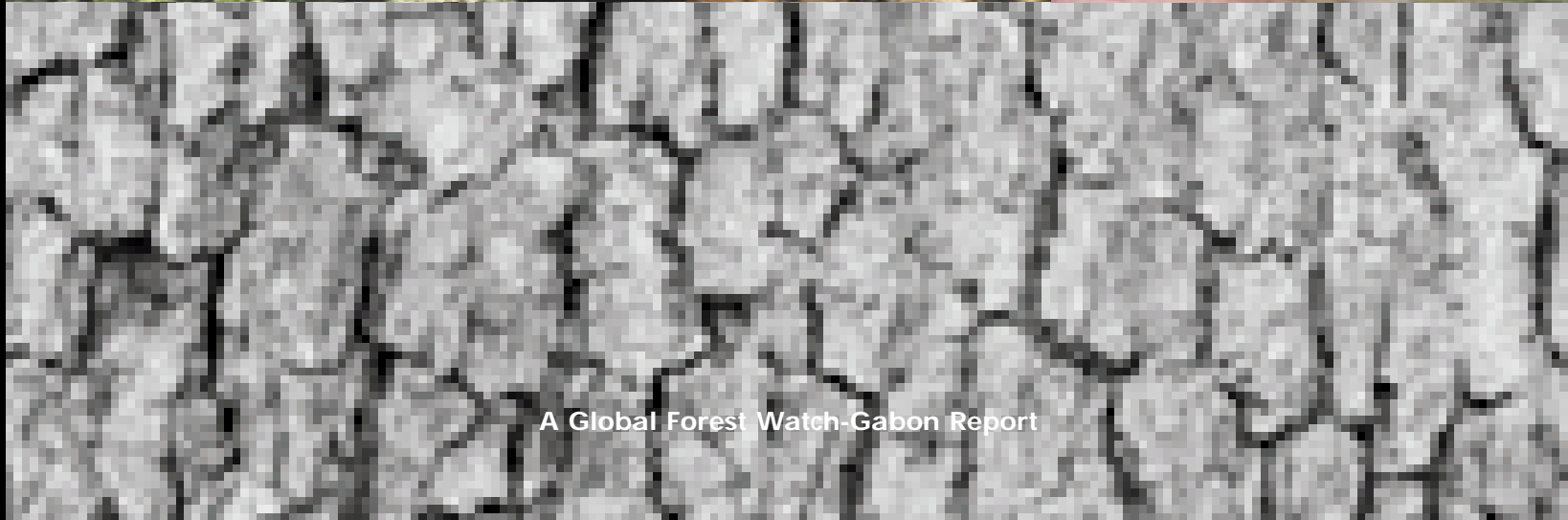
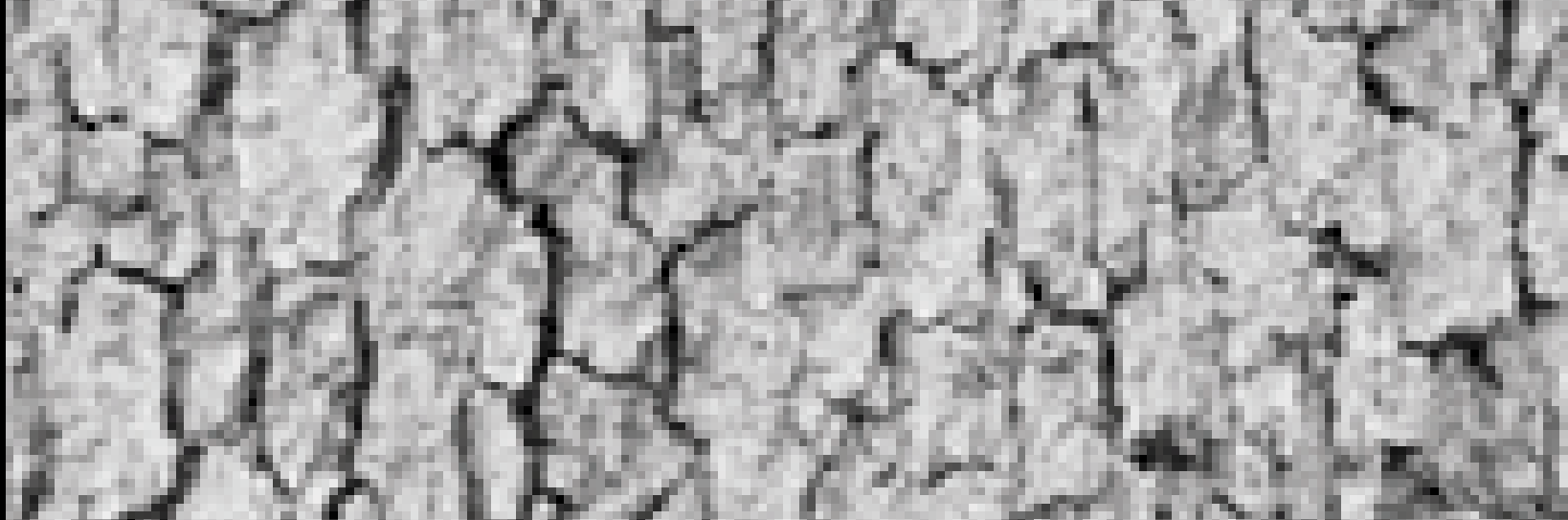




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A FIRST LOOK AT LOGGING IN GABON



An Initiative of



WORLD RESOURCES INSTITUTE

A Global Forest Watch-Gabon Report

What Is Global Forest Watch?

Approximately half of the forests that initially covered our planet have been cleared, and another 30 percent have been fragmented, or degraded, or replaced by secondary forest. Urgent steps must be taken to safeguard the remaining fifth, located mostly in the Amazon Basin, Central Africa, Canada, Southeast Asia, and Russia. As part of this effort, the World Resources Institute in 1997 started Global Forest Watch (GFW).

Global Forest Watch is identifying the threats weighing on the last frontier forests—the world’s remaining large, relatively undisturbed forest ecosystems. By 2005, our goal is to have Global Forest Watch chapters up and running in 21 countries. These nations account for about 80 percent of the world’s remaining forests. In the longer term, GFW monitoring will extend to nonfrontier forest regions, where ongoing development threatens smaller tracts of unique, and often highly diverse, natural forests.

GFW is an independent network of national and/or local organizations that monitor and map logging, mining, road-building, and other forest development within major forested regions of the world. Each organization gathers and reports similar information, with an emphasis on comparable, preferably mapped information that covers entire forest ecosystems.

We also recognize that forests straddle political boundaries. At the global level, we hope that the publication of national reports using comparable data and mapping techniques will provide, in the aggregate, a valuable picture of global trends in development activities and environmental conditions in the world’s forests.

GFW’s principal role is to provide access to better information about development activities in forests and their environmental impact. By reporting on development activities and their impact, GFW fills a vital information gap. By making this information accessible to everyone (including governments, industry, nongovernmental organizations (NGOs), forest consumers, and wood consumers), GFW promotes both transparency and accountability. We are convinced that better information about forests will lead to better decisionmaking about forest management and use, which ultimately will result in forest management regimes that provide a full range of benefits for both present and future generations.

To this end, GFW (i) tracks existing and planned development activities, (ii) identifies the actors—including companies, individuals, government agencies, and others—engaged in this development, (iii) monitors the implementation of laws and regulations established in the interest of forest stewardship, and (iv) provides data on forest ecosystems to highlight the environmental and economic tradeoffs that development options entail.

GFW is an information service. Our mandate is strictly limited to providing objective, credible, peer-reviewed data, and making that information widely available.

All Global Forest Watch publications are available from the World Resources Institute as well as on our website at www.globalforestwatch.org.

What is GFW-Gabon?

The Global Forest Watch-Gabon chapter consists of local environmental nongovernmental organizations, including: the Amis de la Nature-Culture et Environnement [Friends of Nature-Culture and Environment] (ANCE), the Amis Du Pangolin [Friends of the Pangolin] (ADP), Aventures Sans Frontières [Adventures without Borders] (ASF), the Centre d’Activité pour le Développement Durable et l’Environnement [Activity Center for Sustainable Development and the Environment] (CADDE), the Comité Inter-Associations Jeunesse et Environnement [Youth and Environment Inter-Association Committee] (CIAJE), Forêt et Développement [Forest and Development] (FD), and Image Gabon Nature [Gabon Nature Image] (IGN). Future GFW-Gabon activities will include gathering field data, conducting field checks, and documenting developments in other sectors that affect forests, such as mining, oil extraction, and road construction.

All data presented in this report are available at www.globalforestwatch.org or by contacting us at the address provided on the inside back cover.

A FIRST LOOK AT LOGGING IN GABON



Linking forests & people

www.globalforestwatch.org

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FOREWORD

This report, *A First Look at Logging in Gabon* is the first product of a remarkable new alliance called Global Forest Watch (GFW), which was launched by World Resources Institute with non-governmental organizations and local leaders from frontier forests around the world. GFW links satellite imagery with on-the-ground investigation by local groups to assemble powerful information about risks to the world's great forests, and then uses the Internet to make that information widely available.

Technological innovation is rapidly changing the way we manage and protect our forests and our environment. First, technology provides us with the tools we need to get accurate and up-to-date information about forests and other ecosystems, a prerequisite for informed decisionmaking. Second, technology provides the means to make information available to all those with a stake in how natural resources are managed. Information is powerful, and this information will help assure that resources are managed for the common good.

Until recently, there was little systematic information on the condition of the world's forests. It was impossible to say how much forest had been lost and how much remained as frontier forest—large, intact, and fully functioning natural ecosystems. Frontier forests help to slow global warming because they store vast quantities of carbon. Forests control flooding, purify water, and cycle nutrients and soil, ultimately influencing food production for billions of people. Frontier forests house an incredible array of living organisms that provide the genetic material for valuable new products and a foundation for the resilience of natural systems.

In 1997, WRI and our partners collaborated with scientists and local experts around the world to map out remaining frontier forests and areas that had been cleared in past generations. This work could not have happened without new information tools at our disposal: geographic information systems to store and analyze data; access to maps derived from satellite images; and the Internet to share drafts and exchange results with our collaborators. Our report, *The Last Frontier Forests, Ecosystems and Economies on the Edge*, established that just 20 percent of the frontier forests that once blanketed the earth remain today.

Much of what is left is under intense development pressure, primarily from logging and other extractive use.

Existing forest monitoring efforts have been limited primarily to tracking deforestation and forest degradation after it has happened. This work has limited use for management decisions, because once an area has been cleared or degraded, it is often too late to do anything about it. To fill this information gap, GFW seeks to provide early warning data on forest development and on the environmental and economic tradeoffs this development entails. GFW empowers local organizations to monitor and report on their forests, assisting growing local civil society institutions to gain access to remote sensing technology and to the power of the Internet. They will be connected to a worldwide network of partners bound together by a commitment to accurate information and open dialogue about forest management. Grounded in the idea that more public information helps create better outcomes, GFW aims to become an independent source of timely and practical information on who is developing forests, where, and how.

This report reflects the work of seven Gabonese environmental organizations. It is the first civil society document ever to present complete, up-to-date, and peer reviewed information on the logging industry in Gabon. Gabon has vast forest resources, but rapid growth of logging activity may threaten those resources. If managed properly, Gabon's forests could offer long-term revenues without compromising the ecosystems' natural functions. The authors found information about forest development unreliable, inconsistent, and very difficult to obtain. We believe that more public information will promote accountability and transparency and favor the implementation of commitments made to manage and protect the world's forests, which would significantly slow forest degradation around the world.

Over the course of the coming months, GFW will continue to make more information available rapidly to an ever wider audience. Forest information and maps will be on-line, as GFW develops a state-of-the-art web-site (www.globalforestwatch.org) to post results from its multiple field activities in Cameroon, Canada, Chile, Gabon, Indonesia, Russia, and Venezuela. Reports, maps, and other information will be available for download, and the sources of the data will be transparent. Anyone with access to the Internet will be able to consult GFW data and to contribute by providing information or views directly on-line. We hope that the array of products and activities will contribute to a more constructive dialogue between forest managers and users at the local, national, and international levels.

We are grateful to the German Federal Ministry for Economic Cooperation and Development (BMZ), the AVINA Foundation, the Turner Foundation, the Biodiversity Support Program (BSP), the United States Agency for International Development/Central African Regional Program for the Environment (USAID/CARPE), World Wildlife Fund-Gabon, and the World Resources Institute for their generous support of GFW activities in Central Africa.

Jonathan Lash
President
World Resources Institute

KEY FINDINGS

- **Gabon's forests are rapidly being developed by the logging industry.**

In 1957, fewer than 10 percent of Gabon's forests were allocated as logging concessions. Today, more than half are allocated as logging concessions. Areas under logging concessions have doubled in the past five years.

Wood production has nearly doubled in the past decade.

- **Gabon's forest industry may be vulnerable to market swings because of a lack of diversification.**

A single timber species, Okoumé, accounts for 73 percent of export volumes.

Between 1995 and 1997, half of all logs exported by Gabon have been sent to Asian countries.

More than one third of the areas under logging concessions are controlled by five companies; all five are either partially or wholly owned by foreign interests.

More than 90 percent of Gabon's log production is exported.

- **Current laws designed to manage and protect forests in Gabon have been poorly applied and enforced.**

Three fourths of the planned application decrees codifying the law were never written.

Only 5 of 200 logging companies have initiated work on a management plan.

In 1997, only 100 agents were available to monitor and inspect 332 logging concessions covering 86,000 square kilometers—an area roughly the size of Austria.

- **The proposed reform of Gabon's forestry policy provides an opportunity to help rectify these problems by setting new standards for better natural resources management.**

EXECUTIVE SUMMARY

Central Africa's forests have a long history of human use. Large-scale commercial logging, however, is a recent phenomenon. This report addresses the following questions:

- How much forest has been logged and at what rate?
- What are the economic benefits of this activity and who are the beneficiaries?
- Is the market sufficiently diverse to weather fluctuations?
- What are the forest regulations and laws, and is the Gabonese government able to enforce them?
- What efforts are under way to promote longer term management of natural resources?

The first section gives an overview of logging activities within Gabon's forests, using six indicators. These indicators show that logging has expanded rapidly from coastal areas to the country's interior. Although at least two thirds of Gabon's original forest cover is thought to remain, the actual extent of current forest cover is unknown (*Indicator 1*). As of 1999, more than three quarters of Gabon's forests have been, or currently are, allocated as logging concessions (logged, under logging development, or slated for logging) (*Indicator 2*). As is the case elsewhere in Central Africa, foreign interests exert significant control over the logging sector (*Indicator 3*). Most of the rapid increase in logging

development has taken place recently. For example, the area allocated to logging concessions has doubled in the past five years (*Indicator 4*). Gabon's wood production and export statistics (*Indicator 5*) reveal that the industry lacks diversification, because it relies mostly on a single timber species (Okoumé) and exports the majority of its logs to the Chinese and French markets. After extremely high levels of production in the 1990s, Gabon has suffered from the aftereffects of the Asian economic crisis of 1997. Quotas were imposed on production levels as export volumes dropped by more than 50 percent in 1998. Finally, a look at the logistical resources of the Ministry of Water and Forests (*Indicator 6*) demonstrates the mismatch between their operational capacity and the magnitude of the work they have to achieve. Existing data are incomplete and sometimes of questionable accuracy, illustrating the disarray of forestry information and the challenges faced by the administration to properly manage this resource.

The second section summarizes Gabon's forestry law and tax system. The major problem with forestry legislation in Gabon is that it is weak and has been poorly implemented and enforced.

Finally, the Gabonese government, nongovernmental organizations, and some elements of the private sector have undertaken efforts to promote long-term management of forest resources. This report showcases the work of two government agencies and one logging company trying to promote better management of natural resources through the creation and use of new management tools and guidelines.

CHAPTER 1 INTRODUCTION

Why Are Congo Basin Forests Important?

Forests provide a range of ecological, economic, and social services to humans, including protection of water and soil resources. Forests also act as storehouses of carbon, much of which is released into the atmosphere when they are cleared, contributing to the buildup of greenhouse gases. In addition, forests are the main reservoir of terrestrial biological diversity and are a vital resource for millions of indigenous people. Forest products also provide the foundation of many local and national economies.¹

The Congo Basin's tropical forests, covering more than 198 million hectares (ha) in 1995, are the second largest in the world after those of the Amazon Basin.^{2,3} These forests span six countries: Cameroon, the Central African Republic, the Congo Republic, the Democratic Republic of Congo (formerly Zaire), Equatorial Guinea, and Gabon. Within the Congo Basin, between 1980 and 1995, an area about the size of Jamaica was cleared each year (1.1 million ha).⁴

Gabon's Forests

With a total land area of approximately 26.8 million ha,⁵ Gabon is the least densely populated country in Central Africa with 1.1 million inhabitants,⁶ and an average density of 4 persons per square kilometer (km²). Straddling the equator on the west coast of Central Africa, Gabon borders Equatorial Guinea and Cameroon to the north and Congo to the east and south. (See Figure 1.)

Figure 1. Map of Gabon



Depending on the source of the estimate, Gabon's forests cover between 17 million and 21 million ha (60 to 80 percent of the country).^{7,8} Home to most of the Guineo-Congolese forest ecosystem, which is known for high species richness and endemism, these forests represent a national and cultural heritage. Gabon's forests also serve as a huge carbon reservoir sequestering between 0.94 and 5.24 gigatons of carbon.⁹ Until now, Gabon's small population, combined with high revenues from oil production and high operating costs, has sheltered its forest

resources from demographic, agricultural, and industrial pressures. With declining oil revenues, however, increased demands have been placed upon forest resources.

Gabon's economy is largely based on nonrenewable resources such as oil, manganese, and uranium and renewable resources, many of which are derived from its forests. The forest sector constituted the country's economic mainstay until the oil boom of the 1970s. In 1998, the oil and forest sectors contributed 36 percent and 2.5 percent of the country's gross national product, respectively.¹⁰ With the recent glut of oil on the world market and the depletion of Gabon's oil reserves, new hopes are being placed on the forest sector to contribute to the sustainable development of the national economy.

There is a growing awareness in Gabon of the need to manage these forests responsibly. The government is currently developing new forest regulations and has taken steps to set aside 3.6 million ha (13 percent of the country) as protected areas. (However, logging concessions have been granted within protected areas.) Gabon has also signed several environmental treaties, but they have yet to be implemented as law.¹¹ Beyond the timber sector, the unsustainable trade of products derived from the forest, such as bushmeat, has both ecological and economic consequences. (See Box 1.)

BOX 1 Logging and the Bushmeat Trade

Although information is largely qualitative, experts conclude that logging poses a severe threat to wildlife in Central Africa.¹ Because access to current and abandoned logging roads is not properly controlled, hunting camps are often found in remote areas only recently opened by logging companies. Gabon's national media, the Ministry of Water and Forests, and other groups report increasing volumes of bushmeat being transported by logging trucks. Some of the kill is consumed within logging concessions. For example, it has been estimated that 1,200 employees consumed up to 80 tons of bushmeat in one year² in a logging camp near the Lopé Reserve in Central Gabon.

The logging industry itself, however, is not the primary market for the commercial bushmeat trade in Gabon. The growth of the logging industry facilitates access to the resource, but what fuels the trade is urban demand and the relatively quick income that it can generate. Hunting of wildlife can contribute up to 40 percent of a logging

company employee's income.³ While not reflected in national accounts, the total value of the bushmeat trade has been estimated at US\$50 million annually.⁴ Factoring in returns from elephant ivory illicitly sold on international markets, the total net worth of Gabon's "trade" in wildlife is roughly equivalent to 2 percent of GDP.⁵ Bushmeat market studies have shown that a wide range of species is affected from forest duikers (small African antelopes) to gorillas.

