accounts for 94 % of the total production of round wood (fuelwood accounts for 12 % of cooking energy in Kinshasa and charcoal accounts for 75 %). These disparities can be partly explained by the number of inhabitants and the availability of other types of energy. In the DRC, Congo and Cameroon, charcoal is substituted for fuelwood in urban centres. In addition to households, many companies including bakeries, breweries, restaurants, brick-makers and blacksmiths depend on wood as an energy source for their daily activities.

Because the forest dynamics of the Congo Basin is generally sufficient to meet local needs, it took some time for issues of sustainability to emerge, but population growth and urban concentration are changing the situation. The recent emergence of pressure zones, especially as issues around major urban centres, in savanna areas and near protected areas, have began to put to question the sustainability of timber resources. Improving the management of this sector is essential as long as demand continues to rise and alternative energy will not be available to meet demand in the short term. Interventions must be tailored to address issues specific to localities and the informal nature of the sector.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The main obstacles are the lack of policies and available data on the woodfuel sector. Also, an increased collaboration between the various sectors (energy, forestry, environment, land use) is necessary.

Options for more sustainable management of timber resources are:

- recognition of the importance of trees in farming systems;
- managing ecosystems of slash and burn agriculture and forest fallow;
- establishment of plantations in transition zones;
- creation of agro-forestry resources for villages and communities;
- creation of intensive industrial forest resources;
- improving energy efficiency at the level of production, transportation and consumption.

Biodiversity: the wealth that ensures forest ecosystem balance

Knowledge on biodiversity is presented for the major groups of fauna and flora. It has been observed that available data are often incomplete, and that is the case for most species. A huge disparity also exists from one country to the other in the sub-region. Much of the inaccuracy comes from the heterogeneity of counting campaigns and some species (such as bats) appear to be more numerous in the most studied countries.

A primary consideration of biodiversity is the establishment of lists of species found in each country. A secondary consideration concerns the establishment of major faunal regions for some categories of animals such as mammals or fishes, or flora distribution maps.

Very roughly, the bibliography allows for the counting of about 460 species of reptiles, more than a thousand species of birds, about 552 known species of mammals, including 56 primates, 48 ungulates, and 41 carnivores in Central Africa. Fishes are divided into 17 eco-regions counting between 30 to nearly 300 species. There is no synthesis of all the insects found in Central Africa but specialized databases record, for example, ants and day butterflies of which 2,400 species have been counted and divided into 6 families.

Overall, as per its size and the diversity of its ecosystems, the DRC is usually sole host of more than half of known species.

Among the flagship species for conservation, attention is focused on the precarious situation of the *Gorilla beringei beringei*, or eastern mountain gorilla sub-species, which has only small isolated populations confined to the Virunga and Bwindi parks, probably totalling less than 700 individuals. Moreover, the elephant is under unprecedented pressure of being slaughtered in the savanna as much as in the dense forest, mainly for its ivory.

As concerns the vegetation, Central Africa is reputed to have the largest number of plant species per unit area in the world. The number of species varies by more than 10,000 for the DRC, to 7,800 for Cameroon, 6,000 for the Congo, 4,700 for Gabon and 3,600 for CAR. São Tomé and Príncipe should be host to some 700 species including a hundred orchids. The rate of endemism in Central African plains range from 5 % to 10 %, they exceed 15 % for São Tomé.

Biodiversity conservation in Central Africa is done through several complementary approaches. A series of protected areas of various statuses is complemented by a network of botanical gardens. Recent progress have been recorded, with the support of RAPAC, for the establishment of a set of seven complexes of transboundary protected areas, mobilizing 18 sites representing more than 5 million hectares.

Moreover, among the territories not formally dedicated to conservation, industrial forest concessions are being assigned today, as per laws and voluntary eco-certification measures, an increasingly important role of protection and sustainable management of biodiversity. Thus, 17 tree species of commercial interest are subject to partial or total safeguard measures in logging concessions. At least 6 of the 11 criteria of FSC certification directly or indirectly concern sustainable management of biodiversity.

The best documented threat to biodiversity is hunting for food, for subsistence or commercial purposes, which falls under the informal economy but would mobilize the equivalent of an annual turnover of CFA 2,000 billion, or € 3 billion per year. Wars or rebellions, in addition to tragic human consequences, also have impacts on biodiversity. A recent trend involves the intensification of agro-industrial and mining development projects, on a scale still to be determined, but that could have direct and indirect impacts of major and irreversible proportions on the biodiversity of Central Africa.

The role of wildlife in food security in Central Africa: a threat to biodiversity ?

This 2010 edition of the State of the Forest is the first to include a chapter on bushmeat.

Growing human demand, hunting techniques and more efficient trade as well as increasing numbers of hunters, raise the problem of the sustainability of hunting, an important source of protein in Central African countries. Intensive hunting raises concern because of the food security and the livelihoods it provides, but also because of the ecological impacts it has and risks of infectious diseases that it engenders.

However, the potential for bushmeat to reduce poverty is debatable, since studies carried out in Gabon, Equatorial Guinea and Cameroon found that the tendency is not to reinvest the income from hunting in the household, but to devote it to non-essential spending.


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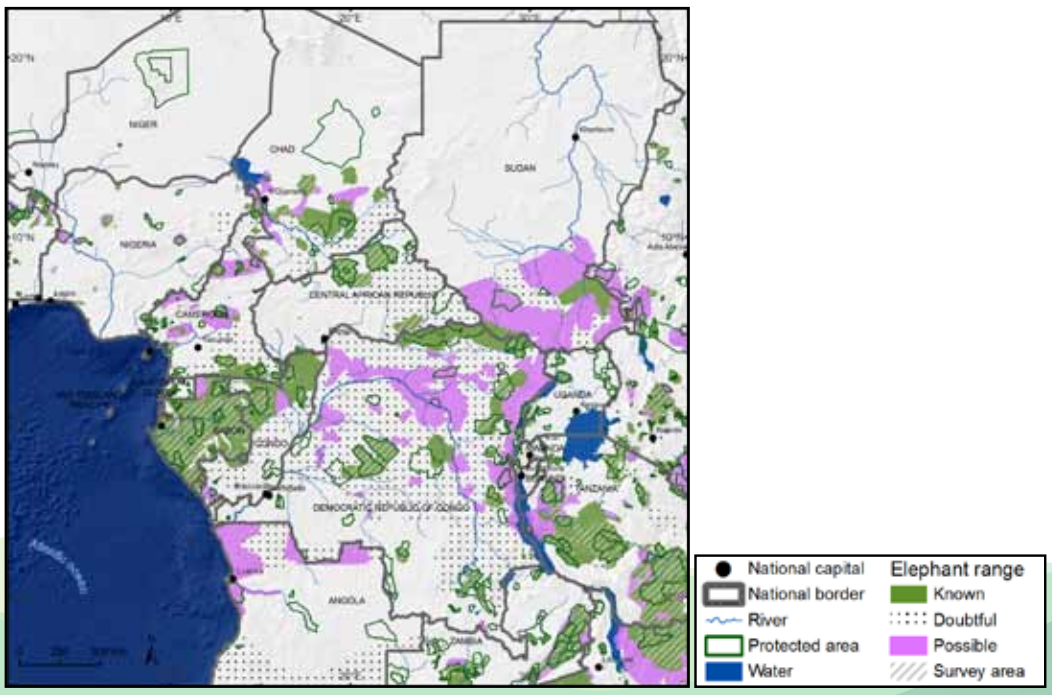
Hunting for commercial purposes is probably the main driving force for increased levels of bushmeat exploitation in Central Africa. Building a better understanding of the demographics of hunted animal populations, and of the dispersal of animals, is critical to management efforts.

