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INTERACTIVE FOREST ATLAS OF CAMEROON

Version 3.0 | Overview Report



WRI.ORG





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FOREWORD

The forests of Cameroon are a resource of local, regional, and global significance. Their productive ecosystems provide services and sustenance either directly or indirectly to millions of people. Interactions between these forests and the atmosphere help stabilize climate patterns both within the Congo Basin and worldwide. Extraction of both timber and non-timber forest products contributes significantly to the national and local economy. Managed sustainably, Cameroon's forests constitute a renewable reservoir of wealth and resilience. Sufficiently intact, they will perpetually provide ecosystem service benefits at the local and global scale. The World Resources Institute is proud to have worked alongside civil society organizations and the Government of Cameroon for more than a decade to this end.

Access to accurate, credible, and timely information at a scale appropriate for the decisions or actions being taken is a key enabler of improved forest governance. By ensuring that information on logging permits, protected areas, community forests, and other land use allocations is regularly made available to the public through the Interactive Forest Atlas of Cameroon, the Government of Cameroon has enhanced forest sector reform. In order for information to lead to actions on the ground, stakeholders must be engaged and able to manage that information and apply it to decision-making processes. Together, the World Resources Institute and Cameroon's Ministry of Forestry and Wildlife have invested significantly in the training of government, civil society, and private sector actors to better use high quality information in order to improve management and monitoring of Cameroon's forests.

Ten years after WRI, the Ministry of Forestry and Wildlife (MINFOF), and a network of civil society organizations began work on the Interactive Forest Atlas of Cameroon, there has been measureable change on the ground. One of the more prominent developments is that previously inaccessible forest information can now be readily accessed. This has facilitated greater coordination and accountability among forest sector actors. In terms of land use allocation, there have been significant increases in protected areas and lands under decentralized management, such as council and community forests. Though illegal logging is trickier to measure, analyses from WRI and Chatham House point to a significant reduction in such activities within the formal timber sector in Cameroon over the past ten years. While significant obstacles remain to achieving sustainable and equitable management of Cameroon's forest resources, it is important to recognize the impressive progress that has been made.

Ensuring that Cameroon's forests provide sustenance for current and future generations is a shared challenge for all actors. Improved access to forest information and capacity to act will better equip concerned stakeholders to face these challenges.



Manish Bapna
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ABOUT THIS PUBLICATION

The Interactive Forest Atlas of Cameroon is a living forest information system hosted in the Ministry of Forestry and Wildlife (MINFOF) and supported by a joint team including members from MINFOF and the World Resources Institute (WRI). Built on a geographic information system (GIS) platform, the atlas provides unbiased and up-to-date information on the Cameroonian forest sector. One of its main objectives is to strengthen forest management and land use planning by bringing all major land use categories onto the same standardized platform. While the underlying Forest Atlas database is kept up-to-date by the MINFOF-WRI team as new information becomes available, periodic publications of the data and database are made publicly available through the atlas report, poster, and mapping application.

This report and associated material is the third in a series of interactive forest atlases of Cameroon. Readers and users of version 3.0 are encouraged to consult versions 1.0 (2005) and 2.0 (2007) for additional and more detailed information regarding Cameroon's forest estate. Particular issues covered more extensively in these previous versions include discussions of forest legislation, forest land use classification categories, and the recent history of the forest estate. Versions 1.0 and 2.0 also offer more extensive cartographic representation. Online versions of these reports, interactive maps, and atlas data are available at <http://www.wri.org/forests>. For more information on areas in which the Atlas has had an impact since version 1.0 was released, please refer to Appendix 7 at the end of this document.

This Interactive Forest Atlas of Cameroon (V3.0) overview report provides the reader with the land use allocation and land cover types in the national forest estate through June 2011, recent trends in production forests, and an expanded discussion of recent developments with community forests. Updated information on protected areas and the public and private road network is also featured, along with preliminary information about mining concessions likely to affect Cameroon's forests. Additionally, this report highlights several practical examples of its use and outlines future directions and applications of the Atlas.

ACCOMPANYING MATERIAL

This report is a companion document to the Atlas, which also includes the following.

- The Interactive Forest Atlas of Cameroon (V3.0). The CD-ROM includes a map-viewing application allowing users to display maps in detail, pan and zoom to areas of interest, view data layers individually or in combination, query datasets, and print maps of their choice. Free map-viewing software (ESRI ArcReader) is also included.
- A poster. This paper map presents the overall situation of forest exploitation in Cameroon in 2011.

Users may also access the Interactive Forest Atlas of Cameroon and associated products and data online at either <http://www.wri.org/forests> or www.minfof.cm. All the components of the Atlas are published in both English and French.

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ABBREVIATIONS AND ACRONYMS

AAC	Annual Harvestable Area (Assiette annuelle de coupe)	OLB	Origin and Legality of Timber (Origine et légalité du bois)
ACFCam	Association of Council Forests of Cameroon (Association des communes forestières du Cameroun)	OSFAC	Central Africa Forest Satellite Observatory (Observatoire satellitaire des forêts d'Afrique centrale)
AEB	Timber Evacuation Permit (Autorisation d'enlèvement des bois)	PA	Protected area
ALOS	Advanced Land Observation Satellite	PAF2C	Program in Support of Council Forests in Cameroon (Programme d'appui aux forêts communales du Cameroun)
APC	Personal Logging Permit (Autorisation personnelle de coupe d'arbre)	PFE	Permanent Forest Estate
ARB	Timber Recovery Permit (Autorisation de récupération de bois)	PMA	Provisional management agreement
ASTER	Advanced Space-Borne Thermal Emission and Reflection Radiometer	ProPSFE	Project Monitoring the Impact of the Forest and Environment Sector Program
BV	Bureau Veritas	PSFE	Forest and Environment Sector Program (Programme sectoriel forêts-environnement)
CARPE	Central Africa Regional Program for the Environment (USAID)	REDD+	Reducing Emissions from Deforestation and Degradation and Enhancing Carbon Stock
CETELCAF	Forest Mapping and Remote Sensing Center (Centre de télédétection et de cartographie forestière—MINFOF)	RIGC	Strengthening Initiatives in Support to Community-Based Management of Forests and Wildlife Resources (Renforcement des initiatives pour la gestion communautaire des ressources forestières et fauniques—under MINFOF)
CIFOR	Center for International Forestry Research	SDIAF	Subdepartment of Forest Inventories and Management (Sous-direction des inventaires et aménagements forestiers—MINFOF)
CoC	Chain-of-custody (ref: FSC)	SDSU	South Dakota State University
CRS	Catholic Relief Services	SGS	Société Générale de Surveillance
CTFC	Technical Center for Council Forests (Centre technique de la forêt communale)	SIGIF	Automated Forestry Information Management System (Système informatisé de gestion des informations forestières)
DFID	UK Department for International Development	SMP	Simple management plan
DMC	Disaster Monitoring Constellation	SSV	Sales of standing volume (see VC)
ESRI	Environmental Systems Research Institute	TFT	Tropical Forest Trust
FESP	Forest and Environment Sector Program	TLTV	Timber Legality and Traceability Verification
FLEGT	Forest Law Enforcement, Governance, and Trade	UFA	Unité forestière d'aménagement (see FMU)
FM	Forest management (ref: FSC)	USAID	US Agency for International Development
FMA	Final management agreement	VC	Ventes de coupe (see SSV)
FMU	Forest management unit (see UFA)	VPA	Voluntary partnership agreement
FSC	Forest Stewardship Council	WRI	World Resources Institute
GIS	Geographic Information System	WWF	World Wildlife Fund
GIZ	German International Cooperation (Gesellschaft für Internationale Zusammenarbeit)	ZIC	Hunting zone (Zone d'intérêt cynégétique)
GPS	Global Positioning System	ZICGC	Hunting zone under community-based management (Zone d'intérêt cynégétique à gestion communautaire)
MINEF	Ministry of Environment and Forestry (Ministère de l'environnement et des forêts)		
MINEP	Ministry of Environment and Nature Protection (Ministère de l'environnement et de la protection de la nature)		
MINFOF	Ministry of Forestry and Wildlife (Ministère des forêts et de la faune)		
MODIS	Moderate resolution imaging spectroradiometer		
NFE	National Forest Estate		
NGO	Non-Governmental Organization		
NPFE	Non-Permanent Forest Estate		
OFAC	Observatoire des forêts d'Afrique centrale		



MAJOR FINDINGS

How, where, to whom and for what purpose land is allocated determines who benefits and which resource use objectives are met. In Cameroon, natural resource allocation is largely the domain of only a few government institutions. Access to comprehensive information on land use allocation across sectors can facilitate improved coordination and analysis of how evenly resource rights are being distributed. Public knowledge of who has the rights to access which natural resources and according to what guidelines increases the degree to which all actors are held accountable. The analyses carried out in this third version of the Interactive Forest Atlas of Cameroon give readers an overview of the status and context of forest land allocation in recent history.

The Forestry Law of 1994 divides the National Forest Estate (NFE) into two major land uses: the Permanent Forest Estate (PFE) and the non-Permanent Forest Estate (nPFE). Land allocation and use in the NFE has undergone significant evolution since 1994, much of which is tracked and made publicly accessible by the Interactive Forest Atlas of Cameroon, beginning with the release of the first version in 2005. Analysis of information contained in version 3.0 of the Forest Atlas highlights the following major findings, according to land use category.

- **NATIONAL FOREST ESTATE (NFE):** In 2011, the classified area of the NFE represented 37% (17.5 million hectares [ha]) of Cameroon's total land area. Of this, 94% was allocated within the PFE and the remaining 6% within the nPFE. In terms of land cover, the NFE contains 55% dense forests and 33% mixed forests, the remaining 12% being land where forests are not the dominant vegetation.
- **PERMANENT FOREST ESTATE (PFE):** Between 2006 and 2011, the PFE increased by 3% to 16.3 million ha, representing 35% of the total national land area, surpassing the 30% target stipulated by the 1994 Forestry Law. This increase was largely driven by a slight growth in areas classified as either council forests or protected areas. Within the PFE, 55% of land is allocated to production forests (including council forests) and 45% to protected areas. Within the PFE, 66% of land cover is represented by dense forests, 11% by mixed forests, and 23% by land where forests are not the dominant vegetation.
- **NON-PERMANENT FOREST ESTATE (NPFE):** Between 2004 and 2011, the classified land area within the nPFE, although small relative to the size of the PFE, increased by 221%, to 1.1 million ha. This increase was largely driven by a significant uptick in the area allocated to community forests. In terms of distribution, 90% of the classified lands in the nPFE were allocated to community forests and 10% to sales of standing volume (SSVs). A figure for area under allocation to *petits titres* was not available for 2011. Including unclassified state forests (*forêts du domaine national*) in the nPFE, as stipulated by the Forestry Law, increased its area significantly to 14.6 million ha, representing 32% of

the total national land area. Of this value, about 41% of the land is covered by dense forests, 59% by mixed forests, and less than 1% by land where forests are not the dominant vegetation.

- **FOREST MANAGEMENT UNITS (FMUs):** Since 2004, total area classified as FMUs has held relatively constant; in 2011 there were a total of 111 FMUs (7.1 million ha, about 15% of total national land area). Of these FMUs, 87 (5.5 million ha) were allocated for logging as forest concessions, 72 of them operating under a MINFOF-approved management plan, representing a total area more than three times that of 2004—increasing from 1.5 to 5 million ha. Forest concessions under Forest Stewardship Council (FSC) certification also significantly increased. By June 2011, there were 14 FMUs FSC certified, covering an area of just over 1 million ha (13% of total area of FSC-certified concessions in Africa) and operated by five different conglomerates.
- **PROTECTED AREAS:** From 2006 to 2011, land allocated to protected areas increased by 8%, to 7.4 million ha (16% of total national land area). This increase was largely driven by the creation of 10 new national parks, many of which resulted from reclassification of forest reserves.
- **COMMUNITY FORESTS:** Aided in part by a simplification of the application and allocation process, community forests increased significantly since 2004 to 301 sites (roughly 1 million ha) in 2011.
- **FOREST RESERVES:** While the number of forest reserves dropped slightly, from 86 to 75, between 2004 and 2011, their combined area has decreased by nearly one third (503,537 ha). The primary driver of this change was the recent conversion of forest reserves to other land uses (either protected areas or FMUs), while newly classified areas have tended to be of smaller size than those converted.
- **FOREST ROADS:** Mapped forest roads were updated through 2009 with acquired satellite images and limited GPS ground tracking. In comparison to the road network mapped up to 2003 for the first version of the Atlas, the extent of forest roads in the southern region increased

by about 8% (1,652 km) through 2009. In spite of this increase in forest roads, there was a decrease in the rate of observation of irregular logging roads in the PFE (outside of allocated logging permits) between 2003 and 2009, compared to pre-2003 data.

- **ACCESS TO FOREST INFORMATION:** Overall, the quality of and access to forest information are significantly better in 2011 than they were in 2004. Most land use allocation information is updated and made available on an annual basis, at minimum, including relevant associated information (e.g., legal documentation, operators, and terms of operation) allowing for better management and monitoring of the forest sector. Notable exceptions include the continued lack of access to spatial references for *petits titres*, lack of consistent and timely access to forest concession annual harvestable areas (AACs), and limited information as to whether logging permit operators are fulfilling obligations laid out in their approved management plans.

By June 2011, the PFE represented 35% of Cameroon's total area, surpassing the 30% target stipulated by the 1994 Forestry Law.

What's New in Atlas Version 3.0?

The Interactive Forest Atlas of Cameroon is a living forest information system built on a GIS platform housed in MINFOF's cartography department (CETELCAF). As relevant and new forest information becomes available, the atlas database is updated by the MINFOF-WRI team. Atlas content, scope, and technological capacity also evolve constantly to better respond to end-user demands. Building on the two previous versions, V3.0 includes the following upgrades.

- **UPDATED LAYER INFORMATION.** Version 3.0 is organized into 11 core themes (or information layers), each updated to reflect the situation as of June 2011.^{1,2}
- **EXPANDED LAND USE THEMES.** Expanding outside of the forest sector, version 3.0 includes themes on mining permits and agroindustrial plantations. Integrating forest land use allocations by various ministries under the same platform significantly increases the government's ability to allocate resources more efficiently.

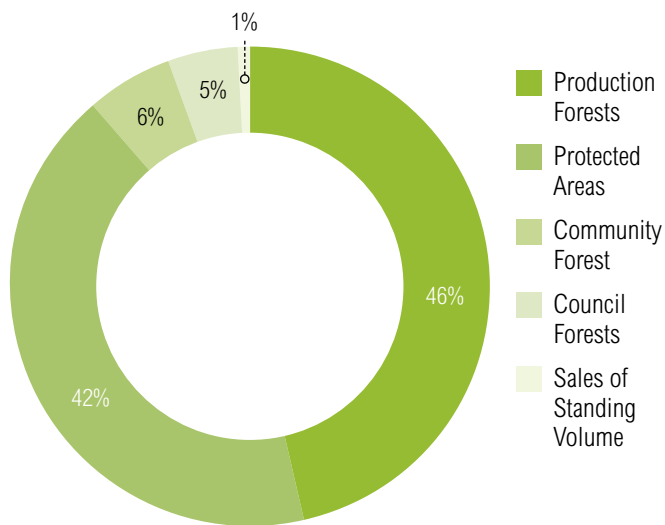
- **INTEGRATION OF RECENTLY ALLOCATED LAND USE CLASSIFICATIONS IN THE NATIONAL FOREST ESTATE.** Version 3.0 includes new land use allocations under previously existing themes, including recently created protected areas (between 2006 and 2011), council forests, and community forests.
- **UPDATED PUBLIC AND LOGGING ROAD LAYERS.** This version of the atlas contains recently mapped forest roads primarily digitized from satellite images over the period 2006–10.



THE NATIONAL FOREST ESTATE IN 2011

Forests are a renewable and dynamic resource, providing multiple benefits to different users. Once much more focused on maximizing extraction of timber resources, the allocation and use of Cameroon's forests have evolved significantly over the past two decades to better reflect the diverse needs of both humans and wildlife.

Figure 1 | **Distribution of Land Use Allocation within Cameroon's National Forest Estate in 2011**



Land Use Allocation Evolution

The Interactive Forest Atlas of Cameroon provides users with up-to-date information on the forest sector, allowing them to access land use allocation information in their efforts to improve monitoring and management of forest resources. In addition to current information, the Atlas also contains historical records that allow the user to track and analyze land use allocation over time. Since the publication of the first version of the Cameroon Forest Atlas using data from 2004, the Atlas has continuously served as a tool to manage and track land use allocation—both within and outside of the National Forest Estate (NFE).

The NFE is subdivided and gazetted into two different land use categories, each with specific use rights and management regimes: the Permanent Forest Estate (PFE) and non-Permanent Forest Estate (nPFE) (see Box 1 for more details). While most of the existing NFE was zoned during the zoning process in the late 1990s, the extent and composition of the NFE continues to change as new areas are gazetted and others are declassified and returned to the status of unclassified forest land. Table 1 provides a synthesis of how land use allocation in the NFE has evolved since 2004. Map 1 provides an overview of 2011 land use allocation in the forested region of Cameroon.