Because there is a lack of species population and distribution data, it is not clear whether the volume of bushmeat consumed in Gabon is sustainable at current levels. Hunters report that wildlife is becoming increasingly scarce within proximity to roads, urban centers, and towns.⁶ Hunters frequently use firearms, but metal snare wires are also quite common. Although the use of these indiscriminate killers is prohibited under law, their importation and sale are not. Because captive breeding of wildlife is limited, there is no real supply-side alternative. Although hunting should not (and could not) be banned outright, better regulation and monitoring of the trade is required to ensure both conservation and the future availability of Gabon's wildlife.

Notes

1. D.S. Wilkie, J.G. Sidle, and G.C. Boundzanga, "Mechanized Logging, Market Hunting, and a Bank Loan in Congo." *Conservation Biology* (1992).
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6. T. Hammond, World Wildlife International, personal communication (1999).

CHAPTER 2 INDICATORS OF FOREST CONDITION AND LOGGING ACTIVITY IN GABON

In the following section, we use existing data to look at the sustainability of the logging industry in Gabon through six sets of indicators. (*See Appendix I.*) Our objective is to answer the following questions:

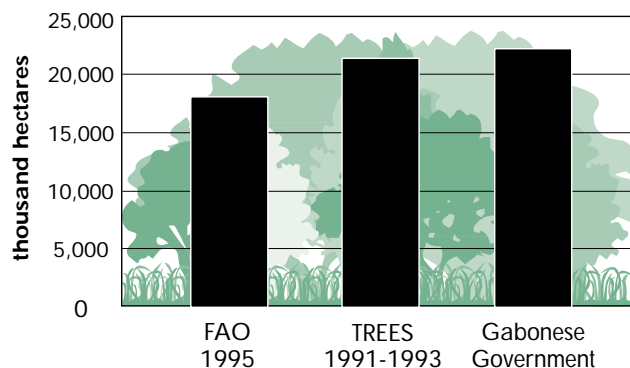
- How much forest has been logged in Gabon, and at what rate?
- What are the economic benefits of this activity, and who are the beneficiaries?
- Is the market sufficiently diverse to weather fluctuations?
- Is the Gabonese government able to enforce existing regulations and laws?

The data collected so far by government agencies and others on the logging sector are incomplete, often outdated, and of questionable accuracy. Furthermore, this type of information is rarely made public. Despite these constraints, we attempted to answer the questions above by mapping out the extent and spread of logging concessions over time and documenting basic information on major owners, wood production and export, and the logistical capacity of the Ministry of Water and Forests. This lays the groundwork for future monitoring and data collection by Global Forest Watch and others. The information presented here—while incomplete—represents the first systematic, open assessment of logging development in Gabon through maps and other data.

Perhaps the most important question—one we are not able to answer given the lack of data—is whether logging is significantly degrading Gabon’s forest ecosystems. More research is needed on the effects of logging on the densities of commercial timber species and on wildlife populations. Studies in Gabon have shown that logging causes on average a 10 percent canopy loss,¹² but up to 50 percent of the canopy may be disturbed,¹³ because several trees are typically damaged or destroyed in the process of reaching and felling a tree to be harvested.

Current logging activity is focussed on high-grading for a few species, notably Okoumé. (*See Box 2.*) This implies that few trees are actually removed and that—because Okoumé is a pioneer species—commercial stocks should regenerate rapidly. However, preliminary evidence suggests Okoumé is less adaptive to logging than once thought.¹⁴ Furthermore, because logging roads open up forests to commercial hunters (bushmeat is a delicacy in the region), timber extraction likely poses a significant threat to Gabon’s wildlife.

Figure 2. Extent of Forest Cover in Gabon According to Different Sources



Source: For full source and data information, see pp. 34-40.

Box 2 Okoumé: Gabon's Primary Export Resource

Okoumé, *Aucouméa kleineana*, is only found in Gabon, parts of Equatorial Guinea, and parts of Congo. It is the most common tree species in Gabon and is widely used by local populations, mostly for furniture and housing. Charles de Chavanne was the first European to attract attention to Okoumé logs for commercial purposes at the end of the 19th century. It was used, for example, in the National Library of Paris and in the Eurostar Train.¹ Today, it is the primary species exploited for the export market, because it makes excellent plywood. Okoumé is thought to grow rapidly and to regenerate well in clearings—suggesting that it is a species that can withstand repeated and frequent logging.

However, new evidence indicates that growth rates may be slower than previously thought (especially in younger trees). In addition, post-logging regeneration success rates are lower than expected. It has even been suggested that removal of the tallest and straightest trees through repeated harvest might eventually select for lower-quality timber, in areas where Okoumé is exploited.² Further studies are needed to resolve these questions and to ensure that foresters set realistic harvest levels that will ensure the long-term maintenance of these commercially important stocks.

Notes

1. Greenpeace, "Buying Destruction: A Greenpeace Report for Corporate Consumers of Forest Products" (Greenpeace International Publications, August 1999).
2. L. White and K. Abernethy, "Vegetation Guide of the Lopé Reserve." (ECOFAC, Gabon, 1996).

INDICATOR 1: WHAT IS THE EXTENT OF FOREST COVER?

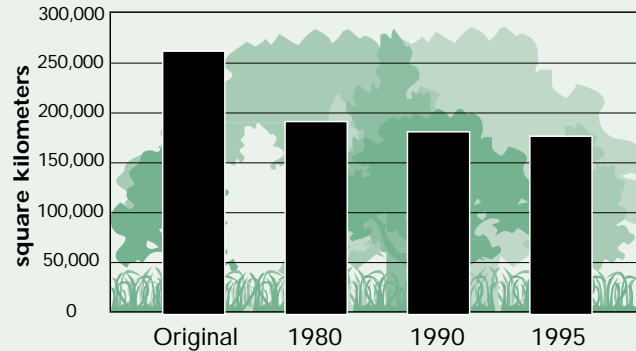
Gabon's exact forest cover is unknown; estimates vary by more than 4 million hectares.

At least three estimates exist, but they vary in age, methodology, and terminology. (See Figure 2.)

- Estimates of the Food and Agriculture Organization of the United Nations (FAO) are available for 1980, 1990, and 1995. Figure 2 presents the FAO estimate for 1995. The FAO defines forest as wooded area with at least 10 percent crown cover.
- JRC TREES (Joint Research Center Tropical Resources and Environment Monitoring by Satellites) project estimates are based on “wall-to-wall” 1-kilometer advanced very high resolution radiometer (AVHRR) satellite data that were acquired between 1991 and 1993 and that distinguish “moist closed forest.”¹⁵ TREES defines forest as wooded area with at least 68 percent crown cover.¹⁶
- Government figures do not have a clearly defined age, methodology, or terminology.

Gabon has lost between 20 and 31 percent of its original forest cover.¹⁷

Figure 3. Changes in Forest Cover in Gabon



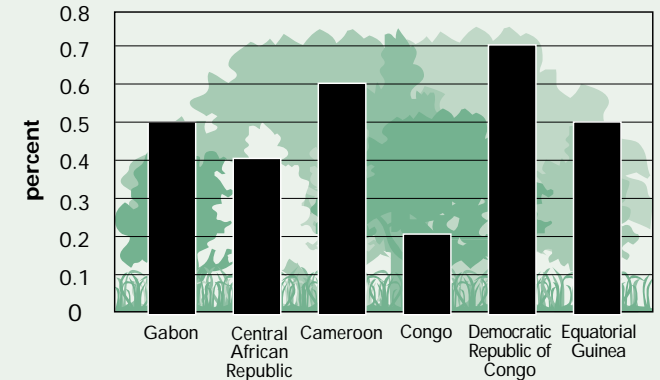
Source: For full source and data information, see pp. 34-40.

- According to FAO, Gabon's forest cover in 1995 was around 18 million ha, which suggests that 31 percent of the original forest cover has been converted to cropland or other land use.
- FAO's forest cover estimates for the tropics are standardized to a common year, using a model based on population growth rate. Because deforestation is associated with a range of factors—including land tenure, economic conditions, and development policies—this population-driven model is of questionable accuracy. However, despite these shortcomings, FAO data are the only source for measuring the rate of forest cover change over the past 15 years.

- According to the TREES project, Gabon's forest cover in 1995 was around 21 million ha, which suggests that 20 percent of the original forest cover has been converted to cropland or other land use.

Gabon's deforestation rate is about average for Central Africa.

Figure 4. Average Annual Forest Cover Change, 1990-95



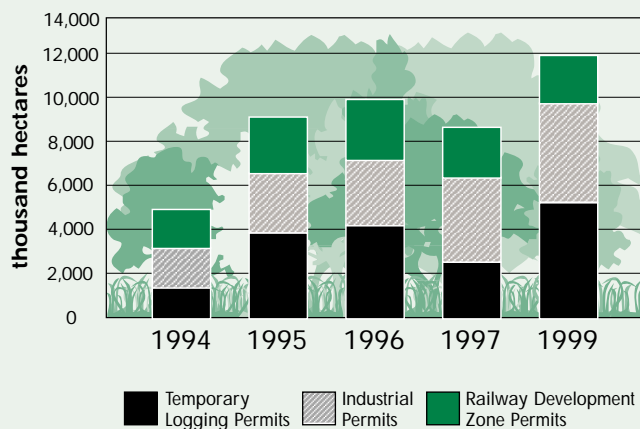
Source: For full source and data information, see pp. 34-40.

- According to FAO estimates, Gabon's annual deforestation rate (0.5 percent) is below the average for most tropical countries.
- At current rates of clearing, Gabon will lose half its forests over the next 100 years.

INDICATOR 2: WHERE IS LOGGING TAKING PLACE?

Gabon's concession area increased seven-fold between 1957 and 1999.

Figure 5. Total Concession Area, 1994-99



Source: For full source and data information, see pp. 34-40.

Much of this expansion occurred during the past five years. Concession area doubled between 1994 and 1999.

Map 1 presents a time series of logging concessions allocated since 1957.

- In 1957, concession area amounted to 1.6 million ha. In 1999, it was 11.9 million ha.¹⁸
- Initially, logging was concentrated along the coast where access and transportation were easier and cheaper.
- Over time, foresters moved farther into the interior as the pressure on the coastal zones grew in intensity. The construction of the TransGabonais railway, crossing the country from east to west, opened up large portions of previously inaccessible forest.¹⁹

- The Ministry of Water and Forests expressed its intention to conserve 12 million hectares of forest—8 million ha of which will be used for production purposes (i.e., logging, mining, etc.) and 4 million ha to create protected areas.²⁰ Given that 1999 data show that logging concessions themselves already represent almost 12 million ha, the government will have to cancel several allocated concessions to achieve this goal.

Since 1957, two thirds of Gabon's forests have been logged, are currently being logged, or are slated for logging.

Most forests where Okoumé can be found have been allocated as logging concessions since 1957.

- It is important to note that some portions of logging concessions have not been logged yet and that some areas may actually not be logged at all.

Map 2 presents the allocation dates of the logging permits valid in 1997, relative to the geographical distribution of Okoumé. This provides a picture of the extension of concessions into remoter forest areas over time.

- As will be shown in Indicator 5, more than two thirds of logs felled for production in Gabon are Okoumé. Maps 1 and 2 show that logging concessions have covered most of the distribution zone of that species. Our results suggest that to maintain current Okoumé production levels, Gabon can no longer rely on establishing new concessions in previously unexploited regions.

In 1997, valid logging concessions covered more than one third of Gabon's forests.

Map 3 shows the location of logging concessions listed as valid in 1997. Some of these concessions are not currently being logged.

- Regions where access and transportation have been facilitated by roads, railway, or the Ogooué River are logged more intensively.
- Eighty-six percent of Moyen-Ogooué's forests and 79 percent of Ogooué-Lolo's were allocated as logging concessions in 1997.

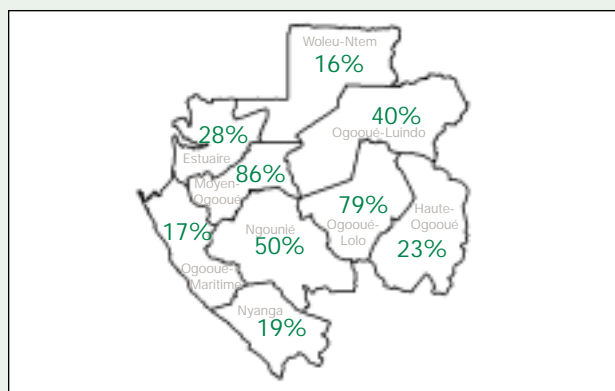
In 1997, three fourths of the concession area was concentrated in 4 provinces (Ogooué-Lolo, Ogooué-Ivindo, Ngounié and Moyen-Ogooué) along the railway. (See Table 1.)

Ogooué-Lolo and Ogooué-Ivindo house nearly half of the forest area allocated as logging concessions in 1997.

- The coast, which has been mostly depleted of commercial species after a long and intensive logging history, as well as remote portions of the country's interior are under less pressure.

Sixteen percent of Woleu-Ntem's forests and 17 percent of Ogooué-Maritime's were allocated as concessions. (See Table 1.)

Figure 6. Percentage of Forest Area under Logging Concessions by Province, 1997



Source: For full source and data information, see pp. 34-40.

There are no complete and accurate maps of logging concessions.

- The most recent official map of logging concessions dates from 1997; however, according to many local forest experts, it contains errors. Moreover, access to this map has been restricted by the Ministry of Water and Forests. The National Mapping Institute (INC) is currently updating the official map of concessions and hopes to complete this work by the end of 1999.²¹
- GFW-Gabon partners compared the 1997 map with an official list of valid logging permits for 1997 and noticed numerous discrepancies between the two. In the interest of serving a wide audience of Gabonese users, including government, and until INC's new map is publicly available, GFW has assembled an updated version (*Map 3*) providing a preliminary view of logging activity in the country.

Table 1 Distribution of Logging Permits by Province

Province	Province Area (km ²)	Area of Dense Moist Forest (km ²)	Percent of Province Forested	Area under Logging Permits, 1997 (km ²)	Percent of Forest under Permits
Estuaire	19,852	15,649	78.8	4,307	27.5
Haut-Ogooué	33,694	23,053	68.4	5,387	22.7
Moyen-Ogooué	17,813	12,284	69.0	10,517	85.6
Ngounié	38,394	30,345	79.0	15,201	50.1
Nyanga	21,763	12,956	59.5	2,547	19.3
Ogooué-Ivindo	43,439	41,284	95.0	16,470	39.9
Ogooué-Lolo	29,005	28,029	96.6	21,928	78.6
Ogooué-Maritime	23,026	15,439	67.1	2,749	16.9
Woleu-Ntem	37,561	34,350	91.5	5,464	15.9
TOTAL	264,547	213,389	80.7	86,350*	40.3

Sources: Ministère des Eaux et Forêts. Echéancier National. 1997; World Conservation Monitoring Centre; Global Forest Watch-Gabon; JRC Tropical Resources and Environment Monitoring by Satellites.

* This total includes 1,780 km² of logging permits, for which a province could not be determined.

Note: Dense Moist Forest estimates were calculated based on TREES (Tropical Resources and Environment Monitoring by Satellites) data obtained from: <http://fellini.gvm.sai.jrc.it/trees/>. These figures should be considered approximate. Slight differences between these and other estimates may result from differences in map projection, provincial boundaries, or processing methods.

- Map 4 highlights the 45 concessions, originally missing on the 1997 official map, which were subsequently identified and mapped by GFW-Gabon. We also found more than 30 other concessions (totaling more than 600,000 ha) in official records but could not map them (for lack of complete geographic coordinates). Local experts also confirmed that our maps were incomplete, especially for the northwestern part of the country,²² indicating that our maps represent an underestimate of the extent of logging concessions in the country.

The GFW mapping exercise demonstrates the incompleteness and inaccuracy of government data. In some cases, concession boundaries described in the granting decree reflect overlap. In others, the geographic coordinates provided in the records are clearly wrong, because they define boundaries that do not form fully closed concessions.

INDICATOR 3: WHO IS LOGGING GABON'S FORESTS?

Almost one third of the total area under timber concessions is allocated to five companies that are partially or wholly owned by foreign interests.

- Map 5 shows that in 1997, 35 percent (3 million ha) of the concession area was held by Rougier-Gabon, La Compagnie Forestière du Gabon (CFG), Leroy-Gabon, La Compagnie Equatoriale des Bois (CEB), and Lutexfo/Soforga.
- Apart from CFG, whose ownership is 52 percent Gabonese, 38 percent French, and 10 percent Dutch,²³ the other four companies are largely dominated by French capital.
- In 1997, Rougier was the largest concession owner (~700,000 ha), followed by Leroy (~654,000 ha), CFG (~651,000 ha), CEB (~505,000 ha), and Lutexfo/Soforga (~487,000 ha). (See Table 2.)
- Although most logging companies are registered under Gabonese law, many are associated with larger “mother” European companies, such as Thanry (CEB) or Glunz (Leroy-Gabon), and operate as subsidiaries.

Half of the concession area in 1997 was held by 5 percent of the concession owners.

- In 1997, logging concessions were distributed among 221 holders, but only 13 companies held 50 percent of the concession area, which is equivalent to almost 21 percent of Gabon’s total forest cover.
- Table 2 shows the 13 largest logging companies ranked according to the size of their holdings. Because they control so much land, these few companies can have a significant impact on how Gabon’s forests are managed.

There is a lack of transparent information on logging companies.

- In order to manage forest resources in the common interest, it is important that the public be aware of the benefits and tradeoffs logging development entails (who profits from logging and what rents concessionaires pay in return to local communities and the government). It is also important to know the environmental track record of concession owners, for example, whether they comply with management regulations. The latter issue is also important to consumers, who increasingly want to know whether the wood they use was sustainably harvested, in compliance with local law.

- The blanks in Table 2 attest to the difficulty we have had in obtaining information on logging companies. Most of our efforts to communicate with the private sector have not yielded successful results. During our search for information, logging companies referred us to the government and the government referred us to the logging companies. Information was therefore collected on a piecemeal basis from several sources.

Reasons for this may be a lack of trust, and no tradition among NGOs, the private sector, and the government to seek and exchange information.

Table 2 Gabon's 13 Largest Logging Companies

Permit Holder	Total Number of Concessions	Industrial Permits (PI) ^a	Temporary Logging Permits (PTE)	Railway Development Zone Permits (PZACF)	Total Area under Concession (hectares)	1997 Production Volume (cubic meters)	Origin of Funding	Capital (million ^b CFA Francs)	Number of Employees	Parent Company	Date Established
Rougier Ocean Gabon	14	0	4	10	699,555	219,000	French	1,202	750		1975
Leroy Gabon	5	1	0	4	654,000	154,000	Franco-German	2,000	330	GLUNZ	1976
Compagnie Forestière du Gabon	8	4	0	4	651,486		Franco-Gabonese	6,785	815		1943
Compagnie Equatoriale des Bois	6	1	4	1	505,000	173,000	French	420	250	THANRY	1950
Lutexfo-Soforga	8	1	4	3	486,530		French	375	272		1983
Société Forestière de Tchibanga	2	2	0	0	246,500		Malaysian				
Société Industrielle des Bois de l'Otoubi du Gabon	1	1	0	0	208,000						
Société Forestière de Moanda	1	1	0	0	200,000						
Société Forestière de Zoolende	1	1	0	0	200,000						
Exploitation Gabonaise de Grumes	3	0	1	2	171,126						
Societe de la Haute Mondah	4	1	0	3	170,208			518	280		1948
Timber Mac	2	1	1	0	157,182		Malaysian				
Société Equatoriale d'Exploitation Forestière	2	1	0	1	143,704						
Sub-Total	57	15	14	28	4,493,291						
Other Concession Holders	270	31	224	8	4,142,642						
Total	327	46	238	36	8,635,933						

Sources: Ministère des Eaux et Forêts. Echéancier National. 1997; Numéro Hors-Série. Marchés Tropicaux et Méditerranéens. (Juin 1998); Guide Economique et Commercial. (Libreville:1999).