Most mammals (70 %) hunted in the Congo Basin are not on the IUCN Red List of endangered species and high exploitation should not always be likened to local extinction. In fact, some bushmeat species such as the brush-tailed porcupine and the blue duiker continue to thrive in natural and modified habitats.

The reasons leading to bushmeat consumption are complex and include economic, cultural and social factors that should not be overlooked in efforts aimed at promoting sustainable levels of hunting. In particular, a clear understanding of consumer preferences for both bushmeat and for substitute products is necessary before developing alternative protein sources.

The Convention on Biological Diversity (CBD) and the report of its Bushmeat Liaison Group recognize that existing policies and legal frameworks related to hunting (i) are unpractical or unfeasible, (ii) provide unrealistic approaches for the implementation of this convention and (iii) ignore the economic and nutritional value of bushmeat. Under these conditions, multidisciplinary approaches are needed to combine a better understanding of bushmeat use and trade, strengthening legal frameworks, providing food solutions and livelihood alternatives as well as sustainable use of wildlife. None of these approaches, taken separately, can solve the famous "bushmeat crisis" but combined and integrated in bushmeat strategies, sold nationally and regionally, it is possible to achieve more sustainable use of wildlife for food purposes in Central Africa.


© Grégoire Dubois



Map showing the presence of elephants in Central Africa

Non-timber forest products (NTFPs) are natural products of biological, vegetable and animal origin, other than timber, such as plants, fungi, meat, insects and fish. NTFPs are widely used for personal and commercial purposes. Their value chain - from extraction activities of a forest product, its processing and production, to delivery to final consumers - are largely informal and not included in the statistics and policies of all Central African States. This situation makes it difficult to assess their contribution to livelihoods and national economies.

Knowledge of the species used and sold by each country is crucial for the sustainable management of NTFPs. Over 500 plant species and 85 animal species are exploited and the majority comes from lowland dense moist forests. Priorities must be established for the management of high value products; that is to say, (i) products with high marketing and consumption levels, (ii) those for which demand exceeds supply, (iii) multipurpose species whose many parts are used, or (iv) those which are vulnerable or protected. Thus, 24 priority products were identified in the Congo Basin, from at least 37 species; many more if all the species used as fuel and bushmeat are taken into account. The economic value of NTFPs is largely unknown. However, surveys in Cameroon show that the market value of only 27 products exceeds $1 billion per year.

Priority NTFPs across the Congo Basin

Priority NTFPs (trade &/or consumption)	Equatorial Guinea	Congo	DRC	Cameroon	CAR	Gabon
Bushmeat (multiple species of mammals & reptiles)	√	√	√	√	√	√
Fuelwood (multiple species)	-	-	√	√	√	√
Cola acuminata & *C. nítida*	√	√	√	√	√	√
Gnetum spp.		√	√	√	√	√
Rattans *(Eremospatha* spp., *Laccosperma* spp.*)*	√	√	√	√	√	
Dacryodes edulis	√	√	√	√		√
Elaeis guineensis	√	√	√	√	√	
Raphia spp.		√	√	√	√	√
Snails, larvae & insects	√	√	√	√	√	
Piper guineensis	√	√	√	√		
Aframomum spp.		√	√	√		√
Garcinia kola	√	√	√	√		
Irvingia spp.	√			√	√	√
Prunus africana	√		√	√		
Marantaceae (Marantochloa sp.*, Megaphrynium* sp.*)*	√	√				√
Rauwolfia vomitoria		√	√	√		
Baillonella toxisperma	√			√		√
Coula edulis	√			√		√
Mushrooms			√	√		√
Honey	√	√	√			
Alstonia boonei	√			√	√	
Ricinodendron heudelotii	√			√		
Garcinia lucida				√	√	
Dioscorea liebrechtsiana		√			√	

There are major obstacles to sustainable management of NTFPs. The first one is the threat of unsustainable and uncertain supply facing the growing urban and rural demand. On top of that, there is a lack of systems of checks and balances because of the policies, institutions and inconsistent regulation, poor governance and low levels of domestication. Secure land tenure is essential for sustainable exploitation and domestication, but ownership and access are increasingly challenged. The availability of most NTFPs being unknown, the identification of priority NTFPs and understanding of their ecology, based on long-term studies, are essential. Collecting such data is possible when operators are more formally recognized and value chains of these products are understood. The extension of pilot projects and demonstration, associated with outreach services, are essential for incorporating NTFPs in agricultural systems and reduce pressure on wild resources.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Existing legal frameworks are not effective in the sustainable management of NTFPs, particularly because of the lack of a consensual definition of NTFPs in the region. Their legal recognition is inconsistent, many highly marketable species and very vulnerable species being unregulated. Regulations are sporadically enforced; administrative bottlenecks and a multiplicity of controls are common, as is corruption. Only a handful of the most threatened NTFPs, such as elephant ivory, leopard skins and the bark of *Pygeum,* are monitored under the Convention on International Trade in Endangered Species (CITES). However, regional trade in *Gnetum* spp., *Dacryodes edulis* and *Irvingia* spp., for example, is largely unregulated.

In future, there will be need to, among others:

- strengthen research to inform policy makers and value chain actors about the contribution of NTFPs to livelihoods and the economy;
- encourage a consensus between the actors in the value chains (harvesters, traders, regulators, consumers) on priority NTFPs;
- revise national forestry laws and their implementation to ensure a harmonized regional approach;
- adopt a realistic and common methodology for data collection and monitoring.


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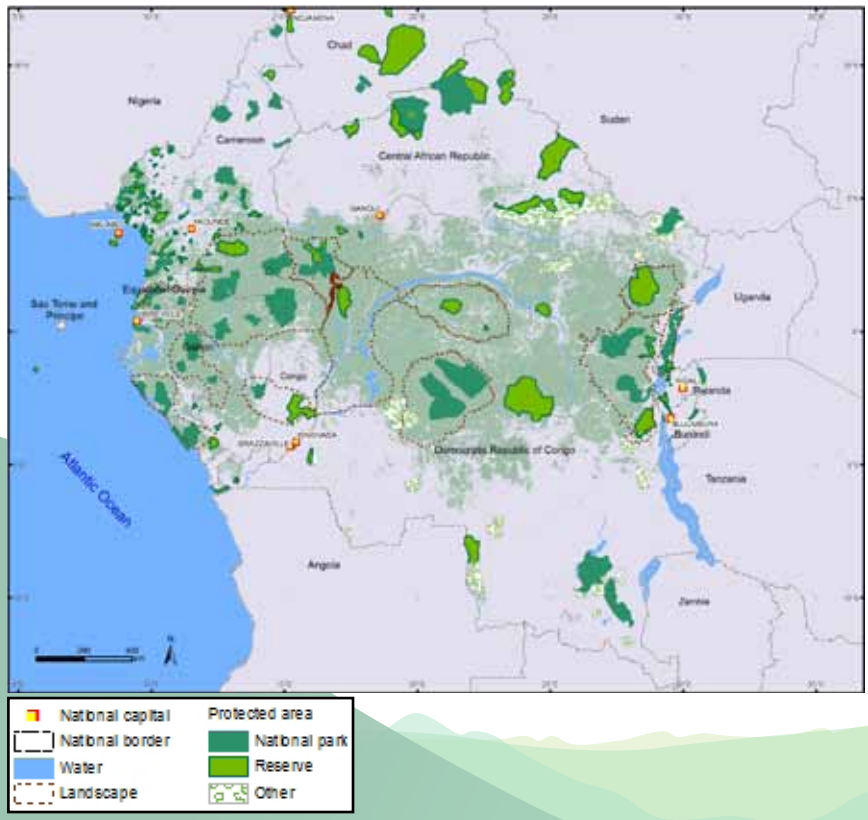
In Africa, protected areas (PAs) are an important option in land use planning for achieving the objectives of conservation, and supporting sustainable development policies and poverty reduction.

