#3

Central Africa

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List of acronyms

AALF	Appui à l'application de la loi sur la faune
ABC	Amis des Bonobos du Congo
ACF	African Conservation Foundation
ADB	African Development Bank
AECID	Agencia Española de Cooperación Internacional para el Desarrollo (Spain)
AFD	Agence française de développement
AFRICOM	United States Africa Command
AIDS	acquired immune deficiency syndrom
ANPN	Agence nationale des parcs nationaux (Gabon)
AP	African Parks
APN	African Parks Network
ATIBT	International Technical Association for Tropical Timber
AWF	African Wildlife Foundation
BAK	Biodiversité au Katanga
BCI	Bonobo Conservation Initiative
BIOPAMA	Biodiversity and Protected Areas Management in African, Caribbean and Pacific countries
BMZ	Federal Ministry for Economic Cooperation and Development (Germany)
CAFEC	Central African Forest Ecosystem Conservation
CAR	Central African Republic
CARPE	Central African Regional Programme for the Environment
CAWHFI	Central African World Heritage Forest Initiative
CBCSP	Community-based Conservation Security Partnerships
CBD	Convention on Biological Diversity
CBFP	Congo Basin Forest Partnership
CBNRM	Community-based Natural Resource Management
CI	Conservation International
CIB	Congolaise industrielle du bois (now OLAM)
CIFOR	Center for International Forestry Research
CITES	Convention for the International Trade in Endangered Species
COMIFAC	Commission des forêts d'Afrique centrale (The Central African Commission for Forests)
CR	community reserve
CSP	Conservation Security Partnerships
DFGF	Dian Fossey Gorilla Fund
EAGLE	Eco Activists for Governance and Law Enforcement
ECCAS	Economic Community of Central African States (CEEAC in French)
ECOFAC	Programme régional de conservation et utilisation rationnelle des écosystèmes forestiers d'Afrique centrale
EFG	École de faune de Garoua (Garoua Wildlife College – Cameroon)
EIA	Environmental Impact Assessment
ENF	École nationale des eaux et forêts du Gabon
ERAIFT	École régionale post-universitaire d'aménagement et de gestion intégrés des forêts et territoires tropicaux
DRC	Democratic Republicof Congo
FAO	Food and Agriculture Organisation
FB	Fundación Biodiversidad
FFEM	Fonds français pour l'environnement mondial
FFI	Fauna and Flora International
FLEGT	Forest Law Enforcement, Governance and Trade
FSC	Forest Stewardship Council
FTNS	Fondation Tri-national Sangha (TNS Trust Fund)
FZS	Frankfurt Zoological Society
GDP	gross domestic profit
GEF	Global Environment Fund
GIC	Gilman International Conservation
GRASP	Great Apes Survival Partnership

GTZ	Deutsche gesellschaft für technische Zusammenarbeit (German technical cooperation)
HGBF	Howard G. Buffet Foundation
HIV	human immunodeficiency virus
IBA	Important Bird and Biodiversity Area
ICCN	Institut congolais pour la conservation de la nature
ICCWC	International Consortium on Combating Wildlife Crime
IFIA	Inter-African Association of Forest Industries
INCEF	International Conservation and Education Fund
INGO	international non-governmental organisation
INTERPOL	International Criminal Police Organisation
IUCN	International Union for Conservation of Nature
KfW	Kreditanstalt für Wiederaufbau (German financial cooperation)
KLC	Key Landscape for Conservation
LAGA	Last Great Ape Alliance
LEM	law enforcement monitoring
LRA	Lord's Resistance Army (a rebel group of Ugandan origin)
MAAMA	Ministerio de Agricultura, Alimentación y Medio Ambiente (Spain)
MECNT	Ministère de l'Environnement, de la Conservation de la Nature et du Tourisme (DRC)
MF	Murry Foundation
MIKE	Monitoring of Illegal Killing of Elephants
MIKES	Minimising the Illegal Killing of Elephants and other Endangered Species
MINEF	Ministère des Eaux et Forêts
MIST	Management Information System
NCU	national coordinating unit
NGO	non-governmental organisation
NICFI	Norway's International Climate and Forest Initiative
NP	national park
NTFP	non-timber forest products
OFAC	Central African Forest Observatory
PALF	Projet d'appui à l'application de la loi sur la faune
PAPECALF	Plan d'action sous-régional des pays de l'espace COMIFAC pour le renforcement de l'application des législations nationales sur la faune sauvage
PEXULAB	Extreme urgency anti-poaching action plan
PNNN	Parc national de Nouablé-Ndoki
PNKB	Parc national de Kahuzi-Biega
PPP	public-private partnership
PROGEPP	Projet de gestion de la périphérie du parc national de Nouabalé-Ndoki
PREPAN	National Parks Rehabilitation Project (World Bank)
RAFAM	Réseau africain de forêts modèles
RAPAC	Réseau des aires protégées d'Afrique centrale (Central African Protected Area Network)
RDC	République démocratique du Congo
REDD/REDD+	Reducing Emissions from Deforestation and forest Degradation/REDD+
RFO	Réserve de faune à okapis (Okapi Wildlife Reserve)
RS	réserve spéciale (special reserve)
SCAEMPS	Strengthening Central African Environmental Management and Policy Support
SEIA	social and environmental impact assessment
SI	Smithsonian Institute
SIV	simian immunodefficiency virus
SMART	Spatial Monitoring and Reporting Tool
SPLA	Sudan People's Liberation Army
SSC	Species Survival Commission
SYVBAC	Système de suivi de la filière viande de brousse en Afrique centrale
TFCA	transfrontier conservation area

TLL	Tshuapa-Lomami-Lualaba
TNS	Tri-national Sangha
TRIDOM	Tri-national Dja Odzala Minkébé
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Science and Culture Organisation
UNODC	United Nations Office on Drugs and Crime
UPDF	Uganda People's Defence Force
USAID	United States Agency for International Development
USFWS	United States Fish and Wildlife Service
WCS	Wildlife Conservation Society
WCO	World Customs Organisation
WEN	wildlife enforcement network
WHS	World Heritage Site
WR	wildlife reserve
WRI	World Resources Institute
WWF	World Wide Fund for Nature
ZCV	Zones cynégétiques villageoises (village safari hunting zones)
ZSL	Zoological Society of London
ZSM	Zoological Society of Milwaukee

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Executive Summary

>0 _ Executive Summary

This Chapter 3 is organised into five sections: 1) an introduction to the wildlife and habitats of Central Africa; 2) a review of the challenges, threats and drivers of threats; 3) a review of ongoing conservation efforts; 4) lessons learned and promising approaches, particularly with respect to the landscape approach to protected area management, partnerships with the private sector, engagement with local communities, and law enforcement; 5) indicative conservation actions to achieve long-term wildlife conservation in Central Africa.

Section 1 describes the main natural habitats and ecosystems of Central Africa and the status of wildlife in the region. It describes the moist tropical forests that dominate Central Africa (including the volcanic islands in the Gulf of Guinea), the biodiversity-rich, moist forest-savannah transition zones, the Sahelian savannahs and woodlands to the north of the moist forest block, and the miombo woodlands to the south. The moist forest block is by far the most extensive area of continuous forest in Africa and contains the planet's largest area of swamp forest. The Central African forests are characterised by high levels of endemism, including several iconic species, such as four subspecies of gorillas, bonobos and okapi. They also represent a gigantic carbon sink and strongly influence local weather patterns. The generally intact nature of vast areas of habitat outside protected areas in Central Africa, particularly in the moist forest zone, together with the generally low human densities, means that it is not too late to do something for conservation.

Section 2 reviews the long-term threats to Central African wildlife. The commercial bushmeat trade is probably the single most pervasive threat and is leading to defaunation of large tracts of otherwise undisturbed forest ('empty forest' syndrome). The commerce is greatly aided by the industrial logging and mining activities, which provide easy and rapid access for hunters deep into the most remote forest blocks. Habitat loss through deforestation, principally from shifting agriculture and fuelwood and charcoal collection, is a threat, although deforestation rates are lower than anywhere else in Africa. Land grabbing for agro-industrial plantations, particularly oil palm, is a growing threat. The most important drivers of these threats are population growth, poverty and poor governance. Insecurity of land tenure and resource user rights and armed conflict are also important drivers. Finally, insecurity and conflict have plagued the region for decades and have had a devastating effect on capacities to manage PAs and protect wildlife.

Section 3 reviews ongoing conservation efforts. The Central African Commission for Forests (COMIFAC) and the Congo Basin Forest Partnership (CBFP) provide the strategic framework for regional cooperation and donor collaboration in Central Africa. The section reviews the key bi- and multi-lateral donors and conservation non-governmental organisations (NGOs) operating in Central Africa.

Section 4 reviews lessons learned and promising approaches. The key lesson is that PAs contain the most intact assemblages of wildlife and biodiversity; also, the PAs where biodiversity is being most effectively protected are those that are receiving long-term support from donor agencies and their technical partners. Public-private partnerships (PPPs) for the management of PAs offer good opportunities for strengthening PA management in Central African countries where PA management capacities are very weak. The landscape approach, targeting groups of PAs and the areas linking them (including transfrontier conservation areas), significantly enhances conservation outcomes because habitats, particularly in the moist forest block, remain relatively intact. Promising opportunities exist for partnerships with private sector logging and mining operators, whose concessions cover the majority of the forests linking PAs and which are required to integrate conservation measures in their legally binding management plans. Building constituencies for conservation among local communities has proved challenging because forest peoples are highly individualistic in their approach to natural resource use. Insecurity of land tenure further complicates the situation and contributes to situations of 'open access' to resources, resulting in overexploitation. There are few examples of successful livelihood programmes that contribute to more sustainable natural resource use in Central Africa. Furthermore the 'conservation-linked-to-development' paradigm that dominates modern biodiversity conservation thinking has resulted too often in conservation projects having to address all the socio-economic ills of populations living around protected areas, despite rarely having either the financial resources or the expertise to do this. Finally no lasting progress in wildlife conservation can be achieved if there is no political will at the very highest level.

Adult male mandrill in Lopé National Park, Gabon, a Natural and Cultural Heritage Site where groups of many hundred individuals can occasionally be seen. Mandrills are endemic to the forests of the north eastern part of the Central African rainforests.

Section 5 outlines a plan for achieving long-term wildlife conservation in Central Africa. Long-term support for Key Landscapes for Conservation (KLCs) containing Central Africa's most important PAs is the central pillar of the plan since these are the areas that have the greatest chance of surviving the many pressures on wildlife and natural resources in the coming years. Priority is given to sites harbouring the most intact assemblages of Central African wildlife. World Heritage Sites (WHSs) are also a priority by virtue of their WHS status, which recognises their global importance for nature conservation, as are sites which are on the countries' tentative lists for WHS status or which protect specific globally important features not found elsewhere. In total, some 60 PAs are included in the KLCs identified. Three particularly important KLCs, all of which are also transfrontier conservation areas (TFCAs) are (i) Greater Virunga KLC (overlapping with Eastern African region) along the Albertine Rift, which encompasses 11 PAs including three WHSs, (ii) the Greater TRIDOM-TNS KLC encompassing 14 PAs including three WHSs, and (iii) Gamba-Mayumba-Conkouati KLC encompassing four PAs. Between them these three KLCs protect a substantial proportion of Central Africa's floral and faunal diversity. They also include most of the priority areas identified in the action plans for gorillas and chimpanzees and encompass the majority of Africa's remaining forest elephants, of which Gabon alone probably holds 50%. These large KLCs also offer good opportunities for reinforcing existing, and developing new, public-private partnerships (PPPs) for PA management, as well as for developing PPPs with the mining and logging sector for wildlife conservation and sustainable livelihood activities in the intervening buffer zones.

While on-the-job training will always be an important component of support to PAs, the major constraint to effective PA management is the weakness of the PA management authorities and the absence of career opportunities in order to encourage competent conservation practitioners (at all levels) to join the authority and stay with it to make their career. Support for institutional strengthening and/or reform of national PA authorities should therefore be a strategic priority of this plan.

Actions to dismantle wildlife crime networks are also key components of the plan and should focus on three themes: (i) building collaboration between organisations and agencies; (ii) strengthening law enforcement; (iii) properly penalising wildlife crime. COMIFAC's regional law enforcement action plan should be supported, as should the important efforts of NGO wildlife enforcement networks.

Lastly, the issue of the unsustainable bushmeat trade must be addressed. Although there are no neat solutions to this intractable problem, it cannot be ignored either. Most bushmeat is consumed in urban areas where it is more of a 'luxury' item than for rural populations where it is more of a food security issue. The plan identifies three areas where action must be taken: (i) reducing the demand for bushmeat, including developing alternative sources of protein at a cost similar to bushmeat; (ii) improving the sustainability of the supply by better management of the resource; (iii) creating a conducive, enabling, institutional and policy environment so that local resource users have a secure stake in the resource and an incentive to manage it sustainably.

1

Special features of the Central African region

>1 _ Special features of the Central African region

The Central African region as defined for the purposes of this report comprises eight countries: **Cameroon**, **Central African Republic**, **Chad**, **Republic of Congo**, **Democratic Republic of Congo**, **Equatorial Guinea**, **Gabon** and **São Tomé & Príncipe**.

The moist tropical forest block of what is loosely referred to as the Congo Basin is the dominant feature of the Central African region in terms of surface area, species richness and diversity, carbon sequestration and influence on climate. The Gulf of Guinea islands of Equatorial Guinea and São Tomé & Príncipe also contain small but biologically important areas of moist tropical rainforest. To the north and south of the moist forest block the ecological transitions to woodland and savannah produce a number of biologically important ecosystems.

1.1 Moist tropical forests

These forests constitute a vast block of tropical rainforests covering an estimated 1.79 million km² of Central Africa [1] and spanning six of the Central African states (Cameroon, Equatorial Guinea, Gabon, Central African Republic, Republic of Congo and Democratic Republic of Congo) and extending also into small areas of Nigeria and Angola. The forests include a vast expanse of different types of lowland Congolian rainforests, and much more restricted, and threatened, areas of high biodiversity Afromontane forests in the Mount Cameroon area in the west and the Albertine Rift in the east. This vast expanse of forests is often loosely referred to as the Congo Basin, although it in fact covers several watersheds: Congo, Sanaga, Ntem, Ogooué, Nyanga, Niari and Kouilou, and in the east the Nile watershed. However, roughly two-thirds of these forests are drained by the Congo River and 60 % of them fall within the Democratic Republic of Congo (DRC).