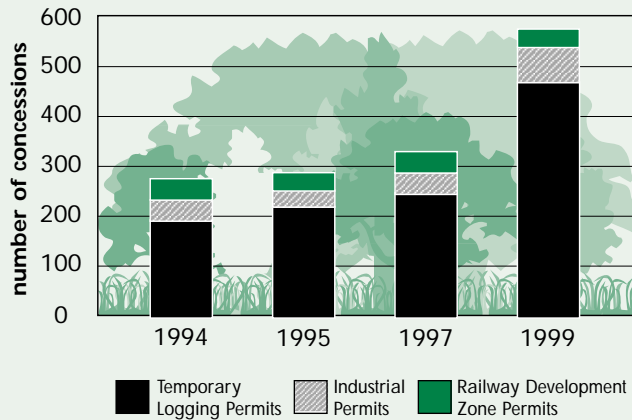
Notes: a. The four types of logging permits in Gabon include: Industrial Permit (PI), Temporary Logging Permit (PTE), Railway Development Zone Permit (PZACF), and Household Permit. For more information, see Chapter 3 on forest legislation.

b. Currency exchange rate as of October 11, 1999: US\$1 = 612 CFA Francs.

INDICATOR 4: HOW HAVE LOGGING CONCESSIONS EVOLVED?

The number and average size of permits increased from 1994 to 1999.

Figure 7. Number of Logging Concessions, 1994-99

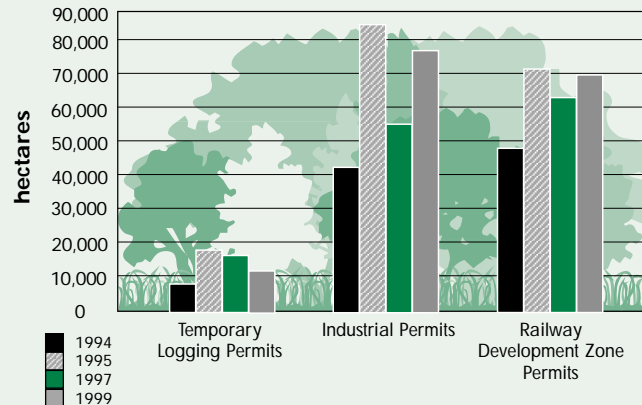


Source: For full source and data information, see pp. 34-40.

- The four types of logging permits in Gabon include: Industrial Permit (PI), Temporary Logging Permit (PTE), Railway Development Zone Permit (PZACF), and Household Permit. (See Table 3, page 24.)
- Between 1994 and 1995, the number of logging concessions remained fairly constant, but their average sizes increased. The 1994 devaluation of the Communauté Financière Africaine franc (i.e., the CFA franc or CFAF) made logging more profitable and may have encouraged logging companies to acquire larger concessions.

- In 1997, the concession area declined due to a drop in the average permit size. (See Figure 8.)
- By 1999, the average size of permits seemed to have stabilized, but the increase in the number of Industrial Permits (PIs) and Temporary Logging Permits (PTEs) explains the 1999 surge in total concession area.
- Between 1994 and 1999, the number of Railway Development Zone Permits (PZACFs) declined. This trend is expected to continue because no new PZACFs are allocated and current ones will expire.

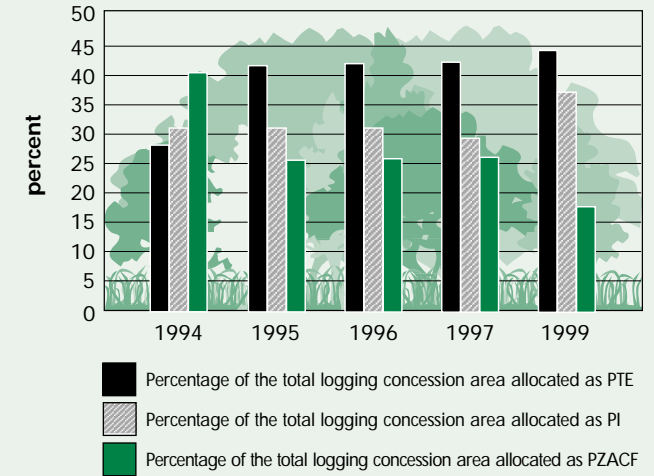
Figure 8. Average Surface Area by Permit Types, 1994-99



Source: For full source and data information, see pp. 34-40.

In 1994, Temporary Logging Permits accounted for one quarter of the total concession area. In 1999, they account for almost half of it.

Figure 9. Surface Area by Permit Type as a Percentage of Total Area Allocated as Logging Concessions



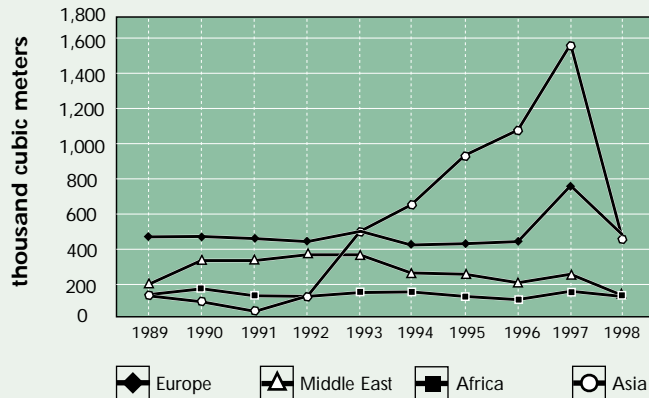
Source: For full source and data information, see pp. 34-40.

- There are five times as many PTEs as there are PIs and PZACFs. The reason could be that PTEs offer fewer constraints on timber cutting and log marketing than other permit types.²⁴
- As PZACFs are logged out, concession owners turn to PIs, but smaller and more numerous PTEs tend to dominate the concession landscape.

INDICATOR 5: HOW MUCH WOOD DOES GABON PRODUCE AND EXPORT?

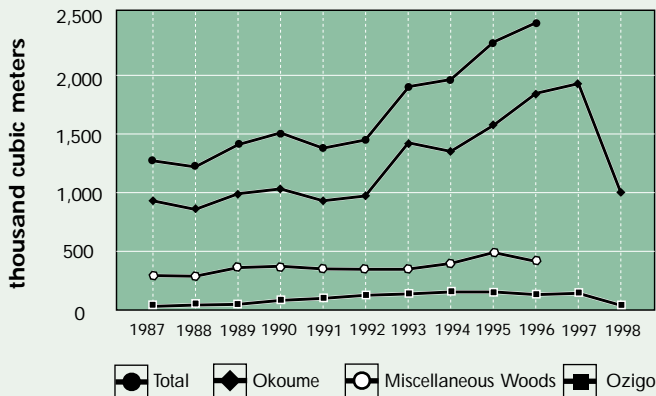
In 1998, exports to Asia fell by 73 percent and those to Europe by 38 percent.

Figure 10. Export of Okoumé and Ozigo Logs to Selected Regions, 1989-98



Source: For full source and data information, see pp. 34-40.

Figure 11. Export Volumes, 1987-98



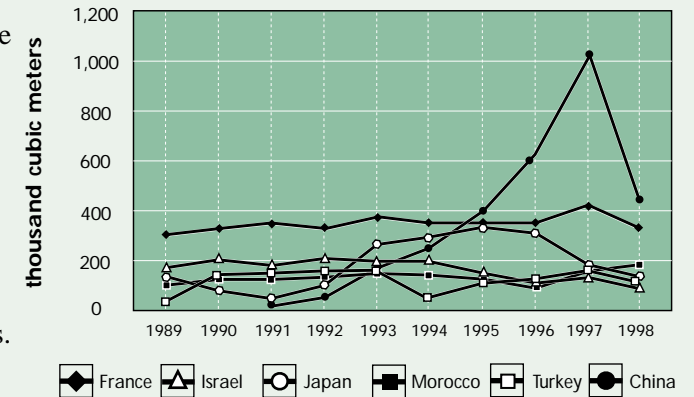
Source: For full source and data information, see pp. 34-40.

- The impact of the Asian economic crisis on Gabon's wood industry was first observed in 1998. As a result, Asian demand for Gabonese wood declined. This was due to a combination of lower overall demand, and declining prices for certain Asian timber products, which made Okoumé less competitive in that region.
- Okoumé log exports dropped by 45 percent between 1997 and 1998. As a result of a decline in demand, the volume of unsold log stocks doubled in early 1998 and eventually led to a production freeze.²⁵
- Many companies had to lay off staff, a move that eventually forced some out of business. Several industrialists have sought to diversify beyond Okoumé trees by promoting miscellaneous woods,²⁶ but they have had enormous difficulties.
- Prior to the Asian crisis, the trend was toward increasing exports.
- A market slowdown in Europe and the restructuring of the Société Nationale des Bois Gabonais (SNBG) in 1991 caused exports to drop slightly, but temporarily.^{27, 28}
- The devaluation of the CFA franc in 1994 seems to have stimulated exports.

Between 1993 and 1997, Asia replaced Europe as the primary importer of Gabonese wood.

China has replaced France as the largest single importer of Gabonese wood.

Figure 12. Export of Okoumé and Ozigo Logs to Selected Countries, 1989-98

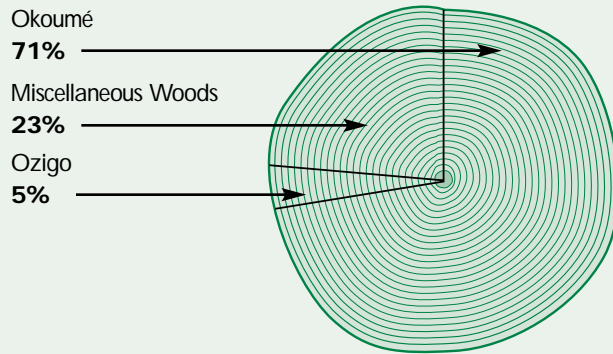


Source: For full source and data information, see pp. 34-40.

- Until 1993, Europe was the main importer of Gabonese wood. Since then, Asia has dominated, except in 1998, when both markets dropped (with a small advantage to Europe).

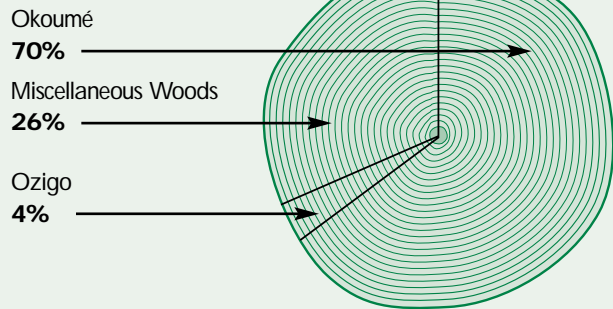
Gabon's wood industry is based on Okoumé production.

Figure 13. Distribution of Export Volumes by Timber Species, 1987-96



Source: For full source and data information, see pp. 34-40.

Figure 14. Distribution of Export Value by Timber Species, 1987-96



Source: For full source and data information, see pp. 34-40.

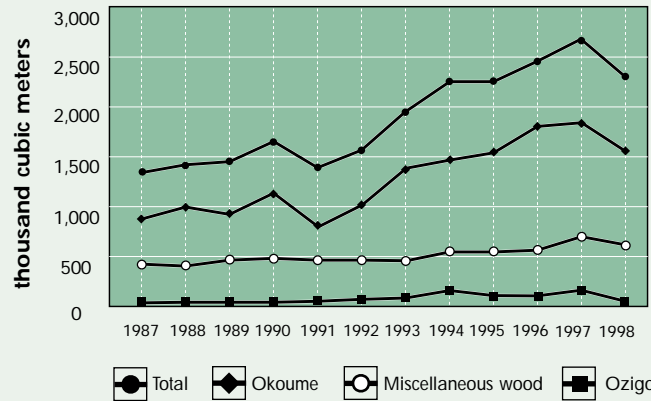
- Overall production and export trends reflect demand for Okoumé.

Between 1987 and 1996, close to three quarters of Gabon's total wood exports consisted of Okoumé.

Production and export revenues are also largely dominated by Okoumé.

Between 1987 and 1998, total log production increased by 78 percent.

Figure 15. Production Volumes, 1987-98



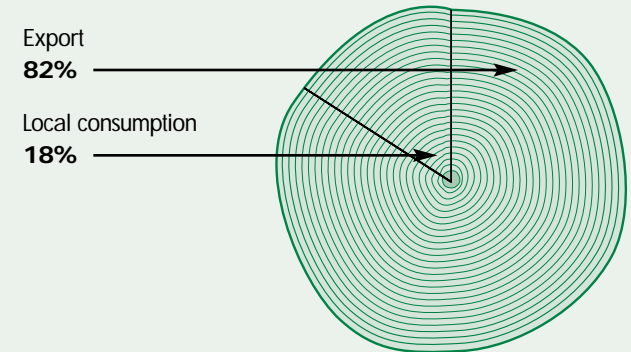
Source: For full source and data information, see pp. 34-40.

- Between 1987 and 1996, Okoumé made up over two thirds of log production in Gabon. Therefore, fluctuations in overall production volumes reflect fluctuations in Okoumé production volumes. Total production was 1.3 million m³ in 1991 and rose to 2.7 million m³ in 1997.
- With the exception of a 1991 production slump, overall production has tended to increase steadily.

The national market for miscellaneous woods is weak.

- Miscellaneous woods represent about 50 species, but only 4 or 5 are exported in quantities larger than 20,000 m³.
- However, Ozigo and miscellaneous woods production volumes rose slowly, especially since 1992, and peaked in 1997. It should be noted that in 1998, just as is the case with Okoumé, exports of Ozigo plunged sharply.

Figure 16. Local Consumption of Miscellaneous Woods, 1987-96



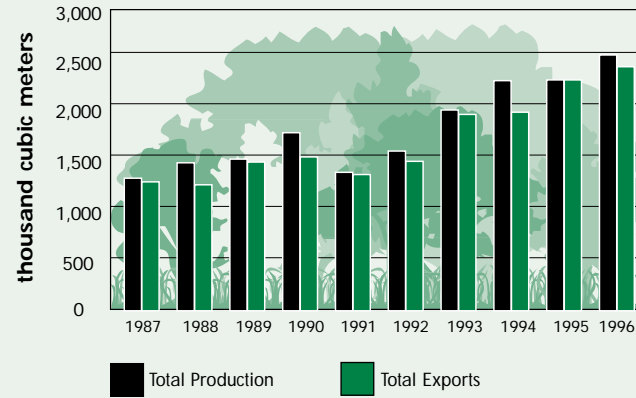
Source: For full source and data information, see pp. 34-40.

Based on Figures 11, 13, 14, 15, and 16, the following trends are apparent for miscellaneous woods.

- Miscellaneous woods represent about one fourth of total production and total export volumes. Figure 16 indicates that the international market is the main market for these woods because 82 percent of the miscellaneous woods production is exported.
- The miscellaneous woods market is very selective because demand is both specific and sporadic. It is important to note that Gabon's wood industry is closely linked with France. The French technological tradition is adapted to the processing of Okoumé (and of Ozigo, which has the same qualities).³⁰ Creating French markets for species other than Okoumé is difficult because it would require heavy investments from French processing industries. However, the growth of Asian markets may help raise demand and value of some secondary species because the Asians' processing technology is different from that of France and could be pre-adapted to use species that are currently underutilized in Gabon.³¹

Despite the 75 percent national processing rate target set by the current forestry code, 93 percent of Gabon's log production is exported.

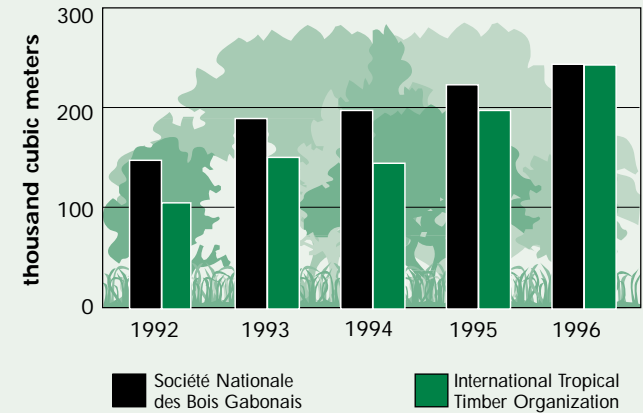
Figure 17. Log Production Volume Versus Log Export Volume, 1987-96



Source: For full source and data information, see pp. 34-40.

Data reporting is inconsistent.

Figure 18. Export Data Inconsistencies among Different Reporting Agencies



Source: For full source and data information, see pp. 34-40.

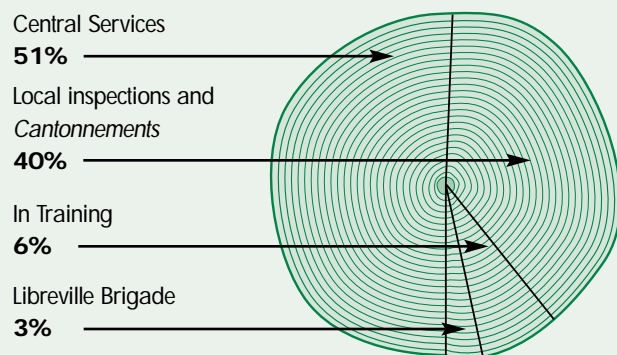
- In 1995, two Gabonese institutions, the Direction Générale de la Statistique et des Etudes Economiques and the Société Nationale des Bois Gabonais, reported that Gabon's log exports totaled 2.2 million m³; the International Tropical Timber Organization reported 1.9 million m³.
- More accurate and reliable data collection and reporting systems are needed.

INDICATOR 6: WHAT IS THE LOGISTICAL CAPACITY OF GABON'S MINISTRY OF WATER AND FORESTS?

Fewer than half the agents in active service in the Ministry of Water and Forests are in the field.

- More than half the agents are assigned to the central administration office and work in the Ministry's various technical departments. Only 40 percent of agents are assigned to local inspection and *cantonnements* (the offices in charge of field operations).

Figure 19. Distribution of Agents Assigned to the Ministry of Water and Forests, by Type of Service

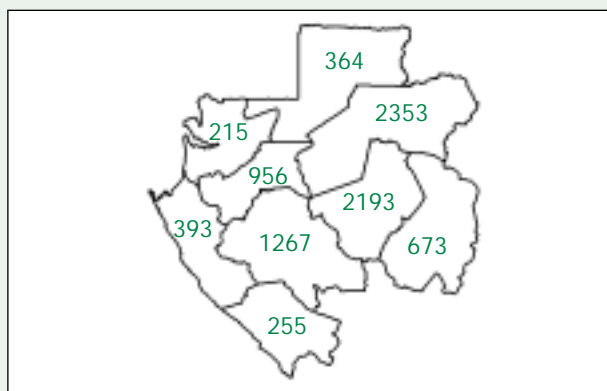


Source: For full source and data information, see pp. 34-40.

On average, a Ministry agent oversees 864 square kilometers of logging concessions.