BOX 1 | OVERVIEW OF FOREST LEGISLATION AND ZONING IN CAMEROON

The Forestry Law No. 94-01 of January 20, 1994, and its associated application texts (e.g., Decree No. 95-466-PM of July 1995) establish the political and strategic framework for forest management in Cameroon. They define the National Forest Estate (NFE) and subdivide it into two different land use categories—Permanent Forest Estate (PFE) and non-Permanent Forest Estate (nPFE)—each with specific use rights and management regimes.

The Permanent Forest Estate (PFE) consists of lands designated to remain as either forest or wildlife habitat. Lands in the PFE are not necessarily forested—many protected areas and

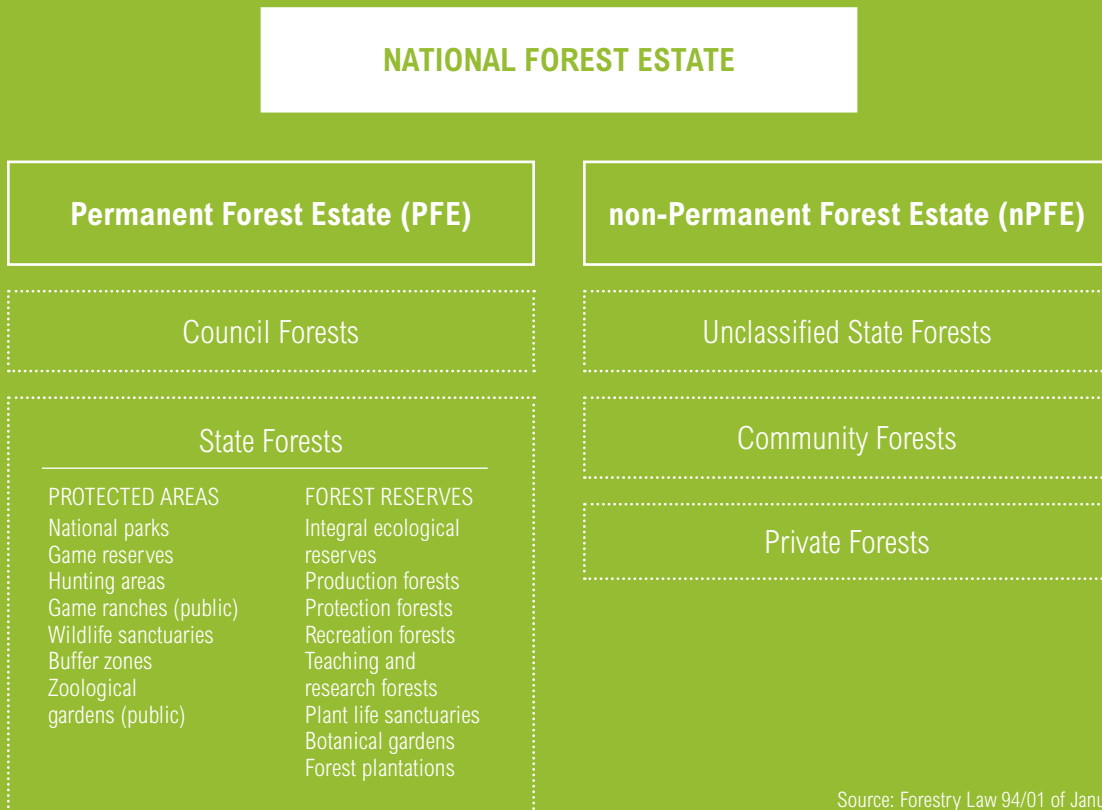
hunting zones are located outside forested areas (see analysis in the subsection “Land Use Allocation versus Land Cover” below). By law, the PFE must cover at least 30% of the national territory, be representative of the nation’s ecological diversity, and be managed sustainably according to management plans approved by the relevant administrative authority.

The non-Permanent Forest Estate (nPFE)—including community forests—consists of forested lands zoned as areas that may be converted into other land uses (e.g., for agriculture). The state holds dominion over all forests not explicitly held by private entities. As such, all forested lands

that are not explicitly classified as part of either the PFE or the nPFE fall by default into the nPFE under the category of unclassified state forests (forêts du domaine national).

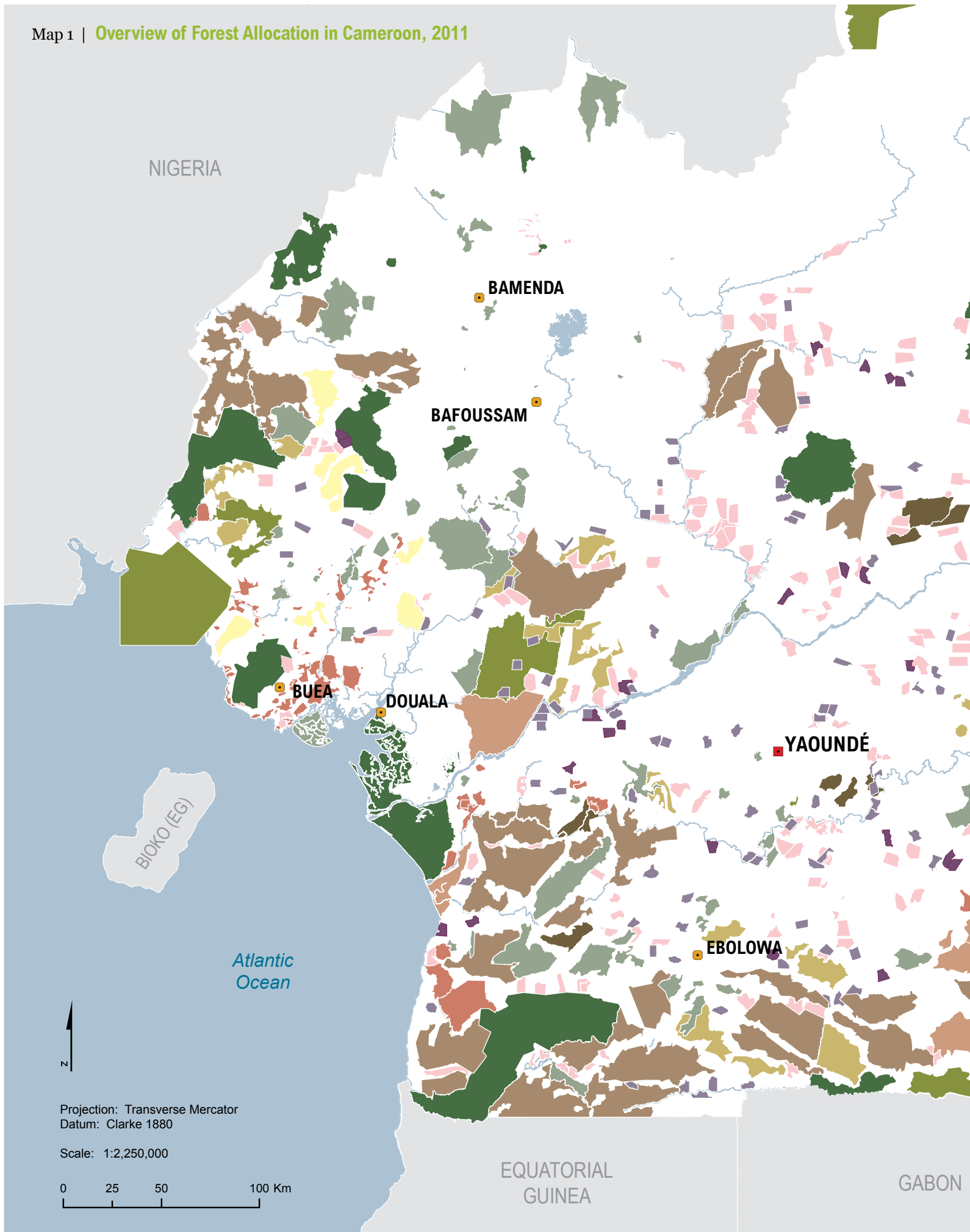
To date, significant areas of the nPFE have not been officially classified—these areas consist largely of forested lands under customary use for swidden agriculture or agroforestry purposes (see analysis in the subsection “Land use allocation versus land cover” for more details).

The diagram below depicts the architecture of the forest zoning system in Cameroon, as defined in the Forestry Law of 1994.



Source: Forestry Law 94/01 of January 20, 1994.

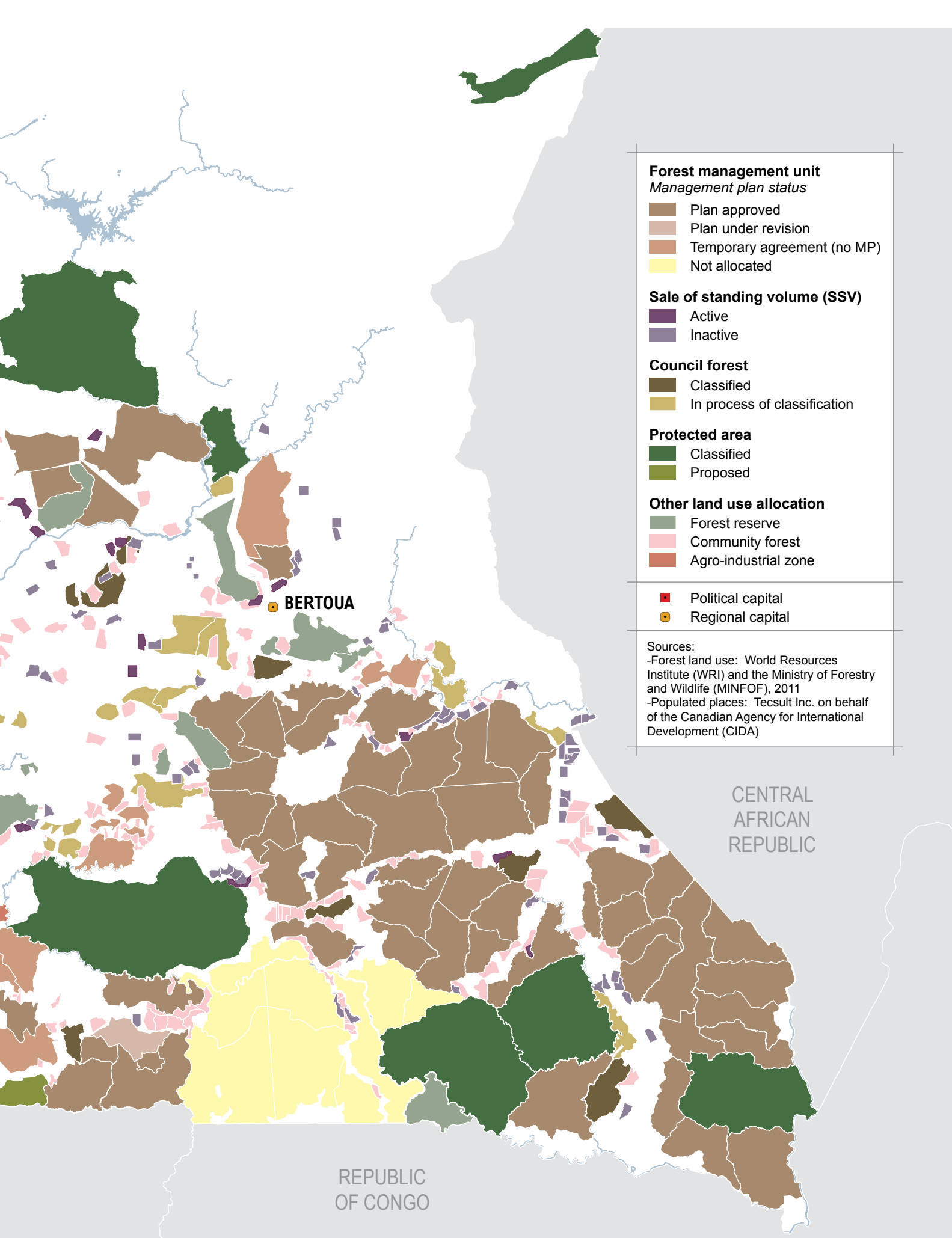
Map 1 | Overview of Forest Allocation in Cameroon, 2011



Projection: Transverse Mercator
Datum: Clarke 1880

Scale: 1:2,250,000

0 25 50 100 Km



Forest management unit
Management plan status

- Plan approved
- Plan under revision
- Temporary agreement (no MP)
- Not allocated

Sale of standing volume (SSV)

- Active
- Inactive

Council forest

- Classified
- In process of classification

Protected area

- Classified
- Proposed

Other land use allocation

- Forest reserve
- Community forest
- Agro-industrial zone

- Political capital
- Regional capital

Sources:

- Forest land use: World Resources Institute (WRI) and the Ministry of Forestry and Wildlife (MINFOF), 2011
- Populated places: Teconsult Inc. on behalf of the Canadian Agency for International Development (CIDA)

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Table 1 | Evolution of Land Use Allocation within Cameroon's National Forest Estate, 2004–11

CATEGORY	2004		2006		2009	
	N°	ADM AREA (ha) ^a	N°	GIS AREA (ha)	N°	GIS AREA (ha)
Permanent forest estate (PFE)						
Production forests^c						
Forest management units (FMUs)	105	6,961,700	110	7,068,337	114	7,500,881
Allocated	72	4,946,900	90	5,558,917	101	6,515,529
Unallocated	24	1,147,800	11	642,420	13	985,352
Abandoned/withdrawn	—	—	—	—	—	—
Conservation	9	867,000	9	867,000	—	—
Forest reserves	86	1,553,400	86	1,541,111	68	1,026,326
Subtotal	191	8,515,100	196	8,609,448	182	8,527,207
Protected areas^d						
National parks	17	2,910,382	15	2,733,232	24	3,433,672
Wildlife reserves	6	738,995	5	777,372	5	722,625
Sanctuaries (floral and faunal)	4	246,368	4	254,342	5	143,909
Hunting zones (ZIC/ZICGC) ^g	57	—	52	3,078,418	52	3,078,418
Subtotal	84	—	76	6,843,364	86	7,378,624
Council forests^h	13	325,500	18	413,622	31	734,751
Total PFE		—		15,866,434		16,640,582

Table 1 | Evolution of Land Use Allocation within Cameroon's National Forest Estate, 2004–11 (cont.)

CATEGORY	JUNE 2011		PERCENT CHANGE (2004–11)	PERCENT OF NFE	PERCENT OF NATIONAL TOTAL ^b
	N ^o	GIS AREA (ha)			
Permanent forest estate (PFE)					
Production forests^c					
Forest management units (FMUs)	111	7,058,958	1	40	15
Allocated	87	5,545,425	+12	32	12
Unallocated	14	1,041,383	-9	6	2
Abandoned/withdrawn	10	472,150	—	3	1
Conservation	—	—	—	—	—
Forest reserves	75	1,049,863	-32	6	2
Subtotal	186	8,108,821	-5	46	17
Protected areas^d					
National parks	24	3,459,798	+19	20	7
Wildlife reserves	5	715,456	-3 ^e	4	2
Sanctuaries (floral and faunal)	5	143,909	-42 ^f	1	<1/2
Hunting zones (ZIC/ZICGC) ^g	52	3,078,418	0 ⁱ	18	7
Subtotal	86	7,397,581	+8 ⁱ	42	16
Council forests^h	34	827,285	+154	5	2
Total PFE		16,333,687	+3 ⁱ	94	35

Table 1 | Evolution of Land Use Allocation within Cameroon's National Forest Estate, 2004–11 (cont.)

CATEGORY	2004		2006		2009	
	N°	ADM AREA (ha) ^a	N°	GIS AREA (ha)	N°	GIS AREA (ha)
Non-Permanent Forest Estate (nPFE)						
Community Forest ^l						
Provisional management agreement	—	—	—	—	29	83,404
Simple management plan	—	—	—	—	65	190,145
Final management agreement	67	241,466	115	415,212	178	666,916
Subtotal					272	940,000
Sales of standing volume ^k	39	100,100	21	55,356	81	198,805
Small logging titles (ARB, AEB) ^l	—	10,000	—	2,005	—	90,959
Total nPFE ^m		351,466		472,573		2,972,089
Total National Forest Estate (PFE+nPFE)						
Other land use allocations						
Extractive permits		—		717,726		—
Industrial agriculture zone		—		199,831		—

a. The total PFE area for 2004 is a combination of GIS data from the Interactive Forest Atlas (version 1.0) and other MINEF data (administrative area) and therefore should only be considered as an estimate based on the best available data at the time.

b. Total land area of Cameroon is listed at between 466,326 km² (de Wasseige et al., 2008) and 472,710 km² (CIA Factbook, 2011). The total land area (468,305 km² excluding maritime territory) in Table 1 is based on the Cameroon national boundary included in V3.0.

c. Area allocated for the sustainable and sustained production of timber or any other forest-related products (Decree n°95/531/PM of August 23, 1995).

d. Protected areas figures for 2009 and 2011 include the recently proposed national parks (Kom, Mefou, Ebo, Tchabal Mbabo, Ndongere, and Ma Mbed Mbed) and the Rumpi Hills Sanctuary, which are still pending official classification. Together, these proposed protected areas account for 609,221 ha.

e. This decrease is due to a discrepancy between the administrative area of the Dja Reserve considered prior to 2011 (590,053 ha) and the GIS area (528,137 ha).

f. This decrease is due to a 78% (93,936 ha) reduction in the area of the Mengame Gorilla Sanctuary and its reclassification into the Kom National Park, now 67,838 ha.

g. Areas overlapping other land use allocations (e.g., FMUs, protected areas) are excluded. The total combined area (including overlaps) in 2011 was 5,230,599 ha.