The moist tropical forests of Central Africa form an essentially uninterrupted forest block, with roughly 80 % falling between 300 and 1 000 m above sea level [2]. Average annual rainfall is between 1 600 and 2 000 mm, although along the coasts between Cameroon and Gabon annual rainfall is much higher (3 000 to 11 000 mm). The cycle of climate changes over the past 2 million years has had a profound influence on the forests of the Congo Basin. In response to expansions and contractions of the polar icecaps, cool dry periods have alternated with warmer, humid periods, causing the forests to shrink and expand. During drier periods, the forests were reduced to a series of scattered refuges situated along the Atlantic coastal mountain ranges, the highlands of eastern DRC, and along the gallery forests and swamps associated with the Congo River. These so-called forest refuges acted as reservoirs of forest species in periods of forest contraction and as the forest fragmented and expanded, forest and non-forest species were repeatedly intermixed in a kind of 'evolutionary whirlpool' [3]. The Okapi, the DRC's endemic forest giraffe, is a spectacular example of a forest species clearly displaying its savannah origins.

Overall diversity, particularly floral diversity, of the Central African forests is high, though not as high as the Southern African region. However, what makes these forests particularly interesting is that much of the fauna and flora is found nowhere else in the world and this is true, not only at the species level but also at the genus and even family levels. The lowland forests contain around 10 000 higher plants, of which 30 % are endemic (including nine endemic families), while the Afro-montane forests contain around 4 000 species, of which 70 % are endemic (including two endemic families) [4]. Several endemic and charismatic mammals occur in the Central African forests, including the okapi, bongo, aquatic genet, gorilla (four subspecies) and bonobo; many of the small primates and forest duikers are also unique to these forests. In addition to the endemic Congo peacock, the forests contain at least five bird families endemic to Africa. Amphibian, reptile and fish diversity are also high, although all three groups are relatively poorly known and new species are regularly discovered. In the DRC alone over 1 000 species of freshwater fish are known. Several of the more charismatic regional endemics are confined to the DRC including the okapi, bonobo, Grauer's gorilla, aquatic genet and Congo peacock, and new mammal species are still being discovered in remote areas.

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(1) Mayaux P., J-F. Pekel, B. Desclée, F. Donnay, A. Lupi, F. Achard, M. Clerici, C. Bodart, A. Brink, R. Nasi and A. Belward (2013). State and evolution of the African rainforests between 1990 and 2010. *Phil Trans R Soc B* 368, 20120300. http://dx.doi.org/10.1098/rstb.2012.0300

(2) 5 The Forests of the Congo Basin. In: State of the Forests 2006 (Chapter 1). Available at http://www.observatoire-comifac.net/edf.php

(3) Kingdon J. (1990). Island Africa. Academic Press.

(4) Mittermeier R.A., C. GoettschMittermeier, P. Robles Gil, J. Pilgrim, G. Fonesca, T. Brooks and W.R. Konstant (2002). Wilderness: Earth's Last Wild Places. Conservation International.

The bonobo is an endangered great ape that is found only in the DRC in the forests to the south of the Congo River. They are threatened by poaching for the bush meat and pet trades throughout their range and are classified as Endangered in the IUCN Red List of Threatened Species.

In addition to its importance in terms of species diversity and endemism, the Congo Basin is one of the last regions in the world where vast areas of interconnected rainforest allow biological processes to continue undisturbed. Rainforests cover only 13% of Africa's landmass but they account for more than 90% of the carbon stored in the continent's terrestrial ecosystems[5]. The Congo Basin is therefore a gigantic carbon sink and as such plays a vital role in regulating the planet's greenhouse gases. Lastly it has a dominating influence on local weather patterns since over 50% of the rain that falls on the central Congo Basin comes from evaporation and evapo-transpiration from the forest itself[6]. It is important to underline that the average rainfall over the Congo Basin is relatively low (approximately 2 000 mm) compared with Amazonia and south-east Asia, placing it close to the threshold of dry forests. This means that most, if not all, of the moist forest tree species would likely be lost if rainfall were to decrease slightly through climate change or extensive forest clearance. With a shift to drier forests fire would start having a devastating impact on the remaining forests, hydrological regimes would be profoundly affected and the impact on human livelihoods in the region would be catastrophic[7]. **The vastness and apparent intactness of the moist tropical forests of the Congo Basin forests therefore belies the extreme precariousness of its existence.**

Specific features of the Central African moist forests to be highlighted include:

The Congolian Atlantic coastal forests have exceptionally high levels of species richness and endemism in all taxonomic groups, particularly birds, amphibians and reptiles. These forests contain a number of Pleistocene refuges – areas which remained forest-covered during the periodic expansions and retractions of the forest block over geological times and where forest species probably survived the dry periods to colonise the new forests in succeeding wet periods. The Monts de Cristal-Monte Alén range, spanning eastern Equatorial Guinea and western Gabon, and Mont Doudou in southern Gabon, rise to altitudes in excess of 1 000 m and are of particular importance for plant diversity and endemism. The Monts de Cristal has over 3 000 species of vascular plant, of which over 100 are strict endemics. Species richness of forest mammals is also exceptional. The highly restricted range of the sun-tailed monkey, a species endemic to Gabon and only discovered in 1984, covers this ecoregion. Globally important populations of gorillas, chimpanzee and forest elephant are also found within these forests. Other important larger mammals include the mandrill, black colobus, bongo and several forest duikers.

A vast area of inland and coastal wetlands, and pockets of Central African mangroves, is also located within this ecoregion. The delta of the Ogooué River in Gabon is Africa's second largest delta after the Niger[8]. Covering over 5 000 km² of flooded forests, swamps, lagoons, lakes and mangroves, this is one of nine Ramsar sites in Gabon and of huge importance for wildlife, particularly fish (both freshwater and marine), birds and other aquatic vertebrates such as manatee, hippo and Africa's three species of crocodile. The area contains pockets of Central African mangroves. Another unique feature of this area is the fact that elephants, gorillas, chimpanzees, hippo, forest buffalo and Nile crocodile can often be observed on the beaches on the Gabon coast. These beaches are also among the world's most important for nesting marine turtles, particularly leatherbacks.

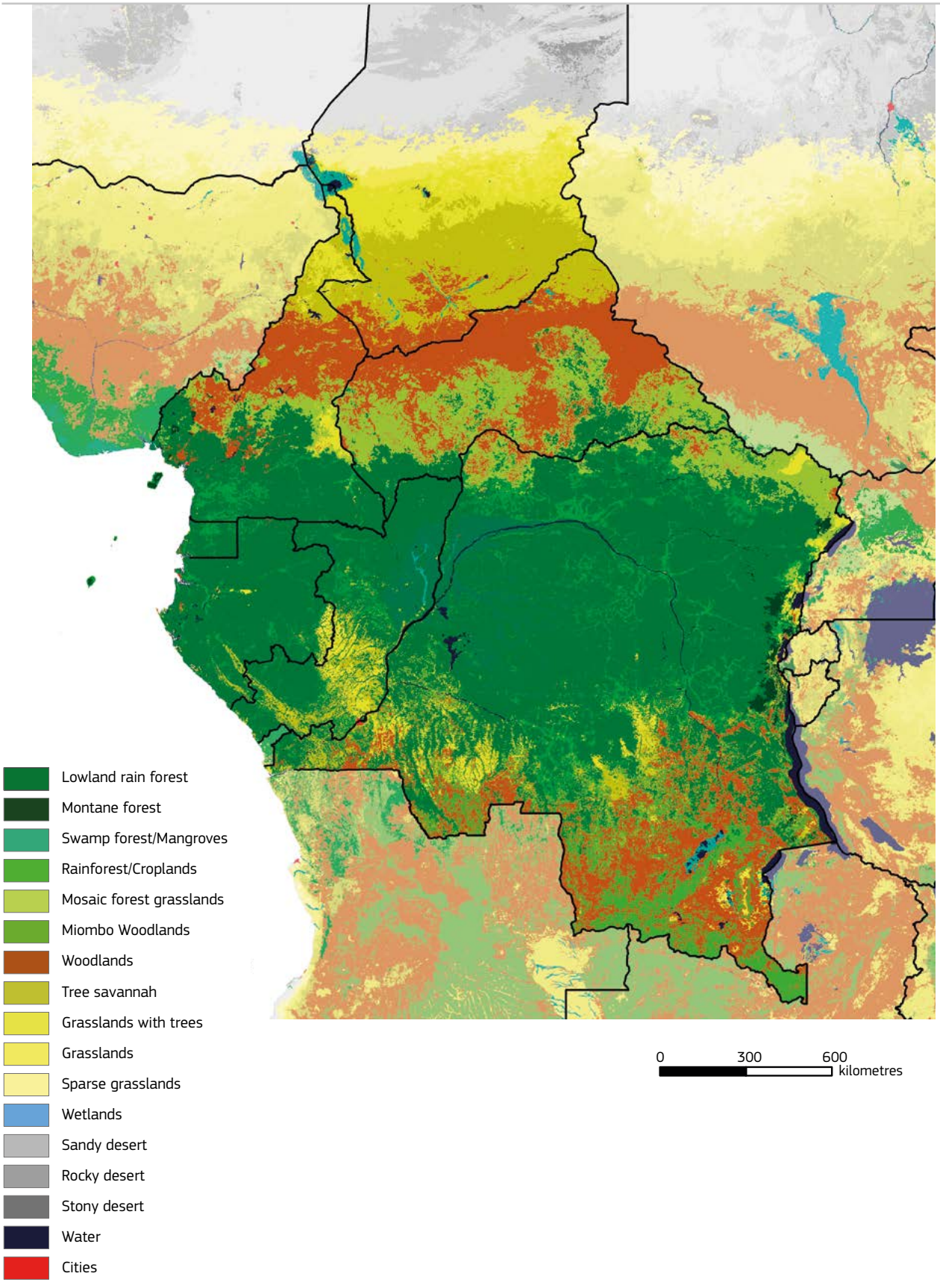
([5]) Mayaux P., J-F. Pekel, B. Desclée, F. Donnay, A. Lupi, F. Achard, M. Clerici, C. Bodart, A. Brink, R. Nasi and A. Belward (2013). State and evolution of the African rainforests between 1990 and 2010. *Phil Trans R Soc B* 368, 20120300. http://dx.doi.org/10.1098/rstb.2012.0300

([6]) 5 Hoare A. (2007). Clouds on the Horizon: The Congo Basin's Forests and Climate Change. Rainforest Foundation report, 27pp.

([7]) 5 The Forests of the Congo Basin. In: State of the Forests 2008. (Chapter 10). Available at http://www.observatoire-comifac.net/edf.php

([8]) 5 Vande Weghe J.P. (2007). Loango, Mayumba et le Bas Ogooué. Gabon Parks.

Figure 1. Land-cover types of the Central African region



Moist forest on the south coast of Bioko Island, Equatorial Guinea.
Uninterrupted moist forest formations from sea level to over 3 000m are found on the Gulf of Guinea islands. Levels of endemism are high on these islands due to their long separation from mainland continental Africa.

The central portion of these forests, particularly the part in Gabon, has one of the lowest human population densities in Africa. Nevertheless, human activities in the form of industrial logging are widespread. Essentially all forests outside the protected areas have been attributed as logging concessions. Commercial hunting for the bushmeat trade is also widespread and protected species are often openly on sale in urban markets. Onshore oil exploitation in the coastal area is also a threat to biodiversity.

There are nine International Union for Conservation of Nature (IUCN) category I to IV PAs in these forests (two in Equatorial Guinea, six in Gabon and one in Congo) covering more than 27 000 km² (18 % of the ecoregion).

Moist forests of the Gulf of Guinea islands: The Gulf of Guinea islands comprising Bioko, Príncipe, São Tomé and Annobon form an arc of volcanic islands reaching out 750 km into the Atlantic Ocean. Uninterrupted moist forest formations from sea level to over 3 000 m are found on the islands. Due to their long separation from mainland continental Africa (Príncipe emerged from the ocean some 17 million years ago [9]), species have evolved that are unique to these islands. São Tomé and Príncipe have 28 endemic bird species and Bioko has two Important Bird and Biodiversity Areas (IBAs) (Luba crater and Basilé peak). Bioko also has five endemic subspecies of primate; the volcanic origin of these mountains provides them with rich soils. The rugged landscapes of these volcanic islands are also particularly spectacular. The beaches of the islands are important nesting areas for marine turtles, the remote southern shore of Bioko being particularly important for leatherback, green and olive Ridley turtles.

There are five IUCN category I to IV PAs on the four islands (two on Bioko, one on Príncipe, one on São Tomé and one on Annobon), covering approximately 1 260 km².

Montane forests of west Cameroon and the Albertine Rift: The montane forests and Afro-alpine formations on Mount Cameroon and the Cameroon highlands in the west and the Albertine Rift in the east are areas of particularly high biodiversity and levels of endemism. For example, 42 plant species and three genera are strictly endemic to Mt Cameroon (where annual rainfall attains >10 000 mm locally). Exceptionally large numbers of endemic animal species occur in all taxonomic groups. For example, along the Albertine Rift, 30 bird and 25 mammal endemics are known. The Virunga National Park in eastern DRC encapsulates the unique biodiversity of the Albertine Rift with an uninterrupted gradient of biotopes from 700 m above sea level to Afro-alpine meadows and glaciers on the summit of the Ruwenzori range at just over 5 000 m over a horizontal distance of little more than 25 km. With the exception of Mt Cameroon, no other area in Africa has such a wide altitudinal span of natural habitats. In an area representing only 0.3 % of the total surface area of the DRC, the Virunga national park (NP) is home to over half of the DRC's mammal species and two-thirds of its bird species.

(9) Gulf of Guinea Biodiversity Project: http://researcharchive.calacademy.org/research/guinea_islands/

However, throughout Central Africa, montane forests have been reduced to relicts by intense human activity since these areas are coveted for agriculture and livestock. The highest human densities of the Central African region are found in these regions (>400 inhabitants/km² locally along the Albertine Rift). In the Cameroon highlands there are a large number of very small forest reserves, which are not well protected. Korup NP (1 295 km²) is the only category I-IV protected area in the Cameroon highlands. Along the Albertine Rift only parts of Virunga NP and Kahuzi-Biega NP (both World Heritage Sites in Danger) protect these important forests.