In the context of the Congo Basin Forest Partnership (CBFP), a new paradigm now designs PAs, not as isolated conservation entities, but as core components of landscape scale ecosystems. Effective management of PAs should be designed in a management strategy that takes into account, at this larger scale, competitive land use patterns in peripheral areas and socio-economic needs of local communities.

Thus, the development of PAs in the CBFP landscapes has gradually produced many tangible and intangible outcomes. They include namely: the production of empirical knowledge on key biodiversity elements in the Congo Basin to facilitate conservation, formulation of national policies and laws on the management of PAs, the involvement of local and indigenous people in planning and running PAs and their periphery.

Although great strides are being made in the management of PAs in the Congo Basin, their actual development still faces several constraints: very few protected areas have a management plan; in the context of protected areas that cut across broader landscapes, the drawing up of management plans has become more complex; contributions from national budgets and improvement of existing funding mechanisms are insufficient to guarantee necessary long-term financing; more sustainable solutions for adequate fundraising and management must be found (for example, the Sangha Tri-National Foundation (FTNS)).



Map of landscapes and protected areas of the 10 COMIFAC member countries

Also, it is timely to take into consideration new guidelines in international discussions on the environment and sustainable development which are now primarily focused on climate change and are moving more towards REDD or payments for environmental services. PAs of the CBFP landscapes are valuable reservoirs for carbon sequestration and capture, as such, it becomes important to include them in international negotiations on REDD+.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The increasing demand for land resources compels COMIFAC member countries to engage in formulating public policies on land use planning.

This planning, which must effectively respond to local, national and international interests, is a complex but critical process for sustainable development, because it must balance different competing or even incompatible sectoral interests. It requires analysis and projection of developmental trajectories, informed decisions regarding arbitration and conflict resolution and, above all, political will and local acceptance.

The laws and traditions of Central Africa create a legal duality between modern and traditional recognition system of land rights. Clarification of these rights is a key element in the land use planning process.


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Zoning, a major component of land use planning, refers to the designation of permitted or conversely unpermitted uses of land based on mapped zones which separate one set of land uses from another. The creation of PAs, community development areas, logging concessions and other resource extraction areas are essential for successful zoning.

Currently, 46 % of the 1.6 million km^2 of the dense humid African forest has already been allocated as logging concessions or designated as PAs. However, the mining and agro-industrial sectors are booming and the overlapping of these activities with other land uses, such as production forests and conservation areas, for example, are sources of conflict.

In Cameroon, brainstorming on the allocation of forested land went on for a decade. In the 1990s, the first exercise led to the land use plan of the southern part of Cameroon. The method consisted in demarcating forests, mapping existing PAs, logging titles and agro-industrial zones. A buffer zone was reserved on both sides of roads and around residential areas to satisfy rural development needs. Land needs projections were made for a 25-year period.

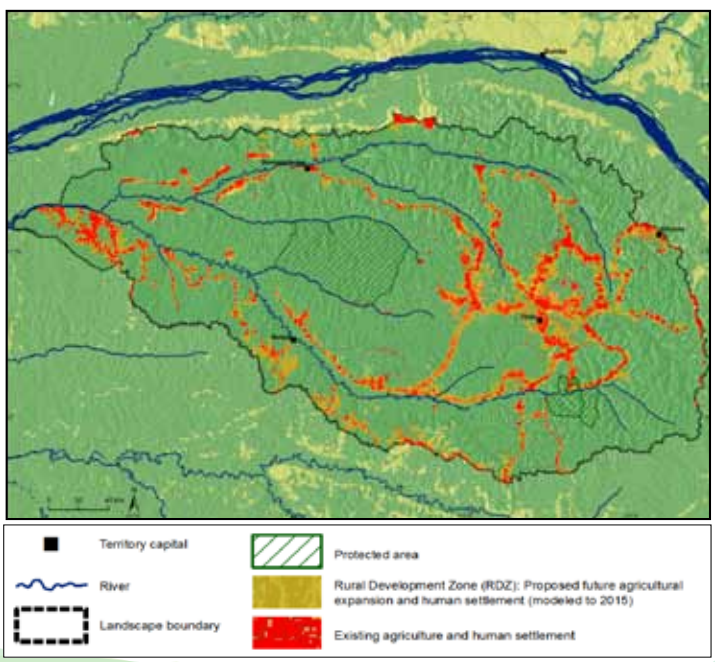
A second exercise, involving representatives from 10 ministries, helped develop a land use plan taking into account the views and comments of private actors and civil society representatives. However, in Cameroon, natural resource management as practiced today, suffers from insecure forest land tenure. Sectoral ministries allocate land independently from other sectors, resulting in conflicts across sectors and on the ground.

In the DRC, the 2002 Forest Code provides for the zoning of forests into "permanent production forests", "classified forests" and "protected forests". In 2009, a National Steering Committee was set up to oversee the zoning of Congolese forests. Macro-zoning activities, aimed at identifying at the national level permanent production forests, PAs and major areas of specific use, must be followed by the "classification" of forests and public inquiries prior to the granting of concessions.

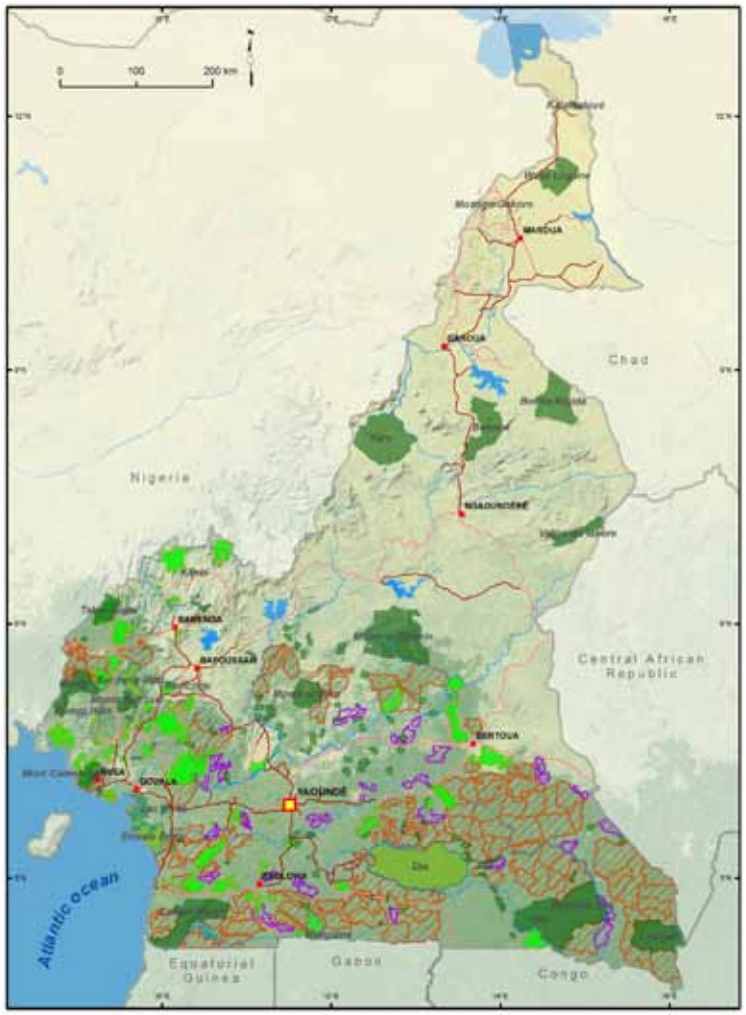
This process must take into consideration the needs of local communities while preserving the forest in key biodiversity areas. Within some macro-zones, participatory mapping and spatial modelling of micro-zones provide an understanding of geographic priorities for conservation and rural development.