Table 1 | Evolution of Land Use Allocation within Cameroon's National Forest Estate, 2004–11 (cont.)

CATEGORY	JUNE 2011		PERCENT CHANGE (2004–11)	PERCENT OF NFE	PERCENT OF NATIONAL TOTAL ^b
	N°	GIS AREA (ha)			
Non-Permanent Forest Estate (nPFE)					
Community Forest ⁱ					
Provisional management agreement	14	50,036	—	<1/2	<1/2
Simple management plan	103	276,333	—	2	1
Final management agreement	184	689,167	+185	4	1
Subtotal	301	1,015,536	—	6	2
Sales of standing volume ^k	49	114,042	14	1	<1/2
Small logging titles (ARB, AEB) ^l	—	—	—	—	—
Total nPFE ^m		1,129,578	221	6	2 ^m
Total National Forest Estate (PFE+nPFE)		17,463,265			37
Other land use allocations					
Extractive permits	101	9,491,752	—	—	—
Industrial agriculture zone	24	112,605	—	—	—

h. This figure encompasses all council forests (classified and undergoing classification).

i. Change from 2006 to 2011.

j. In 2009, "Reservations" were replaced by provisional management agreements (PMAs) within the community forest allocation process, now providing communities with the right to carry out planned forest operations upon signature of the agreement by the ministry in charge of forestry. However, they have to submit their simple management plan and final management agreement (FMA) before the expiration of the PMA, which is valid for 2 years and nonrenewable.

k. Valid and operational.

l. Partially suspended in March 2011.

m. Only classified areas within the nPFE are considered. Unclassified state forests (forêts du domaine national), estimated at around 92% (13,550,889 ha) of the nPFE are excluded here (see Table 3).

Production Forests

Forest Management Units³

Created under the 1994 Forestry Law, forest management units (FMUs)⁴ are zoned within the Permanent Forest Estate. They are allocated by a competitive bidding process for a 15-year period and require a forest management plan approved by the relevant administrative authority. *Forest concessions* are defined as production forests, which may include one or more FMUs, managed by a single company and not to exceed 200,000 ha.⁵

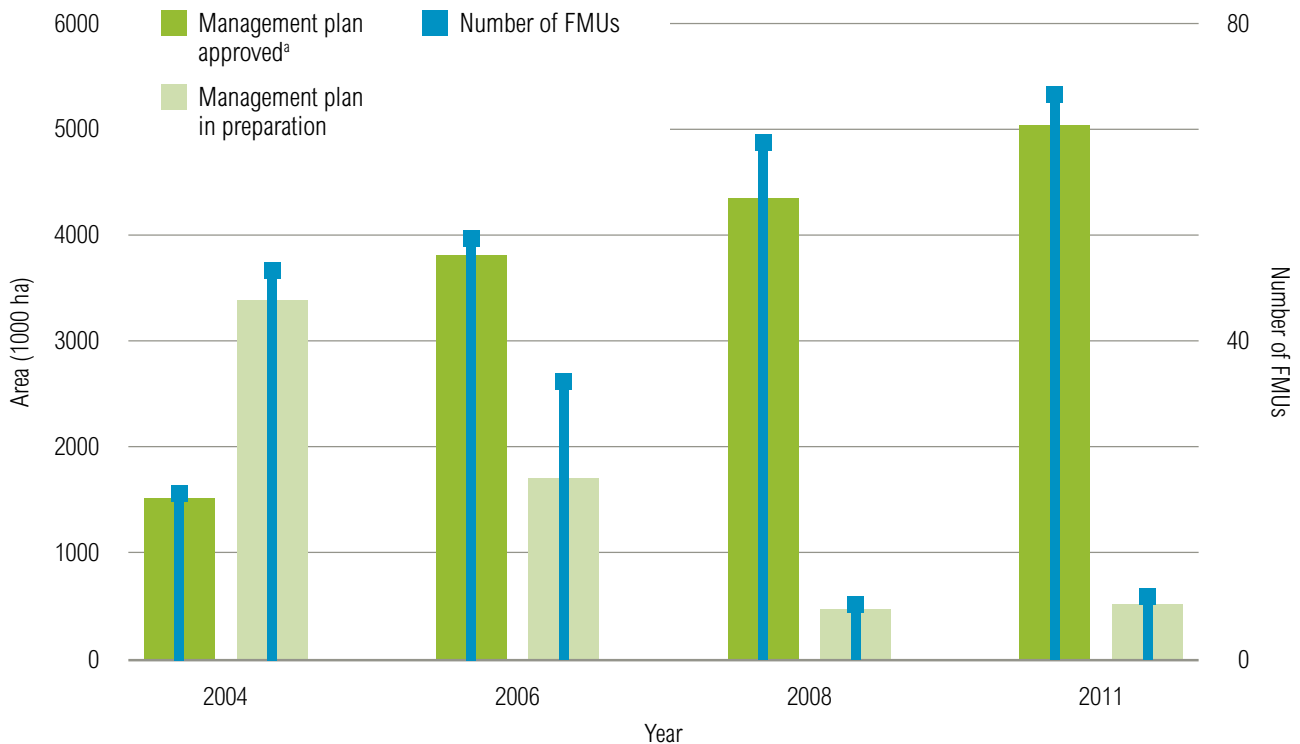
Between 2004 and 2011, FMUs constituted by far the largest allocation of production forests, accounting for approximately 43% of the classified land in the PFE in 2011. Overall, total area in FMUs increased by about 1% during this time period (see

Table 1). The most significant change during this period was the transfer of all nine FMUs (867,000 ha) previously set aside for conservation into the process of allocation for forest concessions.⁶

In addition to an increase in overall allocated area, FMUs with approved forest management plans also greatly increased.⁷ As of June 2011, 72 FMUs operated under an approved management plan, covering a total area more than three times that of 2004—increasing from 1.5 million to 5 million ha (see Figure 2).

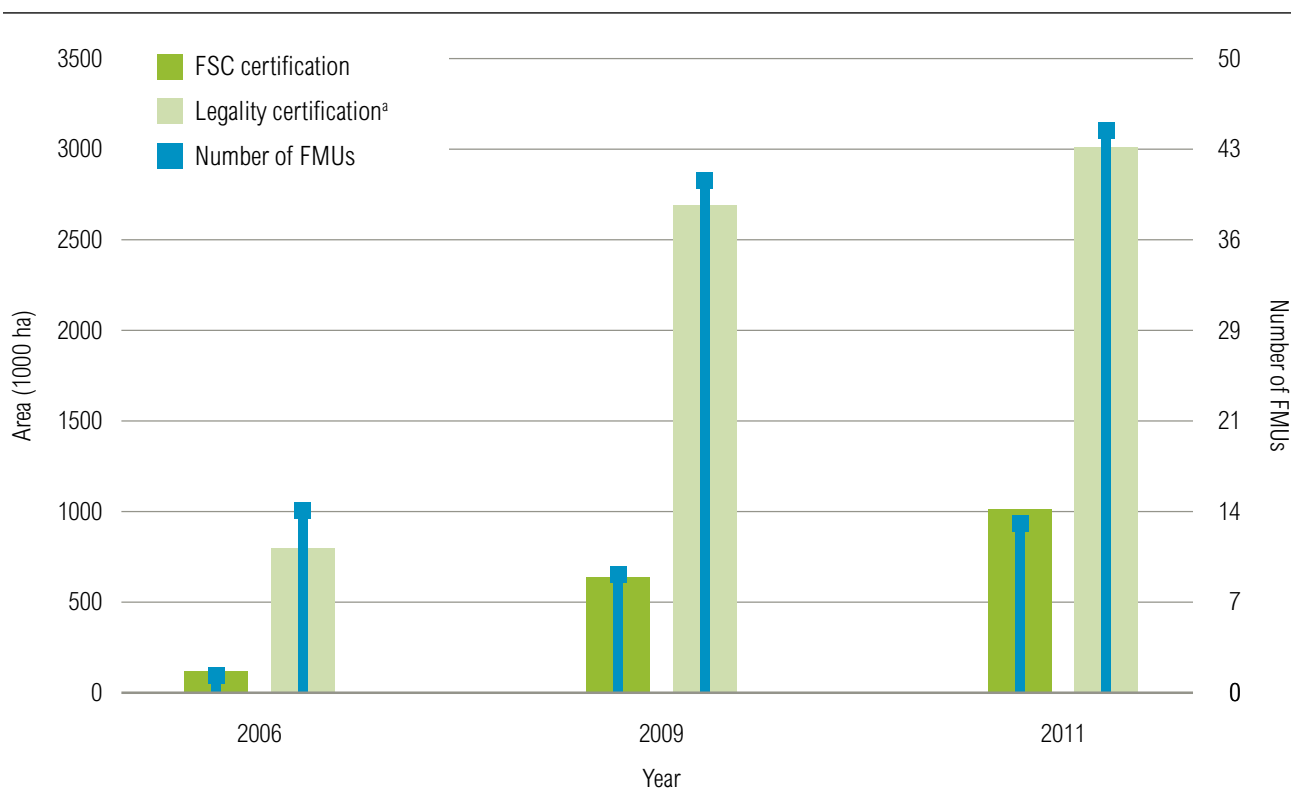
As part of the development of a management plan, concessionaires are required to map out the envisioned annual harvestable areas (AAC)⁸ for the entire planned logging rotation in a given FMU. Additionally, before the start of each calendar year, concessionaires are required to submit a formal

Figure 2 | **Forest Management Units under Management Plans, 2004–11**



a. Management plan is approved by an order of the Minister in charge of Forests (Art. 45, Decree N°95/531/PM of August 23, 1995).

Figure 3 | Forest Management Units under Forest Stewardship Council (FSC) and Legality Certification, 2006–11



a. The two Legality certification schemes in used in Cameroon are Timber Legality and Traceability Verification (TLTV) and Origine et Legalité du Bois (OLB)

AAC request (detailing area, volume, and species to be logged in the year to come) to MINFOF. Access to an FMU management plan and AAC specifications is critical to the effective monitoring of logging in forest concessions. Version 3.0 of the Atlas contains complete sets of AACs for 55 of the 72 FMUs with approved management plans.

Forest concessions under Forest Stewardship Council (FSC) certification have significantly increased in Cameroon since the first concession was certified in 2005. By June 2011, there were 14 FMUs FSC certified, covering an area of 1,041,629 ha and operated by five different conglomerates (Pallisco, SFID, SFIL, TRC, and WIJMA). This area represented approximately 13% of total forests under FSC certification in Africa. A similar increase was observed among FMUs operating under an independently verified legality certificate. By June 2011, there were 45 FMUs covering an area of approximately

3,012,000 ha certified under two different legality processes (see Figure 3).⁹ Please refer to Appendix 1 for a complete list of FMUs and operators in 2011.

Forest Reserves

Forest reserves are classified lands within the PFE that can be dedicated to fulfill various forest use objectives (Box 1). There is limited information available in MINFOF on areas zoned as forest reserves, rendering their monitoring difficult.

While the overall number of forest reserves has only dropped from 86 to 75 from 2004 to 2011, their combined area has decreased by nearly one third (503,537 ha). The primary driver of this change was the recent conversion of forest reserves to other land uses (either protected areas or FMUs); newly classified areas have tended to be smaller than those converted.

Table 2 | **Wood Volume Production (m3) by Logging Title, 2006–08**

TITLE	2006	2007	2008
Forest management unit	1,859,391	1,712,102	1,873,162
Sales of standing volume	275,195	88,798	43,000
Autorisation de récupération du bois	154,830	164,210	189,857
TOTAL	2,289,416	1,965,110	2,106,019

Note: These statistics are drawn from SIGIF.¹⁰ Wood volume statistics for previous years (1996–2005) are available in the Interactive Forestry Atlas of Cameroon, version 2.0, overview report (2007).

Other Production Forests

Council Forests

The Forestry Law of 1994 provides rural councils with the legal right to create their own forest estate within the PFE, following the preparation of a management plan approved by the forest administration. The objectives and the final boundaries of council forests are established during the official classification process. Once allocated, they become the property of the rural council, which must operate them in compliance with the approved management plan in order to retain title to the allocated forest area. Council forests are essentially forest concessions, but they are under the jurisdiction of the rural council instead of the national government and can be leased out for logging rights during a public bidding process. Since 2005, council forests' stakeholders are represented by the Association of Council Forests of Cameroon (Association des communes forestières du Cameroun [ACFCam]). The association's main objective is to promote the conservation and sustainable management of council forests in Cameroon by providing institutional and technical support to participating council

members. The Program in Support of Council Forests in Cameroon (*Programme d'Appui aux Forêts Communales du Cameroun [PAF2C]*) has been set forth in this respect, and the Technical Center for Council Forests (Centre technique de la forêt communale [CTFC]) has been charged with its implementation.

As of June 2011, there were a total of 34 areas designated council forests—collectively covering 827,285 ha. Of these, 19 were created between 2009 and 2010.¹¹ The process of classification has been completed for ten council forests, covering a total area of 239,936 ha,¹² and it is in progress for the remaining 24. Please refer to Appendix 2 for a list of active council forests in 2011.

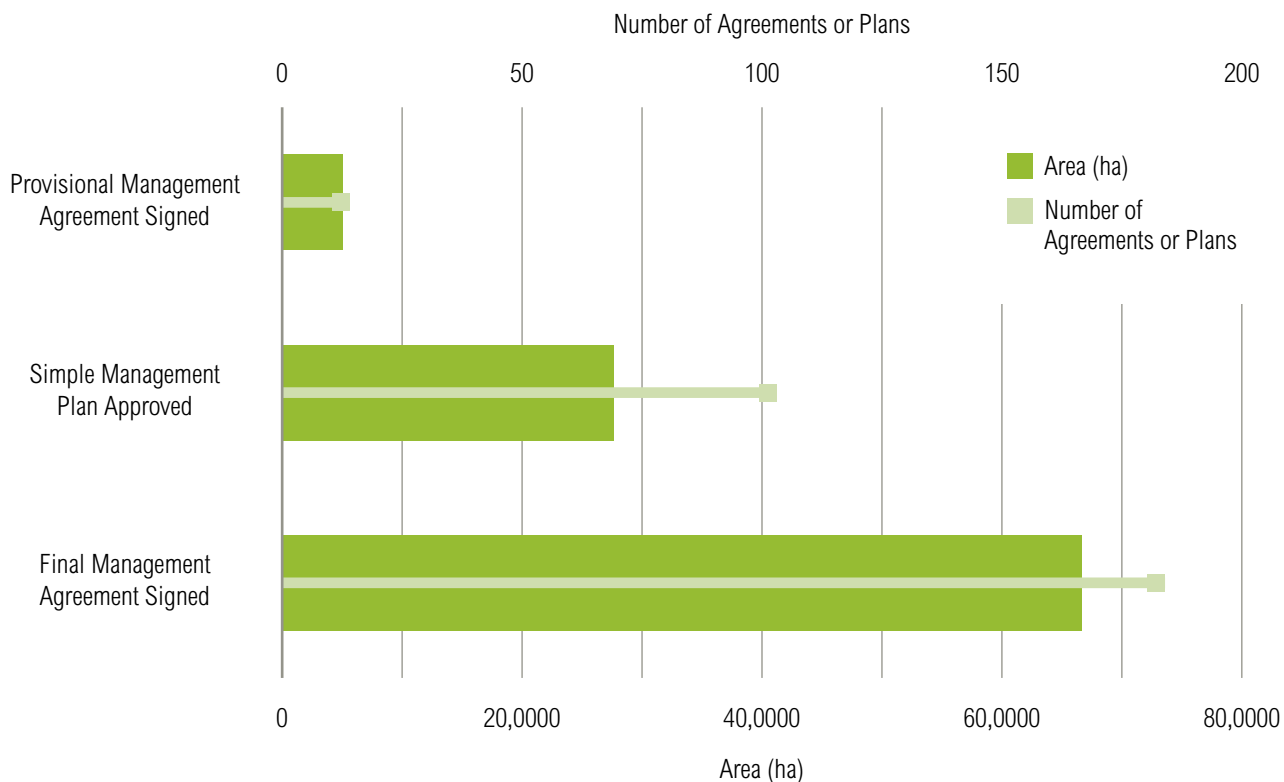
Community Forests

Established under the Forestry Law of 1994, community forests are areas within the nPFE zoned for exclusive use by village communities (see also Box 2). With technical assistance from the local MINFOF staff and the Sub-Department of Community Forests (Sous-Direction des Forêts Communautaires), a village community seeking a forest title identifies a zone not exceeding 5,000 ha and drafts a simple