Congolian swamp forests: This is one of the largest areas of swamp forest on the planet[10] covering some 200 375 km². The Congolian swamp forests are located in the heart of the Congo Basin along the middle reaches of the Congo River and along its northern tributaries (Likouala, Sangha, Likouala-aux-herbes, Oubangui) and southern tributaries (Lomami, Tschuapa, Loile). While displaying relatively low species richness and diversity they are nevertheless of high importance in terms of endemism. They are very important for fish diversity and are vital breeding areas for many species. They also play a central role in the regulation of water flows across the Congo Basin. Surveys in northern Congo[11] in the early 1990s showed that the presence of *Raphia* palms in the Likouala-aux-Herbes swamps support high populations of gorillas year round, and attract forest elephant in the dry season. The swamp forests of Lac Tumba-Lediima Reserve also support populations of bonobo[12]. Contrary to what might be expected, the swamp forests are not inaccessible to poachers. In some areas of the swamps in northern Congo, a dense network of dugout canoe channels is maintained by local hunters, which enable them to penetrate far into the forest and silently approach the non-inundated patches of forest where mammals tend to concentrate. Furthermore, the fact that they are in dugout canoes means that they can transport larger loads of bushmeat than if they were on foot.

With the exception of a very small area along the Loile River in Salonga NP, none of these important forests lie within IUCN category I to IV PAs. However, the Lac Télé–Likouala aux Herbes Community Reserve in Congo (4 525 km²) lies wholly within this forest type, as does approximately half (3 500 km²) of the Lac Tumba-Lediima Reserve in DRC.

Central Congolian lowland forests cover a vast area (c. 430 000 km²) to the south of the great arc of the Congo River and are entirely restricted to the DRC. They cover almost the entire range of the bonobo[13], a species of great ape that is endemic to the DRC. A network of large rivers functions as distribution barriers to many species, thereby isolating this lowland basin along its northern, eastern and western limits. Because of the relatively flat topography of the area, most of these rivers are slow-flowing with heavy sediment loads and have numerous alluvial islands. Many of the soils are nutrient-poor oxisols developed over ancient 'dune fields'.

The central Congolian lowland forests, dominated by species from the leguminous Caesalpiniaceae family, are less floristically diverse than other areas of the Congo Basin but 10% of the species are thought to be endemic. Vertebrate species richness and endemism is also lower than in other parts of the Congo Basin, perhaps because the river barriers have prevented the interchange of species from other ecoregions. On the other hand, these barriers have meant that several mammal species, including several small primates, are endemic to the areas of forest to which they are confined by the river network. Selected examples are the recently described lesula monkey (between the Tschuapa and Lomami Rivers), the Salonga guenon (between the Lua and Lopori rivers) and Thollon's red colobus (between the Lomami and Congo rivers). In 2014, a probable new species of monkey, the inoka, was discovered between the Lomami and Congo Rivers[14].

Only one category I-IV PA is located in these forests (Salonga NP, 36 000 km² – a World Heritage Site in Danger) but several other protected areas (Tumba-Lediima, Lomako-Lokolala, Sankuru) are also located in this ecoregion, as is the future Lomami NP.

North-western and north-eastern Congolian lowland forests have high levels of species richness and endemism and cover the core area of the lowland gorilla and western chimpanzee distribution. Mammalian richness is among the highest of any forest region in Africa and primate species richness is the highest in Africa. Cameroon has 29 species of primate and Gabon 19. The Okapi Wildlife Reserve (DRC) alone has 17 primate species. These forests contain the last strongholds of forest elephant, particularly in the transfrontier area of Gabon, Cameroon, Congo and Central African Republic (CAR). A particularly important feature of these forests, especially the north-western forests, is the presence of hundreds of forest clearings or *'bais'* as they are known locally. These *bais* usually have mineral licks, which attract great numbers of large mammals, including forest elephant, buffalo, sitatunga, bongo, bush pig, giant forest hog, gorillas and chimpanzees. They often have water sources, and the sedges and other aquatic vegetation provide an important food source for gorillas and ungulates.

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(10) Vande Weghe J.P. (2004). Forests of Central Africa. Man and Nature. ECOFAC – Lanoo.
(11) Blake S., E. Rogers, J.M. Fay, M. Ngangoue and G. Ebeke (1995). Swamp gorillas in northern Congo, *Afr. J. Ecol.* 33, pp. 285-290.
(12) IUCN & ICCN (2012). Bonobo (*Pan paniscus*): Conservation Strategy 2012-2022, Gland, Switzerland, IUCN/SSC Primate Specialist Group & Institut Congolais pour la Conservation de la Nature, 65pp.
(13) The bonobo range also extends into the northern part of the southern Congolian forest savannah mosaic in the southern extremity of the future Lomami NP. (See footnote 12 for reference.)
(14) Searching for Bonobo in Congo, see http://www.bonoboincongo.com/maps/

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Forest elephant, bongo and buffalo visiting Dzanga Bai, a mineral-rich forest clearing in Dzanga-Ndoki National Park, Central African Republic. The park is part of the recently nominated Tri-national Sangha transborder World Heritage Site.

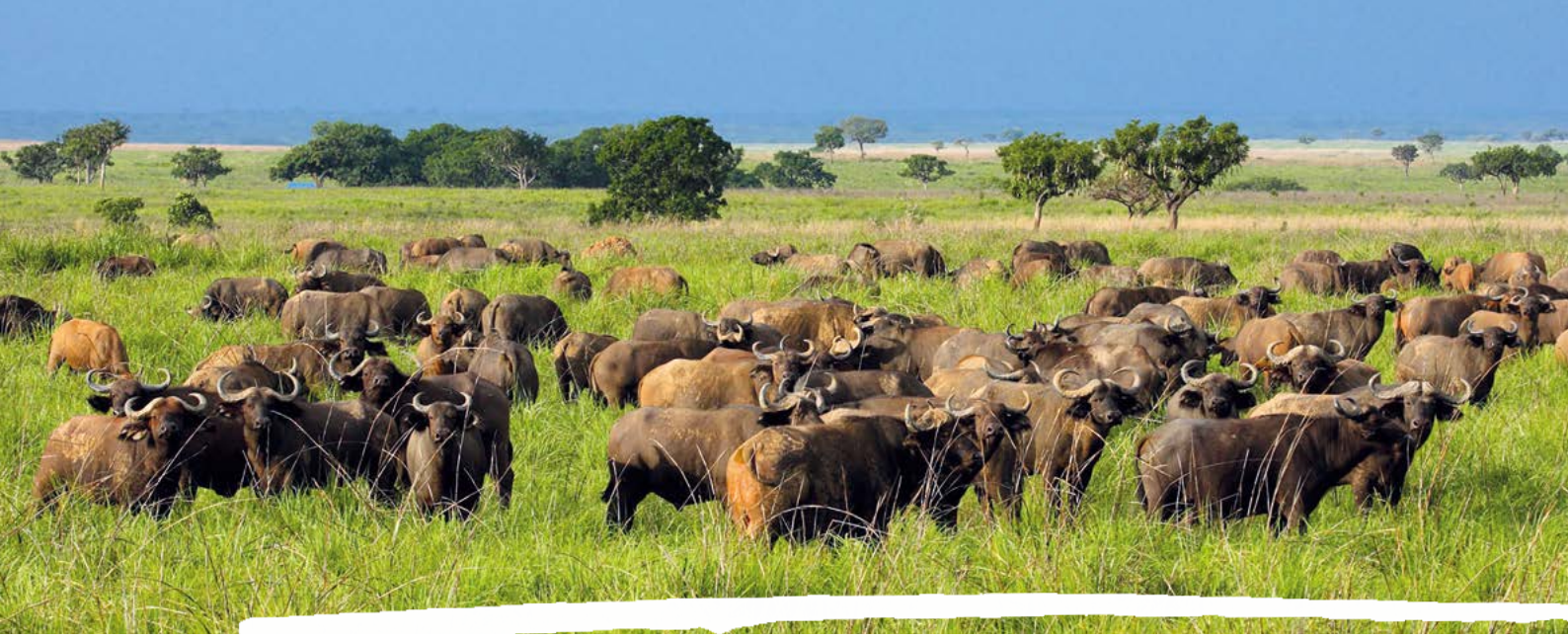
The forest clearings are also important sites for social interactions for many of the species that visit them, particularly the forest elephant. In areas relatively undisturbed by human activities, the *bais* are linked by a dense network of heavily used trails, known as elephant boulevards, which may cover many hundreds of kilometres.

These forests have, until recently, been relatively inaccessible and have therefore remained largely free of human activities. However the situation has changed very rapidly over the past 20 years. Almost all of the north-western forests are covered by active, or soon-to-be-active, industrial logging concessions. The dense network of logging roads has opened up the forest for immigrants in search of employment and forest resources, particularly bushmeat. Several very large industrial mining concessions (iron, cobalt, nickel) are also starting up and these will also attract thousands of people into these hitherto low populated areas. Gold deposits, some of which are of exceptionally high quality, are also found all over these forests. Most of the gold mining is artisanal and unregulated but attracts very large numbers of people. The majority of Central Africa's forest elephants are found in the north-western forests but they are being heavily targeted by gangs of poachers with links to criminal networks operating from both within and outside the Central African region.

There are 15 category I-IV protected areas in these forests, covering a total of 74 100 km^2, approximately 11 % of the north-eastern and north-western Congolian forests. The northern part of Virunga NP also covers some of this forest type. Three of Central Africa's six moist forest World Heritage Sites occur within these forests (Dja Reserve, Tri-national Sangha – TNS, Okapi Wildlife Reserve), although Dja and Okapi are on the World Heritage Site in Danger list.

1.2 Moist forest–savannah transition zones

These transition zones are almost as extensive as the moist tropical forests. To the north of the rainforest block the forests give way to the northern Congolian forest savannah mosaic, a biologically interesting transition zone where plant and animal species characteristic of both the rainforest and savannah occur (chimpanzee, bongo, giant forest hog, hyena, lion, etc.). With their characteristically diverse habitat types, forest savannah mosaics support a high proportion of eco-tonal habitats, which have high species richness and have probably been important centres for differentiation and speciation. Gallery forests are the dominant forest type in this zone and this is where the typical rainforest species are mainly found. Further north, the forest savannah mosaic gives way to relatively moist wooded grasslands with typically woodland/savannah species, such as giant eland, northern white rhino (now extinct), black rhino (only a few individuals remain), giraffe, roan, hartebeest and lion. In Garamba NP, the elephants show morphological characteristics of both the forest and savannah species.



A herd of buffalo and a lion in Garamba National Park, one of the DRC's five World Heritage sites, all of which are on the World Heritage in Danger list.

A similar transition to forest savannah mosaic occurs all along the southern flank of the Congo Basin rainforest block. The Batéké plateaus, comprising grasslands and lightly wooded savannahs overlaying deep Kalahari sands, extend northwards into the south-eastern part of the moist forest block (Figure 1).

Due to their relative accessibility, the main threats to the forest-savannah transition zones come from subsistence agriculture, hunting and competition for grazing and water-point access by large domestic herds of livestock. Artisanal gold panning is widespread in these areas and causes high levels of habitat disturbance locally, especially in the biodiversity-rich gallery forests along watercourses.

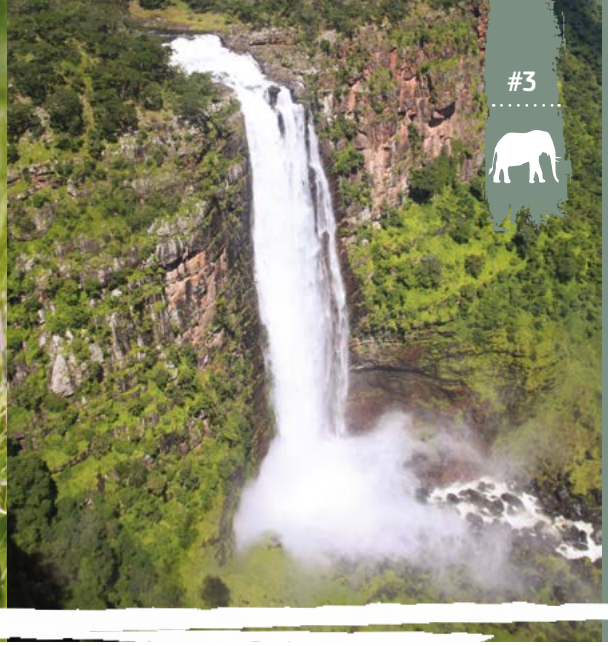
Category I-IV PAs in the northern forest savannah transition zone include Mbam and Djerem NP, Benoué NP and Faro NP (Cameroon), Garamba NP (DRC) and Zemongo Wildlife Reserve (WR) (CAR). However the vast complex of the Bili-Uere hunting domains (category VI, 33 000 km^2) in northern DRC also covers this transition zone. Three category I-IV PAs occur in the transition zone to the south of the moist forest block: the southern tip of the future Lomami NP (DRC), and in the Plateaux Batéké NP (Gabon) and Lefini WR (Congo).

1.3 East Sudanian savannahs and Sahelian acacia savannahs

In the Central African region, these habitat types are found in CAR, Cameroon and Chad. The climate is very hot and dry and during the dry season most of the trees lose their leaves and the grasslands dry up and burn extensively. There is low faunal endemism because the area is so vast and continuous but is quite important in terms of plant endemism. Roughly one-third of the 2 700 plant species in the east Sudanian savannahs are endemic. Animal species typical of the Sudanian savannahs are elephant, lion, cheetah, wild dog, roan antelope and giant eland. Further north, in the drier Sahelian acacia savannahs, many mammal species have been hunted to extinction or near extinction. Species typical of this region include the scimitar-horned oryx (extinct in the wild [15]), dama gazelle, dorcas gazelle and red-fronted gazelle. Endangered predators, such as wild dog, cheetah and lion, were all also present and common but have now been extirpated over most of the ecoregion. The elimination of wildlife over such a large area was facilitated by modern hunting methods – rifles and four-wheel-drive vehicles – and exacerbated by civil disturbance, poor law enforcement and competition for grazing and water-point access with large herds of domestic livestock.

The original wooded savannah and acacia bushland habitats have been greatly altered over thousands of years, through long-term climatic changes and, more recently, through anthropogenic effects (herding, subsistence agriculture, fuel wood and fire). Climatic desiccation is a further threat, exacerbating the impacts of human activities, as the ability of the ecosystem to recover from overuse is reduced when there is little rainfall. In the past there were substantial populations of large mammalian herbivores, which would have grazed and browsed the vegetation. The remaining blocks of intact habitat are found mainly in the protected areas. In other areas the habitat is often degraded, but is extensive and relatively continuous in sparsely populated areas.