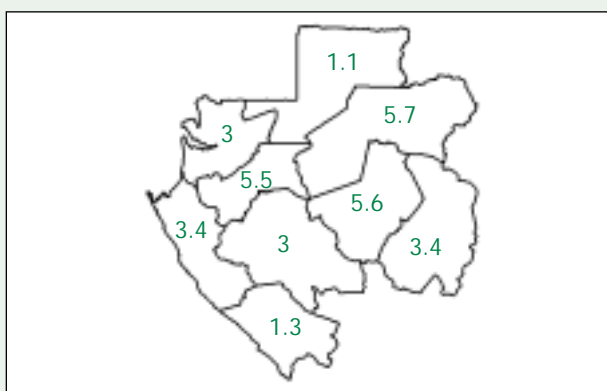
- In three provinces, one agent oversees an average of more than 1,000 square kilometers of logging concessions.
- Woleu-Ntem is the only province with a 1:1 ratio of agents to logging concessions. As a comparison, Ogooué-Ivindo has six times more concessions than agents.

Figure 20. Square Kilometers of Logging Concession per Ministry Agent



Source: For full source and data information, see pp. 34-40.

Figure 21. Number of Logging Concessions per Ministry Agent

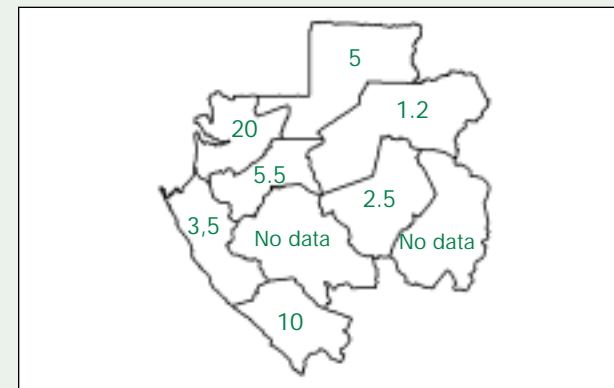


Source: For full source and data information, see pp. 34-40.

Ministry agents have limited transportation means.

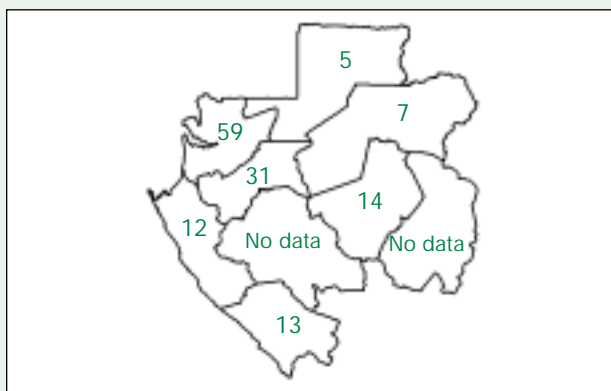
- In seven of the nine provinces for which we have data, there are, on average, five agents per vehicle.
- In four provinces, the ratio of agents per vehicle exceeds 5 to 1.
- In five provinces, there is only one vehicle for more than 2,400 square kilometers of concession area.
- In the Estuaire province, 20 agents have access to only one vehicle; yet they must oversee 4,300 square kilometers.

Figure 22. Number of Ministry Agents per Vehicle



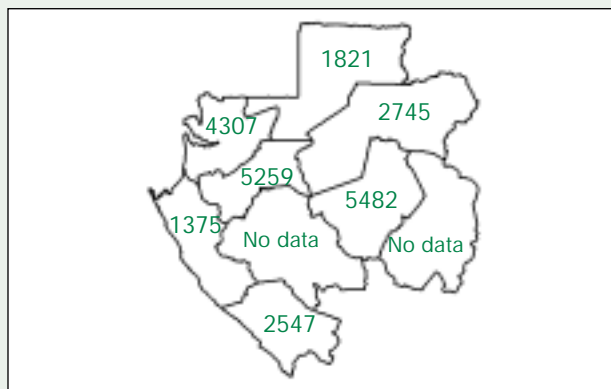
Source: For full source and data information, see pp. 34-40.

Figure 23. Number of Logging Concessions per Vehicle



Source: For full source and data information, see pp. 34-40.

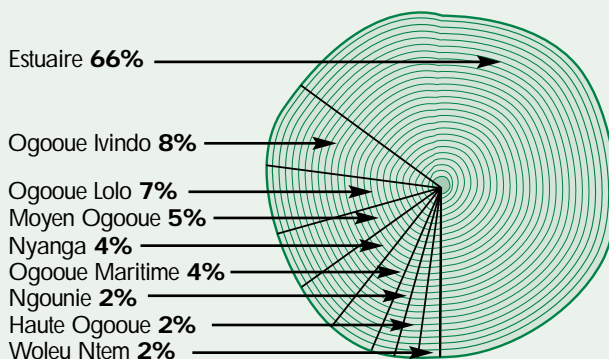
Figure 24. Square Kilometers of Logging Concessions per Ministry Vehicle



Source: For full source and data information, see pp. 34-40.

Most Ministry vehicles seem to be concentrated in the capital region.

Figure 25. Distribution of Vehicles by Province



Source: For full source and data information, see pp. 34-40.

- In 1999, two thirds of the Ministry vehicles were located in the Estuaire. This number most probably reflects not only the vehicles available to the provincial inspection, but also those used by other staff members based in Libreville.

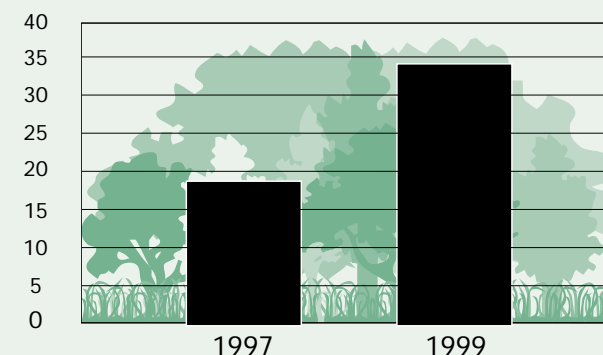
Transport capacity at the Ministry of Water and Forests is improving.

- In 1997, 18 vehicles were available to the provincial inspections (all except the Estuaire). By 1999, the Ministry had increased that number to 34 vehicles.

Housing provided to Ministry field agents is insufficient.

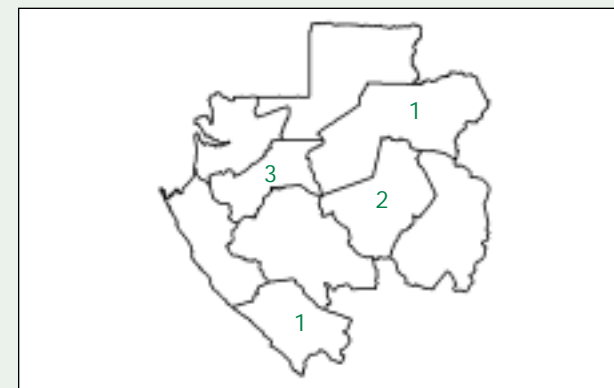
- Ogooué-Lolo and Moyen-Ogooué do not provide sufficient housing for their agents, and no housing at all is provided for agents in the Estuaire province.
- Data on housing are not available for four of the nine provinces.

Figure 26. Number of Vehicles Available to Provincial Inspectors



Source: For full source and data information, see pp. 34-40.

Figure 27. Number of Ministry Agents per Housing Unit



Source: For full source and data information, see pp. 34-40.

CHAPTER 3 FORESTRY LEGISLATION

Main Provisions of the Current Forestry Code

In the Francophone legal tradition, laws are sets of legislated rules, often implemented through various other legal texts, particularly *décrets* (ministerial orders) and *arrêtés* (administrative orders). In instances when a law fails to address a specific issue, older legal texts addressing that issue may be applicable. This has led to confusing and at times contradictory interpretations; however, a forestry policy reform project is currently underway.

Forestry activities are regulated by Law 1/82, passed in 1982 and known as the *Loi d'orientation en matière des Eaux et Forêts*. Law 1/82 lays out the general legal framework regulating logging activity as well as other natural resource use (e.g., hunting). The law introduces the concepts of logging zones, logging permits, size of logging concessions, wood processing development, and other aspects of the forest sector.

Forestry Zones

Gabon's forests are split into the Permanent Forest Domain (Classified Forests), which includes logging concessions and protected areas, and the Non-Permanent Forest Domain (Protected Forests), which includes land to be converted to agriculture and other land use. The Permanent Forest Domain is divided into two logging zones.³² (See Figure 28.)

Zone 1 is essentially the coastal zone—the most easily accessible—and is theoretically reserved for

Figure 28. Logging Zones



Sources: R. Pourthier. 1989. *Le Gabon. Tome 2: Etat et Développement*. L'Harmattan. Paris; Décret 1205/PR/MEFPE du 30 août 1993.

Gabonese nationals. Zone 2 is the interior of the country. Within these two zones, a subzone is recognized as the Railway Development Zone. It is composed of large forest concessions allocated in 1972 and 1973 to help finance the TransGabonais railway.

Logging Permits

In Gabon, the government is the major landowner. Logging concessions and logging permits are granted by “*arrêté*” or “*décret*.” There are four different types of logging permits in Gabon, and among those only “Household Permits” are allocated based on a specific number of trees rather than by surface area. (See Table 3.)

The information for this chapter was culled from Gabonese legislative texts.³³ In meetings held in

June 1999 between the government and representatives of GFW, the government provided GFW with different information—specifically that PTEs are valid for 10 years maximum and are not renewable in Zone 1, and that PIs are valid for 20 to 25 years. However, legal documents confirming the government's information could not be found.

Weaknesses of the Current Code

Natural resource management in Gabon is hampered by incomplete and ill-enforced legislation. Most provisions of Law 1/82 have either been poorly implemented or enforced.

Poor Implementation

- Nearly three fourths of the decrees planned under Law 1/82 were never written. (See Appendix 2.)
- Article 14 states that Classified Forests must be regulated by a management plan, but procedures and regulation of these plans have yet to be defined. As of 1999, only 5 out of more than 200 logging companies have started (or plan to start) writing a management plan.
- Article 20 states that concession owners and operators must obtain an authorization from the Ministry of Water and Forests, and pay certain fees, before beginning any forestry activity. The procedures for obtaining such an authorization were never defined. Hence, people potentially unqualified to carry out logging activities have obtained logging permits, subsequently leasing them to logging operators. (See Box 3.)

BOX 3 *Fermage*: Subcontracting Logging Concessions

Fermage is a practice by which the permit owner, unable or unwilling to engage in logging activities, rents the logging rights for a concession to a third party in exchange for a fee. It creates disincentives to sustainable forest management by fostering rent seeking and uncertain short-term agreements.

Fermage is widely practiced because of two loopholes in Gabonese law. Article 20 of Law 1/82 stipulates that anyone wishing to engage in forestry activities must obtain a qualification approval from the Ministry of Water and Forests. Article 21 states that “operating permits and logging authorizations are strictly personal” and that they can be assigned only by the Ministry of Water and Forests. Both articles refer to subsequent application decrees to regulate the procedures for the approval of qualification and for the assignment of logging authorizations. However, these decrees were never written, causing a variety of interpretations of the law, and a proliferation of *fermage* arrangements. It is widely agreed that *fermage* is illegal, but it is nevertheless extensively tolerated. This practice is extremely widespread in Zone 1 but is also becoming increasingly common in Zone 2. (See section on description of logging zones.)

The practice of *fermage* presents several problems.

- *Fermage* results in the loss of government tax revenues because the transfer of logging rights is poorly regulated. Reports have indicated that individuals involved in *fermage* agreements are negligent in paying taxes.¹
- *Fermage* serves as a disincentive to sustainable forestry because permit owners receive large rents without feeling responsible for investing in their concessions. Likewise, logging companies have no vested interest in managing these concessions for the long term.

Unfortunately, references to *fermage* in the proposed forestry policy reform are ambiguous. Article 51 of the draft Forestry Law stipulates that no logging activity may be undertaken by any person or corporation other than the permit owner, rendering *fermage* an illegal practice. Nevertheless, Article 101 of the draft law proposes, among other taxes, a *fermage* tax.²

Notes:

1. Etude de la Fiscalité Forestière, de l’Attribution des Titres d’Exploitation Forestière et du Développement du Secteur Forestier Gabonais. General Woods & Veneers.
2. Draft Law for Orientation of Water and Forest Resources Policy.

Table 3 Types of Logging Permits in Gabon

Permis Temporaires d’Exploitation (PTE)

[Temporary Logging Permits]

- Administered by the Department of Forestry Production.
- Duration of permit varies (set by the granting decree).
- Size of permit varies (set by the granting decree).
- Renewable.

Permis Industriels (PI)

[Temporary Logging Permits]

- Administered by the Department of Development, Industries and the Wood Trade.
- Valid for 30 years maximum.
- Size of permit varies (set by the granting decree).
- Renewable.

Permis de la Zone d’Attraction du Chemin de Fer (PZACF)

[Railway Development Zone]

- Administered by the Department of Forestry Production.
- Duration of permit varies (set by the granting decree).
- Size of permit varies (set by the granting decree).
- Not renewable.

Coupes Familiales (CF)

[Household Permits]

- Administered by Provincial Inspectors under the responsibility of the Department of Forestry Production.
- Valid for a maximum of one year.
- Granted for no more than 100 trees.
- Renewable.

Sources: Ministère des Eaux et Forêts. Ordonnance 21/68. 1968; General Woods and Veneers. Etude de la Fiscalité Forestière, de l’Attribution des Titres d’Exploitation Forestière et du Développement du Secteur Forestier Gabonais.

Poor Enforcement

- Map 6 shows that several logging concessions listed on the 1997 government list of valid permits are located within protected areas. (See Box 4.)
- The Technical Note of August 30, 1996, suspending applications for PI and PTE permits after 1997 was not respected except in the Woleu-Ntem province.³⁴
- All logging permits for areas greater than 15,000 ha must process some of their wood (Law 1/82 sets a national objective of 75 percent) through a local wood-processing industry. However, from 1988 to 1995, the wood-processing rate has never exceeded 18 percent.³⁵
- Article 24 of Law 1/82 limits concession holdings to 200,000 ha per owner.³⁶ However, in 1997, 8 concession owners had holdings exceeding that limit.

Weak enforcement of the law may be because of inconsistencies between legislative texts issued by different administrations, or rejection of responsibilities among different administrations concerned, or even poor information management on the part of the administrations, the private sector, and civil society.³⁷

Forestry Taxation

System Complexity

- There are as many as 12 different forestry taxes, which makes the system difficult to monitor. Accurate and up-to-date information on taxes is not readily available. (See Appendix 3.)
- The schedule of tax payment varies, adding to the difficulty of monitoring transactions.³⁸

Failure to Capture Tax Revenue

- Taxes are not fully recovered by the government.³⁹ Table 4 shows the four main taxes for which theoretical and actual recovery amounts were available.

- In addition, overall renting fees derived from *fermage* have been estimated to be as high as CFAF 400 million per year (US\$667,000), which represents approximately a 2 percent loss to Government tax revenues.⁴⁰ This suggests that the current tax system may undervalue logging concessions.

Box 4 International Conflict over Logging in the Lopé Reserve

The Lopé Reserve was created in 1948 as a faunal reserve and as such was not protected from logging. Five logging concessions were allocated within the boundaries of the reserve in 1973 as part of the Railway Development Zone. When plans were made to start logging one of these concessions in 1996, the legality of its location within a “Reserve” was questioned. By then, the European Union had invested in a conservation project (ECOFAC) [Conservation et Utilisation Rationnelle des Ecosystèmes Forestiers de l’Afrique Centrale] within the Reserve. The stormy debate that followed unveiled a series of conflicting legal texts taken at different times by different authorities. ECOFAC demanded that a central core area benefiting from comprehensive protection be defined and threatened to stop its

project if concessions were not removed from the proposed core area. The Gabonese Government was under international pressure because it was unclear whether ECOFAC would only pull out of Gabon or pull out of all of Central Africa. In 1997, two logging concessions were removed from a newly defined and fully protected core area within the Lopé Reserve. However, two sections of concessions are adjacent to the core area, still within the original boundaries of the reserve. (Map 6 also shows PTE 15/85 in the Lopé Reserve. This concession appears on the Ministry’s 1997 List of Concessions; however, according to local experts, it is no longer active.) This experience set back efforts to foster collaboration, trust, and communication among conservation groups, logging companies, and the government.

	Theoretical Recovery		Percentage of Total	Actual Recovery		Percentage of Total	Percentage Recovered
	(million CFAF)	(million U.S. Dollars)		(million CFAF)	(million U.S. Dollars)		
Area tax	89	0.1	0.4	66	0.1	0.3	75
Allocation tax	6,556	10.7	28.7	2,129	3.5	11.3	32
Transformation tax	38	0.06	0.2	11	0.02	0.1	29
Export tax	16,139	26.3	70.7	16,672	27.2	88.3	103
Total	22,822	37.2	100.0	18,878	30.8	100.0	83

Source: Ernst & Young. Analyse du système actuel de fiscalité forestière au Gabon. 1998

Undervaluing Resources

- Most forestry taxes have not been changed in the past 25 years, and hence have not factored in inflation.⁴¹ For example, the area tax is between CFAF 4 and CFAF 20. Based on an annual inflation rate of 8.3 percent since 1967, this tax should be approximately CFAF 48 to CFAF 240.⁴²
- Export taxes represent 70 percent of forestry taxes, indicating that the tax burden in Gabon is mostly downstream.
- Table 5 shows that, in Gabon, government revenue from forestry taxes is about half that in Cameroon. Based on production volumes of 3 million m³ for Cameroon⁴³ and 2.7 million m³ for Gabon,⁴⁴ total forestry taxes are CFAF 12,000 per m³ and CFAF 7,000 per m³, respectively.
- The difference between Cameroon and Gabon is not only from recovery rates. Area taxes in Gabon are currently set to be 75 times lower than those in Cameroon. (See Table 6.) For example, a 100,000-ha concession yields, in theory, an

average minimum of CFAF 148 million (US\$242,000) more in area taxes in Cameroon than in Gabon. Although transport and other costs are generally higher in Gabon, this suggests that there may still be further opportunities to capture additional rent from forest resources.

- Taxes collected represent approximately 15 percent⁴⁵ of the production value. As a comparison, taxes recovered in Suriname (South America) in 1995 represented 13 percent of production revenues.⁴⁶

	Area Tax	
	(CFAF per ha per year)	(U.S. Dollars per ha per year)
Gabon	4–20	0.006–0.03
Cameroon	1,500–2,500	2.5–4.2

Sources: Ministère de l'Economie et des Finances. Contribution du Secteur Forestier à l'Economie Nationale. Yaoundé. 1998; General Woods & Veneers. Etude de la Fiscalité Forestière, de l'Attribution des Titres d'Exploitation Forestière et du Développement du Secteur Forestier Gabonais.

	Taxes Recovered			
	Gabon		Cameroon	
	(million CFAF)	(million U.S. Dollars)	(million CFAF)	(million U.S. Dollars)
Area tax	66	0.1	1,145	1.9
Export tax	16,672	27.2	29,200	47.7
Other ^a	2,140	3.5	6,408	10.4
Total	18,878	30.8	36,753	60

Sources: Ministère de l'Economie et des Finances. Contribution du Secteur Forestier à l'Economie Nationale. Yaoundé. 1998; Ernst & Young. Analyse du système actuel de fiscalité forestière au Gabon. 1998

Note: a. Other taxes in Gabon include allocation and transformation taxes. In Cameroon, they include stumpage, auction revenues, transfer taxes, etc.