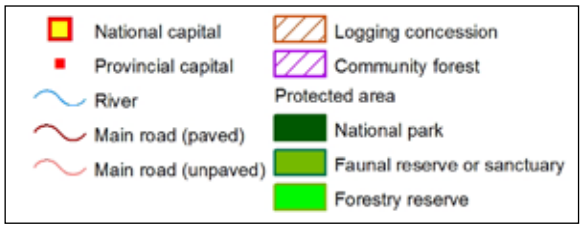
For example, in the Maringa-Lopori-Wamba Landscape in the DRC, the use of biodiversity data, the contribution of stakeholders in the landscape and spatial modelling, have helped identify areas of human influence, potential human-wildlife conflict, wildlife corridors, and areas with very high priority for conservation or others suitable for agricultural extension. From this exercise, a map of temporary macro-zones was drawn. Locally, spatial models have been complemented by participatory mapping at a finer scale and by collecting data with local communities to demarcate a network of micro-zones.

This example shows that through discussions and negotiations between various stakeholders, it was possible to determine the limits and rules for further agricultural expansion to satisfy future needs with a view to sustainable development.

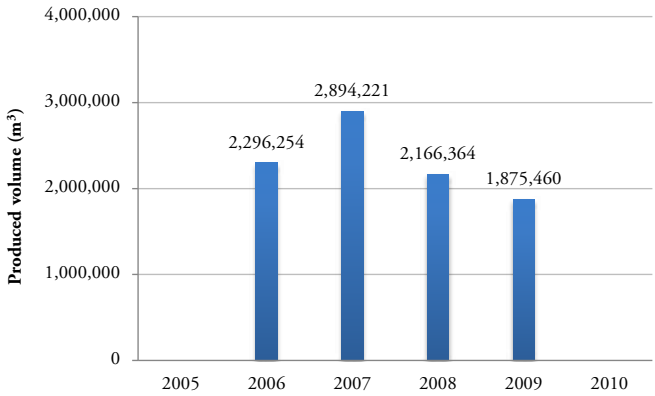


Location of the most optimal areas for future agricultural expansion in the Maringa-Lopori-Wamba Landscape

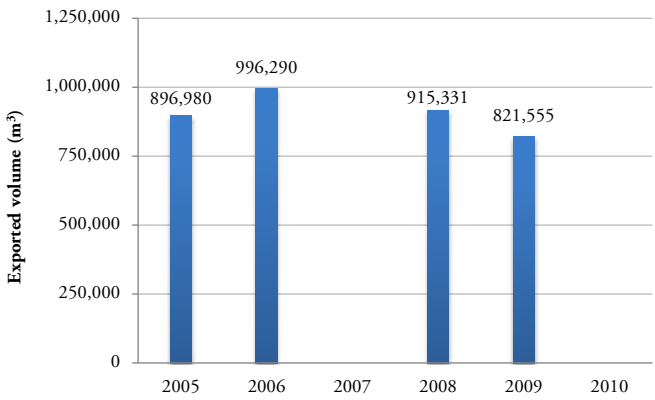




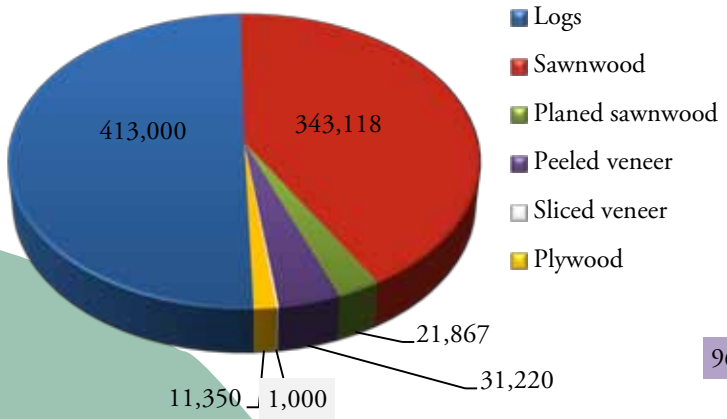
Annual log production



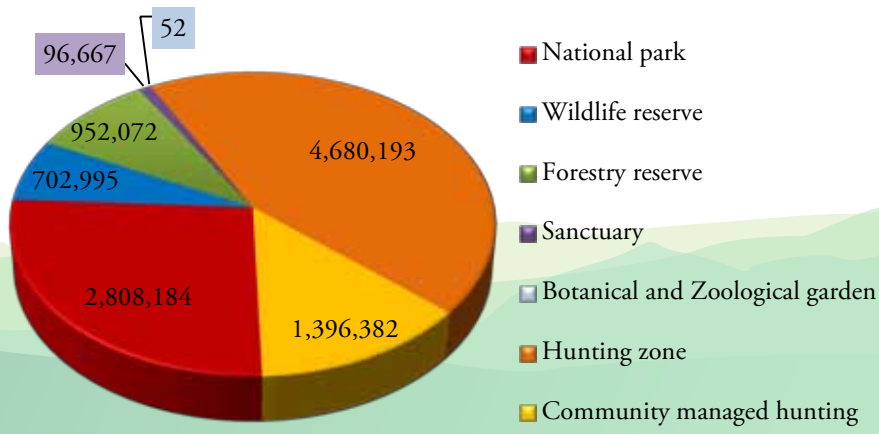
Annual exports



Exports by type of product in 2009 (m³)

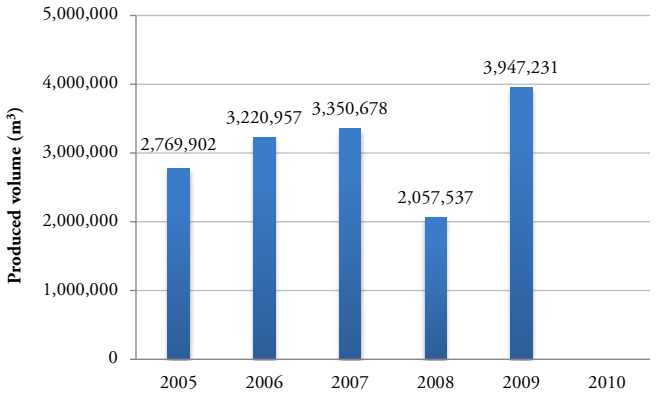


Protected areas in 2009 (hectares)

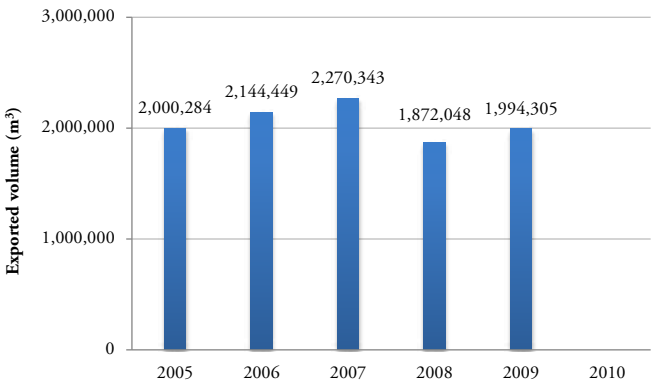


National capital
Provincial capital
Main road (paved)
Main road (unpaved)
River
Protected area
Logging concession
Forest Concession under Sustainable Management (CFAD)
Provisional Convention of Management, Exploitation and Processing (CPAET)