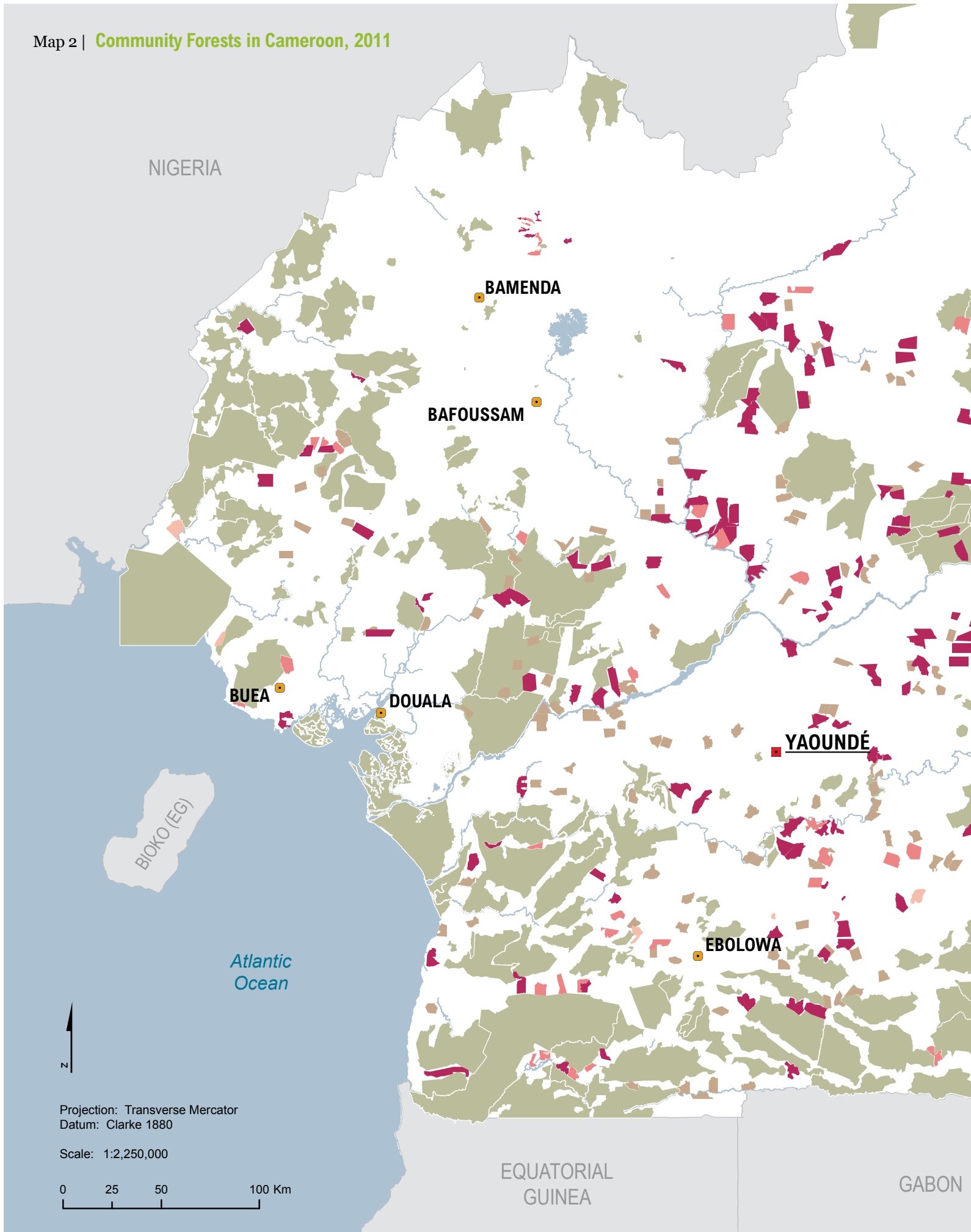
management plan for approval by MINFOF. Incomes generated from sustainable harvesting of community forest resources fund community development projects. The procedure for obtaining a community forest includes the following three stages.

1. **PREPARATION OF A PROVISIONAL MANAGEMENT AGREEMENT (PMA)**—Before officially submitting any paperwork to the Ministry of Forestry, the community forest applicant must first create a legal entity, designate responsible parties within the organization, define the objectives and area of the community forest, and hold consultation meetings with surrounding communities.
2. **PMA APPLICATION**—A community organization must submit an officially stamped application document stating the requested activities in the community forest, a map and area measurements of the requested area, proof of the community organization’s legal status, a description of activities previously carried out on the land, and the minutes of consultation meetings with neighboring communities—all submitted in two copies to the Divisional Delegate in charge of Forestry for the given region. The PMA is approved by MINFOF and valid for a two-year, nonrenewable period. Upon signature, the community can start executing the activities stated in its application.

Figure 4 | **Status of Cameroon Community Forest Allocation in 2011**



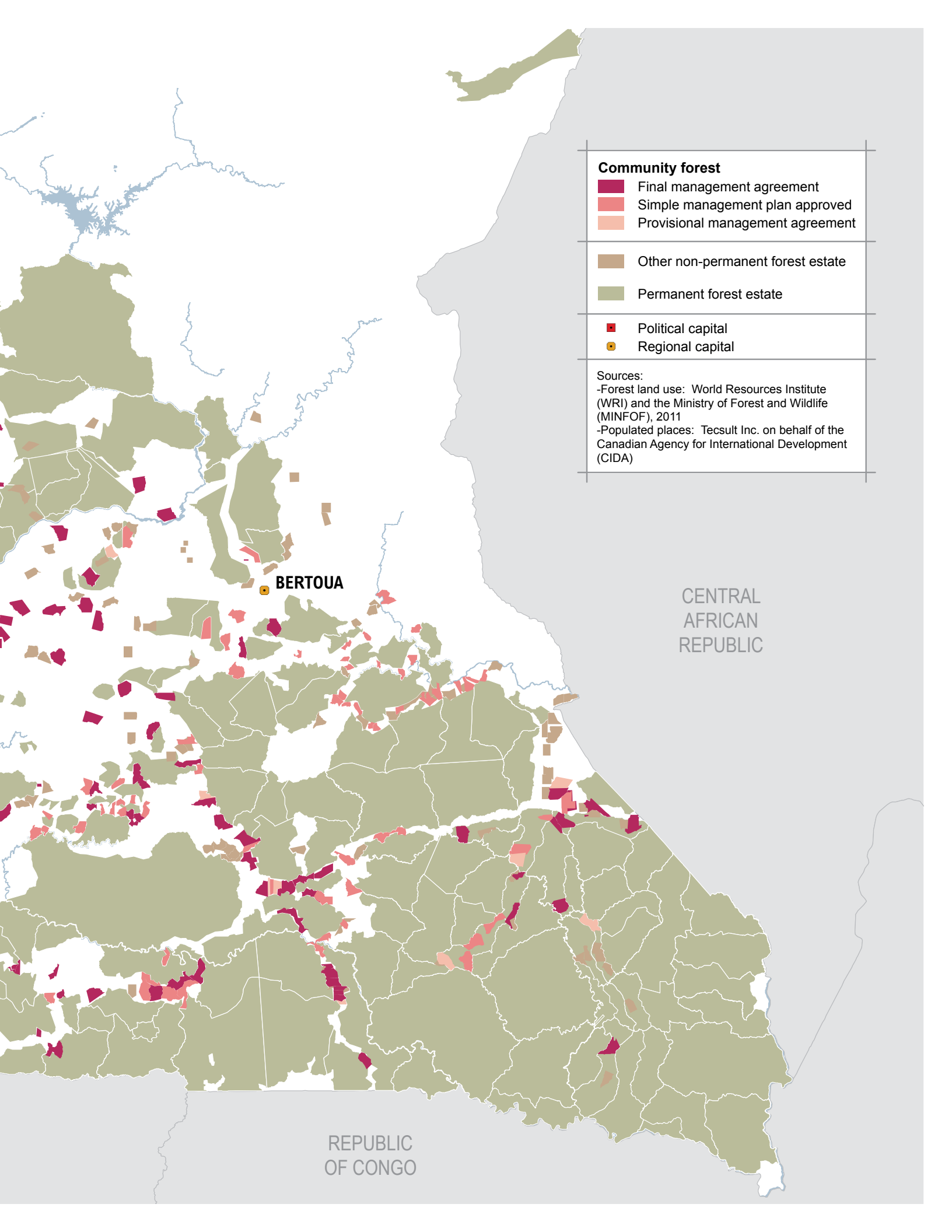
Map 2 | Community Forests in Cameroon, 2011



Projection: Transverse Mercator
Datum: Clarke 1880

Scale: 1:2,250,000

0 25 50 100 Km



Community forest

- Final management agreement
- Simple management plan approved
- Provisional management agreement

- Other non-permanent forest estate
- Permanent forest estate

- Political capital
- Regional capital

Sources:
-Forest land use: World Resources Institute (WRI) and the Ministry of Forest and Wildlife (MINFOF), 2011
-Populated places: Tecsuit Inc. on behalf of the Canadian Agency for International Development (CIDA)

BERTOUA

CENTRAL AFRICAN REPUBLIC

REPUBLIC OF CONGO

BOX 2 | THE EVOLUTION OF COMMUNITY FORESTRY IN CAMEROON

Prior to 1994, legal forest resource extraction rights in Cameroon were exclusively bid on by private, primarily foreign logging companies. While local communities did have customary rights to forest resources, there was no mechanism for legal claims to land. Driven in part by the Earth Summit of 1992, the Government of Cameroon initiated a number of environment and forest reforms that led to the adoption of a variety of legal instruments—including the Forestry Law of 1994 and its application decrees of 1995, the Land Use Map of 1995, the Forestry Policy of 1995, and the Forest and Environment Sectoral Program (Programme Sectoriel Forêts-Environnement [PSFE]) of 2003. These instruments set forth community-based management of forest resources as a cornerstone in the effort to achieve the overarching goal of “enhancing the participation of the populations in the conservation and management of forest resources to improve their living standards” as stipulated in the Forestry Policy of 1995. With a legal process now enshrined in legislation, village communities can obtain and manage a forest or a community hunting zone (ZIGC) on the basis of an approved simple management plan (SMP) and a duly signed final management agreement (FMA) with the government. Whereas an FMU management agreement is valid for 15 years and renewable, a community forest plan is valid for 25 years, with the SMP to be revised every 5 years.

In response to difficulties observed from the onset in the process of obtaining and managing community forests, the Administration in charge of Forests (MINEF), with assistance from the UK Department for International Development (DFID), developed a manual clarifying the allocation procedure and norms for community forest management (MINEF 1998). In 1999, a Community Forests Unit was created in MINFOF. In 2005, the Unit became the Subdepartment of Community Forests and was tasked with all community forestry issues in Cameroon.

Lessons learned from ten years of implementation of community forests under this 1998 procedural manual laid the groundwork for the revision of several key

definitions and procedures in both the acquisition and management of community forests. A revised procedural manual was adopted and has been used since February 2009 (MINFOF 2009). The latest version of the manual includes, among other innovations:

- **IMPOSED DEADLINES** in order to avoid community forest requests’ being subject to lengthy administrative procedural delays, specific deadlines are now imposed for each stage of the process;
- **INTRODUCTION OF A PROVISIONAL CONVENTION** thus providing the community with access to forest resources (e.g., timber) before the signature of the final management convention for their community forest; and
- **MANDATORY REFORESTATION** as stated in Article 1.5.1, “Reforestation and/or sylviculture are compulsory in timber and fuel wood production Community Forests.”

In spite of these innovations, significant obstacles remain to the acquisition and effective management of community forests and their accrued benefits. Some of the more commonly cited challenges include (1) communities’ inability to fulfill the significant requirements of the application file; (2) the high initial cost of investment for harvesting and processing timber; (3) conflicts among land use claims; (4) some communities’ inability to resolve marketing and contracting issues, and (5) conflicts arising from both power and benefits sharing within the community organization itself. In partial response to these challenges, the government launched the project Strengthening Initiatives for Community-Based Management of Forests and Wildlife (Renforcement des Initiatives pour la Gestion Communautaire des Ressources Forestières et Fauniques [RIGC]). The RIGC project is based in MINFOF’s Department of Forestry and is now working to reinforce the institutional, financial, and technical capacity of actors engaged in community forestry in Cameroon.

3. **SIMPLE MANAGEMENT PLAN (SMP) AND SIGNED FINAL MANAGEMENT AGREEMENT (FMA)**—The submission (and subsequent approval) of the SMP and the signature of the FMA for a community forest go hand in hand. An SMP describes the nuts and bolts of how the community plans to manage its forest resources to meet its objectives, within applicable legal restrictions and with the objective that these guidelines and planning will lead to sustainable use of the resources. The SMP includes inventory and mapping of forest resources, planned activities (logging, medicinal plants, etc.), plans for wildlife management, and expected benefits (monetary or otherwise) derived from the community forest and how these will be distributed. The SMP is jointly developed by the applicant community, with support from a local MINFOF official. Once completed, the SMP is submitted

to MINFOF for approval. If the plan is validated, the community may also proceed with the signature of a FMA for the community forest. Both the SMP and the FMA are approved by MINFOF for a period of 25 years, with the SMP to be revised every five years.

In part due to the efforts to reform their application procedure and management in Cameroon, land under community forests has significantly increased since 2004 (see also Box 2). In 2011, there were a total of 301 community forests at various stages of management, totaling more than 1 million hectares nationally (Figure 4; Table 1). Community forests constituted nearly 90% of total classified lands within the nPFE in 2011 (Map 2). Please refer to Appendix 3 for a partial list of active community forests in 2011.

Figure 5 | **Cameroon Logged Area by Titles, ^a 1998–2011**



a. AEB/ARB were partially suspended on March 1, 2011.

b. Prior to 2004, logging statistics were reported by fiscal year (Sept.–Aug.); within SIGIF they follow the calendar year (Jan.–Dec.).

c. FMU and ARB figures were not available from MINFOF (SIGIF) in 2010.

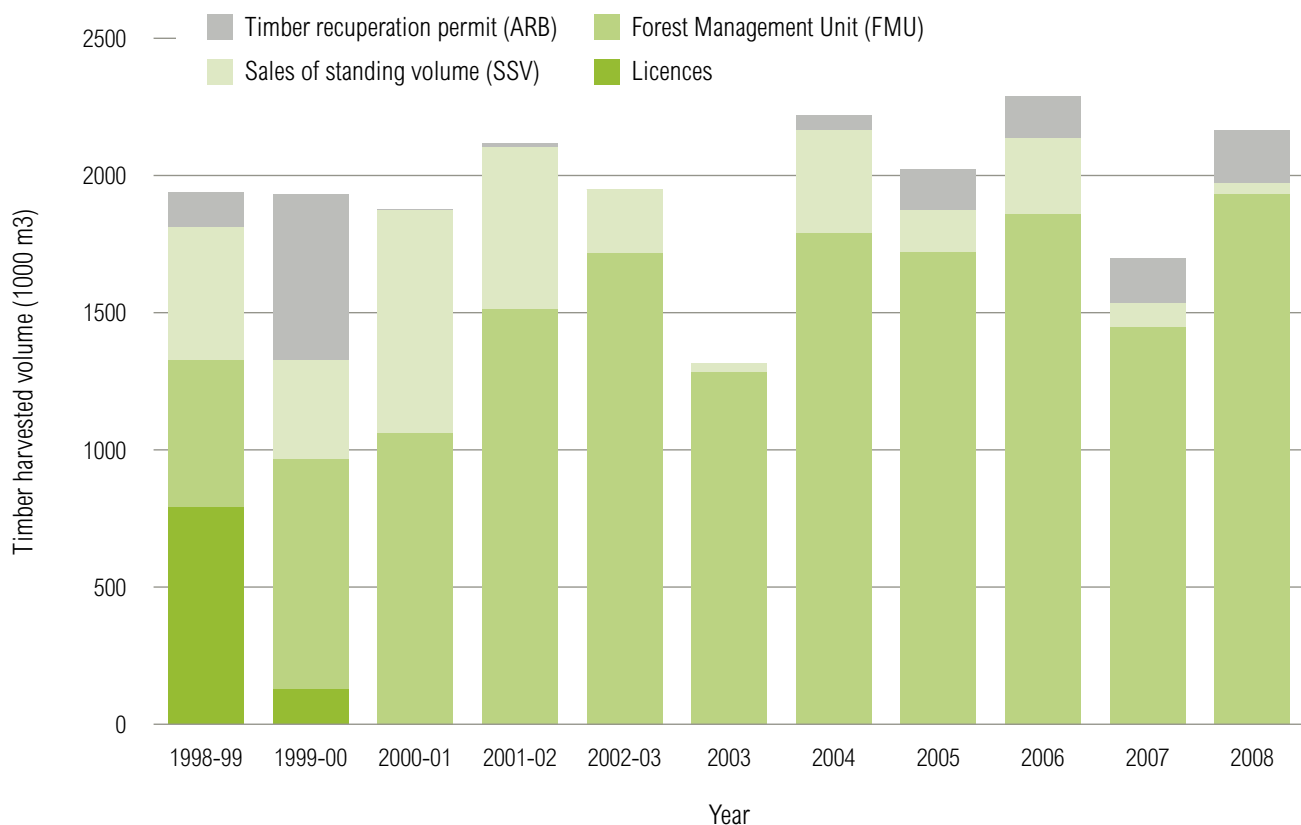
Sales of Standing Volume

Also referred to as *ventes de coupe*, sales of standing volume (SSVs) are short-term, volume-based logging permits typically zoned within the nPFE. Allocated through a competitive bidding process, SSVs are valid for a maximum of 3 years and must not exceed 2,500 ha. SSVs do not require a management plan to be operational. After decreasing from 2004 to 2009, the allocation of SSVs has recently increased sharply—with 49 (covering 114,042 ha) allocated in 2010—of which 35 went into full-scale production in 2011. This significant uptick in SSV allocation occurs at a time when the allocation of and logging within *petits titres* has come under increased scrutiny (see *petits titres* section below). Please refer to Appendix 5 for a list of active SSVs in 2011.