CHAPTER 4 SIGNS OF PROMISE

With its extensive forests and a low population density, Gabon faces a unique opportunity. In many countries, population pressures are such that it is difficult to prevent further, massive conversion of forest to agricultural use and other land uses. Meanwhile, estimates by the United Nations and others suggest that demand for timber products alone will at least double in the next 25 years. With growing global demand for forest services and products, and a shrinking resource base to meet this demand, Gabon's forests represent a valuable natural capital that might offer ever increasing returns if managed for long-term gain. Economic opportunities are not limited to timber production. Ecotourism potential, for example, has barely been tapped despite Gabon's relative proximity to Europe, its spectacular forest flora and fauna, and an extensive coastline.

Data in this report suggest that development of Gabon's timber resources has occurred rapidly, and with relatively little planning and oversight. The new forest law—if enacted and implemented in its current form—would represent a first step toward managing forests for long-term gain, rather than short-term profit. Several promising examples exist within government and industry today that, although very preliminary, illustrate a similar shift toward longer-term investment and planning. We profile four examples below. In future reports, GFW-Gabon will seek to identify other signs of promise—efforts that might be encouraged and replicated to promote the sustainable use and management of the country's forests.

1. The Forestry Policy Reform Project

In the post-Rio atmosphere of the early 1990s, the Gabonese government displayed a greater awareness of environmental issues; however, this new perception of the country's natural resources was not followed by any immediate concrete action.⁴⁷ It was only in 1996 that the Forestry Law reform process began, following the recommendations of the National Interministerial Industrialization Commission and in response to pressure from the International Monetary Fund and the World Bank, which are Gabon's creditors. The cost of this reform is being covered by a World Bank loan.⁴⁸

In September 1998, the new Forestry Law was submitted to the National Assembly. In early 1999, the Assembly sent it back to the Ministry of Water and Forests for modification. To date, GFW partners have not been informed of any changes made to the proposed forestry reform. The following section is based on the September 1998 draft.

Unlike Law 1/82, the new law will be submitted along with several implementing decrees. The new law seeks to

- promote sustainable forest management strategies, based on management plans;
- adjust the tax base to promote and encourage more sustainable logging practices; and
- develop a national wood processing industry.⁴⁹

Logging Permits

Three types of logging permits are proposed.

1. *Concessions Forestières sous Aménagement Durable* (CFAD) [Forestry Concessions under Sustainable Development]:
 - Composed of several units ranging from 15,000 to 200,000 ha, which together can total between 50,000 ha and 600,000 ha, a considerable increase compared with the 200,000-ha limit allowed under the old code.
 - Require both long- and medium-term management plans, as well as an annual operating plan.
2. *Permis Forestiers Associés* [Associated Forestry Permits]:
 - Reserved for Gabonese citizens and companies.
 - Must be integrated into CFAD's management plans.
 - Cannot exceed 15,000 ha.
3. *Permis de gré à gré* [Permits of mutual agreement]:
 - Designed to supply local processing plants.
 - Granted by number of trees and not surface area.⁵⁰
 - Must file management plans, but with less stringent requirements.

Permit Allocation

- Logging permits will be granted based on a public auction system following a preselection based on a company's financial and technical capacity to carry out the objectives set by the new law.
- This condition will potentially ensure that more tax revenues are collected, because tax rates will reflect market value.⁵¹
- Zone 1 (the coastal zone) will remain reserved for national operators.⁵²

Management Plans

Logging of any forest concession cannot begin without prior approval of a documented management strategy submitted to the Ministry of Water and Forests. Failure to gain approval within three years will result in the permit's withdrawal and the reopening of the bidding process. Management plans are designed to ensure sustainable annual production, while preserving social, physical, and biological values derived from forests. The management strategy consists of three separate plans:

- Long-term management plans, which define the strategy over the entire concession for the duration of the permit (20 to 40 years). These are reviewed after three years, then once every five years.
- Medium-term plans, which define the operating strategy for a particular management unit for a 5- to 10-year period. They are reviewed annually.
- Annual operating plans, which define the activities to be undertaken (bases for cutting, logging roads), in particular zones, to be cut that year.⁵³

New Tax System

The new tax system is supposed to simplify the current tax structure and create incentives for sustainable management. It will consist of five basic taxes: area, cutting, *fermage*, export, and export surtax (applicable above certain quotas). In certain cases, three additional taxes will be payable: renewal, transfer, and chainsaw processing.⁵⁴

Classification of Forests

Forests will be classified into two domains:

1. *Domaine Permanent de l'Etat* [Permanent National Forests], which includes:
 - *Forêts (...) Classées* [Classified Forests], such as protected areas, and
 - *Forêts (...) Productives* [Productive Forests], such as logging concessions.
2. *Forêts Rurales* [Rural Forests], which:
 - include a 5-km-wide strip of forest along public transportation routes (roads, railway, and navigable rivers).
 - are reserved for local communities in an effort to promote community forestry projects. They permit local communities to carry out logging operations themselves or rent the services of logging companies. Income generated by these forests will go to local communities.⁵⁵
 - are subject to the same laws and regulations as other logging concessions (although on a smaller scale) and are therefore required to file management plans.

Community forests attempt to blend two traditional logging activities: *Coupes Familiales* [Household Permits] and *fermage*. Because community forests are locally controlled, they will in theory create an incentive for better income distribution and management. Presently, Household Permits often belong to high-level local officials who, for reasons of self-interest, may be strongly opposed to this proposed change.

National Forest Fund

A National Forest Fund is supposed to be established to maintain sustainable management practices. The organization, functioning, and financing of this fund will be detailed in a decree.

2. Institut National de Cartographie

The Institut National de Cartographie (INC) [National Mapping Institute], established in 1983, is under the supervision of the Ministry of Housing, Urban Development, Land Registry, Welfare and City Affairs. Its mandate is to produce and distribute maps, aerial photographs, and other cartographic products.⁵⁶ INC's new mapping methods, based increasingly on computerization, are facilitating the development of general geo-referenced information, which can be specifically applied to serve forest resources management needs. INC also contributes to improving the capacity of forest managers by:

- Developing an information base for better planning and management of natural resources:

In 1995, the French Cooperation (the French agency for international development) agreed to fund INC to develop a spatial database of logging concessions that would help the Ministry of Water and Forests better allocate and monitor these concessions. The database was created by the INC based on information provided by the Ministry of Water and Forests and resulted in a map showing valid logging concessions for 1997. Unfortunately, this map contains a number of errors based on inconsistencies in the original data. It was not widely distributed.

Even though the final product was not of top quality, the process of creating this map was important. It identified serious problems in data collection and laid the groundwork for future mapping activities. However, once initial funds were exhausted, the project lost momentum. It was resumed in the summer of 1999 to correct cartographic errors.⁵⁷ As of October 1999, this map had not yet been fully updated or released.

- Building capacity:

INC has organized training sessions in cartographic techniques and forest photo-interpretation (with the collaboration of CIRAD-Forêt).⁵⁸

As part of the project to create a spatial database of logging concessions, INC has trained government staff to use GIS technology; however, the project has suffered from staff turnover.

3. Direction des Inventaires, de l'Aménagement, et de la Régénération des Forêts

The Direction des Inventaires, de l'Aménagement, et de la Régénération des Forêts (DIARF) is a technical department of the Ministry of Water and Forests.⁵⁹ Their activities contribute to better forest management by improving the information base of Gabon's forests as well as developing technical tools and training staff. Among other activities, they have developed a forest-use zoning map for the eastern portion of the country and an experimental forest information and reporting system.

One of the DIARF's most significant accomplishments is the project: "Multi-resource stratification, mapping and inventory of Gabon's First Forest Zone," with assistance from the International Tropical Timber Organization (ITTO). This project proposes to set aside 2.3 million ha as permanent forestlands, with 1.5 million ha for production purposes and 800,000 ha for conservation. This mapping will be extended to the rest of the country in the near future. Currently, the project is developing management plans for forest areas being managed and developed by the government.

The DIARF also developed a computerized system for gathering and analyzing forestry data. This system is based on the record books of logging companies. By law, every company is supposed to maintain such a book for each of its concessions. The DIARF collects those books and has trained a

team of people to enter and manipulate the information in a computerized database.

Although it needs some fine-tuning, this system has the potential to be a very powerful management tool and could be used to promote accountability. The database contains information such as volume harvested, species harvested, and concession ownership. Since 1994, some of this information has been compiled in annual forestry statistics reports. The quality of these data is currently unknown because they are self-reported by the logging companies with no external audit. The statistics reports are not widely distributed and cannot be independently accessed by civil society. If this forest information system were made readily available, it would lead to more transparency in the sector and to better monitoring of trends to help forest managers in their decisionmaking.

Finally, as part of the "Forest and Environment Project"—launched by a loan agreement between the government of Gabon and the World Bank—the DIARF is conducting pilot studies for the development of a natural forest in the south of the Estuaire province and the rehabilitation of forestry plantations.

4. Compagnie Equatoriale des Bois

The Compagnie Equatoriale des Bois (CEB),⁶⁰ an affiliate of the Thanry Group, has been operating in Gabon since 1943. CEB currently holds six permits (1 PZACF, 1 PI, and 4 PTEs) and is also logging four PTEs on a *fermage* basis (~ 573,000 ha total), all located in a triangle to the south of the Lastourville-Okondja national road, in the southeast of the country. CEB has taken preliminary steps toward long-term investment and planning in this operation.

- Long-term planning efforts include:

CEB claims to be the only logging company in Central Africa to have independently hired a resource management specialist responsible for translating innovative operational plans into concrete actions.

As a potential indication of its commitment, CEB is drafting its own management plan, rather than contracting that task to external consultants.

- Efforts to reduce waste include:

CEB has instituted a tag system that tracks a tree from its location in the forest to the logging camp, reducing the number of abandoned logged trees.

To keep the trunk intact for processing, the buttresses are cut off before the tree is felled, thereby lessening the risk of it breaking up into unusable pieces. Once the tree is felled, rather than pruning the branches on the spot where it is entangled with other debris, it is extricated, resulting in a longer log.

CEB is attempting to process its timber volume more efficiently. It has invested in a processing mill located at its base camp that relies only on rejects from current logging operations as raw material.

- Local investments include:

Since December 1997, CEB has had a debarking unit in place at Owendo; in 2002, another unit will be established in Bambidie.

As part of the maintenance of its logging operations, CEB also maintains roads linking neighboring villages.

CEB has set up a special office where locals can express their needs and concerns. Although the company does not respond to all requests, it does provide an official channel of communication facilitating an exchange of ideas and services. For example, villagers can obtain planks from CEB's rejects, and the company has helped them build houses.

Each employee camp has a store, a school, water, and electricity, partly subsidized by the company.

CEB has launched pilot projects in fish farming, animal husbandry, and terra cotta brick fabrication. Although these projects are not yet financially viable, CEB claims it is trying to improve management and increase production. However, because of a lack of data, it is difficult to assess the impact of these projects on natural resources and local economies.

- Although these activities imply a commitment to sustainable forest management, CEB faces a number of challenges in making its logging operations exemplary. These include:

Current rotation periods are 17 years, which is likely to be too short for the proper regeneration of the stock of commercial species.

CEB owns more concession area than the limit allowed by the current forestry code.

CEB engages in *fermage*. As noted in Box 2, *fermage* is often associated with poor management.

CEB has yet to fully incorporate the results of its inventories and growth studies into logging plans.

CEB has made significant financial investments to develop and implement its current logging strategy, and it estimates that, over time (approximately 5 to 15 years), it will more than recover these investments. Even though its efforts may appear small in light of what is being done elsewhere in the world, CEB is one of only a few logging companies in Central Africa to show signs of long-term commitment to a particular region. More sustainable logging practices may help companies gain a competitive advantage, which could motivate the private sector to develop such strategies.

CHAPTER 5 CONCLUSION

This report is the first synthesis of logging development in Gabon produced by NGOs. It is a compilation of government records and available forestry data, most of which have never been made public. These data reveal that Gabon's forests are being rapidly conceded to loggers and that logging development is narrowly focussed on exports of a few species, by a few companies, to a few countries. Current laws are not just weak but are poorly implemented and enforced by a government suffering from financial, human, and logistical shortages.

Given Gabon's extensive forest area and the expected growth in global demand for industrial wood products in the next 25 years, Gabon's forest estate holds tremendous economic potential if managed for the long term. With a low population density, Gabon can preserve much of its forests intact, generating ecotourism revenues, and contributing to global environmental services, such as carbon sequestration.

The future of the timber industry in Gabon, and the health of the country's forests, is shaped by decisions and actions taken today. Those dependent on forests—Gabon's government, the logging industry, and local people—require accurate and up-to-date data to ensure that these management decisions are informed and made in the public interest.

These data include information on:

- **Estimates of forest cover and change.**
How much forest is left and at what rate is it changing?
- **Where development activities are taking place.**
Are rare and unique forest habitat at particular risk?
- **How much wood is harvested.**
Is the volume of timber extracted sustainable?
- **What trade-offs development options entail.**
What happens to biodiversity and cultural traditions?
- **Who benefits from development activities.**
Are the benefits being shared fairly among the different actors?

Global Forest Watch seeks to help answer these questions through this and future reports, by making data available to the audiences that have a stake in ensuring that forests are well managed and adequately protected. This first report establishes baseline data using currently available information. GFW is committed to build on this experience to contribute to the knowledge base on forest issues in Gabon.

Data quality and availability are key challenges. One of the difficulties encountered during the preparation of this report was the integration of conflicting information. A simple example can be taken from log production and export figures: data from the Société Nationale des Bois Gabonais and the International Tropical Timber Organization may vary by up to 300,000 m³.

Forest sector activities are characterized by a lack of transparency. Many legislative documents are not accessible, such as *décrets* granting logging permits; nor are certain administrative decisions. For example, detailed information on household permits is extremely difficult to obtain. Because information is not readily shared, it is difficult to determine the existence or the quality of relevant data. Forest resources management decisions cannot be taken without sufficient information. Similarly, the efficiency and relevance of these decisions cannot be determined if the public is uninformed and if the forest sector does not gain more transparency. GFW intends to continue to compile basic information from paper documents and conduct field checks to verify that all development activities are accurately documented.

NOTES

1. *Les Entreprises Françaises et l'Exploitation des Forêts Tropicales Africaine*, n.d.
2. 100 hectares = 1 square kilometer = 247 acres = 0.4 square miles.
3. World Resources Institute in collaboration with the United Nations Environment Programme, the United Nations Development Programme, and the World Bank, *World Resources 1998-99* (New York: Oxford University Press, 1998).
4. Food and Agriculture Organization of the United Nations (FAO), *State of the World's Forests, 1999* (Rome: FAO, 1999).
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6. World Resources Institute in collaboration with the United Nations Environment Programme, the United Nations Development Programme, and the World Bank, *World Resources 1998-99* (New York: Oxford University Press, 1998).
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8. Data from Tropical Resources and Environment Monitoring by Satellites (TREES) project, 1995.
9. J. Olson et al., "Carbon in Live Vegetation of Major World Ecosystems," Report ORNL-5862 (Oak Ridge, TN, USA: Oak Ridge National Laboratory, 1993).
10. *Analyse du système actuel de fiscalité forestière au Gabon* (Ernst & Young, 1998).
11. Gabon has signed the following: Year 2000 Objectives of the International Tropical Timber Organization (ITTO), the International Timber Trade Agreement, the Convention on the International Trade of Endangered Species (CITES), the Sustainable Management Principles, *Agenda 21*, the United Nations Framework Convention on Climate Change, and the Biodiversity Convention.
12. *La conservation des écosystèmes forestiers du Gabon*. C. Wilk, (Cambridge: IUCN, Gland, 1990).
13. White, 1994. "The Effects of Commercial Mechanized Selective Logging on a Transect in Lowland Rainforest in the Lopé Reserve, Gabon." *Journal of Tropical Ecology*.
14. L. White and K. Abernethy, "Vegetation Guide of the Lopé Reserve." ECOFAC, Gabon, 1996
15. These include evergreen rainforests, semideciduous rainforests, and hydromorphic forests.
16. Philippe Mayaux, TREES, personal communication, 1999.
17. Original forest cover is an estimation of where forest would be found in the absence of major human disturbance. For more information, consult *The Last Frontier Forests*, by Bryant et al., WRI, 1997.
18. However, because of a lack of spatial reference for the 1999 data, Map 4 shows concession area only through 1997.
19. Caroline Tutin and Michel Fernandez. "Gabon: A Fragile Sanctuary." *Primate Conservation*, 1987.
20. *L'aménagement durable des forêts au Gabon*. Ministère des Eaux et Forêts, December 1996.
21. M. Mervaille, INC. Personal communication, June 1999.
22. S. Lahm, IRET. Personal communication, December 1999.
23. Greenpeace, *Buying Destruction: A Greenpeace Report for Corporate Consumers of Forest Products*. (Greenpeace International Publications, August 1999).
24. Draft law for orientation of Water and Forest Resources Policy.
25. *Marchés Tropicaux et Méditerranéens*. Juin 1998.
26. Miscellaneous Woods are all species other than Okoumé and Ozigo.
27. The Société Nationale des Bois Gabonais (SNBG) is a state-run timber marketing agency holding the monopoly on the Okoumé and Ozigo markets. Logging companies in Gabon sell their Okoumé and Ozigo logs to the SNBG, which then sells them on the international market. Miscellaneous woods can be directly marketed by logging companies.
28. Steve Johnson, International Tropical Timber Organization (ITTO), personal communication, 1999.
29. Livre Blanc—Industrie du Bois, SYNFOGA, 1995.
30. Wood processing industries are designed for, and adapted to, specific wood characteristics that vary from species to species.

31. Mr. Mombo. GFW review meeting of June 22, 1999.
32. Decree No. 1205/PR/MEFPE, 30 August 1993.
33. Ordonnance 21/68. 9 April 1968.
34. Rapport Annuel d'Activités 1997. Direction des Etudes et de la Documentation. Septembre 1998.
35. L'aménagement Durable des Forêts au Gabon - OIBT, Ministère des Eaux et Forêts et du Reboisement, Mai 1998.
36. Loi 1/82 du 22 Juillet 1982, d'orientation en matière des Eaux et Forêts.
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38. Analyse du Système Actuel de Fiscalité Forestière au Gabon. Ernst & Young, 1998.
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41. Etude de la Fiscalité Forestière, de l'Attribution des Titres d'Exploitation Forestière et du Développement du Secteur Forestier Gabonais. General Woods & Veneers.
42. World Bank, *World Development Indicators 1999*. Available on CD Rom. (Washington, DC: The World Bank).
43. Annual Review and Assessment of the World Timber Situation 1998, ITTO 1999.
44. Tendances de l'Economie. Direction Générale de la Statistique et des Etudes Economiques, 1998.
45. This figure was estimated by calculating the production value in 1997 as \$270 million (2.7 million m³ at an average of \$100/m³), and by comparing it to the \$40 million in collected taxes reported by an Ernst & Young report. However, the production value is probably underestimated and the forestry tax burden is probably less than 15 percent.
46. N. Sizer and R. Rice, *Backs to the Wall in Suriname: Forest Policy in a Country in Crisis* (Washington, DC: World Resources Institute, 1995).
47. In 1992, representatives from more than 100 countries gathered at the Earth Summit in Rio de Janeiro. This event reflected a rise in global environmental awareness, and led to the adoption of several environmental guidelines and conventions: the Climate Change Convention, the Biodiversity Convention, the Rio Declaration, the Forest Principles, and *Agenda 21*. These texts identified urgent environmental and development issues as well as steps to address them. The Earth Summit is considered a new beginning in our approach to sustainable development.
48. Michel Simeon, World Bank, personal communication, 1998.
49. Ibid.
50. L'Aménagement Durable des Forêts au Gabon. Ministère des Eaux et Forêts. 1996.
51. Environmental Adjustment and Forestry Policy Reform in Cameroon. Brunner and Ekoko, 1999.
52. Draft Law for Orientation of Water and Forest Resources Policy.
53. Ibid.
54. Ibid.
55. Note relating to the Draft Law for Orientation of Water and Forest Resources Policy.
56. *L'Institut National de Cartographie en 1998*, By R. Riou, December 1998.
57. M. Mervaille, INC. Personal communication, June 1999.
58. *L'Institut National de Cartographie en 1998*, By R. Riou, December 1998.
59. Based on personal communication with Denis Cabana (DIARF), 1999.
60. Based on personal communication with Benoit Demarquez (CEB), 1999.