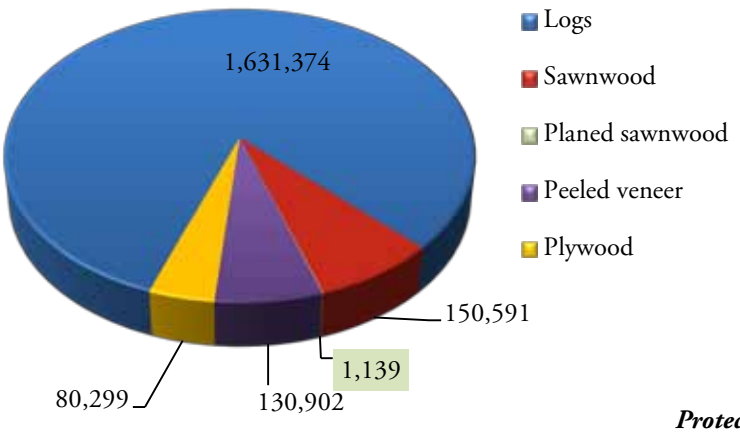
Annual log production



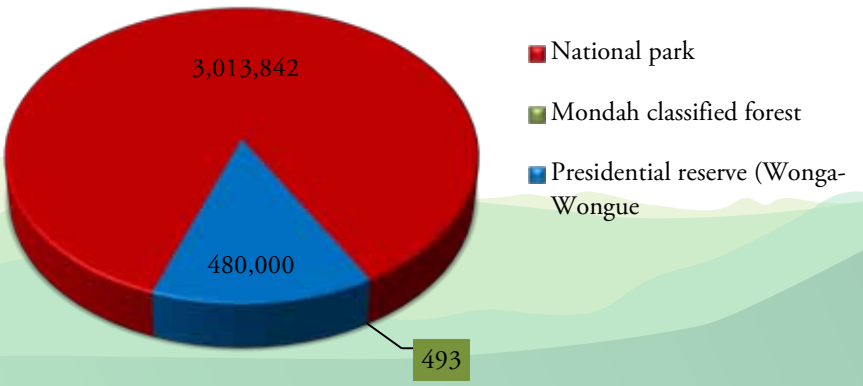
Annual exports

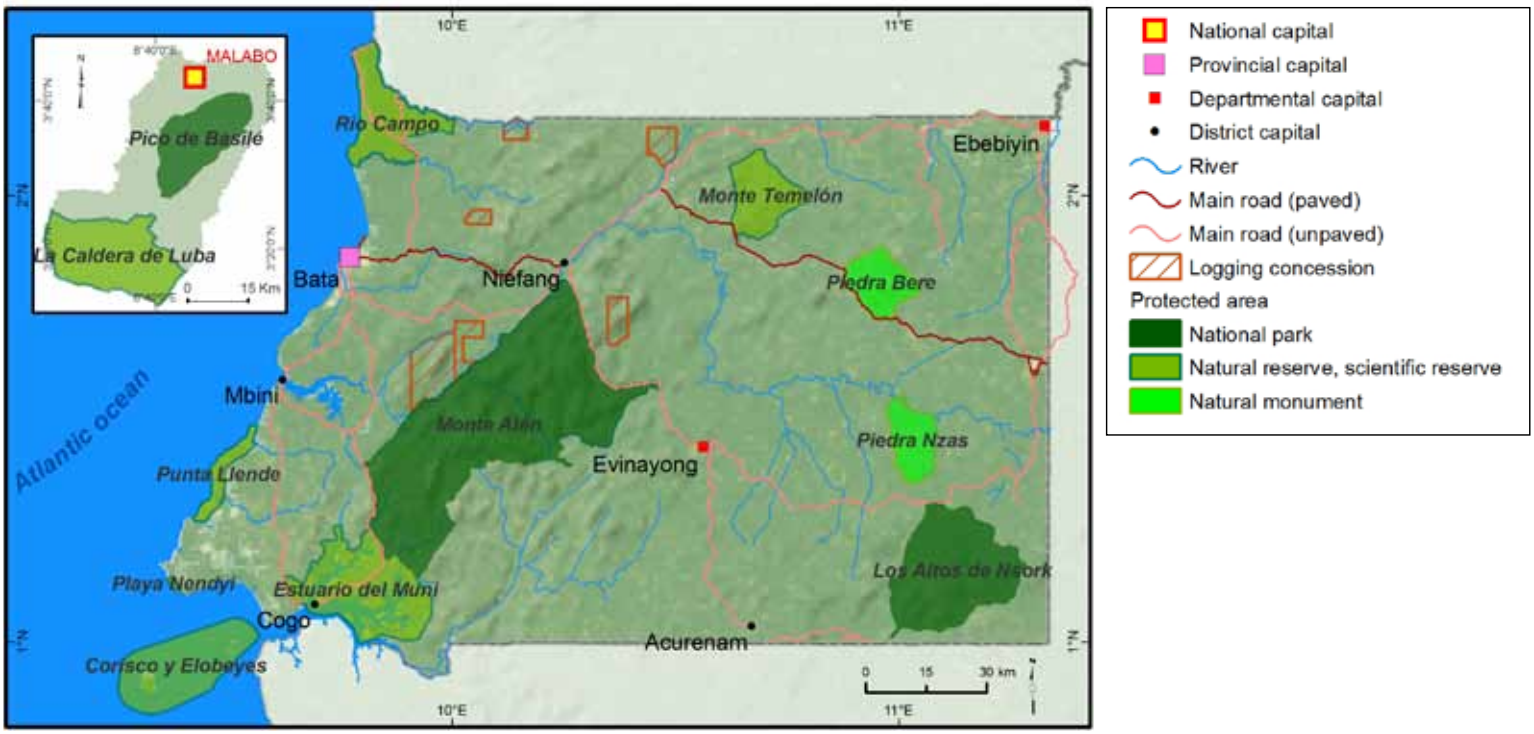


Exports by type of product in 2009 (m³)

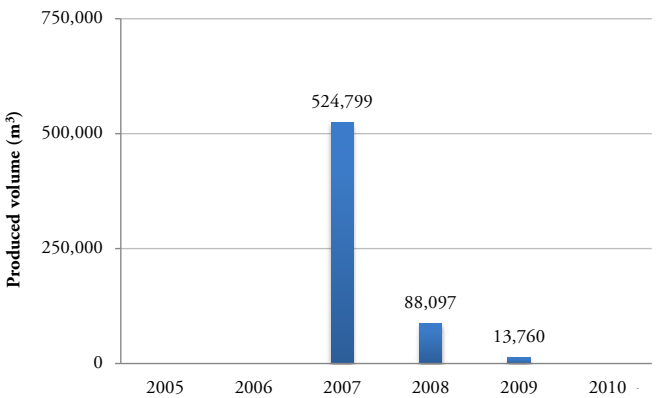


Protected areas in 2009 (hectares)