Petits Titres

This category groups together smaller-volume logging permits that cover situations not described in other titles. It includes timber recuperation permits (ARBs), timber evacuation permits (AEBs) and personal logging permits (APCs). As a group, *petits titres* are attributed in the nPFE to Cameroon nationals for a year. They were officially suspended in 1999, reinstated on March 2006, and partially suspended again on March 1, 2011, for permits allocated in 2009 and 2010.¹³

Figure 6 | Cameroon Logged Volume by Type of Title between 1998 and 2008^a



a. Data were not available for the period after 2008 at the time of printing due to a backlog in SIGIF since its breakdown in 2008. SIGIF 2, which is planned as an expanded version of SIGIF to better handle Cameroon's forest statistics needs, is expected to be operational in 2012.

While this report does include some timber production statistics for ARBs acquired through SIGIF, the Atlas application does not include any spatial information for *petits titres*, since their geographic references are typically not published in official documents.¹⁴ The fact that the geographic boundaries, among other critical information, are not made publicly available significantly hampers the monitoring of Petits Titres (Nkoulou and Nounah, 2010).

Protected Areas

Version 3.0 of the Atlas contains up-to-date information on the boundaries of the various areas designated for biodiversity protection and wildlife management. As a land use classification group, they are all referred to as protected areas (PAs).

As of June 2011, there were a total of 86 PAs (including 52 hunting zones) covering about 45% of the PFE—an area increase of 8% (554,217 ha) since 2006. This increase resulted primarily from the creation of 10 national parks between 2007 and 2009, namely, those of Kagwene, Mefou, Ebo, Ndongere, Mount Cameroon, Takamanda, Tchabal Mbabo, Kom, Ma Mbed Mbed, and Deng Deng. Of these, Takamanda, Ndongere, Ebo, and Deng Deng National Parks were formerly forest reserves, and Mount Cameroon National Park includes the former Bomboko and Etinde Forest Reserves. Thus, a total of six former forest reserves were converted into new national park land between 2007 and 2009. The shift from forest reserve, which is technically a designated production forest, to a national park—an integrally protected entity—constitutes a significant change in land use classification, since it is much easier to change a “reserve” to a “park” than the other way around. Please refer to Appendix 4 for a list of protected areas, excluding hunting zones.

Land Use Allocation versus Land Cover

In addition to how much area is dedicated to each land use category, and where each is located, decision makers and managers should be able to find out easily which types of land cover fall under each land use category. Table 3 shows the results of an analysis of land use cover by land use category, overlaying such categories from version 3.0 of the Interactive Forest Atlas of Cameroon with broad land cover classification derived from satellite imagery.

Significant areas of the National Forest Estate (12%) and Permanent Forest Estate (22%) contain nonforested land

Of the total national land area of around 47 million hectares, about 59% is covered by some type of forest (dense + mixed forests)—with the remaining nonforested land located primarily in the northern part of Cameroon. Significant areas of the NFE (12%) and PFE (22%) contain nonforested land—this is primarily a result of many protected areas in the northern part of the country (Map 3, Figures 7–9).

If all unclassified state forests (*forêts du domaine national*) are included in the nPFE as stipulated by the Forestry Law, the total area of both the nPFE and PFE increases significantly. If one includes the unclassified state forests, the nPFE swells to around 32% of national territory,¹⁵ approaching the 35% covered by the PFE and placing a full two thirds of Cameroon’s land in the NFE.

Road Network

Forest roads are important indicators of the extent of past and present industrial logging activities. Since its onset, the Interactive Forest Atlas project has acquired and processed satellite imagery to improve the boundary definition accuracy of logging permits, protected areas, and other land use classifications in Cameroon. Satellite imagery has also been used to monitor forest-based extractive activities through the mapping of roads and other forest infrastructure. WRI has also partnered with

Table 3 | **Composition of the National Forest Estate by Types of Land Cover in 2011^a**

LAND COVER ^b	DENSE FORESTS (ha)	MIXED FORESTS (ha)	OTHER (ha)	TOTAL (ha)	PERCENT OF NFE	PERCENT OF NATIONAL TOTAL
PFE	10,855,753	1,727,646	3,640,577	16,223,976	52	35
Production forests^c	7,293,910	650,211	150,091	8,094,212	26	17
Protected areas + Hunting zones^d	2,877,376	959,450	3,466,202	7,303,029	24	16
Council forests	684,466	117,984	24,284	826,735	3	2
nPFE	6,048,034	8,656,091	68,798	14,772,922	48	32
Community forests	613,180	318,793	65,727	997,699	3	2
SSVs	77,751	33,150	3,071	113,972	<1/2	<1/2
Unclassified state forests^e	5,357,103	8,304,148	—	13,661,251	44	29
Total NFE	16,903,787	10,383,737	3,709,375	30,996,897		66
Total land area outside of NFE^f	38,902	124,084	15,645,826	15,645,826		34
Cameroon	16,942,689	10,507,821	19,355,201	46,805,711		

- a. Discrepancies between values in Tables 1 and 3 occur principally due to: (1) the extension of several areas in consideration beyond the continental land area of Cameroon as in the case of the Ndongere National Park—these portions were excluded from this calculation; and (2) inherent discrepancies in the comparison of vector-based and raster-based objects—the surface areas in Table 1 were calculated using vector data, while those in Table 3 were calculated using raster data.
- b. Data used for land cover comparison was extracted from the compilation of land cover produced by South Dakota State University (SDSU), the Université Catholique de Louvain (UCL), the Joint Research Centre (JRC), and the Observatoire des forêts d'Afrique centrale (OFAC) 2008. With respect to the land cover definitions of the source data, "Dense forests" refers to a combination of "dense forests" and "mangroves"; "Mixed forests" are a combination of "rural complex" and "mosaic forests and savanna"; and "Other" is a compilation of "background," "water bodies," "closed deciduous forest," "cities," "cropland," and "other."
- c. FMUs and forest reserves.
- d. Only nonoverlapping hunting zones considered.
- e. By default, all unclassified state forests fall within the nPFE as *forêts du domaine national* (Art. 35, Forestry Law of 1994).
- f. Total area of land that neither is forested nor falls within an officially classified land use in the NFE. It includes all agroindustrial zones.

the Ministry of Public Works and the European Union to define a standardized nomenclature of roads data used in GIS by different stakeholders in Cameroon.¹⁶ In previous versions of this Atlas, mapping of public and forest roads was limited to the southern forested region of the country. For version 3.0, considerable effort was devoted to updating and expanding the data to reflect recent development of the road network, including public, forest, and plantation roads across Cameroon.

The roads layer was updated based on recently acquired medium resolution satellite imagery covering the years 2005 to 2010 (see Appendix 6). New logging roads were digitized and categorized according to the source of data (type of imagery) and date (image acquisition date), as well as the condition of the road and its primary usage.¹⁷ The status of older logging roads was updated according to more recent observations via satellite imagery. Further editing and improvement of existing public, divisional, regional, and national road datasets

were carried out based on topographic map information and on-the-ground tracking with a GPS unit for areas where cloud cover in images made tracing these roads difficult.








Table 4 presents the extent of roads as mapped by the project team. At the national level, the overall road network represented approximately 57,803 km in 2009, nearly 88% of which were in the South. In comparison to the road network mapped up to 2003 for version 1.0, forest roads in the southern region increased by about 8% (1,652 km) by 2009. In spite of this increase in forest roads, analysis carried out in the assessment of the FESP revealed a decrease in observation of irregular logging roads within the PFE between 2003 and 2009.¹⁸ This could indicate a decrease in illegal logging activities over this same period, which would not be surprising, given the significant decrease in illegal logging reported for the decade between 2000 and 2010 (Lawson and MacFaul, 2010).

Table 4 | Road Length (Km) by Category based on Available Data^a

ROAD CATEGORY	SOUTH ^b		COUNTRY	SOUTH
	2003 ^c	2009	2009	CHANGE (2003–09)
Public road	22,721	29,929	36,850	+7,208
Forest road	18,717	20,369	20,369	+1,652
Plantation road	484	584	584	+100
Total	41,922	50,882	57,803	+8,960

- a. The inability to acquire cloud-free imagery across the country for any given year, and insufficient resources to carry out GPS ground-tracking of all areas not covered with satellite imagery made it impossible to obtain precise values for length of roads for each time period. The values given here should thus be considered an underestimate of the actual situation.
- b. In 2003, only roads in the southern forested part of the country were mapped. Version 3.0 of the atlas integrates roads mapped across the entire country, but for purposes of comparison, 2009 values are given for the southern area mapped in 2003.
- c. Refer to mapped roads in the version 1.0 of the Atlas based on the available data (1999–2003), and see the overview report in version 1.0 for a full description of the dataset and methodology.

Map 3 | Land Cover and National Forest Estate, 2011

Vegetation	
	Dense forest
	Mixed forest
	Other
	Permanent forest estate
	Non-permanent forest estate
	Political capital
	Regional capital
Sources:	
-Land cover: UCL, JRC, and SDSU, 2008	
-Forest land use: World Resources Institute (WRI) and the Ministry of Forestry and Wildlife (MINFOF), 2011	
-Populated places: Teclist Inc. on behalf of the Canadian Agency for International Development (CIDA)	

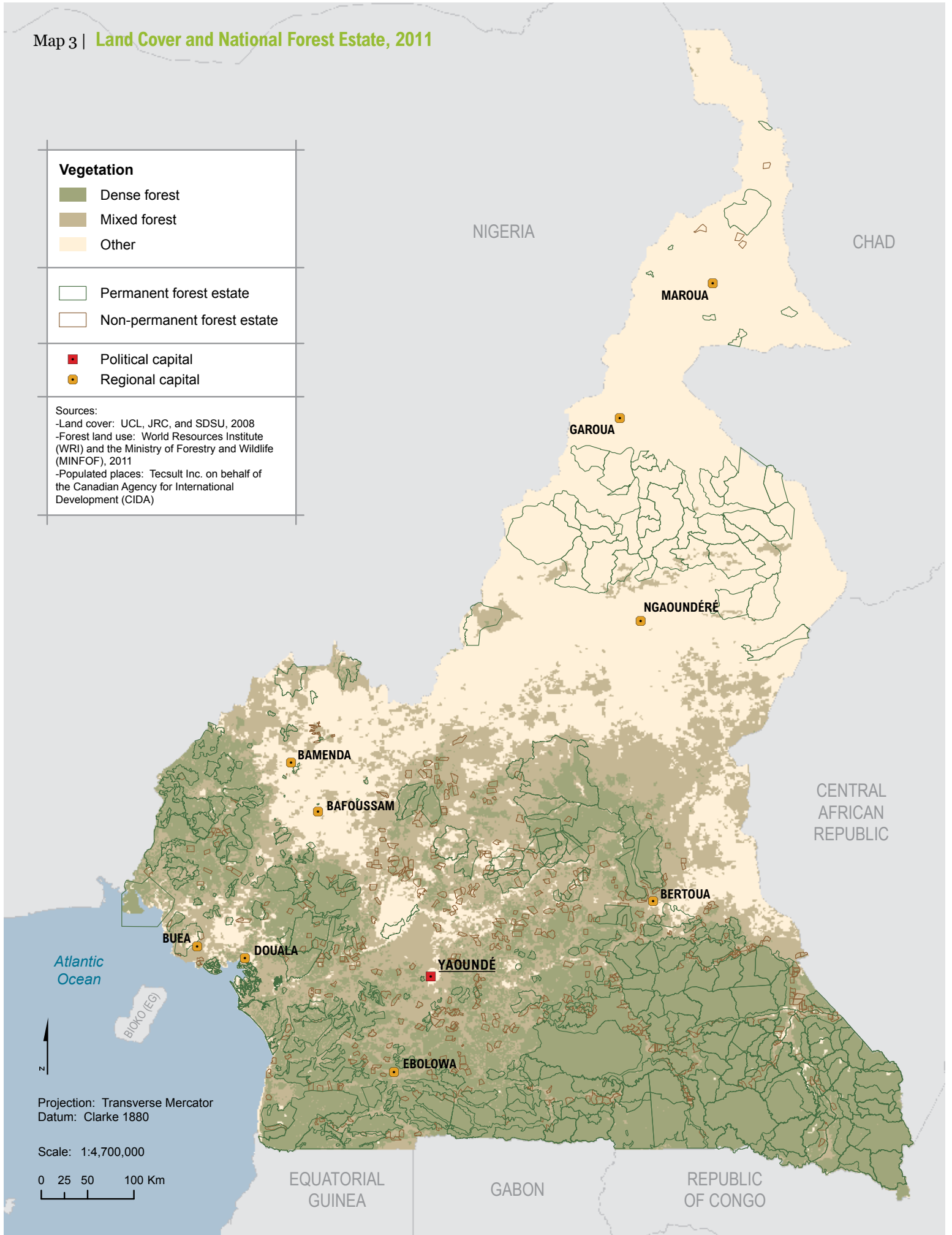
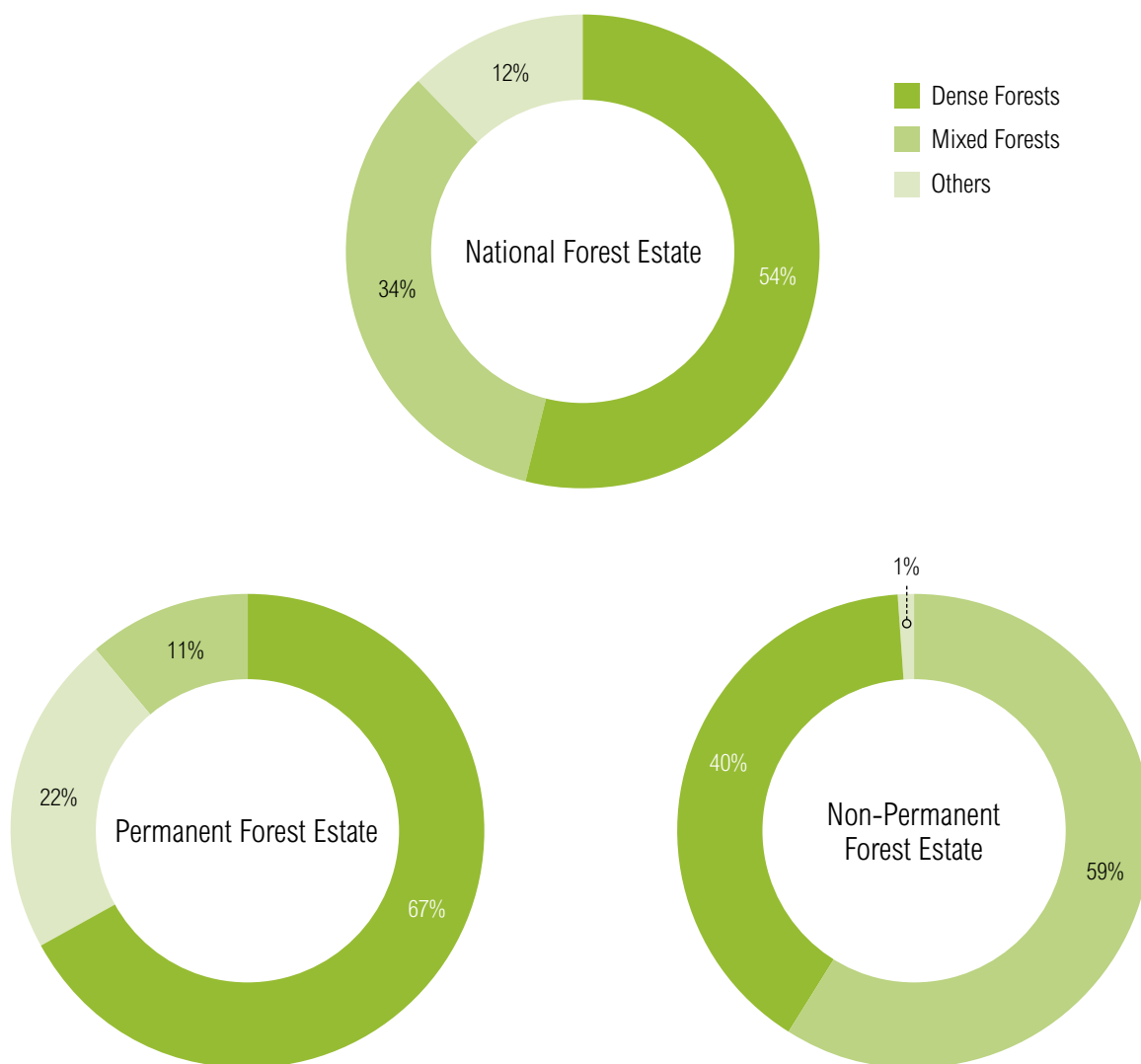


Figure 7 | Distribution of Land Cover in Cameroon's Forests, 2011



If all unclassified state forests (forêts du domaine national) are included in the nPFE as stipulated by the Forestry Law, the nPFE swells to around 32% of the national territory, placing a full two thirds of Cameroon's land in the NFE



LAND USE OUTSIDE OF THE NATIONAL FOREST ESTATE

In Cameroon, human pressure on forests is increasingly coming from areas outside of the traditional forest sector. Rising global commodity prices have led to an increased focus on expanding mineral extraction and industrial agricultural plantations. Rapidly developing urban areas need more land to meet their needs. Much of this expansion has, and will, come at the expense of historically forested land.