([15]) IUCN Red Data List. See http://www.iucnredlist.org



The 380 m high Kaloba Falls on the Lofoi River in the miombo woodlands of Kundelungu NP, DRC are the highest in Africa.

In the 1960s and 1970s, the area of northern CAR was sometimes referred to as the 'Serengeti of Central Africa' because of the vast numbers of large mammals that the habitat supported. However decades of poaching, and incursions by large herds of domestic livestock (in many cases owned by influential and wealthy individuals) from Sudan and Chad[16], have reduced wildlife numbers to very low levels. Long-term conflict in southern Sudan, CAR and Chad has also prevented effective conservation in this area. Elephants have been particularly targeted in southern Sudan, northern CAR, northern Cameroon and southern Chad by Sudanese poachers and armed militia. For example, the slaughter of elephants in Chad's Zakouma NP between 2006 and 2008 resulted in a catastrophic population decline from 4 500 to 450 individuals[17]. Similarly over a six-week period in 2012 in Bouba-Ndjida NP in northern Cameroon, at least half of the park's elephants were slaughtered by a highly organised band of Sudanese poachers[18].

Chad has several large category I-IV PAs totalling 120 000 km², although the only one that is managed adequately is Zakouma NP. In CAR, the complex of wildlife reserves, hunting domains and national parks centred around the Manovo-Gounda-St Floris and Bamingui-Bangoran national parks cover 80 000 km² but most are not effectively managed because of recurring conflict in the region (Manovo-Gounda-St Floris is a World Heritage Site in Danger). In fact, until the recent conflict overwhelmed the country, the best populations of wildlife remained in the savannah areas of CAR that were managed for sport hunting. The Chinko-Mbari watershed adjacent to the Zemongo wildlife reserve, covering over 80 000 km² in the east of CAR, still contains a surprisingly complete representation of the wildlife characteristic of this ecosystem, thanks to protection provided by professional safari hunters[19].

1.4 Southern miombo woodlands

Spread throughout Central and Southern Africa, the southern miombo woodlands extend over a vast area. In the Central African region they extend across the south of the DRC from the Zambian border to Angola. These woodlands are floristically rich, dominated by slow-growing leguminous tree species with a canopy height of up to 15 m. Grasses cover the ground under the trees and they burn in the dry season. Miombo is thus a fire-adapted habitat. Soils are generally poor which means that miombo woodland plants tend to be difficult to digest for mammals, thus favouring low densities of bulk-feeding mega-herbivores such as elephant and black rhino (now extinct in Central Africa). Miombo woodlands are also typically rich in termite species and mushrooms, both of which provide important sources of food for local populations. Although vast in extent, the Central African miombo woodlands are in fact threatened by agriculture and fuelwood collection, particularly as they are so slow to regenerate. The high plateaus of the Katanga region of southern DRC, covered by miombo woodland and grasslands, give rise to several large rivers that feed into the Congo River. They therefore play a vital role in the provision of a regulated supply of clean water. The Katanga plateaus also provide spectacular landscapes with high tourist potential. The 380 m high Kaloba Falls on the Lofoi River in Kundelungu NP are the highest in Africa.

Only two national parks, Kundelungu and Upemba (DRC), totalling 21 400 km², protect the Central African miombo woodlands in Central Africa.

(16) The flood plains of the Gounda River in the Manovo-Gounda-St Floris World Heritage Site offer particularly rich grazing for pastoralists from Sudan and Chad who now occupy the zone year round. The cattle raised here are used to supply meat markets as far afield as Nigeria.

(17) It is important to underline that over 25 years of conservation investment in this park by the European Commission from the late 1980s resulted in a spectacular recovery of all wildlife in this park, and with the exception of the elephants, wildlife populations remain very healthy in Zakouma. This illustrates the fact that elephant poaching is a special issue requiring a series of highly specialised and targeted actions.

(18) http://www.ifaw.org/united-states/news/elephant-population-halved-cameroon-killing-spree-graphic-images

(19) http://www.chinkoproject.com/

2

Conservation issues and challenges

>2 _ Conservation issues and challenges

In this section, the direct threats to biodiversity and the key drivers of these threats are presented.

2.1 Direct threats

2.1.1 Unsustainable commerce of wild animal protein [20]

The massive scale of the commercial bushmeat trade across Central Africa is leading to impoverishment of vast areas of rain forest and local extinctions of many species, particularly the medium and large-bodied species (the 'empty forest syndrome'). Estimates of the scale of the Central African bushmeat trade indicate that up to 4.5 million tons of bushmeat are extracted annually from the Central African forests with an estimated value of up to USD 205 million annually. A very wide variety of taxa are hunted (mammals, birds, reptiles). Mammals make up the bulk of the catches in terms of number and biomass, with ungulates and rodents representing two-thirds of the carcasses sold in urban markets. Large-bodied species are hunted where they are present (i.e. in recently exploited forest) but these soon disappear, after which catches are dominated by smaller species such as brush-tailed porcupines, pouched rat and blue duiker. Monkeys are hunted in large numbers in many areas but as shotguns are required to kill them, the cost of the cartridges often outweighs the financial return for the hunter. However cartridges and firearms are often supplied by corrupt officials; where this happens the financial returns make monkey hunting worthwhile. For terrestrial species, the overwhelming method of hunting is with steel-wire snares, a commodity that is widely and cheaply available in the form of brake cables for bicycles. This method is extremely wasteful since it is unselective in what it catches and also many carcasses decay before hunters return to check their traps. Typically hunters will lay up to several hundred traps on a hunting trip. Hunters do not distinguish between protected and non-protected species – they will take whatever they find in their traps. In heavily hunted areas, protected species, which are often larger-bodied ones, disappear first. Larger-bodied, longer-lived species with low intrinsic rates of population increase, such as elephants, apes, other large primates, carnivores and large antelopes, are less resistant to intensive hunting than species with high intrinsic rates of population increase, such as rodents and small to medium-sized ungulates. Primates and carnivores are extremely vulnerable. However some species, such as the blue duiker, are particularly resistant to hunting pressure and can maintain their population levels, even under quite high hunting-intensity levels.

There is increasing evidence of overfishing in many of the inland waters of Central Africa. This is particularly evident in Lake Edouard (Virunga NP) [21] where 'open access' to the resource, and the involvement of powerful middlemen in the trade, is depriving local fishing communities of their livelihoods. Forest people in Central Africa often naturally alternate between bushmeat and fish as a function of seasons and availability, but as bushmeat supplies diminish there will be a tendency to increase consumption of fish, leading to overfishing. Evidence of this is already occurring in the town of Mambasa in DRC (in the moist forest region near the Okapi Wildlife Reserve) where increasing quantities of fish from the Great Lakes region to the east, (including Lake Edouard) are being consumed.

The loss of wildlife from forest ecosystems disrupts ecological processes and reduces biodiversity. Plant diversity and regeneration is often dependent on the presence of specific animal species or groups of species for pollination and seed dispersal. The disappearance of 'keystone species' at the top of the food chain and/or important seed dispersers (elephants, apes, large carnivores, crocodiles, raptors, etc.) is likely to have a disproportionate impact on the ecosystem. Central African hunting systems are biased towards heavy offtakes of seed-dispersing frugivorous mammals – over 70% of animals in an average village hunting offtake have a seed dispersal role [22].

Although per capita bushmeat consumption in urban areas is lower than in rural areas, the vast majority of the bushmeat is consumed in urban areas because that is where the majority of the people in forested Central Africa lives (levels of urbanisation vary from 34% in DRC to 86% in Gabon [23]). Furthermore, the contribution of urban areas to the overall bushmeat consumption is likely to continue increasing as the population of Central African countries continues to urbanise.

([20]) Principal source of information concerning bushmeat for this section: R. Nasi, A. Taber and N. Van Vliet (2011). Empty forest, empty stomachs? Bushmeat and livelihoods in Congo and the Amazon basin, *International Forestry Review*, Vol. 13.

([21]) Aveling C., G. Debonnet and P. Ouédraogo (2014). Rapport de Mission. Mission de suivi réactif de l'Etat de Conservation du parc national des Virunga, République démocratique du Congo (RDC) de 07 au 14 mars 2014. UNESCO, IUCN, Ramsar.

([22]) Abernethy K.A., L. Coad, G. Taylor, M.E. Lee and F. Maisels (2013). Extent and ecological consequences of hunting in Central African rainforests in the twenty-first century. *Phil Trans R Soc B* 368: 20130494: http://dx.doi.org/10.1098/rstb.2013.0494

([23]) https://www.cia.gov/library/publications/the-world-factbook/fields/2212.html

Severed and smoked hands of a western lowland gorilla. Primates of all species constitute part of the estimated 4.5 million tons of bushmeat consumed annually in the Central African moist forest region. Meat for sale from protected species is a very common sight in Central African markets.

Bushmeat is a much-needed source of protein in rural areas where there is generally very little availability of meat from domestic livestock. When wild fish is available it can outweigh the importance of bushmeat in the diet of forest dwellers, who will readily switch from one to the other according to availability. In urban areas, there is greater availability of alternative meat sources but where meat alternatives are more expensive than bushmeat (e.g. Kisangani, Bangui) the poorer households will tend to opt for bushmeat. However in the larger cities of Equatorial Guinea, Gabon and Cameroon where there is more wealth, bushmeat is more of a luxury product rather than a protein necessity.

Although bushmeat is primarily used by rural populations for basic subsistence needs, most families will also hunt to supplement their incomes. Bushmeat is often seen as a buffer to see families through hard times (crop failure, unemployment) or to gain income for special needs (funerals, school fees, weddings) and this safety net is particularly important for the more vulnerable members of the community. However the commercial trade is undoubtedly the primary driver of the increasing levels of bushmeat offtake in Central Africa.

A large amount of bushmeat trade occurs across borders in Central Africa but there is also a significant international trade outside of the region.

2.1.2 Massive, criminally organised, international trade in wildlife and ivory

Like almost all the other African elephant range states, poaching for ivory has dramatically intensified over the past decade. Central African elephants are particularly sought after by poachers because the ivory from forest elephants is denser than that of savannah elephants and preferred by ivory carvers in Asia. The Central African forests are also prized hunting areas because it is difficult to detect and arrest poachers in the forest environment, and poor governance and a lack of resources and political will result in very ineffective law enforcement.

Most of the ivory poached is smuggled out of Central Africa and finally ends up in Asia where the price is so high that well-organised criminal networks are now involved in the entire chain from the African forest to the illegal and 'legal' markets in China. Actors in the criminal networks are numerous and varied, and include corrupt law enforcement, customs and administrative officers in range states, armed militia and rebel groups, and diverse African (often West African) and Asian middlemen. Ivory is smuggled out of the Central African states in various directions: overland to Sudan (Khartoum), by air, land and sea to West African capitals acting as transit points (Togo, Nigeria, Guinea-Bissau, Senegal) for the Far East, or overland to the East African ports of Mombasa and Dar es Salaam.

Elephant populations have declined dramatically all over their range in Central Africa as a result of intense poaching for ivory. The involvement of armed militia and rebel groups in the organised poaching of elephants is a particular concern because of its implications for national security.

The increasing involvement of armed militia and rebel groups in the organised poaching of elephants is a particular concern because of its implications for national security. Several such cases have been documented in Central Africa. The Lord's Resistance Army (LRA) is involved in elephant poaching in Garamba NP (DRC)[24] to fund its brutal campaign, and Sudanese militia were responsible for the slaughter of elephants in Bouba-Ndjida NP in northern Cameroon in 2013. The involvement of rogue elements of the national armed forces is widespread. Their involvement ranges from doing the poaching themselves, to supplying weapons and ammunition to poachers, to providing protection for the transport of the ivory. High-tech resources are often deployed. For example, the Ugandan Army is suspected of having used its helicopters to poach elephants in Garamba NP[25]. Also kidnapped children who have escaped from the LRA attest to the fact that helicopters (of undetermined origin) regularly landed at their camps to collect ivory.

Elephant populations have declined dramatically all over their range in Central Africa. A paper published in April 2013[26] analysed all available survey data for Central African forest elephants between 2002 and 2012 and concluded that there had been a 62 % decline. In the savannahs and woodlands to the north and south of the rainforest block, intense poaching over many years has reduced elephant populations to very low levels, and has extirpated them from large areas. Large-scale slaughters of elephants have been recorded in Zakouma NP, Bouba Ndjida NP and the north of the CAR. As elephant populations have declined around the edges of the rainforest block, poachers have moved deeper and deeper into the forested areas. Despite having 60 % of Central Africa's rainforests, the DRC now has only 19 % of its remaining forest elephants. The Wildlife Conservation Society (WCS) estimated DRC's forest elephant population at 19 000 individuals in 2011. The last remaining stronghold for forest elephants is now the trans-border area between north-eastern Gabon, southwest Cameroon, northern Congo and south-western CAR (the TRIDOM and TNS landscapes), an area containing 12 national parks totalling some 250 000 km².

However even this area is now under intense pressure. For example, a survey conducted by the Gabon's National Park Agency (ANPN), WCS and WWF[27] showed that Minkébé NP in Gabon, regarded as the park with one of the highest elephant populations in Central Africa, lost between 16 000 and 20 000 elephants between 2004 and 2012, with much of this ivory going out through Cameroon.

Gabon is the only remaining Central African country where elephants occur throughout the territory and is home to an estimated 40 000 to 64 000 elephants, about half the remaining forest elephants in Africa.

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(24) Agger K. and J. Huston (2013). Kony's Ivory: How Elephant Poaching in Congo Helps Support the Lord's Resistance Army. !Enough. www.enoughproject.org

(25) A Ugandan Army Antonov helicopter was photographed in Garamba NP in April 2012 in the vicinity of a site where 15 elephants had just been killed with a single bullet through the top of the skull, and the ivory taken. The registration number of the helicopter was recorded and the Ugandan Army has so far failed to provide an explanation as to what the helicopter was doing so far into Congolese territory.

(26) Maisels F., S. Strindberg, S. Blake, G. Wittemyer, J. Hart et al. (2013). Devastating Decline of Forest Elephants in Central Africa. *PLoS ONE* 8(3), e59469. doi:10.1371/journal.pone.0059469

(27) ANPN, WCS and WWF (2013). Wildlife and poaching assessment in northeast Gabon, Report, 23pp.