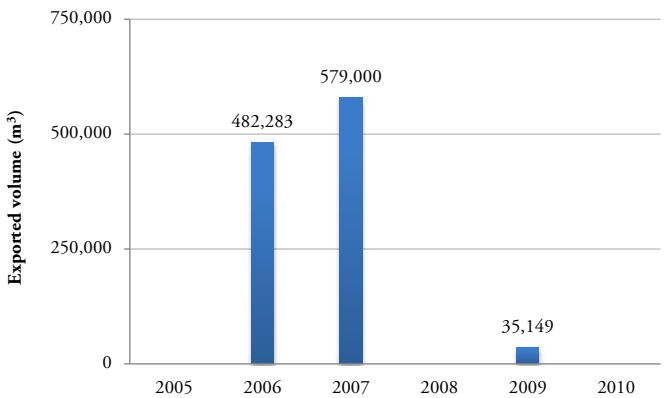




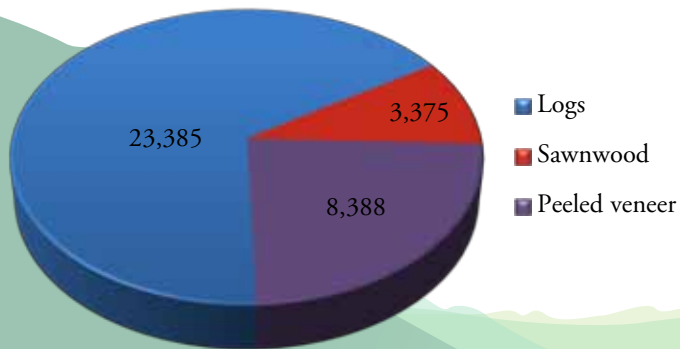
Annual log production



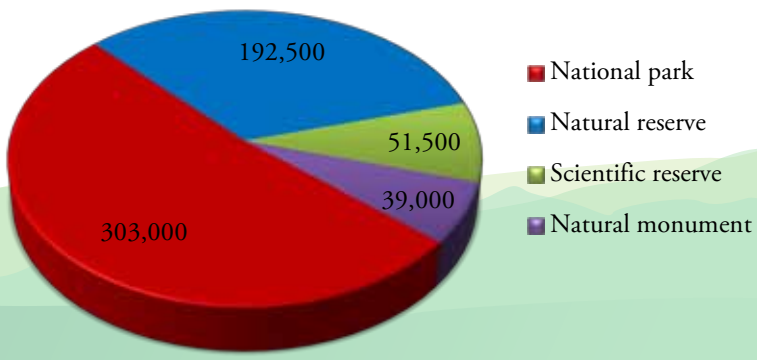
Annual exports

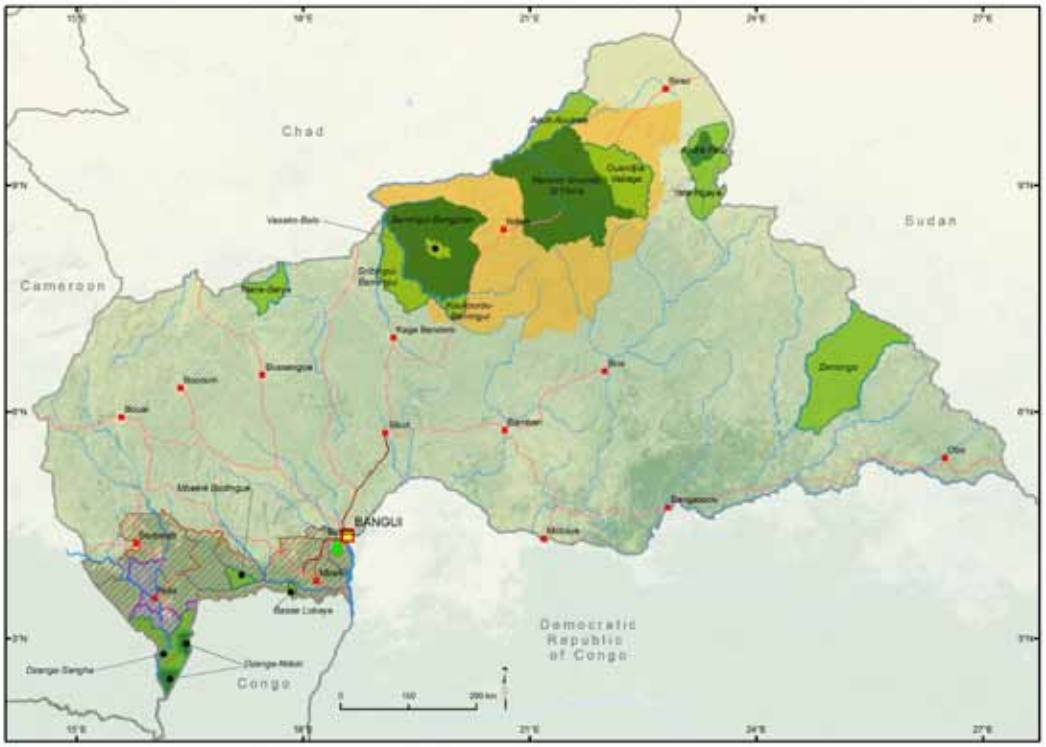


Exports by type of product in 2009 (m³)



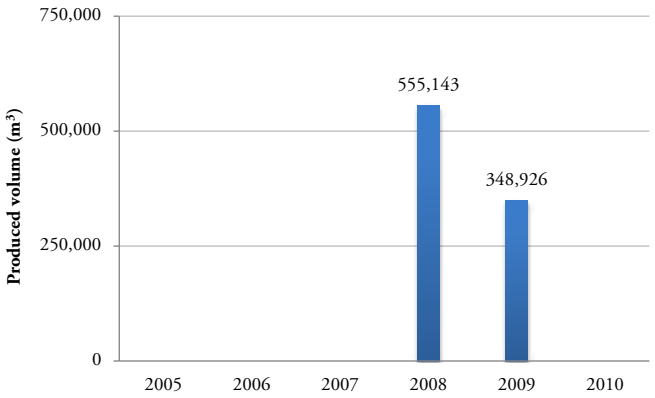
Protected areas in 2009 (hectares)



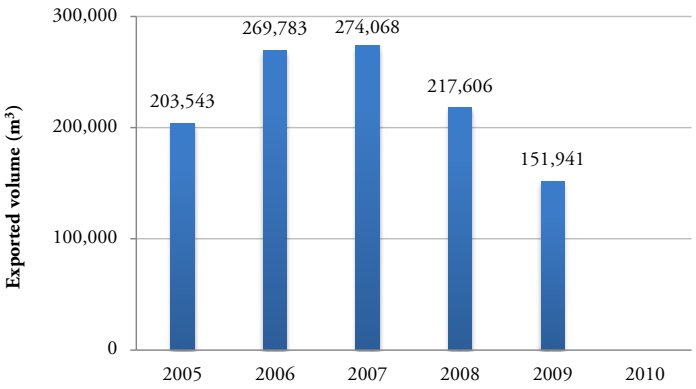


National capital
Prefecture capital
River
Main road (paved)
Main road (unpaved)
Protected area
National park
Reserve
Safari and community managed hunting zones
Other
Logging concession
Allocated
Not allocated