Mining Concessions

In line with Cameroon Vision 2035, a development plan aiming to drive the country to emergent economy level by 2035, the government is promoting the mining sector to boost and diversify the country's development base. Accordingly, since 2008 the government has launched mineral exploration projects across the country.¹⁹

Until recently, the forest management community paid relatively little attention to the impact of Cameroon's growing mining sector on the integrity of forest lands. Since these sought after minerals are often under forested lands, it is urgent that the mining and forest sectors coordinate their land use planning (Map 4).

Working in collaboration with the personnel of the Ministry of Industries, Mines, and Technological Development, the Atlas project team mapped and

integrated allocated mining exploration permits into version 3.0 of this Atlas (see Box 3 for further detail on mining permits). The integration of mining concession data into the Atlas provides a useful platform for the forest and mining sectors to pool their information and improve coordination.

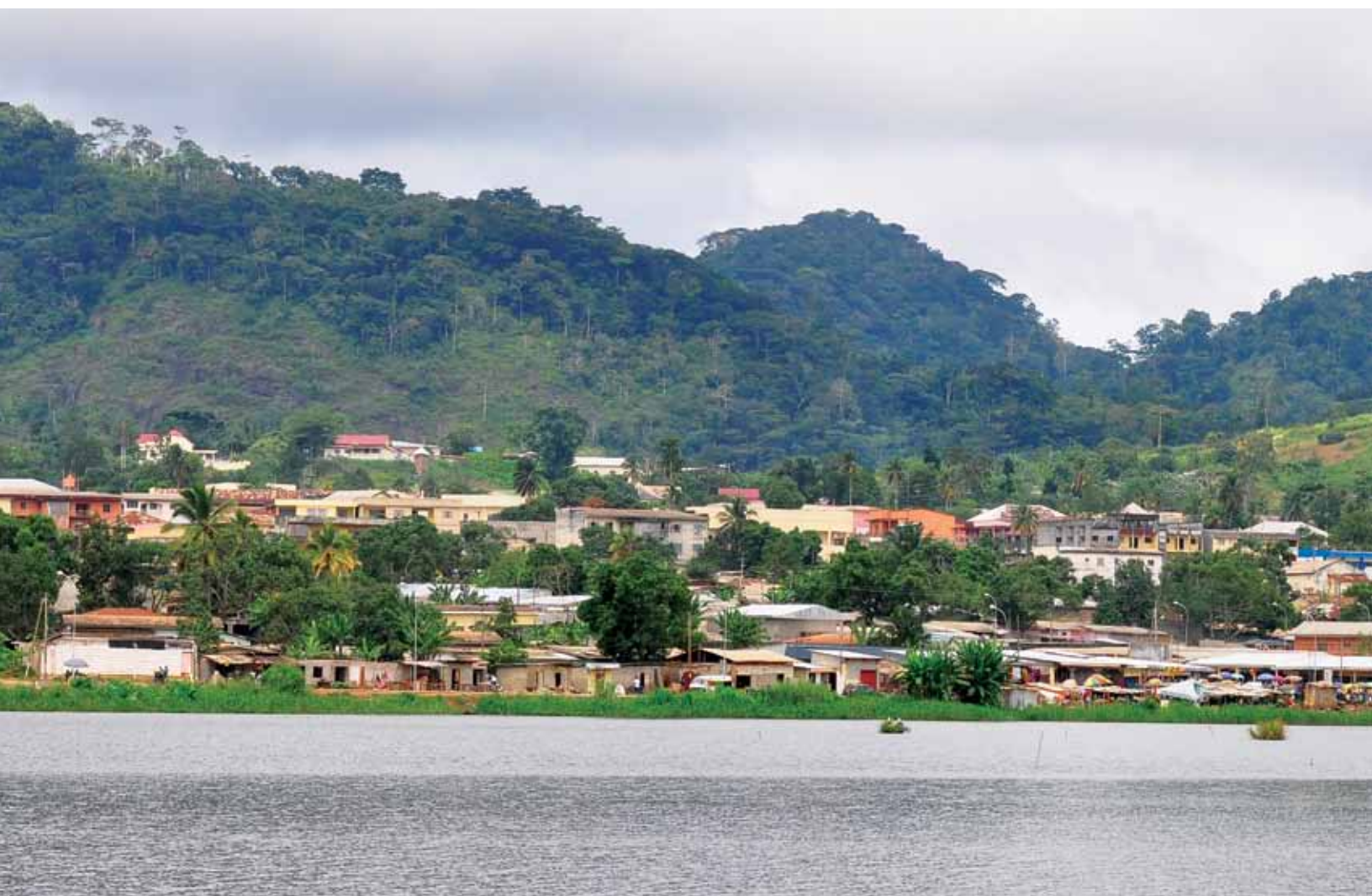
Industrial Agriculture Plantations

In Cameroon, land designated for industrial agriculture falls outside of the National Forest Estate. Industrial agricultural plantations are generally allocated by the Ministry of Economy and Planning to private entities under long-term, renewable lease contracts. Once such contracts are allocated, the Ministry of Agriculture is responsible for managing and monitoring these areas. The majority of agro-industrial lands are planted with rubber trees or oil palm, with the increasing global demand for biofuels driving interest in the expansion of the latter.








V3.0 is the first version of the Atlas to contain spatial information on agroindustrial plantations in Cameroon. Lack of access to spatial or official documentary information on agroindustrial lands in the Ministry of Agriculture renders mapping or monitoring of these areas difficult. Agroindustrial lands contained in version 3.0 were largely mapped using satellite imagery, combined with ground-truthing to determine crop type and operating company. Given that the Atlas team did not often have access to the official documentation for these areas, boundaries should be considered as approximate. Similarly, the agroindustrial lands contained in version 3.0 are not exhaustive for Cameroon.

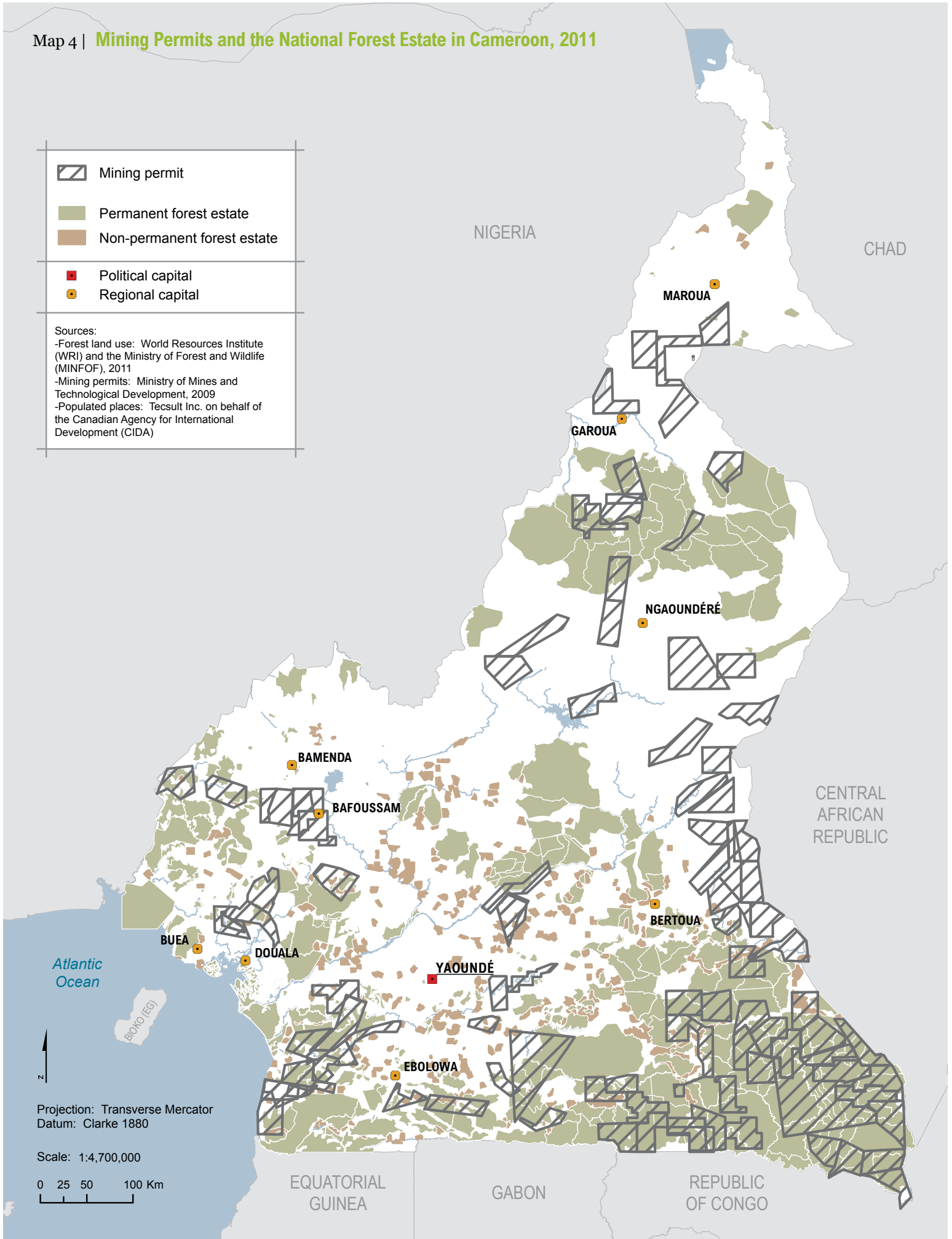
The integration of mining concession data into the Atlas provides a useful platform for the forest and mining sectors to pool their information and improve coordination.



Map 4 | Mining Permits and the National Forest Estate in Cameroon, 2011

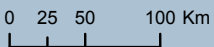
	Mining permit
	Permanent forest estate
	Non-permanent forest estate
	Political capital
	Regional capital

Sources:
 -Forest land use: World Resources Institute (WRI) and the Ministry of Forest and Wildlife (MINFOF), 2011
 -Mining permits: Ministry of Mines and Technological Development, 2009
 -Populated places: Tecsuit Inc. on behalf of the Canadian Agency for International Development (CIDA)



Projection: Transverse Mercator
 Datum: Clarke 1880

Scale: 1:4,700,000



BOX 3 | OVERVIEW OF DIFFERENT MINING PERMITS IN CAMEROON

The mining sector in Cameroon is governed by the Law n°001-2001 of April 16, 2001, and its application decree n°2002/648/PM of March 26, 2002. These legal instruments provide mining operators with four types of mining titles.

- **ARTISANAL PERMIT** Issued only to Cameroonian nationals by the competent territory authority for renewable 2 year periods. It provides its holder with the exclusive rights to prospect and extract mineral substances inside the allocated area not to exceed 100 m² and 30 m deep. No more than four artisanal permits in contiguous areas can be issued to the same individual. A holder of an artisanal mining permit can also be issued research and/or exploitation permits within the same area. In this case, issue of an exploitation permit automatically terminates the artisanal permit.
- **PROSPECTION PERMIT** Issued by the Ministry of Mines for a period of 1 year and renewable, for prospection over large surface areas—up to 10,000 km² under a unique block. This permit provides its holder with the exclusive and nontransmissible rights to conduct prospection activities, and to get access and establish appropriate installation within the allocated area, provided that the permit holder is in compliance with land tenure.
- **RESEARCH PERMIT** Issued through an order from the Minister of Mines for a period of 3 years and renewable (up to four times in 2-year increments) in order to carry out research aimed at detecting and assessing mineral deposits and analyzing conditions for commercial exploitation. The area allocated should not exceed 1,000 km² under a unique block. Renewal of a research permit obligates the bearer to forgo rights to at least half of the original permitted area to up to 62 km².
- **EXPLOITATION PERMIT** Granted through a decree from the President of the Republic after consultation with the Minister of Mines for the extraction of solid, liquid, and gaseous mineral substances above or underground by any process or method. An exploitation permit is granted for a period of 25 years and renewable (in 10-year increments until exhaustion of the resource), provided that the permit holder is in compliance with all the conditions stipulated by the convention. The permit area allocated depends on the type of mineral deposit as stipulated in the feasibility study. However, it must fall under a unique block entirely inside the area for which the research permit was previously granted. In addition to mineral extraction, the permit provides its holder with exclusive rights to occupy the area allocated for mining and any other related operations.

Source: Mining Code N°001/2001 of August 16, 2001.



PERSPECTIVES

Going forward, the Interactive Forest Atlas of Cameroon will improve and expand both function and content to respond to end user feedback, as well as to address new challenges and opportunities facing the forest sector. Through Atlas updates and ongoing trainings of forest sector stakeholders, WRI and MINFOF aim to place critical forest information securely into public hands to support transparent and informed forest management.

1. Capacity building and integration of Atlas development in MINFOF

Since 2008, WRI's staff in Cameroon has been working directly with the personnel of MINFOF's Technical Mapping Service (Service de cartographie).²¹ Through this collaboration, MINFOF personnel are receiving on-site training to ensure the effective transfer of competencies to its technical services. This partnership will continue, with emphasis on advanced technical training in the use of GIS and remote sensing technology for collecting and integrating forest information, with due consideration to the forthcoming SIGIF 2 and FLEGT-VPA. Training in Atlas applications will extend to a wider circle of stakeholders, especially at regional levels.

2. Atlas updating and content enrichment

Considering the dynamic nature of the forest sector, significant effort will be undertaken to ensure timely updates of the Atlas and the continuous availability of accurate and up-to-date information. While the Atlas will continue to capture information on forest allocation, classification, management, and certification processes, WRI and MINFOF will further expand the scope of the work either in or to the following areas of interest:

- mining concessions and related infrastructure;
- restoration and farmer-based natural regeneration management areas;
- customary lands and related land use titles;
- five-year logging plans (*blocs quinquennaux*), as specified in the management plans of FMUs;
- timber extraction at the subconcession level;
- oil palm concessions and agroindustrial expansion; and
- critical conservation sites and model forests.

3. Contributing to regional processes and programs

In addition to satisfying the demand for forest information, the Atlas also contributes to the enrichment and updating of databases developed in the framework of subregional integration programs such as the Central Africa Forest Satellite Observatory (OSFAC). WRI's and MINFOF's Atlas data has been a principal source of information in updating the OSFAC database and producing the State of the Congo Basin Forest report in 2006, 2008, and 2010.

4. Strengthening institutional coordination on forest resource use

Authority for land use allocation and the management of some forest-related issues in Cameroon cuts across different institutions. An example is the REDD+ mechanism, whose execution is assigned both to MINFOF and the Ministry of Environment and Nature Protection (MINEP). Going forward, the Atlas will endeavor to strengthen institutional coordination among the principal forest stakeholders (e.g., MINFOF, MINEP, Mines) by feeding and bridging their different information systems within the same platform. Significant improvements in information exchange will support coordination of the Government of Cameroon toward achieving its goals of increased economic development in a context of sustainable use of the nation's forest resources.

Emerging Themes

In addition to the activities listed in the section "Next Steps," future forest atlases will seek to incorporate or address a number of ongoing or emerging themes. While the list of potential applications below is far from exhaustive, it provides a sense of potential new directions to be followed.

Informal Timber Sector

This sector includes logging activities that occur outside of areas officially allocated for timber production. Much of this timber is cut by chainsaw operators illegally and destined to supply local and regional markets. With increased scrutiny and certification of the formal timber sector (within officially allocated permits), there is now much better information about and monitoring of logging activities than 15 years ago. While there are still legality, sustainability, and social issues to address in the formal sector, it is increasingly recognized that much more needs to be done to address logging and related issues in the informal sector as well. A recent study in Cameroon estimates that the volume of timber entering the domestic market is roughly equivalent to that of the export market, and that nearly 75% of the wood supplying the former comes through the informal sector (Pye-Smith, 2010). The Atlas could serve as a platform to map and consolidate documented informal logging activities and provide MINFOF and stakeholder organizations with a powerful tool to manage and address these issues more effectively.

Monitoring of the Implementation of Management Plans

With the majority of FMUs operating under MIN-FOF-approved management plans, the challenge is now to monitor their implementation on the ground. The Atlas' ability to map activities targeting certain milestones or practices could offer MINFOF as well as other monitoring stakeholders (NGOs, MINEP) an effective tool for overseeing management plan implementation.