2.1.3 Habitat loss

Forest degradation, deforestation and forest fragmentation are important direct threats to wildlife and biodiversity in Central Africa. Deforestation leads to total loss of biodiversity, while habitat fragmentation negatively affects gene flows and ecological processes, both of which ultimately result in biodiversity impoverishment.

Annual net deforestation rates [31] across the Congo Basin are lower than in Amazonia and Southeast Asia but are accelerating. Net deforestation for the period 1990-2000 was 0.09 % and rose to 0.17 % for the period 2000-2005 [32]. Net annual deforestation was highest in DRC with 0.11 % for 1990-2000 and 0.22 % [33] for 2000-2005. Congo had the next highest net deforestation rate (0.07 % for 2000-2005), while Gabon's net rate for this period was zero. An assessment of forest degradation between 2000 and 2010 in the DRC published in 2013 [34] reports a loss of 1.02 % of primary forest cover due to clearing and predicts that degradation of intact forests could increase up to two-fold over the next decade.

The key agents of habitat loss and impoverishment in Central Africa are shifting agriculture (slash and burn), fuelwood collection and charcoal. Fragmentation is also caused by industrial logging and mining with their associated road and rail infrastructures, agro-industrial plantations (with oil palm plantations becoming an increasingly important threat) and hydroelectric dams. Competition for grazing and access to water points by domestic livestock herds also causes habitat impoverishment in the moist forest-savannah transition zones and is often associated with the killing of wildlife, particularly large carnivores.

Shifting agriculture

This type of agriculture has been part of the ecosystem for centuries but it becomes a problem when fallow periods are shortened as the human population grows and more land is required for production. Shorter fallow periods lead to a decline in tree regeneration, soil fertility and agricultural yield. In Central Africa, shifting agriculture is most intense along main roads, near villages and on the outskirts of urban centres. The problem is exacerbated by the rapid expansion of the road network, particularly by industrial logging (see below).

Fuelwood and charcoal

Fuelwood and charcoal represent 90 % of all wood removal from the forests of Africa [35]. Fuelwood is the main energy source for over 80 % of people in Central Africa, and its consumption is

In the transition zone and in the savannahs and woodlands to the north of the rainforest block, the remaining elephant populations are found in scattered pockets, mainly in and around the following protected areas: Zakouma NP (Chad), Bouba Ndjida and Waza NPs (Cameroon), Garamba NP (DRC) and Zemongo WR (CAR). In the transition zone, Garamba NP (DRC) has between 1 500 and 2 000 elephants [28], Mbam et Djerem NP (Cameroon) still contains an estimated 1 000 elephants, while in the Bili-Gangu sector of the vast Bili-Uere complex in north-central DRC numbers have declined dramatically and are currently estimated at 650 individuals [29].

Many other wildlife species and products are traded in Central Africa. There is a large and poorly regulated international trade in grey parrots throughout Central Africa and the trade is clearly unsustainable [30]. Illegal trading of pangolin scales, mainly for the Asian market, is widespread. There is also a local, but large-scale trade in fruit pigeons in DRC. In both cases bais are the preferred location for catching these species as they visit them in large numbers and can be caught quite easily using nets or lures smeared with natural glues.

(28) Bolanõs N.C. (2012). Aerial animal census 2012. Garamba National Park, DRC. April and May 2012, ICCN/ANP report.
(29) Hart J. (2014). Summary of elephant surveys in North Central DRC 2007-2013. Lukuru Wildlife Research Foundation. Draft report submitted to AfEDB, September 2014.
(30) http://www.birdlife.org/datazone/sowb/casestudy/568
(31) Net deforestation is the difference between gross deforestation and gross reforestation. Under the current climatic conditions natural reforestation occurs in Central Africa when habitat is left undisturbed by humans.
(32) The Forests of the Congo Basin. In: State of the Forests 2010 (Chapter 1). Available at http://www.observatoire-comifac.net/edf.php
(33) Gross annual deforestation in DRC from 2000-2005 was 0.32 %.
(34) Zhuravleva I., S. Turubanova, P. Potapov, M. Hansen, A. Tyukavina, S. Minnemeyer, N. Laporte, S. Goetz, F. Verbelen and C. Thies (2013). Satellite-based primary forest degradation assessment in the Democratic Republic of the Congo, 2000-2010. *Environmental Research Letters* 8, 024034.
(35) The Forests of the Congo Basin. In: State of Forests 2010 (Chapter 4). http://www.observatoire-comifac.net/edf.php

Deforestation for fuel in Virunga National Park, DRC, by refugees following the genocide in neighboring Rwanda. At the height of the crisis an estimated 900 tons for wood was being removed daily.

A charcoal kiln in North Kivu, DRC. Fuelwood and charcoal represent 90 % of all wood removed from the forests of Africa.

expected to continue to grow in the coming decades[36] (indeed Africa is the only continent where fuelwood consumption will continue to rise). In the DRC, 94 % of total round wood production is for fuelwood, compared with 24 % for Gabon. Peri-urban forests play a key role in providing fuelwood and charcoal, so deforestation and biodiversity loss are highest in these areas. In Kinshasa, a city of over 7 million inhabitants, the halo of deforestation from charcoal extraction extends for up to 200 km from the city, but a significant proportion of its charcoal comes from even further afield – by river, over distances of up to 1 000 km.

Industrial logging

Most of Central Africa's rainforests are being, or will be, selectively logged. Logging is generally selective for high-value species with average extraction rates at between two and six trees per hectare. In addition to the direct forest loss caused by the extraction of trees (secondary damage from felling and extraction), forest is lost for the construction of roads, sawmills and logging camps. Soil erosion, water pollution and reduction of the regeneration capacity also occur. Logging also removes nutrients and escalates forest fragmentation. The extensive network of roads created by logging activities also allows people to move into the forest to settle, and opens up vast new areas for hunters.

Industrial mining and oil extraction

The African continent contains one-third of global mineral resources. The subsurface strata of the Congo Basin contain very important oil and mineral resources. Several of the world's largest iron-ore deposits are found in the Tri-national Dja Odzala Minkébé (TRIDOM) landscape (Cameroon-Gabon-Congo transfrontier zone) (Figure 2). Other minerals present in the landscape include cobalt, nickel, copper, manganese, platinum, silver, uranium, zinc, lead, gold and diamonds. Key iron-ore deposits that are being, or will soon be, exploited are Belinga (Gabon), Mbalam, Nkout (Cameroon), Nabeba, Letioukbala, Avima, Badondo (Congo). The Belinga and Mbalam deposits are estimated at 1 billion tons each. They are among the largest in the world, and the ore has an exceptionally high iron content. To exploit the Mbalam deposit, a 500 km railway line to Kribi on the Cameroon coast is planned. The capital cost of the Mbalam project over 25 years is currently estimated at USD 4.7 billion. To exploit Belinga, an extension to the trans-Gabonese railway is planned and the construction of a hydro-electric dam on the Ivindo River has also been considered. This would severely impact the Ivindo NP, a potential World Heritage Site, with its spectacular series of rapids and waterfalls at Koungou.

Development and consumption pressures

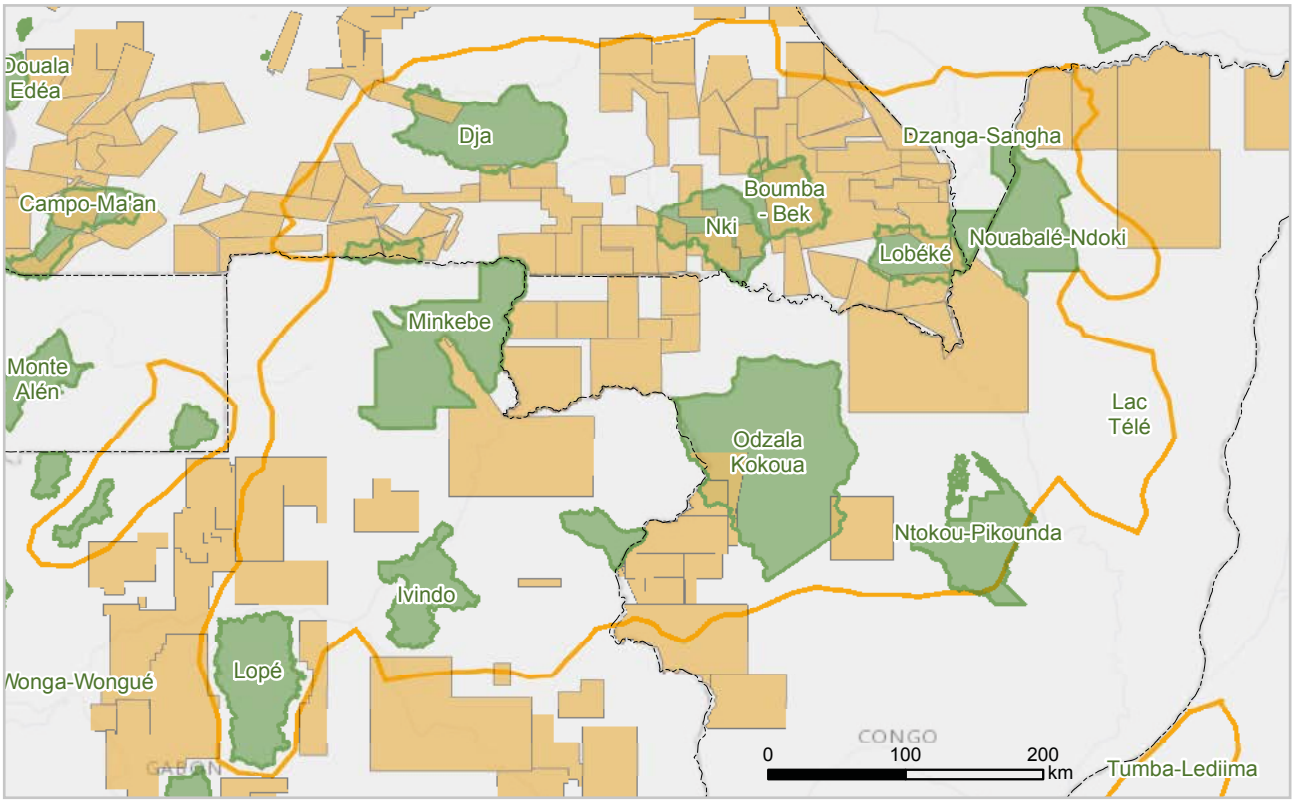
Linked to the growing human population are the associated increases in development and consumption, including development in the energy and transport sectors. These are leading to habitat loss, degradation and fragmentation, and an increased accessibility to previously isolated sites, which increases the vulnerability of biodiversity in these areas, as well as socio-economic problems for rural communities who are dependent on the affected natural resources. It is essential that such developments undertake a rigorous independent social and environmental impact assessment (SEIA) process, and identify adequate mitigation and compensation measures in response. To achieve this it is critical that African countries have strong SEIA policies and the capacity for its monitoring and implementation.

Onshore oil has been exploited for decades along the coastal area of Gabon and Congo and onshore oil exploration permits are beginning to appear all over the Congo Basin. As with mining permits, many of these oil 'blocks' overlap partially or wholly with protected areas. The most worrying example is Virunga NP, a World Heritage Site and the oldest park in Africa, where an oil exploration permit has been granted inside the park in contravention of the World Heritage Convention to which the DRC is a signatory.

([36]) The Forests of the Congo Basin. In: State of Forests 2010, p. 39. http://www.observatoire-comifac.net/edf.php

Hardwood logs ready for loading onto railway ***trucks in Gabon.***
Most of Central Africa's rainforests, outside of protected areas, are being or will be selectively logged. The extensive network of roads created by logging activities opens up vast new areas for hunting for the bush meat trade and for human settlements.

Figure 2. Mining concessions in the TRIDOM landscape
Source: European Commission, Joint Research Centre



The skull of a western lowland gorilla killed by the Ebola virus in Odzala-Kokoua National Park, Congo. In areas where there have been outbreaks of Ebola great ape populations have declined drastically.

As with logging, industrial mining causes habitat loss through the mining activity itself, the construction of associated infrastructures (camps, roads, railways, hydroelectric dams). Pollution is also a major concern. Mining also attracts massive numbers of people into the forest in search of economic opportunities. This leads to permanent settlements, agriculture and commercial hunting. The very rich gold deposits also attract thousands of artisanal miners and associated hunters and traders. In 2011, the Gabonese army evacuated a mining camp of over 6 000 people from Minkébé NP.

Agro-industrial plantations

Oil palm originates from Central Africa. Due to the huge profits that can be made, there is currently a strong push, mainly from Southeast Asian companies, to greatly expand oil palm plantations, particularly in Cameroon, Gabon, Congo, CAR and DRC. A Rainforest Foundation study[37] reveals that new industrial oil palm expansion projects currently underway in the Congo Basin cover 0.5 million ha, and that at least 1.6 million ha are planned, with companies seeking even larger areas. The terms of the agreements between palm oil companies and Congo Basin governments have mostly been conducted and concluded in complete secrecy. Furthermore, a recent study by the Center for International Forestry Research (CIFOR)[38] suggests that cash crops are generally more profitable than logging if the timber from a forest concession is harvested sustainably, which means that if REDD+[39] initiatives are to come to the rescue of forests in Central Africa, the global market values for carbon will have to increase significantly.

Oil palm plantations have a devastating effect on biodiversity as they result in total forest loss. They also cause fragmentation of forests and, if badly planned, can block gene flows and disrupt ecological processes.

2.1.4 Emerging diseases

Over the past two decades research has highlighted the importance of emerging diseases as a serious threat, not only to human populations but also to wildlife. Since the mid-1990s there have been several outbreaks of Ebola in Gabon[40] and Congo[41] in human populations and all were traced back to hunters handling ape carcasses found in the forest[42]. The Ebola outbreaks in and around Odzala NP in Congo between 2000 and 2004 resulted in the probable loss of 80 % of the gorilla population.

It is now known that HIV originated in chimpanzees and sooty mangabeys and made the jump to humans; more than 40 different non-human primate species have been tested positive for simian immunodeficiency virus (SIV)[43]. As humans are consuming the meat of many of those species, the risk of many new SIV strains jumping over to humans is believed to be significant. Observations made in Cameroon of people with human immunodeficiency virus (HIV) symptoms but without HIV or SIV-positive test results are causing concerns over the ongoing creation of new HIV strains, which ultimately could make it even more difficult to find a cure against acquired immune deficiency syndrome (AIDS).