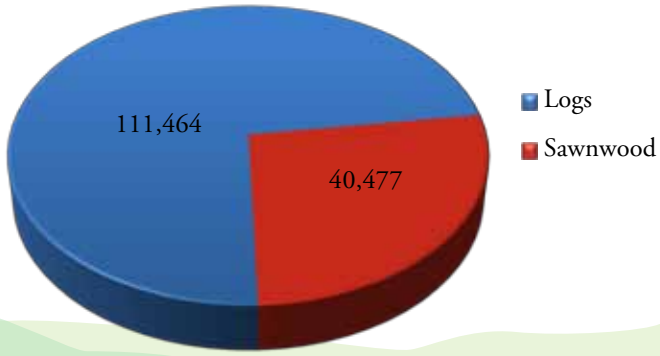
Annual log production



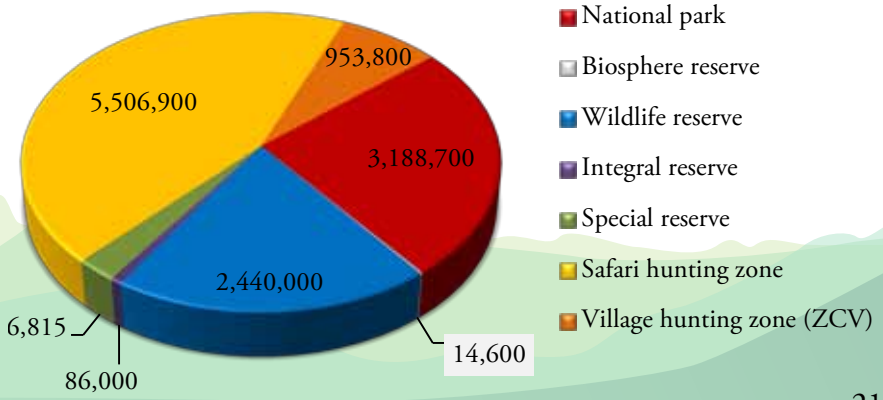
Annual exports

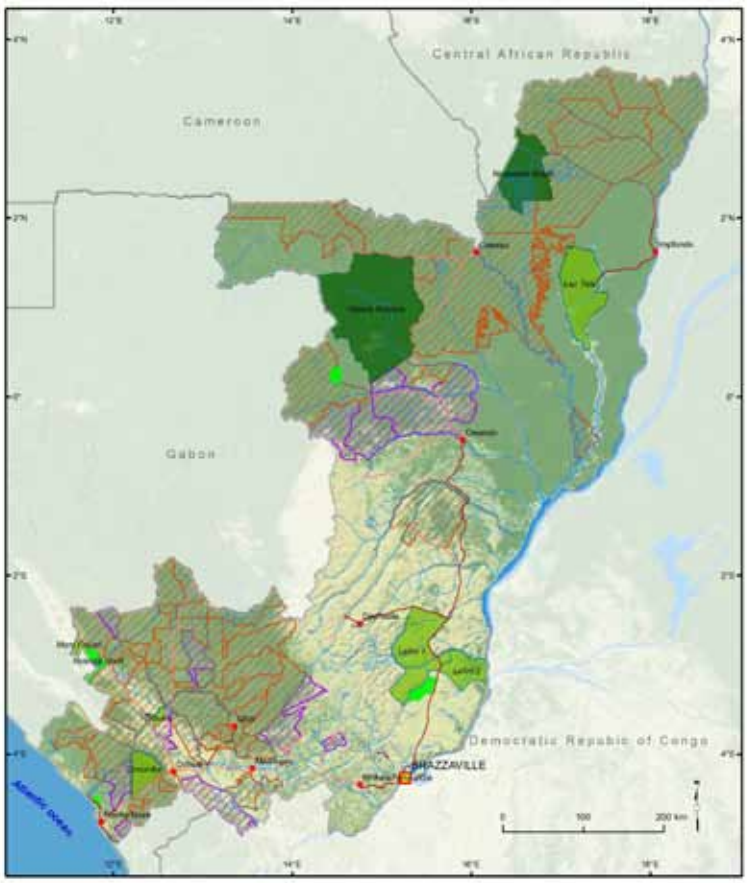


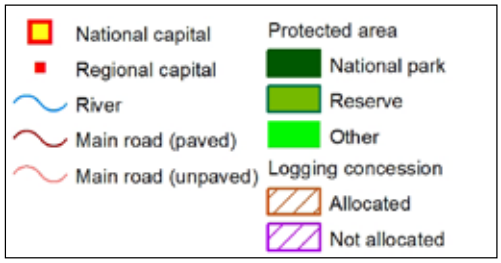
Exports by type of product in 2009 (m³)



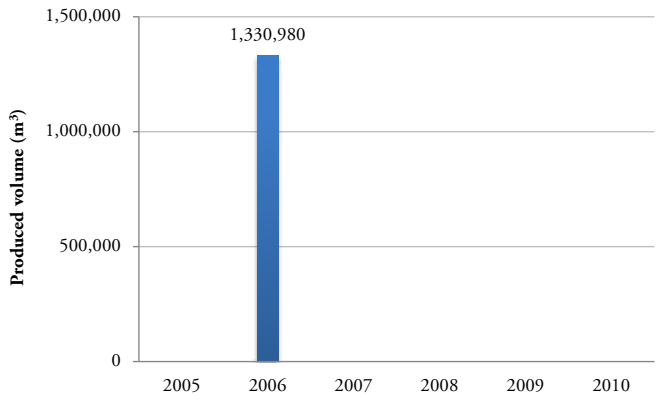
Protected areas in 2009 (hectares)