APPENDIX 1. DATA SOURCES

INDICATOR 1. WHAT IS THE EXTENT OF FOREST COVER?

Forest Cover in Gabon
(Figure 2)

	FAO 1995	Trees 1991–93	Government of Gabon
Forested area (hectares)	17,859,000	21,338,900	22,000,000

Sources: Food and Agriculture Organization of the United Nations (FAO). 1997. *State of the World's Forests*. Rome: FAO ; Joint Research Center Tropical Resources and Environment Monitoring by Satellites (JRC TREES).1995; Ministère des Eaux et Forêts. 1998. *L'Aménagement Durable des Forêts au Gabon*.

Changes in Gabon's Forest Cover
(Figure 3)

	Original	1980	1990	1995
Total area (square kilometers)	257,670	194,110	183,140	178,590
Percentage of original cover	100	75	71	69
Estimated annual deforestation (square kilometers)	NA	x	1,160	910
Annual deforestation rate (percent)	NA	x	0.60	0.50

Sources: World Resources Institute in collaboration with the United Nations Environment Programme, the United Nations Development Programme, and the World Bank. 1998. *World Resources 1998–99*. New York: Oxford University Press; Food and Agriculture Organization of the United Nations (FAO). 1990. *Food and Agriculture Organization 1990 Assessment*. Rome: FAO; D. Bryant et al., 1997. *The Last Frontier Forests: Ecosystems and Economies on the Edge*. Washington, DC: World Resources Institute. FAO. 1997. *State of the World's Forests*.

Changes in Forest Cover in Central Africa
(Figure 4)

	Forested area, 1990 (hectares)	Forested area, 1995 (hectares)	Annual percentage change, 1990–95
Gabon	18,314,000	17,859,000	0.5
Central African Republic	30,571,000	29,930,000	0.4
Cameroon	20,244,000	19,598,000	0.6
Republic of Congo	19,745,000	19,537,000	0.2
Democratic Republic of Congo	112,946,000	109,245,000	0.7
Equatorial Guinea	1,829,000	1,781,000	0.5

Source: World Resources Institute in collaboration with the United Nations Environment Programme, the United Nations Development Programme, and the World Bank. 1998. *World Resources 1998–99*. New York: Oxford University Press.

Technical Notes

- FAO’s estimate of forest cover is based on a 1970 inventory to which a -0.6 percent annual deforestation rate was applied. This rate is not derived from a calculation but from a model incorporating demographic and ecological data. Experts believe that this rate is too high for Gabon and that the models on which it is based are biased (Philippe Mayaux, TREES, personal communication, 1999).
- The estimate from TREES was calculated by country, using remote sensing technology (analysis of high-resolution LANDSAT satellite imagery taken during the dry season) to identify zones with at least 68 percent of crown cover. Experts believe it may overestimate actual forest cover, particularly along the coast of Gabon because of cloud cover (Philippe Mayaux, TREES, personal communication, 1999).
- FAO data were used to estimate land cover changes, because they are the only complete source of data that uses a similar methodology to assess change over different time periods. Although high-resolution satellite images are available for the 1970s, 1980s, and 1990s through the LANDSAT Pathfinder program, extensive cloud cover in Central Africa has limited the completeness of these data.

INDICATOR 2. WHERE IS LOGGING TAKING PLACE?

Technical Notes

(Maps 1–6 and Table 1)

- TREES data on forest cover were used in Table 1 because they are the only complete and the most recent map-based estimate of forest cover in Gabon.
- GFW maps were created by comparing the 1997 government logging concession map to a 1997 list of valid logging permits. The World Conservation Monitoring Centre (WCMC) provided geographic boundaries of the 1997 official map. GFW–Gabon was able to map additional logging concessions (missing on the official map) by tracking the “*arrêtés*” and “*décrets*” granting permits, which specify the concession boundaries in the “*Journal Officiel*” (Official Gazette). Unfortunately, not all the “*arrêtés*” and “*décrets*” were found; thus certain concessions from the 1997 list are still missing from GFW’s maps.
- Experts have informed us that the WCMC boundaries for the Lopé and the Minkébé Reserves based on information provided by the Gabonese government are not up to date. We have tried to correct our maps based on expert opinion but were unable to obtain digital data for those limits. Our maps, therefore, represent an estimation of the most up-to-date boundaries for the Lopé and the Minkébé Reserves.
- A complete listing of the concession data presented in GFW maps is available through the Global Forest Watch office in Washington, DC or through the CARPE office in Libreville. (*See inside back cover.*)

INDICATOR 3. WHO IS LOGGING GABON'S FOREST?

Technical Notes

(Table 2)

- This list was compiled from GFW data based on the 1997 logging permits map (WCMC) and the 1997 list of valid permits from the Ministry of Water and Forests.
- Shortcomings of the source data may have caused some errors in our calculations of the surface areas owned by different companies.
- Table 2 lists only logging companies, not individual owners. Three individuals own more than 140, 000 hectares each.

INDICATOR 4. HOW HAVE LOGGING CONCESSIONS EVOLVED?

Gabon's Logging Permits

(Figures 5, 7–9)

	1994	1995	1996	1997	1999
Total concession area (hectares)	5,045,228	8,967,570	9,909,399	8,635,333*	11,884,737
Total percent of forest cover	24	42	46	40	56
PTE as percentage of forest cover	7	18	20	12	25
PI as percentage of forest cover	7	13	14	17	21
PZACF as percentage of forest cover	10	11	12	11	10
Area covered by PTEs (hectares)	1,418,705	3,800,490	4,235,719	2,537,453	5,258,279
Area covered by PIs (hectares)	1,576,229	2,820,010	3,068,610	3,722,879	4,477,818
Area covered by PZACFs (hectares)	2,050,294	2,347,070	2,605,070	2,266,240	2,148,640
Percent of total area for PTEs	28	42	43	29	44
Percent of total area for PIs	31	31	31	43	38
Percent of total area for PZACFs	41	26	26	26	18
Number of PTEs	195	223		238	465
Number of PIs	37	33		46	58
Number of PZACFs	43	33		36	31
PTE average area (hectares)	7,275	17,043		15,642	11,308
PI average area (hectares)	42,601	85,455		55,162	77,204
PZACF average area (hectares)	47,681	71,123		62,951	69,311

* This number includes 108,761 hectares allocated to permits that could not be classified as PI, PTE, or PZACF.

Sources

- Total area of forest cover: Final Report of Interministerial Commission on Industrialization of the Wood Sector in Gabon. January 1996.
- Area and number of permits in 1997: WCMC and GFW.
- Area of permits in 1994 and 1995: Department of Inventories, Management and Regeneration (DIARF), Gabon Forest Statistics Yearbook, "Portrait Statistique, Edition 95" (DIARF, April 1997).
- Number of permits in 1994: Department of Inventories, Management and Regeneration (DIARF), Gabon Forest Statistics Yearbook, "Portrait Statistique, Edition 94" (DIARF, April 1996), p. 10.
- Number of permits in 1995: Final Report of Interministerial Commission on Industrialization of the Wood Sector in Gabon. January 1996.
- Area of permits in 1996: Department of Inventories, Management and Regeneration (DIARF), Gabon Forest Statistics Yearbook, "Portrait Statistique, Edition 96" (DIARF, May 1998).
- Area and number of permits in 1999: Ministère des Eaux et Forêts Echéancier National (1999).

Technical Note

- All PZACFs were granted in 1972 and 1973; therefore the data between 1994 and 1999 should remain constant or decrease (as permits expire), but they do not. The Department of Inventories, Management and Regeneration (DIARF), which is the source of these data, explains the variations observed by the facts that permits not logged in a particular year may not be accounted for and that certain PZACFs are divided into several lots.

INDICATOR 5. HOW MUCH WOOD DOES GABON PRODUCE AND EXPORT?

(Figures 11, 13, 14, 15, 16, 17)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 ^a	Total	1987–96
Okoumé production (cubic meters)	868,200	989,200	944,000	1,136,600	821,400	1,014,800	1,332,100	1,461,300	1,529,700	1,780,900	1,836,000	1,576,600	15,290,800	11,878,200
Ozigo production (cubic meters)	38,900	52,200	57,800	60,600	73,800	98,300	127,000	204,600	141,100	124,200	156,900	70,400	1,205,800	978,500
Miscellaneous woods production (cubic meters)	395,828	375,662	439,934	478,132	443,413	439,083	458,065	555,094	548,496	567,262	698,983	674,622	6,074,574	4,700,969
Total production (cubic meters)	1,302,928	1,417,062	1,441,734	1,675,332	1,338,613	1,552,183	1,917,165	2,220,994	2,219,296	2,472,362	2,691,883	2,321,622	22,571,174	17,557,669
Okoumé exports (cubic meters)	901,561	859,698	987,406	1,031,025	889,084	952,831	1,377,459	1,322,440	1,552,660	1,790,846	1,850,427	1,012,131	14,527,568	11,665,010
Ozigo exports (cubic meters)	32,220	39,376	43,909	58,179	64,095	84,665	126,970	159,631	157,809	118,888	155,517	49,829	1,091,088	885,742
Miscellaneous woods exports (cubic meters)	303,819	289,908	378,955	392,768	372,271	363,817	370,395	424,299	507,660	444,569			3,848,461	3,848,461
Total exports (cubic meters)	1,237,600	1,188,982	1,410,270	1,481,972	1,325,450	1,401,313	1,874,824	1,906,370	2,218,129	2,354,303			19,467,117	16,399,213
Okoumé production (million CFAF)	23,676	27,804	26,727	33,259	23,565	28,480	45,313	110,887	98,059	106,399	117,622	101,482	743,273	524,169
Ozigo production (million CFAF)	703	966	906	1,208	1,563	2,051	3,296	11,740	6,617	5,195	6,953	2,848	44,046	34,245
Miscellaneous woods production (million CFAF)	13,092	12,549	13,337	16,448	14,812	15,062	16,162	38,258	34,042	48,995			222,757	222,757
Total production (million CFAF)	37,471	41,319	40,970	50,915	39,940	45,593	64,771	160,885	138,718	160,589			1,010,076	781,171
Okoumé exports (million CFAF)	31,138	32,500	35,376	39,364	33,040	35,719	62,417	134,920	127,728	144,205	154,728	71,492	902,627	676,407
Ozigo exports (million CFAF)	821	901	1,073	1,486	1,696	2,141	4,212	12,025	9,600	6,962	8,732	2,591	52,240	40,917
Miscellaneous woods exports (million CFAF)	15,090	14,500	17,357	19,087	17,741	16,364	17,863	40,159	42,643	52,277			253,081	253,081
Total exports (million CFAF)	47,049	47,901	53,806	59,937	52,477	54,224	84,492	187,104	179,971	203,444			1,269,683	970,405

Note: a. Projected.

Sources: Production and exports value and volume data:

Okoumé and Ozigo production and exports in volume and value: Société Nationale de Bois Gabonais. Production data for 1998 are estimated on the basis of the first 6 months; export data on the basis of the first 11 months.

Production and exports value and volume data for Miscellaneous Woods from 1987 to 1996: Direction Générale de la Statistique et des Etudes Economiques.

Miscellaneous Woods production in volume in 1997 and 1998: Société d'Exploitation des Parcs à Bois Gabonais.

Other figures based on the preceding data.

Countries and Regions Importing Wood from Gabon
(in thousand m³ of Okoumé and Ozigo)
(Figures 10, 12)

Country	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 ^a
France	302.3	326.2	352	319.4	376.9	340.6	345.2	347.8	464.2	354.6
Morocco	78.5	87.7	93.1	95.2	116.2	114.1	92.9	80	109.4	110.4
Israel	161.7	203.2	181.6	202.3	196.7	197.4	143	96.8	105.1	57.2
Turkey	24.3	102.9	122.3	139	150.3	56.8	97.3	101.8	129.2	74.2
Japan	130.2	75.1	26.1	89.1	252.1	291.1	327	286.3	127.2	
China			12.3	36.2	143.3	241.9	364.4	627.1	1015.8	428.4
Region										
Europe	484.5	488.3	472	428.3	479.1	429.2	437.9	439.7	730.6	449.6
Africa	138.5	156.2	107.1	116.6	136	138.5	112.9	102	133.5	121.8
Middle East	201.5	309	307	344.9	350.9	255.7	244.2	199.7	234.4	133.4
Asia	139.9	87.1	41.2	127.4	493.6	633.9	914.9	1,097.8	1,579.8	432

Note: a. Projected.

Sources: Data on destinations of Gabonese exports: Direction Générale de la Statistique et des Etudes Economiques, 1998, according to Société d'Exploitation des Parcs à Bois Gabonais data.

Log Export Data
(Figure 18)

Data Source	Logs exported (thousand cubic meters)				
	1992	1993	1994	1995	1996
International Tropical Timber Organization	1,050	1,500	1,500	1,900	2,350
Société Nationale de Bois Gabonais and Direction Générale de la Statistique et des Etudes Economiques	1,401	1,875	1,906	2,218	2,354

Sources: Société Nationale de Bois Gabonais; Société d'Exploitation des Parcs à Bois Gabonais; Direction Générale de la Statistique et des Etudes Economiques. *Tendances de l'économie*, (Libreville: Ministère de la Planification, de l'Environnement et du Tourisme, 1998). International Tropical Timber Organization: *Annual Review and Assessment of the World Timber Situation*, 1998.

INDICATOR 6. WHAT IS THE LOGISTICAL CAPACITY OF GABON'S MINISTRY OF WATER AND FORESTS?

Information on the Ministère des Eaux et Forêts Agents
(Figure 19)

Category	Central Services ^a	Local Inspection And Cantonnement ^{b,c}	In Training ^d	Libreville Brigade ^e	Total
A1 ^f	35	2	1	1	39
A2 ^g	82	51	14	7	154
B1 ^h	32	46	3	2	83
B2 ⁱ	4	5			9
C ^j	6	19			25
Total	159	123	18	10	310
Percentages	51	40	6	3	100

Notes:

- a. Central Services comprises all agents working in the Ministry of Water and Forest Resources, in the various technical departments in Libreville.
- b. Inspection units comprise all agents assigned in a province.
- c. Cantonnements comprise all agents located in a department.
- d. Training refers to the Eaux et Forêts agents and not ENEF trainees.
- e. The Libreville Brigade comprises all agents not part of the Estuaire provincial inspection, such as those of the Mondah Classified Forest.
- f. A1 = "Bac" [high school diploma] + 5 years university.
- g. A2 = "Bac" + 3 years university.
- h. B1 = "Bac" or equivalent.
- i. B2 = Without "Bac."
- j. C = With or without BEPC [vocational diploma].

Logistical Capacity of the Ministère des Eaux et Forêts by Province
(Figures 20–24, 27)

Province	Number of Logging Concessions, 1997	Logging Concession Area, 1997 (square kilometers)	Number of Water and Forests Field Agents, 1995	Number of Water and Forests Vehicles, 1997	Number of Water and Forests Housing Units, 1997	Number of Agents per Vehicle	Concession Area per Agent (square kilometers)	Number of Concessions per Agent	Number of Concessions per Vehicle	Concession Area per Vehicle (square kilometers)	Number of Agents per Housing Unit
Estuaire	59	4,307	20	1	0	20.0	215	3.0	59	4,307	
Haut Ogooue	27	5,387	8				673	3.4			
Moyen Ogooue	61	10,517	11	2	4	5.5	956	5.5	31	5,259	3
Ngounie	36	15,201	12				1267	3.0			
Nyanga	13	2,547	10	1	10	10.0	255	1.3	13	2,547	1
Ogooue Ivindo	40	16,470	7	6	10	1.2	2353	5.7	7	2,745	1
Ogooue Lolo	55	21,928	10	4	6	2.5	2193	5.5	14	5,482	2
Ogooue Maritime	24	2,749	7	2		3.5	393	3.4	12	1,375	
Woleu Nteum	16	5,464	15	3		5.0	364	1.1	5	1,821	
Gabon	332 ^a	86,350 ^b	100	19	30	5.3	864	3.3	17	4,545	3

Notes: a. Includes 1 permit for which a province could not be determined.

b. Includes 1,780 square kilometers of logging permits for which a province could not be found.

Number of Vehicles Available to the Ministère des Eaux et Forêts by Province
(Figures 25, 26)

Province	1997	1999
Estuaire	1	63
Haut Ogooue		2
Moyen Ogooue	2	5
Ngounie		2
Nyanga	1	4
Ogooue Ivindo	6	8
Ogooue Lolo	4	7
Ogooue Maritime	2	4
Woleu Ntem	3	2
Total	19	97
Total (Except Estuaire)	18	34

Sources

- Number and area of permits in 1997: WCMC, Global Forest Watch (supplemental data and additional concessions).
- Number of vehicles and housing units available to the Ministry of Water and Forest Resources in 1997: *Rapport Annuel d'Activités 1997*, Direction des Etudes et de la Documentation, 1998.
- Number of vehicles available to the Ministry of Water and Forest Resources in 1999: Direction des Inventaires et de la Régénération des Forêts, 1999.
- Number of agents in 1995: *Annuaire des Statistiques Forestières du Gabon, 1995*. April 1997.
- Categories and assignments of Eaux et Forêts agents in 1997: DED (Department of Research and Documentation).

Technical Note

- The calculated ratio of agents to number of concessions, area of concessions, vehicles, and housing takes into account agents assigned only to provincial inspections.

APPENDIX 2. ARTICLES OF LAW 1/82 FURTHER DEFINED BY DECREE

Article Number ^a	Topic	Decree Status
5	Customary rights of use	Decree # 192/PR/MEFCR; 3/4/1987
6	Paramilitary equipment for Eaux et Forêts [Water and Forest Resources] agents	Decree # 861/PR/MFP; 8/20/81 (partial)
7	Bonuses for Eaux et Forêts agents	Not addressed
10	Definition of the “Domaine Forestier” [National Forest]	Decree #184/PR/MEFCR; 3/4/87
11	Classification of the classified “Forêts Domaniales”	Decree #184/PR/MEFCR; 3/4/87
14	Management plan modalities for all classified “Forêts Domaniales”	Not addressed
16	Nature of and allocation procedure for operating permits	Decree #559/PR/MEFE; 7/12/1994, but only for household lots
20	Obtaining of approval for logging or processing activity	Not addressed
21	Cessation, transmission, or transfer modalities for logging permits	Not addressed
22	Delimitation of logging zones	Decree #1205/PR/MEFPE; 8/30/1993
23	Inventories and logging plans	Decree #1206/PR/MEFPE; 8/30/1993
23	Procedures for keeping statistical and accounting records or for logging charge modalities	Not addressed
26	Procedures for keeping logging records	Decree #1206/PR/MEFPE; 8/30/1993
27	Return to the “Domaine” of permits whose periods of validity have not been observed	Not addressed
29	Right of the administration to take back a logging zone granted for reasons of public interest	Not addressed
30	Standardization and classification rules for raw and processed forest products	Decree #1285/PR/MEFPE; 9/27/1993
80	Functions of an artificial forest plantation authority	Not addressed
81	Measures facilitating operation by groups of Gabonese nationals	Not addressed
82	Repossession by the state of abandoned logs	Decree #977/PR/MDCUDM; 7/28/1986
83	Plant health or animal health certificate	Not addressed
85	Oath to be taken by agents	Not addressed
87	Procedures for writing up violations	Not addressed
91	Agents’ rights to inspect vehicles used for hauling forest products	Not addressed
92	Confiscation of products or equipment by Eaux et Forêts agents	Not addressed
96	Possibility of Eaux et Forêts intervention in judgments	Not addressed
97	Transaction	Not addressed
101	Distribution of rewards among Eaux et Forêts agents	Not addressed
102	Distribution of seized products among Eaux et Forêts agents	Not addressed
107-112	Penalties, seizures, confiscations, sequestration, restitutions, damages and interest, or restoration of land to original state	Not addressed
112	Conditions of penalties specified in Articles 107, 108, 109, 110, and 111	Not addressed
113	Possibility of prohibiting renewal of an operating permit	Not addressed
114	Possibility of suspension or withdrawal of an operating permit	Not addressed
115	Suspension or withdrawal of a permit in case of infraction	Not addressed

Note: a. Includes only Articles from Sections I, II, V, VI, and VII of Law 1/82 relating to water and forest resources.