(37) Seeds of Destruction. Expansion of industrial oil palm in the Congo Basin: potential impacts on forests and people. Rainforest Foundation, February 2013, 38pp. S http://www.synchronicityearth.org/assets/uploads/Seeds_of_Destruction,_February_2013%281%29.pdf

(38) http://blog.cifor.org/26824/redd-central-africa-forests-cash-crops#.VXqG-nkw-zk

(39) Reducing Emissions from Deforestation and forest Degradation.

(40) Huijbregts B., P. DeWachter, L.S.N. Obiang, M.E. Akou (2003). Ebola and the decline of gorilla *Gorilla gorilla* and chimpanzee *Pan troglodytes* in populations in Minkébé Forest, north-eastern Gabon, *Oryx* 37, pp. 437-443.

(41) Bermejo M., J.D. Rodriguez-Teijeiro, G. Illera, A. Barroso, C. Vila and P.D. Walsh (2006). Ebola outbreak killed 5000 gorillas, *Science* 314, p. 1564.

(42) Rouquet P., J.M. Froment, M. Bermejo, A. Kilbourn, W. Karesh, P. Reed et al. (2005) Wild animal mortality monitoring and human Ebola outbreaks, Gabon and Republic of Congo, 2001-2003, *Emerging Infectious Diseases* 11, pp. 283-290).

(43) Locatelli S. and M. Peeters (2012). Non-Human Primates, Retroviruses, and Zoonotic Infection Risks in the Human Population. *Nature Education Knowledge* 3(10), p. 62.

Hunter with a dying crowned monkey near Mbomo village, north Congo.
More than 40 different non-human primate species have been tested positive for simian immunodeficiency virus (SIV). The risk of new SIV strains jumping to over to humans is believed to be significant.

Other diseases that have been identified in primate bushmeat species include Marburg virus, monkey pox, simian foamy virus, arboviruses (dengue and yellow fever), anthrax, salmonellosis, herpes B, cutaneous leishmaniasis and loaloa. Given the scale of the bushmeat trade, the presence of these pathogens constitutes a very serious human health hazard.

Wild primate populations are also at risk from human diseases such as influenza and measles. This is particularly relevant in the case of ape-based tourism where humans come into close contact with habituated groups of gorillas and chimpanzees [44]. These apes are particularly vulnerable to certain human diseases and this is therefore a major concern in the case of endangered species such as the mountain gorilla where only a few hundred individuals remain in two discrete populations (Bwindi forest and Virunga mountains).

As deforestation continues, wildlife will be increasingly confined to patches of forest surrounded by human settlements. This enhances the chances of contact between virus-bearing animals and humans, thus increasing the chances of new diseases emerging.

2.2 Key drivers of threats

2.2.1 Human population growth, poverty and agricultural systems

Human population growth, allied with continuing poverty and agricultural production systems practiced in the region, is the overriding driver of biodiversity loss. Some nations of the Congo Basin rank among the lowest in the world on most human welfare indicators, and among the highest in population growth and fertility. Average annual population growth in Central Africa is between 2% and 3%. The population of the DRC is predicted to increase from 67 million in 2013 to 155 million in 2050 (Summary document – Synthesis, Section 1.4, Table 1).

Poverty, particularly in the rural areas, means that local populations remain heavily reliant on natural resources from the forest for their subsistence. However, a lack of economic opportunities in rural areas leads to communities engaging in commercial exploitation of forest resources for the burgeoning urban markets where roughly half of Central Africa's population lives. For most forest wildlife species, particularly the medium to large-bodied species, commercial exploitation almost always leads to overexploitation of the resource [45].

Inefficiencies in the agricultural production systems – both cropping and animal husbandry – in the region exacerbate this situation. Inefficient agricultural production results in a loss of economic opportunity for rural populations, thus increasing the dependence on natural resources, including wildlife and forests, for income and livelihoods. Furthermore, poor agricultural production and livestock-keeping practices mean that people need

(44) Macfie E.J. and E. A. Williamson (2010). Best Practice Guidelines for Great Ape Tourism, Gland, Switzerland. IUCN/SSC Primate Specialist Group (PSG), 78pp.
(45) Nasi R., D. Brown, D. Wilkie, E. Bennett, C. Tutin, G. van Tol and T. Christophersen (2008). Conservation and use of wildlife-based resources: the bushmeat crisis. Secretariat of the Convention on Biological Diversity, Montreal, and Center for International Forestry Research (CIFOR), Bogor. Technical Series No 33, 50pp.

protein from bushmeat and wild harvest plants in order to meet their nutritional requirements.

In the absence of any kind of effective family planning programmes, population growth, particularly in agriculturally rich areas such as the Albertine Rift highlands, has led to overpopulation in the highlands and a tendency for people to migrate to the lower altitude forests to the west. Not only are these forests not able to support such high population densities (resulting in larger areas of forest being cleared for agriculture) but also migration leads to conflict for land with the local indigenous communities. Overlapping customary and modern land tenure systems make these conflicts particularly difficult to resolve and this has often led to violence (e.g. eastern DRC) as indigenous and migrant populations clash over land tenure and power structures.

Commercial hunting of wildlife for the urban bushmeat markets is a classic example of 'open access' to resources leading to overexploitation. Immigrant hunters moving in to an area recently made accessible by new roads are often resented by indigenous communities who see these 'outsiders' earning revenue from 'their' resources. However, levels of poverty in these forest communities are such that the indigenous populations will often collaborate with the immigrant hunters in order to obtain a share of the economic profits. For example, the semi-nomad indigenous people (pygmies) will willingly work for commercial hunters (for very little financial return) and as they are such proficient hunters they can rapidly deplete an area of its wildlife.

2.2.2 Poor governance

Corruption is a significant obstacle to building the strong institutions needed for the governance over and management of natural resources, including wildlife, forests and water. For the purposes of this section, the term 'poor governance' is used to cover not only corruption, but more broadly the problems of a lack of political will and the multitude of ways in which poorly designed and implemented government policies, laws and programmes (covering all sectors: environment, education, justice, land tenure, health, infrastructures, mining, etc.) lead to irreversible negative impacts on biodiversity.

The extractive industries (logging, mining and oil) are a major source of investment and revenue in Central Africa but the countries have generally not succeeded in translating revenues to sustainable economic development. In some cases, large extractive industry revenues even appear to have retarded economic and social development through a number of phenomena known as the 'resource curse' [46] (theft of revenue from resources by the ruling elite, conflict over access to resources). Despite being one of the richest countries on the planet in terms of natural resources, the DRC is lowest ranked in the world in terms of per capita gross domestic profit (GDP) (USD 415) [47]. Equatorial Guinea is an example where huge oil and gas revenues have placed it 30th in the world's nations in terms of GDP (USD 29,742), but 144th in the United Nations Development Programme's (UNDP) ranking of Human Development Index trends [48].

The countries of Central Africa are ranked among the world's worst in terms of corruption [49]. It permeates all aspects of life, and undermines all development efforts. In Central Africa, poor governance is the overarching driver, compromising the sustainability of all conservation efforts. It impacts wildlife and biodiversity in many ways:

- **Lack of political will** to provide the necessary support for PAs. While the political discourse from Central African governments is firmly in favour of biodiversity conservation and PA management, in reality most of the governments invest less than the bare minimum in their PAs. Almost without exception the only PAs in Central Africa that are being managed more or less adequately are those that are receiving support from foreign donors and conservation NGOs. Local-level corruption hampers the efficient and effective operations of park authorities, NGOs and communities undertaking measures to conserve and protect biodiversity.

- **Dysfunctional legal systems** mean that lawbreakers are rarely prosecuted. Impunity from prosecution, particularly at the highest levels of government where corruption on a grand scale is openly tolerated, sets the standards for everyone else and breeds contempt for legal processes and a feeling that 'anything goes'. In the case of wildlife crime, successful prosecutions are rare and penalties are anyway not dissuasive enough. There are also wide disparities between the wildlife laws of the different countries in terms of severity of penalties for wildlife crimes.

- **Poor land-use planning** regularly results in competing and incompatible land-use attributions. Inter-ministerial communication and collaboration is notoriously weak, resulting in development choices that often do not integrate biodiversity conservation needs. Local level corruption in the process results in land and resource allocations that are unjust and do not reflect the will of the community, but rather the power of the elite, thus undermining the process and incentivising people to work against the system of management of the resource base. As a result, over-exploitation can be seen as an honourable act of rebellion against the injustices of the system.

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(46) (2008). Governance of extractive industries in Africa. Survey of donor-funded assistance. Report for Norad/World Bank/African Development Bank/African Development Fund, 46pp.
(47) http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD/countries?display=default
(48) http://hdr.undp.org/en/content/table-2-human-development-index-trends-1980-2013
(49) Out of the world's 175 nations, Transparency International's 2013 Corruption Perception Index places Sao Tomé highest at 72, followed by Gabon (106), Cameroon and CAR (144), the two Congos (154) and Equatorial Guinea (163). http://www.transparency.org/cpi2013/results#myAnchor1

Park equipment and stores destroyed during an attack by the Lord's Resistance Army (LRA) on the headquarters of Garamba National Park, DRC, in January 2009. Fifteen lives were lost and two children kidnapped.

- **Allocation of resource rights and environmental permission:** Environmental impact assessments are generally of very poor quality and are often viewed as an administrative hurdle to enable companies to continue 'business as usual'. Examples are road infrastructures, hydroelectric dams, agro-industrial plantations, mining permits, etc. in areas of high biodiversity value, including inside PAs. The attribution of an oil exploration permit inside the Virunga NP World Heritage Site is one of the most high-profile examples. This example also highlights another aspect to the problem which is that even when it is known that a mining or oil permit overlaps a PA, countries are often unwilling to forgo the potentially huge revenues that would be generated and are prepared to override, or change, existing laws in order to allow exploitation to go ahead.

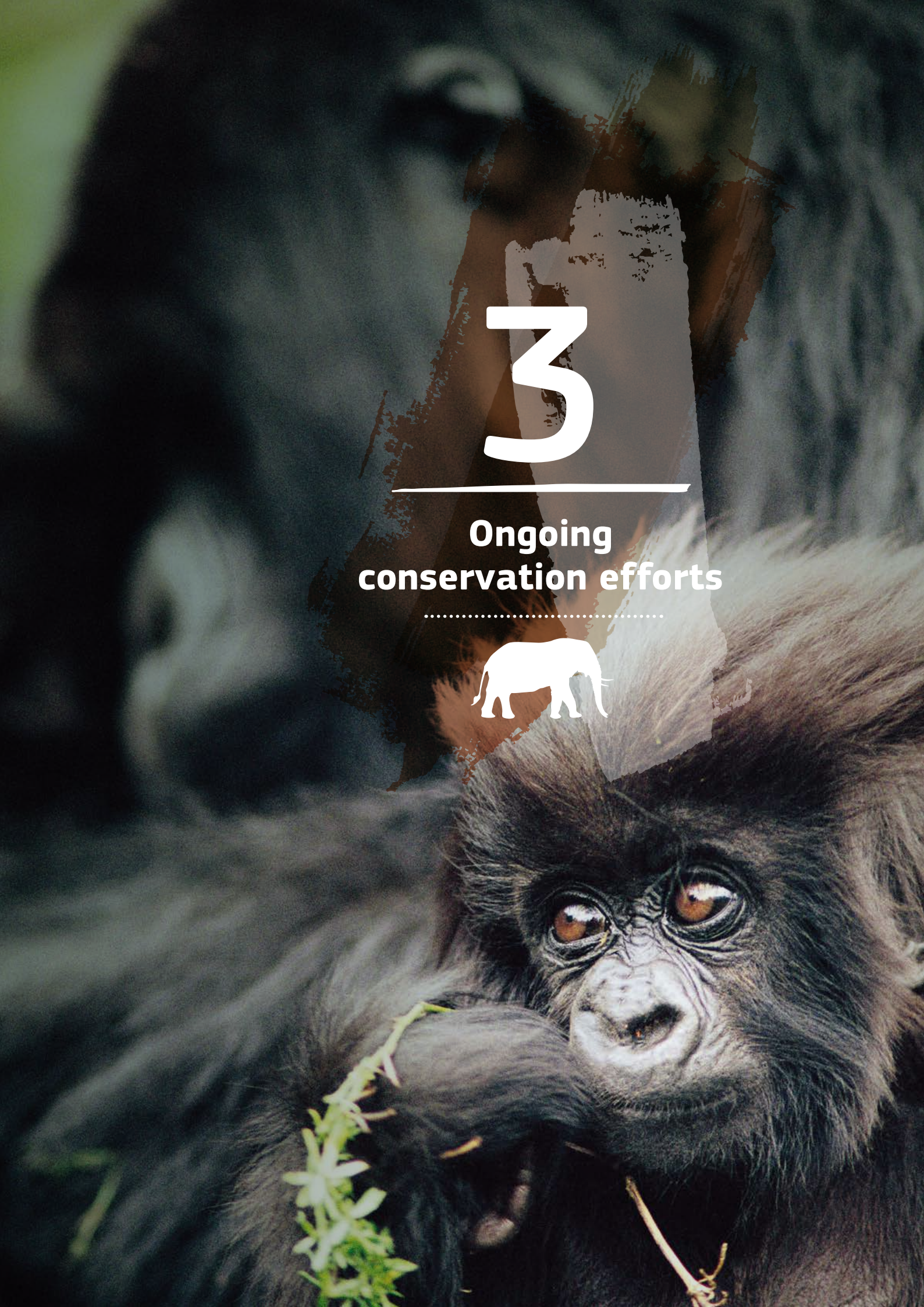
- **Insecurity of land tenure** leads to an unsustainable use of resources. In some countries, customary and state systems of land tenure overlap and this can create conflicts in land use. When forest-living people feel that they do not have a real stake in the 'ownership' of their forest resources there is little incentive to exploit them sustainably. This often results in a situation of 'open access' to resources, resulting in over-exploitation for commercial purpose.

- **Dysfunctional education systems** mean that a large proportion of children, particularly in rural areas, do not attend school. The quality of higher education structures is highly variable across the region. The environment is generally very poorly covered in school curricula and concepts of conservation and the sustainable use of natural resources are poorly understood by the young generation.