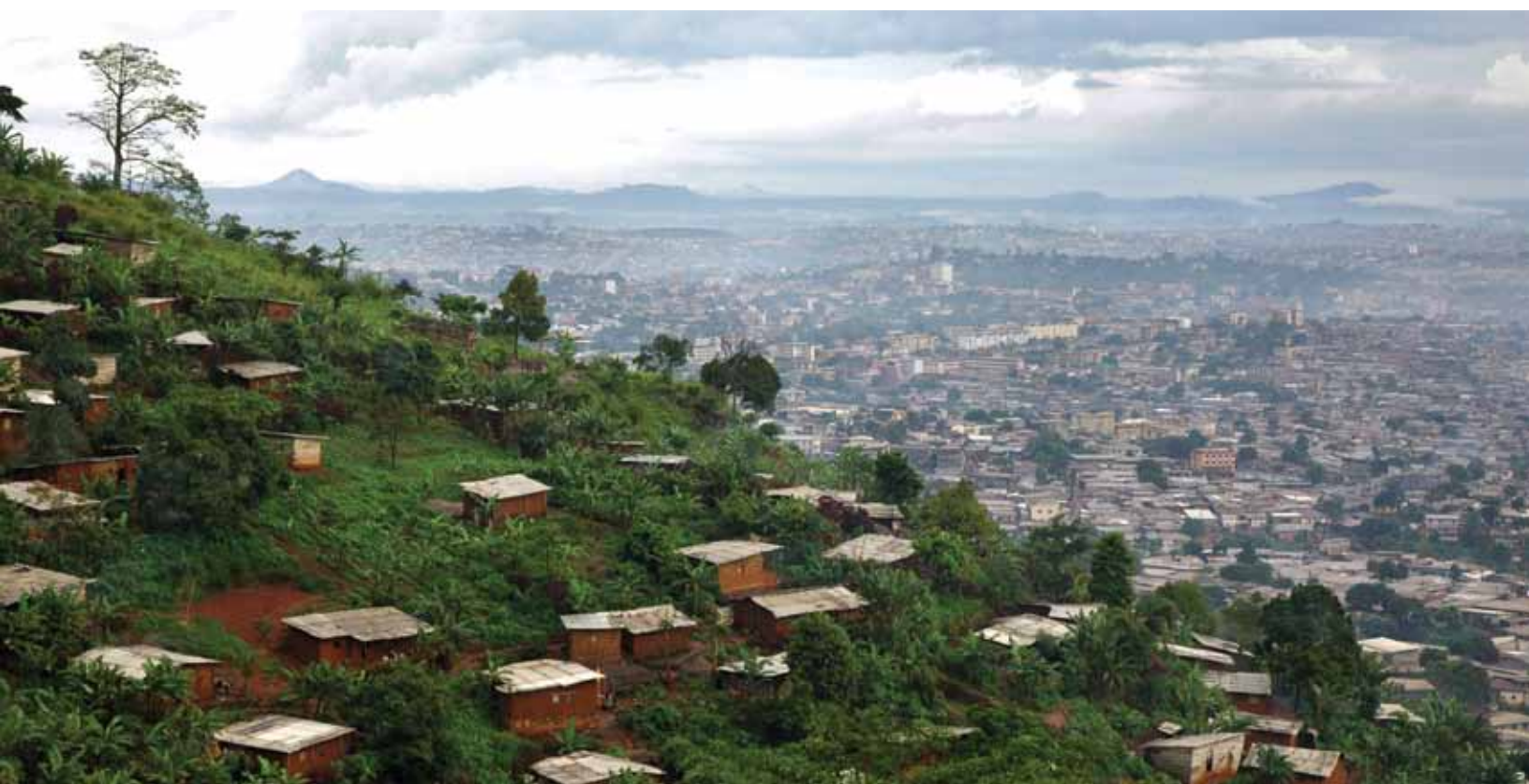
Land Tenure and Customary Rights

By law, the state has dominion over all forests that are not explicitly designated as private property. The state allocates or leases defined areas to recognized entities for specific resource use purposes. In addition to these officially recognized land use classifications, local communities are also granted customary access to resources to meet their subsistence needs. Since areas under customary resource use are rarely formally mapped, there are significant regions of overlap with areas allocated under the “formal” system. The Atlas offers a central and standardized platform for the consolidation of areas that have been claimed or identified as under customary resource use—thus giving all parties

the ability to address existing land use conflicts in a dynamic fashion—as well as the opportunity to consider customary usage in future “formal” land allocation processes.

Reducing Emissions from Deforestation and Degradation and Enhancing Carbon Stock (REDD+) and Mapping Ecosystem Services

With the emergence of the REDD+ process and the increasing interest in the recognition of ecosystem services (the benefits forests provide to people, such as climate regulation) in the formal marketplace, the demand for credible, accessible, and up-to-date forest information will escalate rapidly. Countries or regions with reliable systems in place to manage and monitor their forest ecosystem services will be well placed to take advantage of these opportunities now on the horizon. As a central and standardized system for managing multistakeholder validated information across Cameroon's entire forest sector, the Atlas provides a logical base on which to manage both REDD+ and ecosystem service indicators. With the addition of mapped customary lands, the Atlas can help decision makers ensure that local rights are not being compromised in the pursuit of REDD+ objectives.



APPENDIX 1: LIST OF FMU STATUS AS OF JUNE 30, 2011

FMU NUMBER	CONCESSION		ALLOCATION		MANAGEMENT PLAN		GIS AREA (ha)	CERTIFICATION	
	NUMBER	STATUS ^a	HOLDER	DATE	STATUS ^b	DATE		LEGALITY	FSC
00-001	1075v	A	SEPFCCO	2005	MPA	2008	59,270	OLB	
00-002	1075v	A	SEPFCCO	2005	MPA	2008	15,335	OLB	
00-003	1028v	A	MMG	2000	MPA	2004	162,267		
00-004	1029v	A	TRC	2004	MPA	2005	124,523	OLB	FSC (FM/COC)
07-002	1027v	A	EDEATEC	2009	TA		91,489		
07-003		NA					29,190		
08-001	1026v	A	RC CORON	1996	MPA	2005	49,297		
08-002	1026v	A	RC CORON	1996	MPA	2005	60,627		
08-003	1020v	A	STJJY	1997	MPA	2005	44,975		
08-004	1017v	A	EFMK	1997	MPA	2004	86,398		
08-005	1077v	A	SIM	2005	MPA	2008	35,793		
08-006	1002v	A	SFB	1997	MPA	2003	50,070		
08-007	1049v	A	CANABOIS	2006	MPA	2005	84,031		
08-008*	1030	A	SCTCB	2000	MPA	2006	78,872		
08-009*	1031	A	INC SARL	2000	MPA	2004	48,814		
09-001		NA					206,107		
09-002		NA					75,375		
09-003	1032v	A	LOREMA	2000	MPA	2008	110,104	TLTV	PreAudit
09-004a	1032v	A	LOREMA	2000	MPA	2008	20,839	TLTV	PreAudit
09-005a	1032v	A	LOREMA	2000	MPA	2008	10,330	TLTV	PreAudit
09-004b	1033v	A	COFA	2000	MPA	2004	71,094		

APPENDIX 1: LIST OF FMU STATUS AS OF JUNE 30, 2011 (CONT.)

FMU NUMBER	CONCESSION		ALLOCATION		MANAGEMENT PLAN		GIS AREA (ha)	CERTIFICATION	
	NUMBER	STATUS ^a	HOLDER	DATE	STATUS ^b	DATE		LEGALITY	FSC
09-005b	1034v	A	SOCIB	2000	MPr		43,010	TLTV	PreAudit
09-006	1001v	A	SFF	1997	MPA	2004	71,007		
09-007	1073v	A	MPACKO	2005	MPA	2009	44,665	TLTV	PreAudit
09-008	1073v	A	MPACKO	2005	MPA	2009	36,273	TLTV	PreAudit
09-009**	1076v	A	SFB	2005	NA		48,838		
09-010**	1076v	A	SFB	2005	NA		31,692		
09-011	1079v	A	SIBM	2006	MPA	2010	35,036		
09-012	1062v	A	Meto'o et Fils	2002	TA		84,602		
09-013*	1063v	A	CFK	2002	MPA	2008	51,204	OLB	
09-014**	1080v	A	GEC	2006	NA		29,365		
09-015	1035v	A	SN COCAM	2000	MPA	2010	41,870		
09-016	1064v	A	COFA	2002	MPA	2007	64,765		
09-017	1050v	A	FIPCAM	2001	MPA	2004	66,788		
09-018	1050v	A	FIPCAM	2001	MPA	2004	32,624		
09-019	1036v	A	CUF	2000	MPA	2004	36,529	OLB	
09-020	1069v	A	CUF	2005	MPA	2008	36,604	OLB	
09-021	1006v	A	WIJMA	1997	MPA	2004	42,810	OLB	FSC (FM/COC)
09-022	1078v	A	GAU SERVICES	2005	MPA	2008	79,886	OLB	
09-023	1005v	A	BUBINGA	1997	MPA	2004	58,220		
09-024	1037v	A	WIJMA	2000	MPA	2006	75,217	OLB	FSC (FM/COC)

APPENDIX 1: LIST OF FMU STATUS AS OF JUNE 30, 2011 (CONT.)

FMU NUMBER	CONCESSION		ALLOCATION		MANAGEMENT PLAN		GIS AREA (ha)	CERTIFICATION	
	NUMBER	STATUS ^a	HOLDER	DATE	STATUS ^b	DATE		LEGALITY	FSC
09-025	1011v	A	SCIEB	1997	MPA	2004	88,276		
09-026	1081v	A	CUF	2006	MPA	2008	50,230	OLB	
09-027	1081v	A	CUF	2006	MPA	2008	18,024	OLB	
09-028	1082v	A	EFFA JBP	2006	TA		25,517		
10-001	1025v	A	CFC	1996	MPA	2003	70,443	TLTV	
10-002	1025v	A	CFC	1996	MPA	2003	23,006	TLTV	
10-003	1025v	A	CFC	1996	MPA	2003	49,470	TLTV	
10-004	1025v	A	CFC	1996	MPA	2003	53,256	TLTV	
10-005a	1051v	A	STBK	2006	MPA	2010	52,986		
10-005b	1088v	A	STBK	2006	MPA	2010	37,908		
10-007	1010v	A	SEBC	1997	MPA	2003	123,931	TLTV	
10-008	1052v	A	SEFAC	2001	MPA	2005	74,026	FSC COC	
10-009	1022v	A	SEBAC	1997	MPA	2004	92,978		
10-010	1053v	A	SEFAC	2001	MPA	2006	67,888	FSC COC	
10-011	1013v	A	SAB	1997	MPA	2003	49,016	TLTV	
10-012	1016v	A	SEFAC	1997	MPA	2004	59,820		
10-013	1065v	A	Habitat 2000	2006	MPA	2009	51,386	OLB	
10-015	1004v	A	CIBC	2001	MPA	2005	130,754	TLTV	
10-018	1003v	A	STBK	1997	MPA	2004	81,775		
10-020	1038v	A	SFEES	2000	MPA	2004	83,241		
10-021	1018v	A	GREEN VALLEY	1997	MPA	2004	66,615		
10-022	1039v	A	SFIW	2000	MPA	2004	35,509		

APPENDIX 1: LIST OF FMU STATUS AS OF JUNE 30, 2011 (CONT.)

FMU NUMBER	CONCESSION		ALLOCATION		MANAGEMENT PLAN		GIS AREA (ha)	CERTIFICATION	
	NUMBER	STATUS ^a	HOLDER	DATE	STATUS ^b	DATE		LEGALITY	FSC
10-023	1007v	A	SFCS	1997	MPA	2003	58,582		
10-025	1070v	A	SFIL	2005	MPA	2009	48,320	FSC	
10-026	1040v	A	ALPICAM	2000	MPA	2004	128,225	OLB	
10-027		NA					32,079		
10-028		NA					78,314		
10-029	1014v	A	SFDB	1997	MPA	2004	46,991		
10-030	1054v	A	PALLISCO	2001	MPA	2004	76,842	OLB	FSC (FM/COC)
10-031	1041v	A	SODE- TRACAM / PALLISCO	2000 / 2010	MPA	2004	40,448	OLB	FSC (FM/COC)
10-032			NA				98,768		
10-033			NA				48,321		
10-034			NA				164,976		
10-035			NA				101,117		
10-036			NA				61,952		
10-037	1042	A	KIEFFER	2000	MPA	2004	53,435	TLTV	
10-038	1043v	A	CAMBOIS	2000	MPA	2005	148,692	TLTV	
10-039	1044v	A	PALLISCO	2000	MPA	2004	48,042	OLB	FSC (FM/COC)
10-040	1074v	A	TTS	2005	MPA	2010	80,362		
10-041	1019v	A	PALLISCO	1997	MPA	2004	65,564	OLB	FSC (FM/COC)
10-042	1055v	A	SODE- TRANCAM	2001	MPA	2004	45,184	OLB	FSC (FM/COC)
10-043*	1071v	A	PLACAM	2005	NA		51,469		

APPENDIX 1: LIST OF FMU STATUS AS OF JUNE 30, 2011 (CONT.)

FMU NUMBER	CONCESSION		ALLOCATION		MANAGEMENT PLAN		GIS AREA (ha)	CERTIFICATION	
	NUMBER	STATUS ^a	HOLDER	DATE	STATUS ^b	DATE		LEGALITY	FSC
10-044	1056v	A	ASSENE NKOU	2001	MPA	2004	65,755	OLB	FSC (FM/COC)
10-045	1045v	A	J. PRE- NANT	2000	MPA	2004 (2008)	54,353		
10-046	1046v	A	SCTB	2000	MPA	2004	71,024		
10-047a*	1057v	A	FIPCAM	2001	MPA	2008	46,844		
10-047b*	1083v	A	CCIF	2006	NA		47,170		
10-048	1084v	A	SCIFO	2006	MPA	2009	67,119		
10-049*	1085v	A	PMF WOOD	2006	NA		34,175		
10-050*	1085v	A	PMF WOOD	2006	NA		37,343		
10-051	1015v	A	GRUM- CAM	1997	MPA	2004	85,897	OLB	
10-052	1058v	A	SFIL/ SOTREF	2001	MPA	2004	72,098		Audit FSC
10-053	1072v	A	GRUM- CAM	2005	MPA	2008	82,743	OLB	
10-054	1012v	A	SFID	1997	MPA	2005	67,500	TLTV	PreAudit
10-055*	1071v	A	PLACAM	2005	NA		40,466		
10-056	1066v	A	SFID	2002	MPA	2008	73,689	TLTV	FSC/FM
10-057	1067v	A	ING F	2002	TA		33,836		
10-058	1009v	A	SEBC	1997	MPA	2003	55,625	TLTV	
10-059	1059	A	SCTB	2001	MPA	2004	45,000		
10-060	1059	A	SCTB	2001	MPA	2004	54,548		
10-061	1021v	A	PLACAM	2001	MPA	2004	28,127		

APPENDIX 1: LIST OF FMU STATUS AS OF JUNE 30, 2011 (CONT.)

FMU NUMBER	CONCESSION		ALLOCATION		MANAGEMENT PLAN		GIS AREA (ha)	CERTIFICATION	
	NUMBER	STATUS ^a	HOLDER	DATE	STATUS ^b	DATE		LEGALITY	FSC
10-062	1047v	A	PAN- AGIOTIS MARELIS	2000	MPA	2005	146,232	OLB	
10-063	1048v	A	ALPICAM	2000	MPA	2004	69,479	OLB	
10-064	1060v	A	FILIERE BOIS	2001	MPA	2004	117,159	FSC COC	FSC
10-065	1090v	A	WANJA / SFW	2006	TA		103,607		
11-001	1086v	A	TRC	2006	MPA	2008	55,385	OLB	PreAudit
11-002	1068v	A	WIJMA	2002	MPA	2006	48,579		
11-003	1089v	A	SEFECAM	2006	MPA	2009	32,455	OLB	
11-004	1089v	A	SEFECAM	2006	MPA	2009	15,233	OLB	
11-005	1087v	A	CAFECO	2006	MPA	2009	80,370	FSC COC	
11-006		NA					28,116		
11-007		NA					36,270		
11-008		NA					27,363		

a. Status of allocation: A = allocated, NA = not allocated, v = valid (active) logging titles as of June 30, 2011.

b. Status of management plan elaboration: MPA = management plan approved, MPr = management plan under revision, TA = temporary agreement (management plan in preparation).

c. * = abandoned FMU ** = declassified FMU.

APPENDIX 2: LIST OF COUNCIL FORESTS

NAME	GAZETEMENT STATUS	GAZETEMENT DATE	ADM. AREA (ha)	GIS AREA (ha)
Akom II–Efoulan a	PM	2009	11,649	17,178 (combined)
Akom II–Efoulan b	PM	2009	5,529	17,178 (combined)
Ambam	PM	2007	44,620	44,620
Angossas	AP	2009	22,150	22,178
Ayos	AP	2008	12,006	12,008
Batouri	PM	2009	14,326	14,152
Belabo	AP	2006	9,819	9,914
Dimako*	G	2001	16,240	18,045
Djourn*	G	2002	15,270	15,140
Doumaintang	AP	2008	37,966	37,966
Doume	AP	2010	40,700	40,602
Dzeng	G	2010	21,212	21,167
Ebolowa	AP	2009	16,126	15,702
Gari Ngombo*	G	2006	29,255	29,255
Lomié	G	2010	15,190	15,603
Makak	AP	2009	11,298	11,304
Massok-Songloulou	AP	2009	23,064	23,386
Mbang	AP	2006	19,854	19,821
Messamena-Mindourou	AP	2008	36,508	36,465
Messondo	G	2006	16,864	15,496
Minta	G	2010	41,087	41,335

APPENDIX 2: LIST OF COUNCIL FORESTS (CONT.)