APPENDIX 3. GABON'S FORESTRY TAX SYSTEM

Tax	Value			
Before Permit is Granted				
Exploration Tax (CFAF per hectare)	2 (US\$ 0.003)			
Transfer Tax (CFAF per hectare)	200 (US\$ 0.3)			
Repurchase Tax (CFAF per hectare)	220 (US\$ 0.36)			
When Permit is Granted				
Area Tax (CFAF per hectare per year)¹	Tax Zone A	Tax Zone B	Tax Zone C	Tax Zone D
	20 (US\$ 0.03)	12 (US\$ 0.02)	8 (US\$ 0.01)	4 (US\$ 0.006)
Allocation Tax (percentage of beach price)²				
Railway development zone permits, Temporary logging permits, and industrial permits ³	8–10	6–8	4–6	2–4
Household permits	CFAF 1500 per unit (US\$2.50)			
Timber-marking Tax	Varies between CFAF 200 and CFAF 2,600 (US\$ 0.3 to US\$ 4.20)			
Applies only to species other than Okoumé and Ozigo				
During Production				
Reforestation Tax	Rate not available			
Applies only to wood exported				
When Wood is Processed				
Sawing Tax (CFAF per cubic meter)	200 (US\$ 0.3)			
Veneer and Plywood Tax (CFAF per cubic meter)	400 (US\$ 0.6)			
When Wood is Exported				
Port Tax (CFAF per metric ton)	545 (US\$ 0.9)			
Treasury Tax	0.2 percent of export taxes and duties			
Export Tax (percent of FOB price)				
Logs	11			
Processed products	5			

Notes:

1. Defined by Law 31/66 (December 19, 1966). Household lots are exempt. This tax is applied on the entire concession, even if only a part of it is being logged. It varies according to the distance from the port and the difficulty of extraction. In order to take these two factors into account, four tax zones (A, B, C, and D) have been delimited in Gabon. Zone A is nearest to the port and Zone D the farthest from it. Transport costs increase from Zone A to Zone D. Moreover, logging is often more difficult, and therefore more costly, in the interior of the country than along the coast, because the interior is less readily accessible and very hilly, factors that increase the cost of infrastructure and public works. To offset these differences, wood from the more distant zones is taxed less than wood from the coastal zone.
2. This fee is based on the beach price. The beach price comprises the costs of extraction and transport and seeks to determine the amount spent on a tree from the moment of its identification in the forest up to its arrival in the port. This price therefore also varies in accordance with the tax zones described above. The beach price is lower than the Free on Board (FOB) price, which includes the cost of holding in stock, and export duties and varies depending on supply and demand. The FOB price is the market value of the tree.
3. Processed wood is exempt.

APPENDIX 4. THE GFW REVIEW PROCESS

A key principle of Global Forest Watch is the firm belief that transparency and accountability are essential for developing better natural resources management. In preparing this report, we faced difficulties in both accessing existing information and deriving documentation on these data—in terms of definitions used, how data were collected, and quality of the information, among other factors. In the interest of promoting open, public, and transparent information policies, GFW products include detailed notes on the data we have assembled (*see Appendix 2*) and a summary of the major comments experts provided in reviewing early drafts. These are listed below, along with details on how comments were addressed.

The Review Process

This report and the maps presented in it underwent two separate reviews. An initial draft was presented to an advisory group composed of representatives of the Gabonese Forestry Department and other relevant agencies (Institut National de Cartographie, Plan National d'Action pour l'Environnement, Projet Forêt et Environnement), along with scientists and individuals working in nongovernmental conservation organizations (Association pour le Développement de l'Information Environnementale, Africa Forest, WWF, local NGOs). The following individuals attended the day-long review workshop held in Libreville on June 22, 1999: Robert Solem, Sylvie Nkousse Evinah, Michel Fernandez, Marc Mervaille, Jean-Pierre Profizi, Chris Wilks, Prosper Obame, Omer Ntougou, Marc Mombo Kombila, Alphonse Owele, Jean Mboulou, Athanase Bousseguet, Jean-Philippe Jorez, Juste

Bousseguet, Jean-Boniface Memvie, Aurélien Mofouma, Clair Mbourou, Jean-Bruno Mikissa, Nicaise Rabenkogo, Jean Madouma, Honoré Nzao-Nzao, Stéphane Mundunga, Serge Akagah, Emmanuel Bayani, and JG Collomb.

On the basis of workshop input, we revised the report further and submitted it to a second review in September. The following people were asked to comment on this draft (an asterisk denotes reviewers who were unable to comment on the report):

Robert Solem, Nicodème Tchamou, Fred Swartzendruber, Chris Justice, Laurent Somé, Nicolas Bordier,* Séraphin Dondyas,* and Jim Graham. These reviewers represent the following institutions: CARPE, USAID, University of Virginia, Biodiversity Support Program, Syndicat des Forestiers du Gabon,* and WWF-Gabon;* however, the comments received reflected personal, and not institutional, opinions. Several WRI staff—Jake Brunner, Nigel Sizer, Tony Janetos, Dan Tunstall, and Dirk Bryant—also provided input.

In addition, specific maps and sections of the report were circulated to the following individuals for input on questions raised during the review process: Philippe Mayaux (JRC TREES project), Benoit Demarquez (Compagnie Equatoriale des Bois), Pauwel de Wachter (WWF), and Emmanuel de Merode (ECOFAC). Pierre Samson and Denis Cabana (both from the DIARF) also provided valuable data on concessions and the logistical capacity of the Ministère des Eaux et Forêts.

Major Review Comments and How They Were Addressed

Most reviewers commented on the report's structure and presentation of materials. We received limited input on the data behind the maps and graphs, perhaps because of a basic lack of information on logging development trends in Gabon, the specific location of concessions, and the lack of documentation on the protocols and methods used under government data collection efforts. Major comments follow.

- **Concessions data are incomplete.**

Data presented in our maps do not provide a complete picture of the extent of current and abandoned concessions. For example, we have underrepresented the extent of abandoned concession area in the Première Zone (DIARF maps provide more detailed information on this zone; however, we were unable to procure these data). In addition, we have been unable to distinguish between active and inactive concessions for those sites recorded as currently operative. Data on production levels by concession—in theory available, but not accessible to GFW partners—would allow users to make such a distinction. Our concession maps, which are presented with caveats, are intended to give a preliminary view of logging development to be field checked through future GFW work.

- **Mapped locations of protected areas and concessions are sometimes inaccurate.**

Preliminary draft maps included inaccurate boundaries for several protected areas (Lopé, Minkebé), which were traced to problems with the base maps we used. We have corrected these with input from ECOFAC and WWF experts. Reviewers also noted discrepancies in the total area reported for several concessions along with the location of concession boundaries. These have been addressed where possible or else flagged as an issue within the technical notes.

- **Statistics on production and capacity for implementation are of varying quality.**

We adjusted incorrect production statistics presented in early report drafts on the basis of ITTO and other data. We present summary statistics on staffing and other capacity for implementing management regulations with caveats regarding the conclusions one can draw from these data. The technical notes in this report highlight where data quality is otherwise known to be questionable.

- **Fiscal information presented in this report does not provide a clear picture of the benefits and costs of logging in Gabon.**

Reviewers noted a need for further analysis and information on taxation recovery rates, fiscal returns relative to operating costs, and comparative information for other Central African countries. We made several revisions to earlier drafts of this report, including adding a summary table on taxes and recovery rates, providing comparative infor-

mation for Cameroon, and moving much of the detailed fiscal data to an appendix. However, we have not been able to address many of the reviewer comments on this section of the report because of time and data limitations. GFW-Gabon intends to collect and present a more comprehensive overview of the benefits and costs of logging in future reports.

- **We should strengthen sections on forest legislation and enforcement and provide recommendations.**

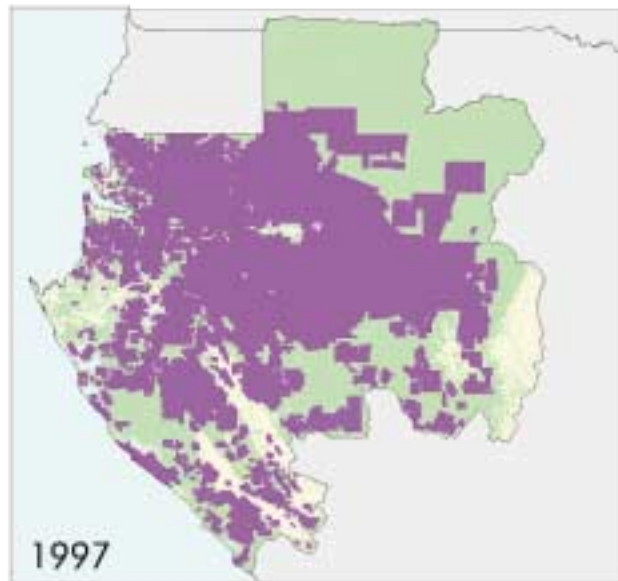
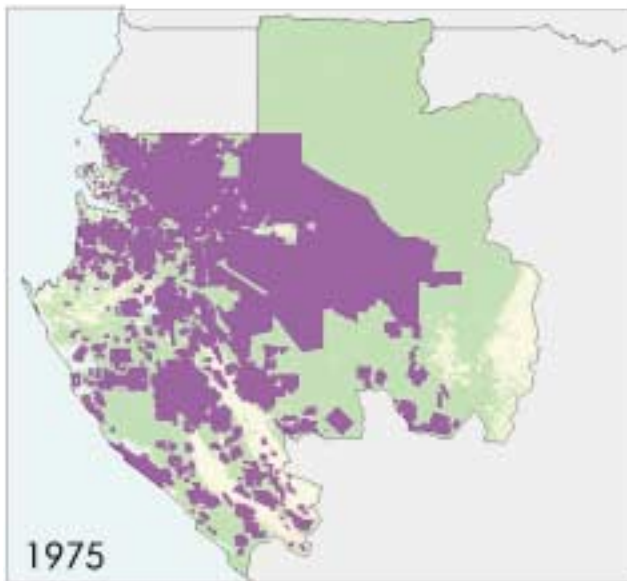
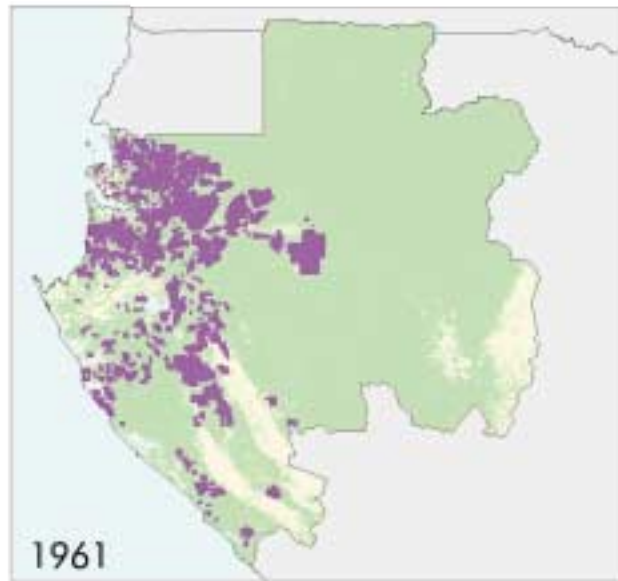
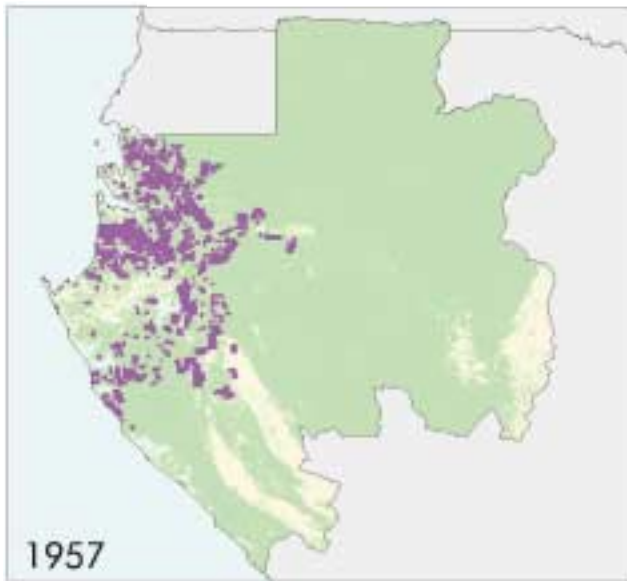
Several individuals noted that the policy section was long and unclear, with key information buried in the text. This material was restructured to capture the key dispositions of the law, which have yet to be adequately applied or enforced. Text on the new law was moved into the "Signs of Promise" section. Reviewers also encouraged us to conduct a systematic review of Gabon's forest policy and draw recommendations from our findings. As GFW's mandate is limited to collecting and communicating data, rather than providing policy analysis and recommendations, we did not attempt such a review. It is hoped that data presented in this report will be useful to others interested in doing so.

- **The report contains judgmental language, particularly in the "Signs of Promise" section.**

Several reviewers flagged draft materials they deemed judgmental. We edited or deleted those sections of the text accordingly and provided additional references to support poorly substantiated materials. The "Signs of Promise" stories were restructured and edited to present the information in a more factual fashion, rather than in the original narrative format.

In response to comments regarding the presentation of materials, we restructured and simplified initial drafts of this report, so that results could be more clearly communicated to our audiences. This included adding an overview of the report, an Executive Summary, and an introduction to the Indicator section and rewriting the introduction to the "Signs of Promise" section.

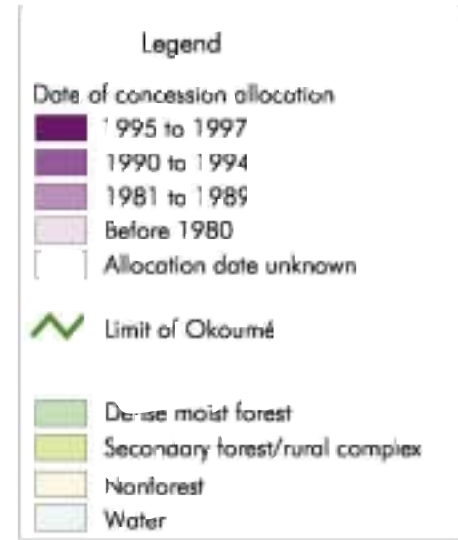
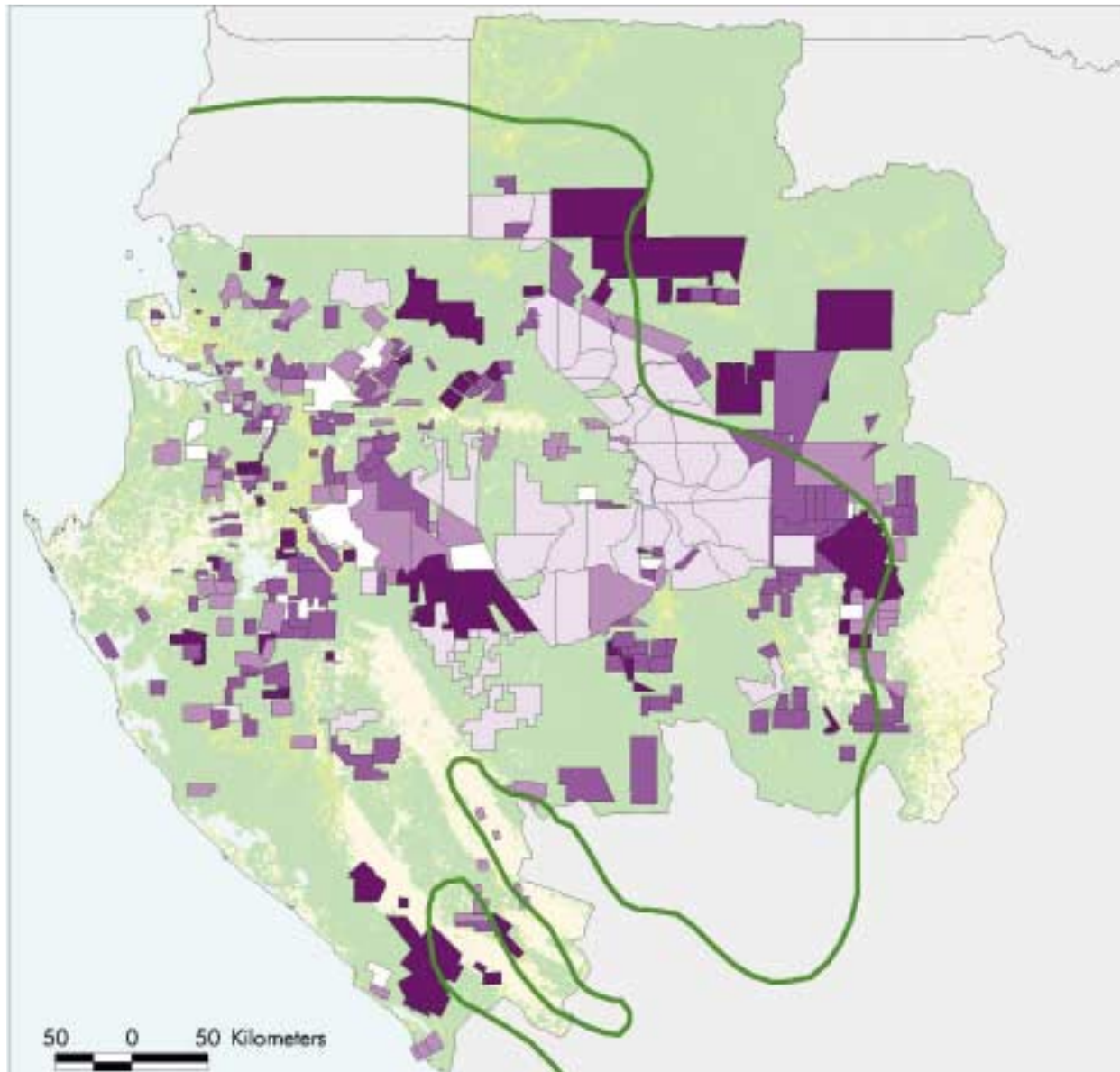
MAP 1 Cumulative Area in Forest Concessions, 1957-97



Sources: Concession data from Journal Officiel du Gabon, WCMC, Pourthier 1989. Land cover from IREES (EC Joint Research Centre), derived from 1992-93 AVHRR imagery; forested area includes dense moist forest and secondary forest classes.