- **Dysfunctional national armies** where discipline is poor and soldiers are often badly paid (or in the case of DRC, often not paid at all). Members of the armed forces at all levels are frequently involved in poaching and other illegal activities such as mining. In eastern DRC, members of the armed forces even collaborate with rebel groups to exploit and commercialise the same resource (e.g. gold, diamonds, coltan, charcoal). The presence of a band of highly armed and well-organised Sudanese poachers, apparently operating with complete impunity in CAR and northern Cameroon, went unchallenged by the national defence forces until international public opinion forced them to act (by which time it was too late).

2.2.3 National and regional conflict

Central Africa has been blighted by conflict (internal and external) over the past three decades. This has had a devastating impact on livelihoods, socio-economic development and natural resource protection. Many of these conflicts can in fact be described as natural resource conflicts (eastern DRC, northern CAR, Chad, Congo). The DRC is a particularly striking example where its immense riches have brought little more than conflict. At the time of the wars of liberation between 1997 and 2004, the armies of at least seven neighbouring countries were present on Congolese territory, the major motivation for most, if not all, of them being to exploit the country's natural resources. A legacy of armed conflict is that countries end up being flooded with automatic weapons and these often end up in the hands of hunters or their patrons. The two Congos, CAR and Chad have been particularly affected by this problem, but the porosity of international borders in this region means that other countries are also affected. The recent evolution of the elephant poaching crisis highlights how the void created by the breakdown in law and order (either in the situation of bad governance or in periods of conflict) has allowed armed militias and terrorist groups to move in and operate with virtual impunity.



3

Ongoing conservation efforts

>3 _ Ongoing conservation efforts

3.1 COMIFAC, CBFP and ECCAS – A regional framework for biodiversity conservation

The *Commission des forêts d'Afrique centrale* (COMIFAC) emerged from a Heads of State Summit on sustainable forest management held in Yaoundé in 1999, and the Congo Basin Forest Partnership (CBFP) was launched at the World Summit on Sustainable Development in Johannesburg in 2004. Together these two structures provide the strategic framework for regional cooperation and donor collaboration in Central Africa. The CBFP (Appendix 1) coordinates programmes and policies of the different partner organisations in order to improve the coherence and effectiveness of their programmes for the sustainable development of the Congo Basin's forest ecosystems within the framework of the COMIFAC strategic plan (Plan de Convergence) which was revised in 2014. Technical support to COMIFAC is provided by a number of partner organisations, including RAPAC (Central African Protected Area Network) and OFAC (Central African Forest Observatory).

Conservation of biological diversity (including PA management) is a key component of COMIFAC's nine-point strategic plan (Box 1). The landscape approach is an integral part of the CBFP's support to COMIFAC. This approach aims to enhance the ecological integrity of PAs and their surroundings by addressing conservation management issues in the multiple-use zones that link them.

Key regional law enforcement and biodiversity conservation-planning initiatives and agreements that have been developed recently include:

- Regional action plan for strengthening national wildlife law implementation for the period 2012-2017 (PAPECALF) developed by COMIFAC[50]. The plan aims to (i) strengthen cooperation and collaboration between supervisory bodies and the legal authorities concerned by wildlife law enforcement at national and regional levels, (ii) intensify investigations and law enforcement operations at key transit points, borders, trans-border zones and local markets, (iii) establish effective deterrents to poaching and the illegal commercial wildlife trade, and ensure that cases are properly prosecuted and the results widely publicised, and (iv) strengthen awareness about the illegal wildlife trade;
- Extreme urgency anti-poaching action plan (PEXULAB)[51], a short-term component of PAPECALF;
- Regional action plan for the conservation of gorillas and chimpanzees in Central Africa[52];
- Eastern DRC great apes conservation action plan 2012-2022[53];
- Bonobo Conservation Strategy 2012-2020[54];
- Central African Elephant Conservation Strategy (2005);
- Tri-national Agreement – a ground breaking agreement signed in 2000 between the governments of Congo, CAR and Cameroon for the joint protection and management of the Tri-national Sangha complex of protected areas. This agreement was a precursor to the area being listed as a World Heritage Site.

The Economic Community of Central African States (ECCAS, CEEAC in French) has become increasingly involved in addressing the issue of wildlife crime because of the damage it does to economies and security in the region. In collaboration with regional technical partners, the CEEAC is playing an important role in developing and implementing strategic responses through its anti-poaching cellule[55], in particular the above-mentioned PEXULAB and PAPECALF. The CEEAC is also the regional structure through which the EU channels its support to *Programme régional de conservation et utilisation rationnelle des écosystèmes forestiers d'Afrique centrale* (ECOFAC)/RAPAC.

(50) Plan d'action sous-régional des pays de l'espace COMIFAC pour le renforcement de l'application des législations nationales sur la faune sauvage (PAPECALF) 2012-2017. www.pfbc-cbfp.org/comifac.html

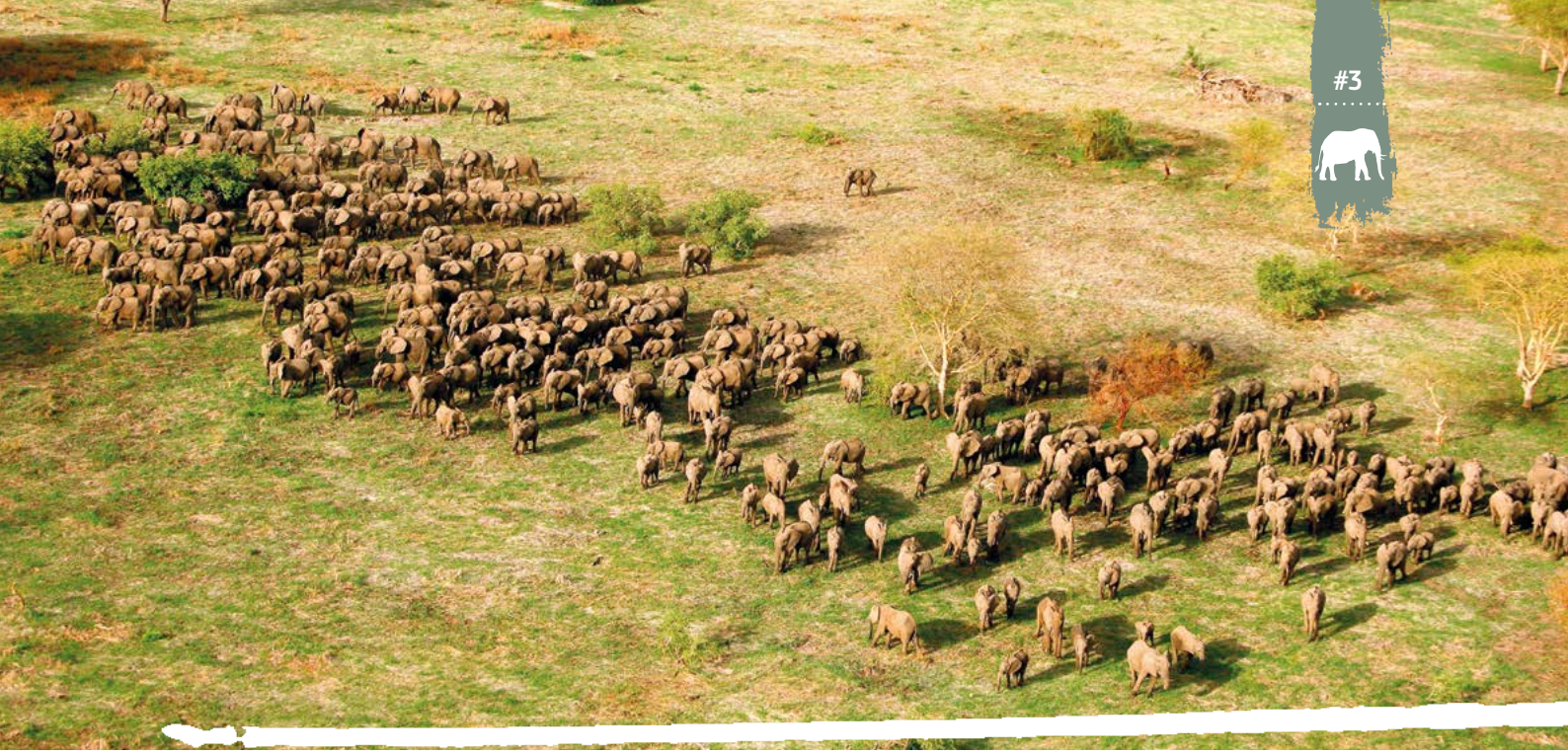
(51) Plan d'extrême urgence de lutte anti-braconnage (PEXULAB): http://pfbc-cbfp.org/actualites/items/LAB-CEEAC.html

(52) Tutin C. et. al. (2005). Plan d'action régional pour la conservation des chimpanzés et des gorilles en Afrique Centrale. Conservation International. Washington, DC.

(53) Maldonado O., C. Aveling, D. Cox, S. Nixon, R. Nishuli, D. Merlo, L. Pintea and E.A. Williamson (2012). Grauer's Gorillas and Chimpanzees in Eastern Democratic Republic of Congo (Kahuzi-Biega, Maiko, Tayna and Itombwe Landscape): Conservation Action Plan 2012-2022, Gland, Switzerland, IUCN/SSC Primate Specialist Group, Ministry of Environment, Nature Conservation & Tourism, Institut Congolais pour la Conservation de la Nature & the Jane Goodall Institute.

(54) IUCN & ICCN (2012). Bonobo (Pan paniscus): Conservation Strategy 2012-2022, Gland, Switzerland, IUCN/SSC Primate Specialist Group & Institut Congolais pour la Conservation de la Nature, 65 pp.

(55) http://www.lab-ceeac.com/



A herd of several hundred elephant in Zakouma National Park, Chad.
Between 2006 and 2008, during a prolonged period of armed conflict, Zakouma's elephant population was decimated by poachers with links to Sudan. The much reduced population is now stabilised thanks to effective protection on the ground made possible by strong political support at the highest level.

Box 1. Key elements of the COMIFAC Convergence Plan 2015-2025

Priority strategic themes

- harmonisation of forestry and fiscal policies;
- management and sustainable development of forest resources;
- conservation and sustainable use of biological diversity;
- combatting climate change and desertification;
- socio-economic development and multi-actor participation.

Cross-cutting strategic themes

- sustainable funding;
- training and capacity building;
- research and development;
- communication, awareness building and education.

3.2 Key funding agencies and conservation partners

Biodiversity conservation in Central Africa is delivered predominantly through international donor agencies, conservation NGOs and other technical partners working in partnership with the national forestry, wildlife and PA authorities. NGOs work with funds provided by donor agencies but also mobilise many sources of private funding. There are very many organisations working in Central Africa and it is not possible to provide a detailed description here of their different interventions.

Over the past two decades, the EU and the USA have been, and continue to be, the most important donors in terms of funds mobilised for the region. Individual European nations are also making significant contributions, particularly Germany and France. Germany's focus is mainly on protected areas while France's has been mainly on the forest sector; Spain supports conservation initiatives in DRC, Congo, Cameroon and Equatorial Guinea; and Norway has recently started contributing, through its International Climate and Forest Initiative. International institutions such as the World Bank (through the Global Environment Fund – GEF), African Development Bank, Food and Agriculture Organisation (FAO), United Nations Education, Science and Culture Organisation (UNESCO) and the United Nations Environment Programme (UNEP) also support conservation efforts in the region. The paragraphs below summarise the interventions of the largest donors in Central Africa. Table 1 (Section 5.1) provides a more complete overview of where the main donors and technical partners are active.

The elusive Okapi, a kind of forest giraffe endemic to the forests of eastern DRC.

European Union

To date, the EU has committed more than EUR 500 million for biodiversity conservation in Africa over the past 28 years. Support to PAs by the EU is either through grants to international or local NGOs who are then responsible for the implementation of activities, or through bilateral cooperation (beneficiary state/EU). Through the regional ECOFAC (Forest Ecosystems in Central Africa) project, launched in 1992 (and still operational) the EU pioneered a regional approach to conservation in Central Africa, which promoted regional collaboration for PA management through coordinated support to specific PAs in each country. The Central African Protected Areas Network (RAPAC) emerged from ECOFAC and is one of the structures through which the EU mobilises its funds for conservation. Other PAs are also supported within the framework of public-private partnerships: Zakouma NP, Odzala NP, Nouabalé-Ndoki NP (planned), Virunga NP, Garamba NP and Akagera NP (see Section 4). Over EUR 203 million are currently proposed for conservation activities focusing on PAs in Central Africa.

The EU also funds cross-cutting projects which include Central African components such as MIKES (Minimising the Illegal Killing of Elephants and other Endangered Species), BIOPAMA (Biodiversity and Protected Areas Management in African, Caribbean and Pacific countries) and OFAC (Central African Forest Observatory). It also disburses its funds through other international agencies, e.g. UNESCO's Central African World Heritage Forest Initiative (CAWHFI), targeting existing or potential Central African World Heritage Sites.

Through the Forest Law Enforcement, Governance and Trade (FLEGT) process, the EU also contributes indirectly to biodiversity conservation by ensuring that timber imported into Europe has been exploited in conformity with national forestry laws.

The EU supports training and capacity building through its support to the Regional Post-graduate Training School of Integrated Management of Tropical Forests and Lands (French acronym ERAIFT) and the University of Kisangani (DRC).

United States of America

The US government delivers its conservation aid to Central Africa through Agence de coopération des États-Unis (USAID) and United States Fish and Wildlife Service (USFWS).

USAID

USAID's CARPE programme (Central African Regional Programme for the Environment) was launched in 1997 and, like ECOFAC, promotes a regional approach to conservation. An accent is placed on the landscape approach with significant resources mobilised in the buffer zones of protected areas in 12 landscapes across Central Africa for land-use planning, community-based natural resource management activities and capacity building of local structures. CARPE partners with international conservation NGOs experienced in the region for the implementation of its activities. Over the past two decades it has mobilised between USD 10 million and USD 15 million p.a.

CARPE III will be rolled out from 2013 to 2018 through two programmes: Central African Forest Ecosystem Conservation (CAFEC) and Strengthening Central African Environmental Management and Policy Support (SCAEMPS). A total of USD 92.3 million is expected to be mobilised for CAFEC – USD 21.6 million of which will come from Norway's International Climate and Forest Initiative (NICFI) over five years. Actions will be concentrated on eight landscapes located in the two Congos. Approximately USD 10 million will be allocated for SCAEMPS over five years to promote national and regional policy and regulatory advances, and to deliver monitoring tools that inform policy, and support forest and biodiversity conservation.