NAME	GAZETTEMET STATUS	GAZETTEMET DATE	ADM. AREA (ha)	GIS AREA (ha)
Moloundou*	G	2005	42,612	42,556
Mundemba	AP	2010	36,210	34,475
Mvangan	AP	2009	44,730	44,675
Nanga Eboko	G	2009	20,000	19,965
Ndélélé	AP	2006	10,550	11,073
Ndikinimeki	AP	2009	20,000	23,063
Ndom/Ngambé/Nyanon	AP	2009	26,496	23,088
Nguti	PM	2009	12,009	11,744
Salapoumbe	PM	2007	20,800	22,887
Sangmelima	AP	2009	32,770	32,735
Somalomo	G	2005	22,500	22,525
Yingui	AP	2009	25,110	25,670
Yokadouma*	G	2005	22,206	21,781
Yoko	AP	2006	29,500	29,717

Notes: Gazettement situation in 2011: G = gazetted, PM = file transferred to the prime minister for gazettelement, AP = public notice (*avis au public*), * = valid (active) logging title as of June 30, 2011.

APPENDIX 3: LIST OF ACTIVE COMMUNITY FORESTS AS OF JUNE 30, 2011

N°	CODE	HOLDER	LOCALIZATION	VOLUME (m3)	ACTIVE AREA 2011 (ha)	ADM. (ha)	GIS (ha)
1	382	GIC PRODEVINDO	Ndikinimeki	1,062	200	5,000	4,694
2	206	GIC AMINKO	Dja	352	89	3,007	3,093
3	457	GIC AFED	Diang	1,615	200	4,997	5,046
4	454	GIC AFEN	Diang	1,650	199	4,976	5,084
5	446	GIC AFEB	Diang	1,715	176	4,350	4,483
6	455	GIC PAFM	Diang	1,153	132	3,289	3,305
7	266	GIC GESFOCO	Sangmelima	985	161	5,000	3,989
8	185	GIC ABBEGONG	Deuk	1,736	200	5,000	4,735
9	141	GIC PALOBA	Dimako	871	173	3,900	4,177
10	426	GIC CACAO CAFE	Belabo	1,997	148	3,599	3,640
11	268	GIC DOH	Belabo	2,155	148	4,738	143
12	258	ASSOCIATION COBAKAM	Lomie	1,386	170	3,632	2,441
13	283	GIC ASDEFAGBAB	Bertoua	1,792	200	5,000	5,044
14	235	GIC GICAM	Edea	1,995	132	5,000	3,758
15	348	ASSOCIATION ADEVIMA	Biwong Boulou	1,621	170	5,000	4,992
16	176	GIC MYLDEM	Yingui	708	200	5,000	6,050
17	327	GIC MENLA	Biwong Boulou	1,616	190	5,000	4,667
18	318	GIC ATEM	Nkoteng	1,993	200	5,000	5,000
19	263	GIC REVEIL DE NDOKANYACK	Yingui	546	145	4,410	4,410
20	333	GIC CVD MEKOM	Esse	660	200	2,554	2,526
21	17	GIC GICAN DE NKOLBANG	Zoetele	1,822	189	4,500	4,562

Sources: MINFOF, 2011; CTFC, 2011

APPENDIX 4: LIST OF PROTECTED AREAS

CATEGORY	NAME	DATE	ADM. AREA (ha)	GIS AREA (ha)	MANAGEMENT PLAN
Faunal Reserve	Dja	1905	526,000	528,137	2007
	Douala Edea	1932	160,000	168,116	
	Kimbi	1964	5,625	5,163	
	Lac Ossa	1968	4,000	4,539	
	Santchou	1964	7,000	9,500	
National Park	Benoue	1968	180,000	199,241	2002
	Bouba Ndjida	1968	220,000	213,415	
	Boumba Bek	2005	238,255	238,941	
	Campo Ma'an	2000	264,064	260,944	2006
	Deng Deng	2010	58,091	54,172	
	Ebo		141,706	141,667	
	Faro	1980	330,000	350,808	2008
	Kalamaloue	1972	4,500	6,757	
	Kom		67,838	67,936	
	Korup	1986	125,900	129,457	2002
	Lobeke	2001	217,854	218,372	2006
	Ma Mbed Mbed			14,293	
	Mbam et Djerem	2000	416,512	430,242	2007
	Mefou		1,044	1,101	

APPENDIX 4: LIST OF PROTECTED AREAS (CONT.)

CATEGORY	NAME	DATE	ADM. AREA (ha)	GIS AREA (ha)	MANAGEMENT PLAN
National Park	Mont Cameroun	2009	64,677	58,148	
	Monts Bakossi	2007	29,320	29,318	
	Mozogo Gokoro	1968	1,400	1,736	
	Mpem et Djim	2004	97,480	97,543	
	Ndongere		233,400	232,289	
	Nki	2005	309,362	326,567	
	Takamanda	2008	67,599	62,717	
	Tchabal Mbabo		105,251	106,766	
	Vallée du Mbere	2004	77,760	74,884	
	Waza	1968	170,000	141,939	1997
	Rumpi Hills		45,675	45,169	
Sanctuary	Banyang-Mbo	1996	66,000	69,093	
Sanctuary (Fauna)	Kilum Ijim		1,000	1,006	
Sanctuary (Flora)	Kagwene	2008	1,944	1,931	
Sanctuary (Gorilla)	Mengame	2008	26,711	26,710	

Source: MINFOF, 2011

APPENDIX 5: LIST OF VALID SALES OF STANDING VOLUME (SSV) AS OF JUNE 30, 2011

N°	TITLE N°	OPERATOR	LOCALIZATION	ADM AREA (ha)
1	08 10 210	SOFOCAM	Nyanon	1,000
2	07 03 67	SOFOIE SA		2,167
3	07 03 68	SEVPROF	Nsem	2,500
4	07 03 69	FIPCAM	Minta	1,700
5	08 01 185	BMC	Nkoteng	2,102
6	08 01 186	Martial & Compagnie	Minta	2,270
7	08 01 187	SCABOIS	Nkoteng	1,708
8	08 01 188	IBC	Nanga Eboko	2,464
9	08 01 189	IBC	Nanga Eboko	2,300
10	08 01 191	CANA Bois	Nanga Eboko	2,481
11	08 01 194	NAMBOIS	Ngomedzap	2,500
12	08 01 195	SEFECCAM	Ngog mapubi	2,469
13	08 03 188	Sodetra Regent	Ngog mapubi	2,400
14	08 06 207	NGO TOUCK	Ngog mapubi/Dibang	2,500
15	08 06 208	SEVPROF	Ntui	2,500
16	08 06 209	Essamesso Gabriel	Yoko	1,785
17	08 10 212	La Rosière	Yoko	2,500
18	08 10 213	Ets Mgbatou	Ngambé-Tikar	2,498
19	08 10 214	Ets Mgbatou	Ngambé-Tikar	2,383
20	08 10 216	Ets Mgbatou	Ngambé-Tikar	2,000
21	08 10 217	Ets Mgbatou	Ngambé-Tikar	2,000
22	08 10 218	Sodetra Regent	Endom	1,700
23	08 10 219	SEVPROF	Yoko	2,000
24	08-07-163	Eyia Pierre	Bengbis	2,500
25	08-10-215	SCABOIS	Sangmelima	2,315

APPENDIX 5: LIST OF VALID SALES OF STANDING VOLUME (SSV) AS OF JUNE 30, 2011 (CONT.)

N°	TITLE N°	OPERATOR	LOCALIZATION	ADM AREA (ha)
26	09 01 185	SEVPROF	Bengbis	2,500
27	09 01 190	SIM	Bengbis	2,419
28	09 01 191	FIPCAM	Mvangane	2,500
29	09 01 192	SOFOIE SA	Ngoulemakong/Mengong	2,500
30	09 02 001	SCABOIS	Ebolowa	2,500
31	09 02 183	GRACOVIR International Sarl	Mengong	2,454
32	09 02 184	GAD	Ebolowa 2	1,923
33	09 02 185	Marvellous Forest Sarl	Lokoundjé	2,498
34	09 02 187	FIPCAM	Mvangane	2,500
35	09 03 206	Forestcam	Campo	2,065
36	09-02-002	STBK	Moloundou	2,309
37	09-03-204	STBK	Yokadouma	1,516
38	10 01 175	La Rosière	Yokadouma	2,450
39	10 01 176	La Rosière	Yokadouma	2,500
40	10 01 178	SIM	Yokadouma	2,500
41	10 01 179	La Rosière	Nguelemedouka	1,430
42	10 01 181	Ets Amougou Aboui	Lomié	2,500
43	10 02 189	NAMBOIS	MBANG	2,493
44	10 02 190	NAMBOIS	Bertoua/Diang	2,383
45	10 03 189	Ets Kakouandé	Mandjou	2,498
46	10 04 126	TAGNE DJODOM	Bertoua	2,224
47	10 04 127	NAMBOIS	Nguti	2,444
48	10 04 128	Ets ZA	Nguti	1,000
49	11 03 18			2,491
50	11 03 19			2,496

APPENDIX 6: SATELLITE IMAGE COVER FOR ROAD DATASET

Since 2003, because of technical problems that affected the Landsat sensor, the project has pursued its data collection by using other sources of medium resolution imagery, such as the Disaster Monitoring Constellation (DMC), the Advanced Space-Borne Thermal Emission and Reflection Radiometer (ASTER) and the Advanced Land Observation Satellite (ALOS). Acquisition of available cloud-free satellite data allowed for coverage of 72% of the southern area, 55% of current logging titles, and 57% of the southern protected areas over the period 2005–10.

Satellite Imagery Acquired for Atlas Version 3.0^a

TYPE OF IMAGE	# OF IMAGES	FOCUS	ACQUISITION PERIOD
DMC	15	Entire country	2005–06
ASTER	157	Southern region	2005–10
ALOS-AVNIR	16	Southern region	2006–10
Landsat ETM	60	Southern region	2007–10

a. WRI acquired the above mentioned data through partnerships with international institutions or programs, such as the University of Maryland, OSFAC, GIZ, and the World Bank.

Coverage of the Acquired Dataset

DATASET	AREA (ha)	AREA COVERED BY RECENT IMAGES	
		ha	PERCENT
Southern Cameroon ^a	33,121,100	24,322,500	73.4
Forested area ^b	19,881,435	12,502,150	63.8
Logging title (FMU) ^c	7,219,009	3,951,712	54.7
Protected area (South) ^d	3,225,914	1,817,914	56.3

a. Southern Cameroon is defined as all areas south to 6.5°N.

b. Forest area map is based on the MODIS-based forest cover map realized by SDSU.

c. Logging titles includes all FMUs, allocated and unallocated in 2009.

d. In order to allow comparison and coverage analysis, only the protected areas located south of 6.5°N were considered.

Source: MINFOF, 2011

APPENDIX 7: MAJOR IMPACTS OF THE FOREST INFORMATION INITIATIVE SINCE 2002

Since its beginning in 2002, MINFOF-WRI's collaboration has improved forest information quality, transparency, and capacity building, leading to informed decision making in forest and related sectors in Cameroon. Major achievements include the following:

- **Improved quality of information.** Provision of timely, accurate, and multistakeholder validated forest information to sort out overlapping land use allocations and support better resource use decision making and monitoring.
- **Greater access to information.** Diffusion of forest information made publicly available through diverse media (online, paper maps, reports, CD-ROM), combined with outreach campaigns and informational workshops.
- **Improved technical capacity.** Trainings in GIS, remote sensing, and forest information management give MINFOF, civil society, and the private sector greater ability to collect and apply critical forest information.
- **Well-informed planning for field missions.** MINFOF's Cartographic and Control Brigade Units are able to draw on information in the Atlas in order to effectively plan or support logging and monitoring field missions with scarce material and human resources.
- **Improved transparency in the management of financial resources.** Facilitation of the monitoring of revenue streams and reduction of investment risk in the forest sector.
- With improved capacity and access to credible and up-to-date information, MINFOF is better equipped to carry out forest land use planning, as well as to address competing demands on limited forest resources. Examples include the establishment of new forest titles (e.g., sales of standing volume [SSVs] and council and community forests) and the conversion of existing land use classifications to other categories (e.g., upgrading of forest reserves to national parks and reclassification of FMUs to agricultural land).
- Making up-to-date information about land use allocation available to multiple administrations with land use allocation authority has drastically reduced claims for land use overlapping and facilitated the identification and resolution of competing claims. Recent examples include an SSV permit allocated in the Ebo National Park and competing land claims between the community forest 803-115 (GIC Foconyamzom) and the forest concession FMU 08-005.
- The Atlas has been useful in siting infrastructure and energy projects such as the proposed railway from the mineral exploration zone of Mballam to the proposed port located in the south of Kribi, and in determining the impact of and the inherent land use categories affected by the proposed Lom Pangar dam construction project.²³

The examples below illustrate some applications of the atlas since its inception:

- Atlas datasets map the development of roads throughout the forested regions of Cameroon. They are classified by categories and approximate construction date. When these roads are overlaid with officially recognized resource extraction permits (e.g., logging, mining), MINOF can quickly identify roads likely used for logging that fall outside of allocated permits—thus considering them as “irregular” and prioritizing them for field control missions. In a similar vein, the monitoring of the development of “irregular” roads within the forest estate is a key indicator used by MINFOF to measure the impact of the implementation of the Forest and Environment Sector Program (FESP).²² Since the Atlas is also publicly available, other actors (e.g., the Independent Observer and Cameroonian NGOs focusing on forest monitoring) are using the information to monitor and combat illegal logging.

ENDNOTES

1. See versions 1.0 and 2.0 of this atlas for a full description of the information layers and the methodology developed for data collection, harmonization, verification, and integration into the GIS database.
2. Updated information layers include administrative boundaries, public and logging roads, logging titles, protected areas, land cover, water features, and populated places. Each of these layers is linked to an updated attribute table that provides additional information on mapped features. Examples of updated layer attribute information include the management status of FMUs, companies' involvement in wood certification and chain-of-custody processes, subconcession-level forest zoning, and wood volume production.
3. Refer to versions 1.0 and 2.0 of this atlas, available at www.wri.org/publication/interactive-forestry-atlas-cameroon and <http://www.wri.org/publication/interactive-forestry-atlas-cameroon-version-2-0>, for a detailed description of the types of logging titles allocated in Cameroon.
4. The French acronym is UFA (unité forestière d'aménagement).
5. As of June 2008, there were 87 forest concessions in operation in Cameroon; 76 contained only one FMU and the remaining consisted of either two (9 forest concessions), three, or four FMUs.
6. Public Notice n°0308/N/MINFOF/SG/DF/SDI/AF/SC, December 2008.
7. The implementation of the management plan is compulsory and a prerequisite for forest certification.
8. The French acronym is AAC (assiette annuelle de coupe).
9. The two legality certification schemes used in Cameroon are timber legality and traceability verification (TLTV) and origine et légalité du bois (OLB), operated respectively by the Société générale de surveillance (SGS) and Bureau Veritas (BV).
10. Data were not available for the period after 2008 at the time of printing due to a backlog in SIGIF since its breakdown in 2008. SIGIF 2, which is planned as an expanded version of SIGIF to better handle Cameroon's forest statistics needs, is expected to be operational during 2012.
11. Akom II-Efoulan a & b, Angossas, Batouri, Ebolowa, Makak, Minta, Nanga Eboko, Ndom/Ngambe/Nyanon, Nguti, Massock Songloulou, Mvangan, and Sangmelima Council Forests for 2009, and Doume, Dzeng, Lomie Minta, and Mundemba Council Forests for 2010.
12. Dimako, Djoum, Gari Ngombo, Lomie, Messondo, Minta, Mouloundou, Nanga Eboko, and Yokadouma Council Forests.
13. http://www.minfof.cm/index.php?option=com_content&view=article&id=55:arbaeb-le-minfof-met-de-lordre&catid=6:page-acceuil.
14. For further reading, please refer to Box 4 in version 2.0 of this atlas at www.wri.org/publication/interactive-forestry-atlas-cameroon-version-2-0.
15. Versus only 2% of the total national area for officially classified nPFE lands (see Table 1).
16. For more detail, please refer to the road categories and technical mapping specifications presented in the manual Spécifications de contenu du référentiel géographique routier du Cameroun.
17. Refer to the Technical Roads report associated with the first version of this atlas for a full description of the road-digitizing methodology.
18. Irregular roads in this study were considered as all visible logging roads detected in areas unallocated for logging. Nonetheless, the legal status of these deemed "irregular" roads can only be determined by the appropriate authorities. For further information on these figures, please refer to the forest roads technical report prepared by WRI for the PSFE (WRI, 2009).
19. By the end of December 2010, 101 mineral exploration permits were allocated in Cameroon.
20. Feedback on the atlas can be provided to any of the contacts on page 60 of this document.
21. Formerly known as CETELCAF.
22. The FESP is a 10-year program developed by the government of Cameroon, the World Bank, NGOs, and other development partners. Adopted in June 2004, its aim is to increase the value of the forest and environment sectors in the national economy, reinforce these sectors' competitiveness and contribution to the country's development, and improve the sectors' governance in order to fight poverty.
23. Refer for example to page 66/315 of the synthesis report of the environmental study of the Lom Pangar dam.

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ABOUT WRI

The World Resources Institute (WRI) is a global environmental and development think tank that goes beyond research to create practical ways to protect the Earth and improve people's lives. We work with governments, companies, and civil society to build practical solutions to urgent environmental challenges. WRI's transformative ideas protect the Earth and promote development because sustainability is essential to meeting human needs and fulfilling human aspirations for the future.

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