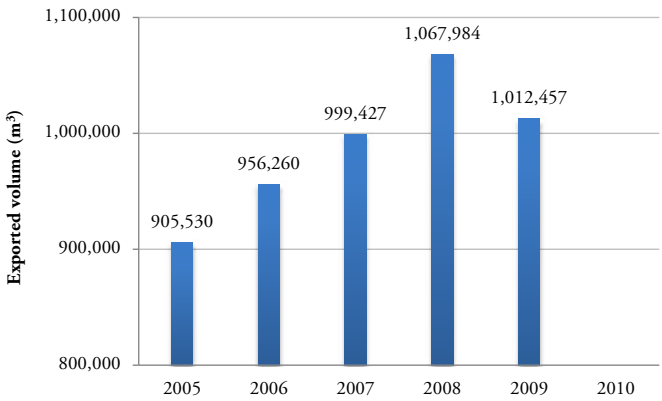




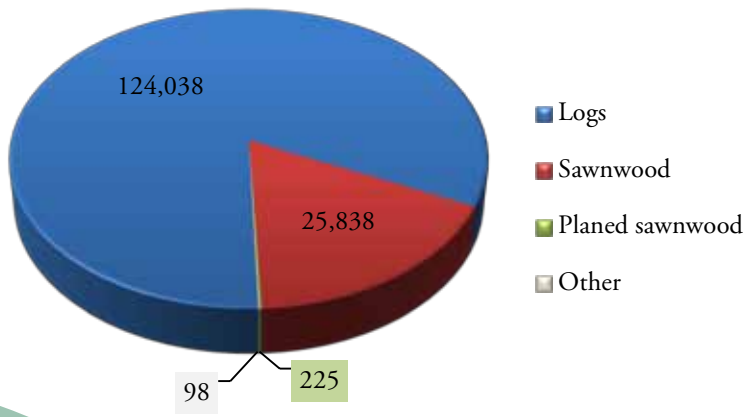
Annual log production



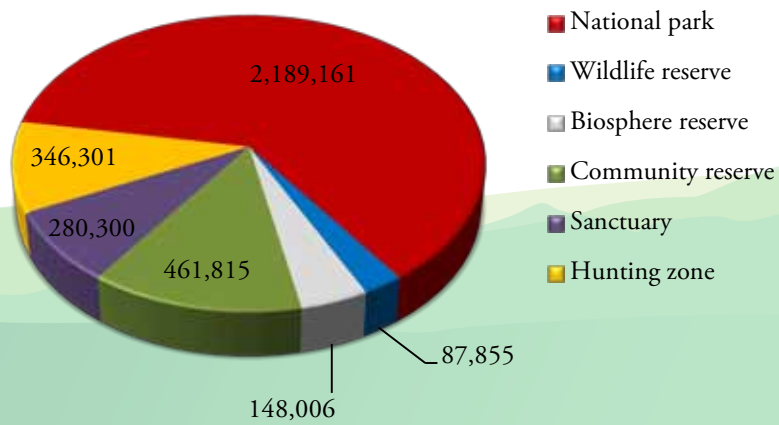
Annual exports

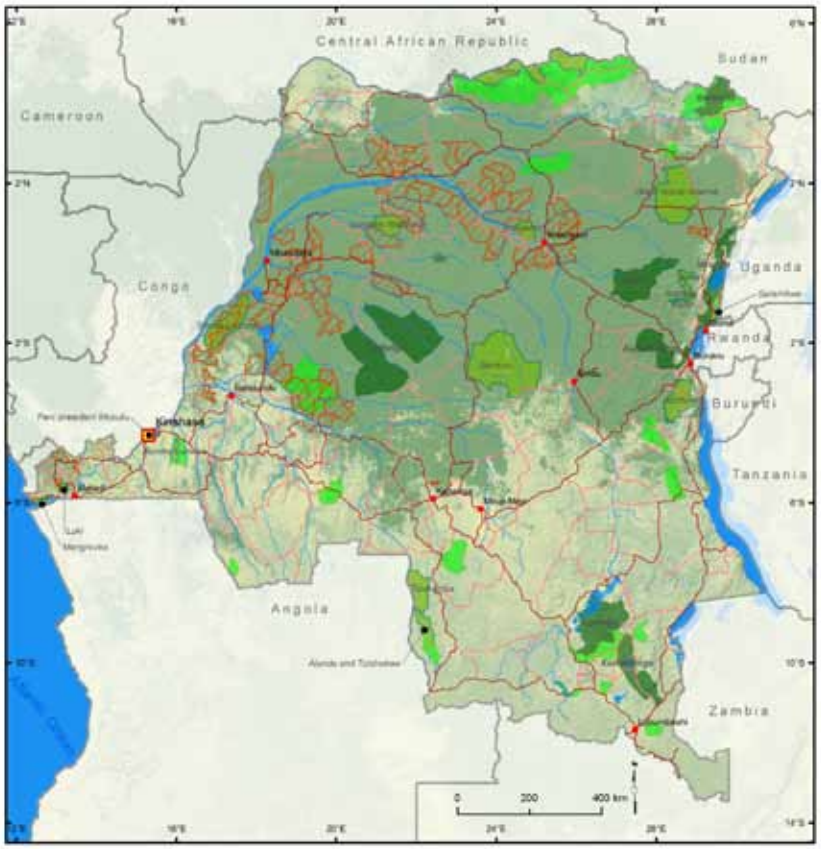


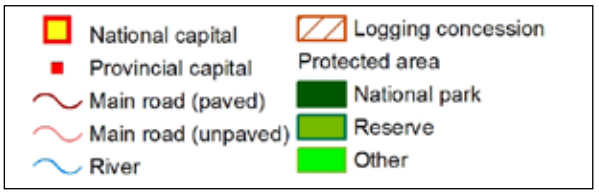
Exports by type of product in 2009 (m³)



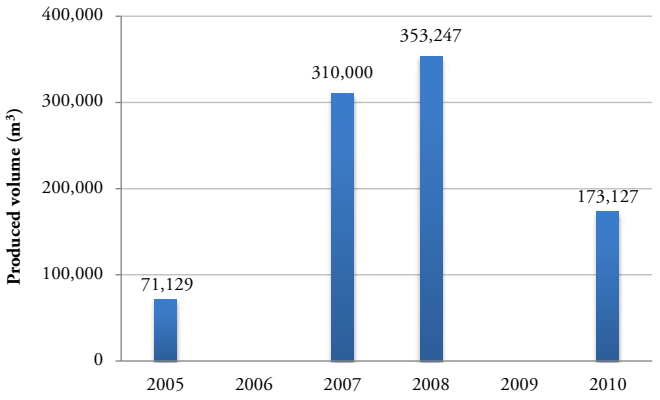
Protected areas in 2008 (hectares)



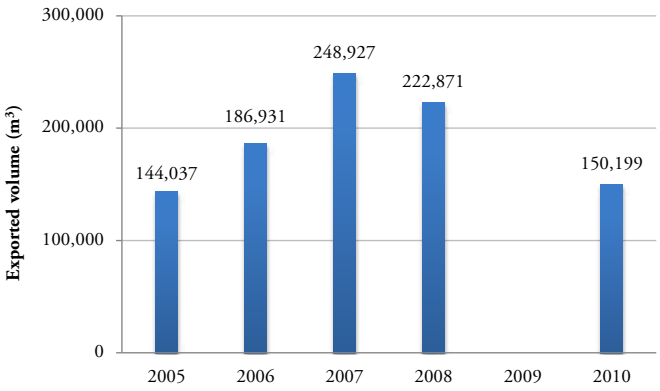




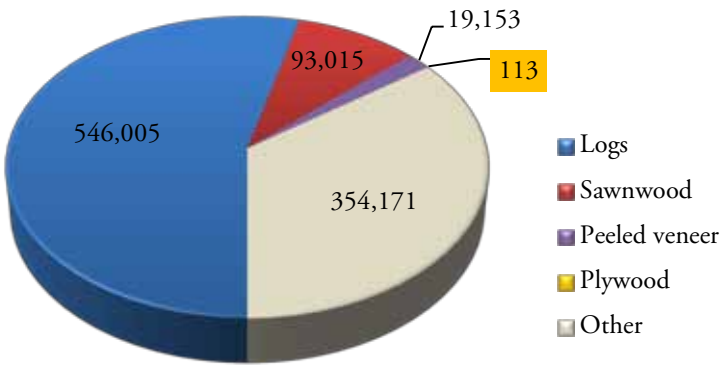
Annual log production



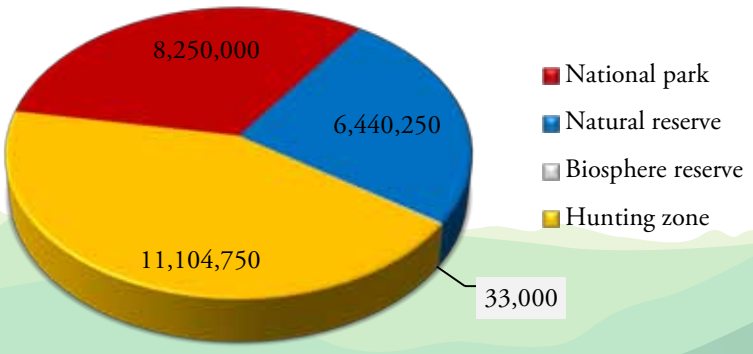
Annual exports



Exports by type of product in 2010 (m³)



Protected areas in 2009 (hectares)



The Observatory for the Forests of Central Africa (OFAC) was created to satisfy COMIFAC's need to acquire a reference observatory in order to have a database and updated knowledge on forest resources.

OFAC is a permanent body which has among other responsibilities to (i) write a periodic report on the state of the forests in Central Africa and (ii) maintain an updated database on monitoring, including geo-spatial monitoring, of Central African forests. The purpose of these products and tools is to enable States, international organizations, NGOs, private sector companies, research organizations and international and national civil society to have a credible information base that can be used to support decision-making, political and technical, on forest management in Central Africa in order to improve the living conditions of the population and preserve the unique biodiversity of these forests.

Thus, OFAC enables COMIFAC and members of the CBFP to have an essential management and knowledge sharing tool for better governance and sustainable management of forest ecosystems.

The sources of data presented in this document are available on the OFAC website (http://www.observatoire-comifac.net/edf2010.php)

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