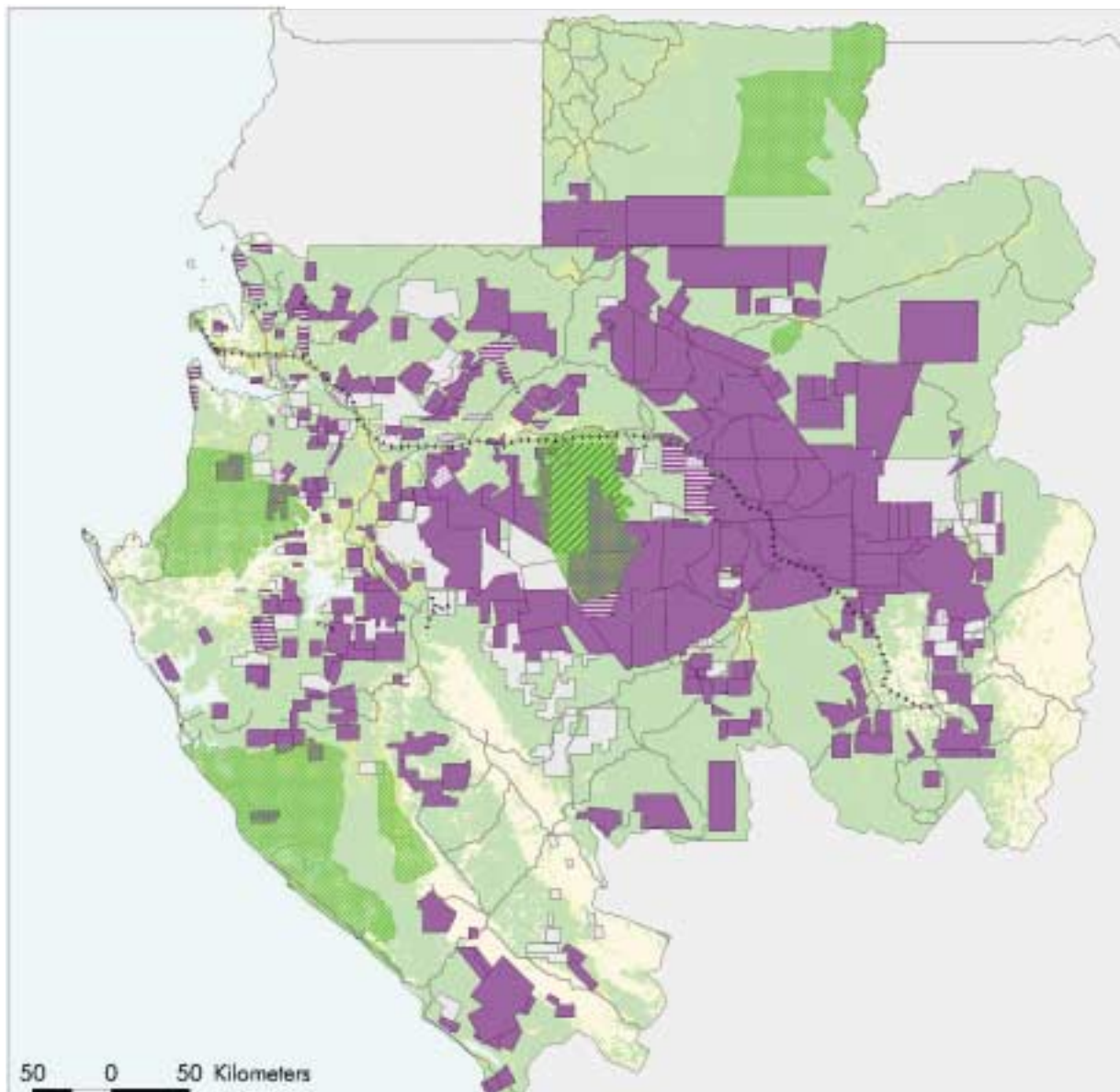
MAP 2 Allocation Year of Logging Concessions



Sources: Concession information from Gabon government data, Journal Officiel du Gabon, and WCMC. Land cover derived from 1992-93 AVHRR imagery (TREES, EC Joint Research Centre).



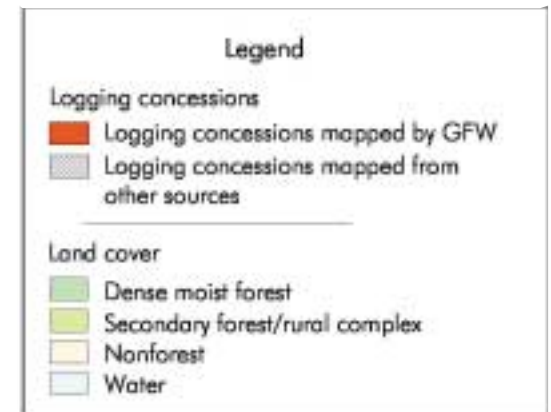
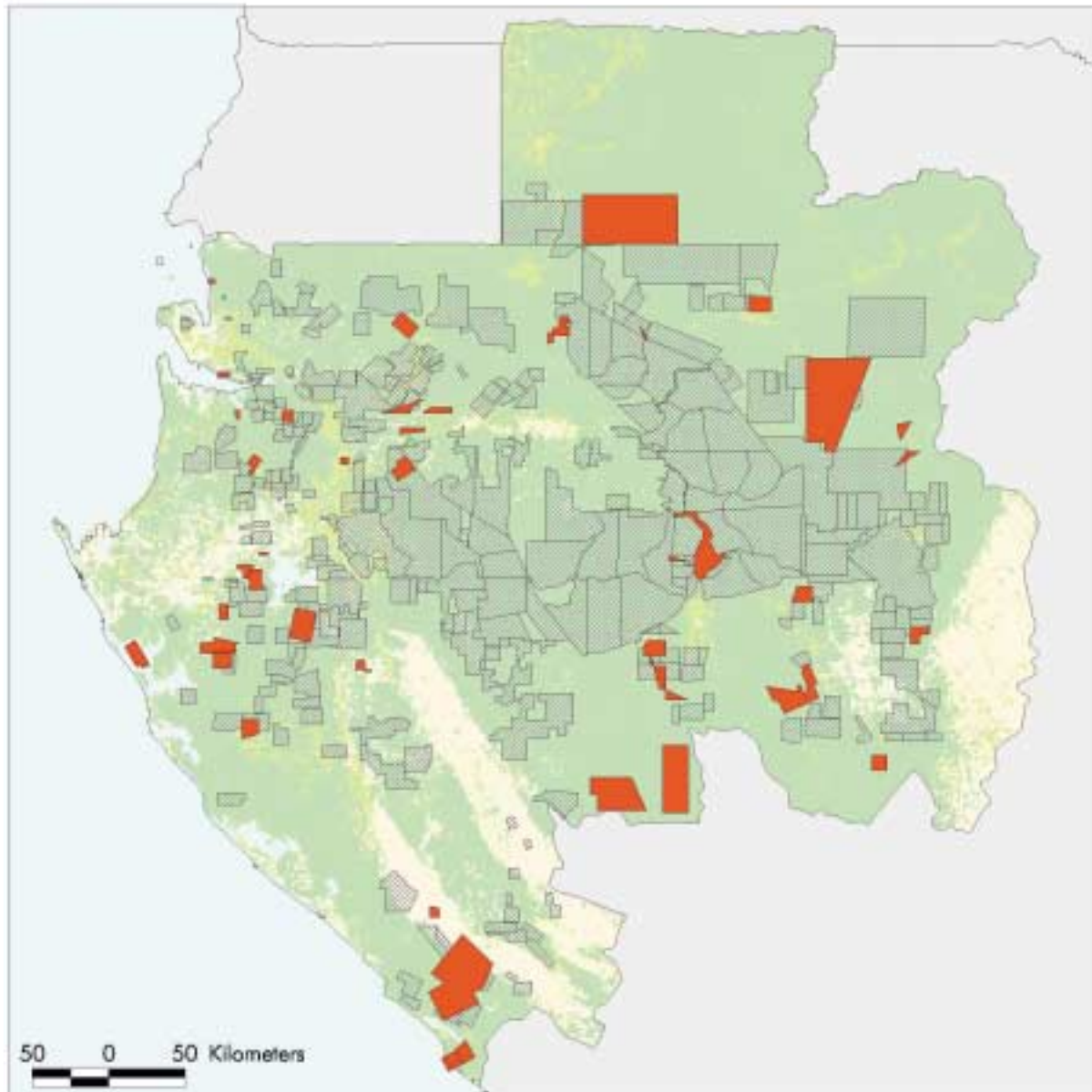
MAP 3 Logging Concession Status in 1997



Sources: Concession information from Gabon government data, Journal Officiel du Gabon, and WCMC. Land cover derived from 1992-93 AVHRR imagery (TREES, EC Joint Research Centre). Protected areas information from WCMC, IUCN, WWF.



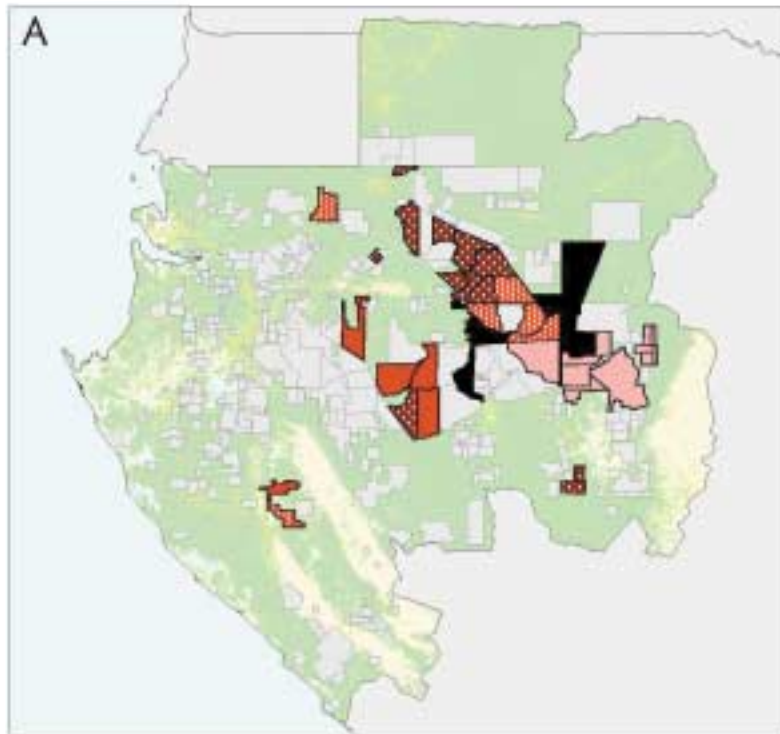
MAP 4 Logging Concessions Mapped by Global Forest Watch









Sources: Data on GFW-mapped concessions from Gabon government data, *Journal Officiel du Gabon*. All other concessions provided by WCMC from Gabon government maps. Land cover from TREES (EC Joint Research Centre), based on 1992-93 AVHRR imagery.



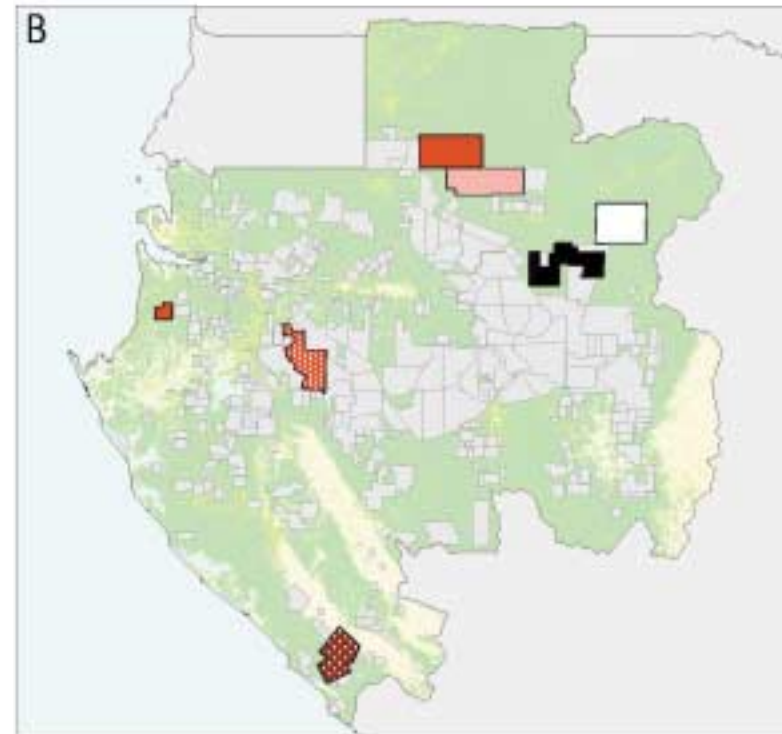
MAP 5 Largest Concession Holders in 1997



- A. Largest concession holders (>250,000 ha total holdings)
-  Rougier Gabon (700,000 ha)
 -  Leroy Gabon (654,000 ha)
 -  CFG (651,000 ha)
 -  CEB (505,000 ha)
 -  Lutexfa/Safarga (487,000 ha)
 -  Owned by other concession holders (with <250,000 ha total holdings)

Note: Total holdings include some concessions that could not be mapped.

Sources: Concession information from Gabon government data, Journal Officiel du Gabon, and WCMC. Land cover from TREES IEC Joint Research

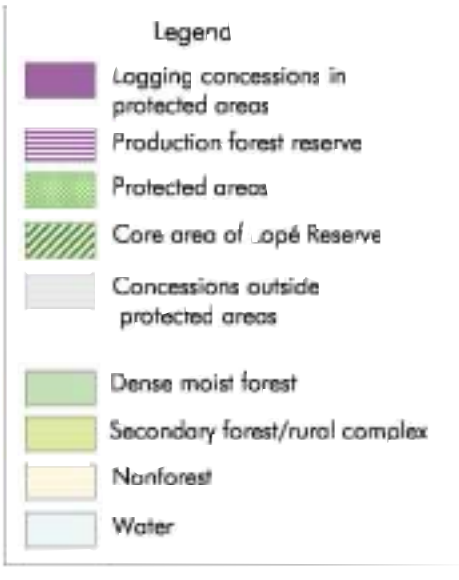
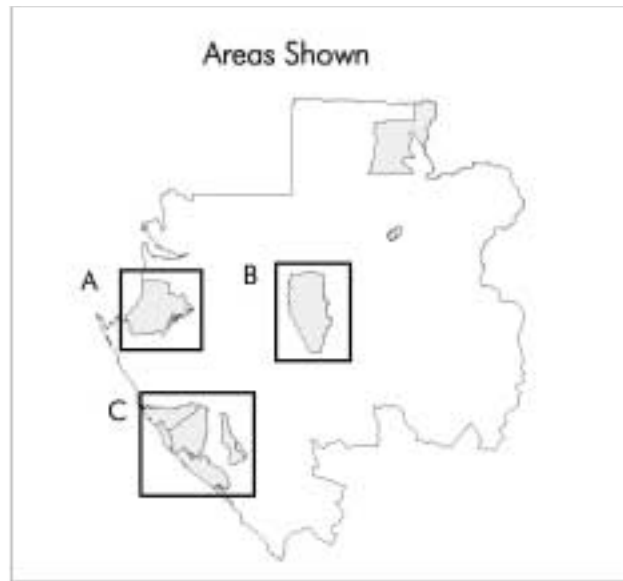
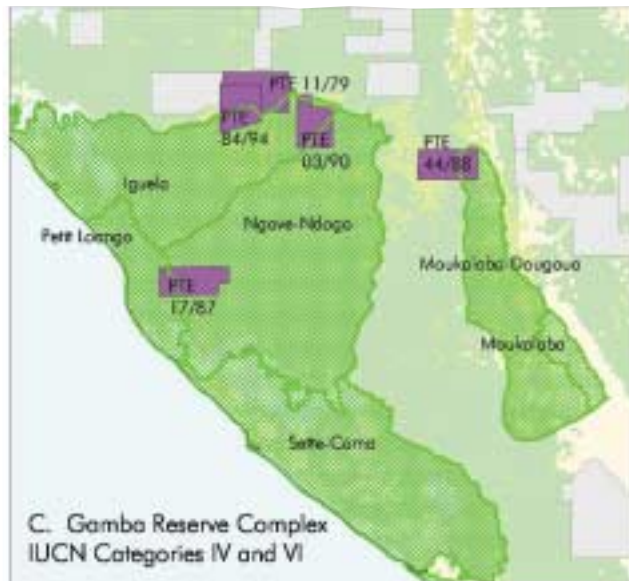
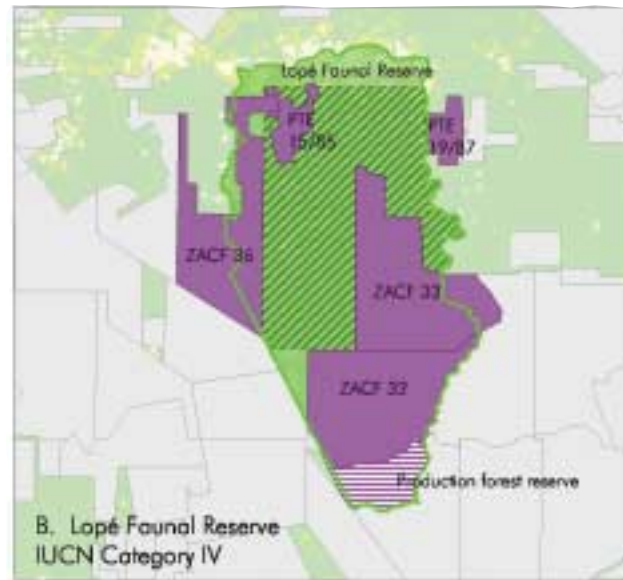
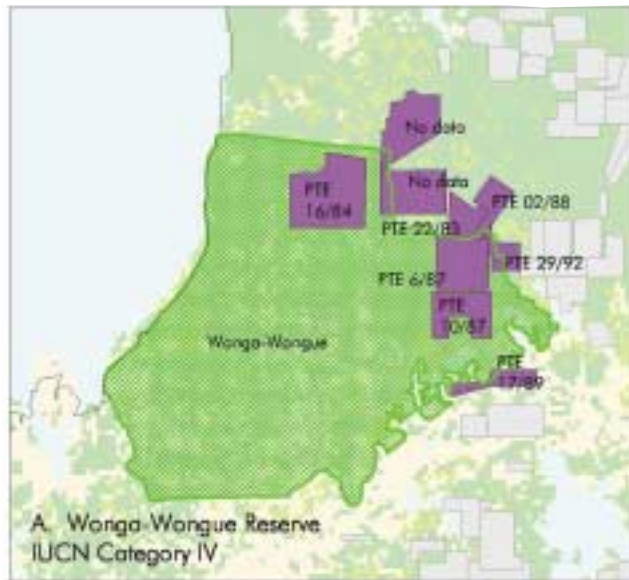


- B. Concession holders with 200,000 to 250,000 ha in total holdings
-  SFT (247,000 ha)
 -  Private individual (240,000 ha)
 -  SIBO (208,000 ha)
 -  Private individual (200,000 ha)
 -  SFM (200,000 ha)
 -  SFZ (200,000 ha)
 -  Concession holders with either >250,000 or <250,000 ha

- Land cover
-  Dense moist forest
 -  Secondary forest/rural complex
 -  Nonforest
 -  Water



MAP 6 Logging Concessions in Protected Areas



Note: Additional concessions in protected areas have been reported but could not be mapped owing to insufficient information.

Sources: Concession information from Gabon government data, Journal Officiel du Gabon, and WCMC. Land cover from TREES (EC Joint Research Centre), based on 1992-93 AVHRR imagery.

Protected areas data from WCMC, IUCN, WWF. Lopé and Minkebé boundaries were modified according to local expert opinion.



All data presented in this report are available at
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