The Great Blue Turaco,
Odzala-Kokoua National Park, Congo.

USFWS

USFWS delivers its aid worldwide through their Wildlife Without Borders programme funded through seven funds enacted by the US Congress [56]. The USFWS is funding projects in all of the Central African states (currently over 30 initiatives are funded). Funds are disbursed through cooperation agreements and grants. Grants may be made to individuals, national agencies, and national and international NGOs through an annual system of calls for proposals.

Over the next five years, USD 5.5 million p.a. have been allocated for cooperation agreements with Gabon's National Park agency (ANPN), DRC's *Institut congolais pour la conservation de la nature* (ICCN) (for Virunga and Lomami NPs), and the TNS World Heritage Site. In addition, grants (from USD 50 000 to USD 250 000) will be available for a variety of other initiatives aimed at reducing the bushmeat trade, strengthening judicial processes for wildlife crime, identifying and managing new PAs, and training wildlife managers [57].

It is anticipated that around USD 5-6 million will be made available annually (subject to Congress approval each year).

Germany

Germany has been a long-term supporter of conservation in Central Africa, most notably its uninterrupted support to DRC's Kahuzi-Biega NP (World Heritage Site) since 1983, and is currently one of the largest donors for conservation in Central Africa. German support for conservation is delivered through the Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by *Deutsche gesellschaft für technische Zusammenarbeit* (GIZ) (technical cooperation) and *Kreditanstalt für Wiederaufbau* (KfW) (financial cooperation). Over EUR 125 million is currently committed or in the pipeline for KfW-implemented initiatives.

German support targets various aspects of the conservation challenges in the region. Forest policy and governance are addressed through support for several processes, including COMIFAC, FLEGT, certified forest exploitation and REDD+ preparation, and DRC institution building. Recognising the shortcomings of national conservation institutions and the need for long-term support for PAs and sustainable sources of funding to avoid the negative impacts of stop-start funding cycles, Germany makes significant investments in PA management (particularly in sites where experienced NGO partners are present) and sustainable funding mechanisms. At least 15 important PAs are receiving, or are about to receive, direct support for management [58] and Germany was one of the first European countries to capitalise trust funds in Central Africa. It was a key player in the development and capitalisation of the TNS Trust Fund (Congo, CAR and Cameroon) and is supporting the development of the Okapi Trust Fund for DRC's PA network [59] Germany was also one of the first countries to use debt swap mechanisms to support conservation activities in Central Africa.

([56]) African Elephant Conservation Fund 1989; Amphibians in Decline Fund 2010; Asian Elephant Conservation Fund 1997; Critically Endangered Animals Fund 2009; Great Apes Conservation Fund 2000; Marine Turtle Conservation Fund 2004; Rhinoceros and Tiger Conservation Fund 1994.

([57]) Training is supported through grants to Garoua Wildlife College and an innovative new approach pioneered with Gabon's ANPN entitled MENTOR-FOREST (Mentoring for environmental training in outreach and resource conservation) to build the capacity of multidisciplinary teams of Central African conservationists to improve forest stewardship and wildlife conservation. http://www.fws.gov/international/signature-initiatives/mentor-forest.html

([58]) DRC: Okapi WR, Kahuzi-Biega NP, Kundelungu NP, Lomami NP, Salonga NP, Ngiri NR; Cameroon: Korup NP, Mt Cameroon NP, Takamanda NP, Banyang-Mbo NP, Lobeke NP, Waza NP, Benoué NP, Bouba-Ndjida NP; and the TNS transfrontier World Heritage Site (Congo, CAR, Cameroon).

([59]) The Okapi Trust Fund is for DRC's protected areas and is initially targeting a capital of EUR 120 million.

France

France's support to conservation and sustainable forest management is delivered through the Agence française de développement (AFD) and the French Global Environment Facility (FFEM).

Over the past 20 years, the AFD has made a particularly strong contribution to achieving sustainable management practices in logging concessions. It has helped place 20 million ha of forest in the Congo Basin under management, 5 million of which are certified under international standards. AFD's biodiversity conservation strategy aims at protecting, restoring, managing and developing ecosystems and fairly sharing the benefits of their development, mainstreaming ecosystem conservation in industrial development policies and strengthening partnerships between French biodiversity players and other players where AFD operates. Achieving sustainable financing for biodiversity protection through foundations (AFD contributes to the TNS Foundation), payments for ecosystem services and biodiversity offsets is also a key element of their strategy. AFD also finances conservation activities through debt conversion mechanisms. A EUR 50 million debt conversion for Gabon is being used to fund conservation and sustainable management of Gabon's forest ecosystems, including implementation of ANPN's anti-poaching activities. AFD's current commitments for biodiversity are around EUR 160 million p.a. with about 75 % going to Sub-Saharan Africa.

The FFEM mobilises about EUR 200 million annually, of which roughly EUR 5 million goes for biodiversity conservation in Africa. In Central Africa, FFEM supports efforts to improve best practices in logging and to integrate sustainable forest management (supported by France for many years) into REDD strategies for Central African countries. Other areas of support include PA management, conservation and sustainable management of wildlife in buffer zones, sustainable village hunting and communal forests. FFEM has also played a role in facilitating the creation of trust funds, including the TNS Fund.

World Bank/GEF

The World Bank supports biodiversity conservation in the DRC through its National Parks Rehabilitation Project (PREPAN) and its Forest and Nature Conservation Project for which around USD 75 million are committed. The objectives of these interventions include support to high priority PAs (Virunga NP, Maiko NP), creation and capitalisation of the Okapi Trust Fund for the DRC PA network and institution building of the national PA authority (ICCN) and its Ministry (MECNT). In southern Cameroon, the World Bank/Global Environment Fund (GEF) will support an initiative for the conservation and sustainable use of the Ngoila-Mintom forest block located in the strategically important zone between the Dja World Heritage site and Boumba-Bek National Park.

United Nations

UNDP/GEF funding supports the TRIDOM project, a strategically important trans-border biodiversity conservation initiative in the Minkébé-Dja-Odzala interzone of Gabon, Cameroon and Congo, which contains nine protected areas and logging and mining concessions (the zone includes the Ngoila-Mintom forest block mentioned above). The initiative aims to officially establish governance structures for conservation and sustainable natural resource use in this tri-national trans-border complex. Activities focus on land-use planning, monitoring of biodiversity and natural resource use, law enforcement and biodiversity conservation systems in logging concessions and community-based natural resource management.

UNEP – UNEP coordinates the Great Apes Survival Partnership (GRASP), a partnership of great ape range states targeting the objectives of the Global Strategy for the Survival of Great Apes.

The **UNESCO** World Heritage Centre mobilises funds from various sources (EU, France, Italy, Belgium) in support of eight of the nine existing World Heritage Sites, as well as for the identification of new potential World Heritage Sites through its two programmes: support to DRC's WHS in Danger and the Central African World Heritage Initiative (CAWHFI). The CAWHFI initiative places a particular focus on transfrontier protected area complexes and engagement with the private sector for biodiversity conservation in interzones connecting the protected areas. UNESCO also launched the ERAIFT regional postgraduate training school in Kinshasa in 1999 and continues to coordinate it.

The **FAO/GEF** has recently launched a USD 10 million regional initiative for the sustainable management of the wildlife and bushmeat sector in the DRC, Gabon, Congo and CAR. Through a series of pilot projects, the initiative aims to overcome the barriers to effective participatory wildlife management. This will involve policy reforms to give communities legal rights to the use of wildlife on their lands, develop tools for the development of community level rules for wildlife management, and strengthen capacities of key stakeholders (community managers, supporting institutions and oversight bodies) for participatory wildlife management.

Non-governmental organisations and foundations

International NGOs (INGOs) and NGOs play a central role in Central African conservation initiatives. For many of the funding agencies they are the preferred structures for delivering their support as they are experienced operators on the ground, often with long-term commitments in the areas where they work, have specialist skills and generally leverage several other sources of private funding (foundations, private donors, etc.) in addition to their own 'core' funding.

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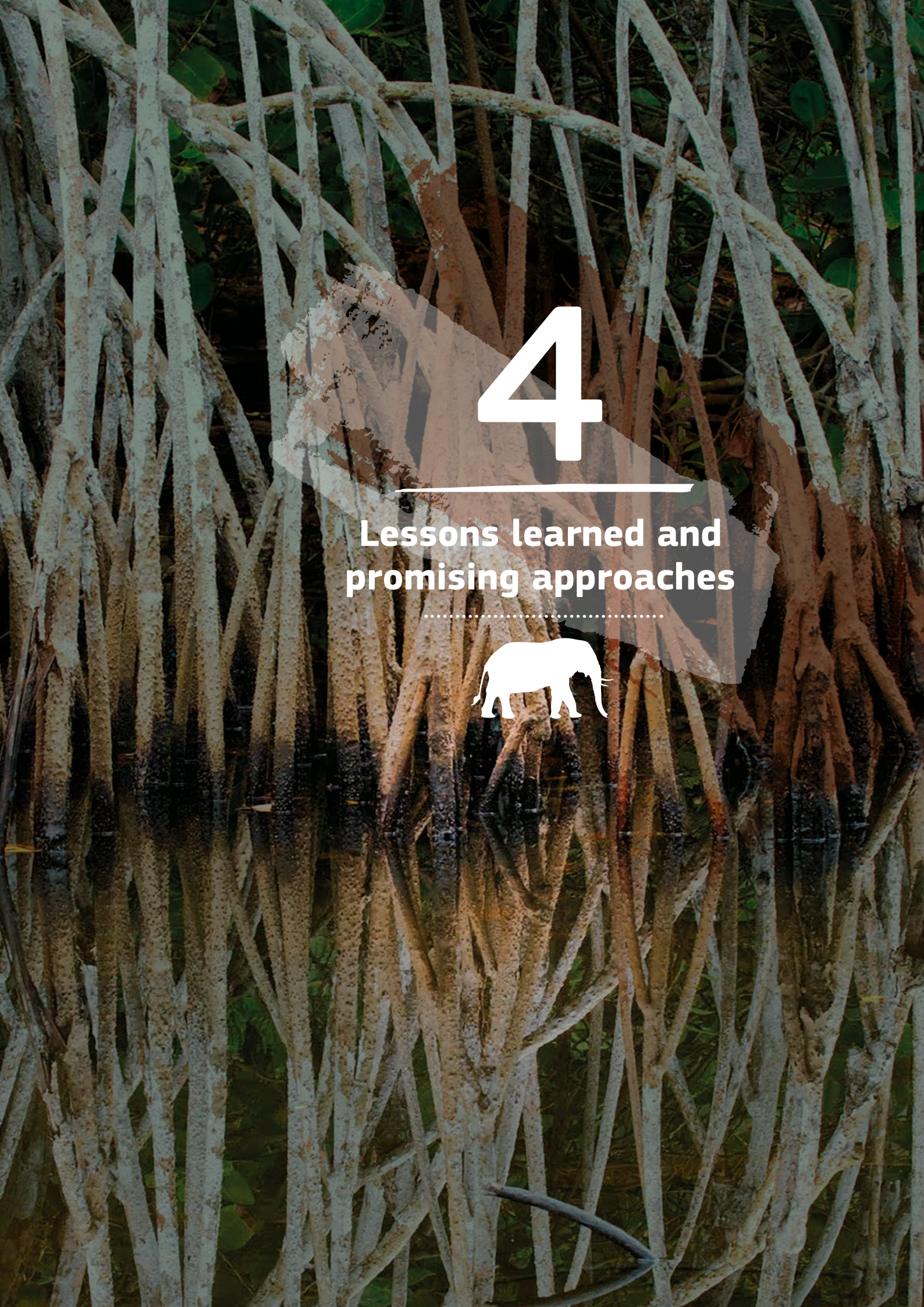
*A lake of lava in Nyiragongo crater, **Virunga National Park, DRC.** This active volcano is a major tourist **attraction.***

An extensive list of these organisations is given in Appendix 2. Some of the biggest players (in terms of geographical scope, numbers of projects, funds mobilised, impact or long-term presence) include African Conservation Fund, African Parks Foundation, African Wildlife Foundation, Dian Fossey Gorilla Fund International, Fauna and Flora International, IUCN, Jane Goodall Institute, Lukuru Foundation, Wildlife Conservation Society, Gilman International Conservation, World Wide Fund for Nature, Zoological Society of London and Zoological Society of Milwaukee.

Important private foundations supporting biodiversity conservation activities include Arcus Foundation, Abraham Foundation, Aspinall Foundation, Berggorilla & Regenwald Direkthilfe, BirdLife International, Howard G. Buffet Foundation, International Fund for Animal Welfare, International Conservation and Education Fund, Liz Claybourne and Art Ortenberg Foundation, MacArthur Foundation, Murry Foundation, Rufford Foundation.

Many universities, international research institutions or campaigning organisations are also active in Central Africa (see Appendix 2) including the Centre for International Forestry Research, Environmental Investigation Agency, French Agricultural Research Centre for International Development, Joint Research Centre, Kyoto University, Max Planck Institute for Evolutionary Anthropology, Rainforest Foundation, World Resources Institute, Royal Museum for Central Africa (Belgium).



4

Lessons learned and promising approaches

>4 _ Lessons learned and promising approaches

4.1 The best remaining assemblages of biodiversity are in protected areas

Almost without exception in Central Africa, the areas with the most intact assemblages of biodiversity are in protected areas (or areas under active management like sport-hunting zones). Furthermore, the PAs where biodiversity is being most effectively protected are those that are receiving support from donor agencies and their technical partners because most national PA agencies are so weak and under-resourced.

4.2 Long-term funding is essential for successful biodiversity conservation

Biodiversity conservation requires sustained long-term support. Stop-start funding cycles must be avoided because wildlife populations can be lost very quickly but take a long time to recover. The EU's sustained support to Zakouma NP is a particularly good example of what uninterrupted long-term funding can do to bring an area back from the brink. In the late 1980s, when the EU first intervened, very little wildlife could be seen. By the mid 1990s, Zakouma NP was teeming with wildlife and was attracting significant numbers of tourists, both local and international. Without Germany's 30-year support to Kahuzi-Biega NP (DRC) it is doubtful that that the park would have survived the prolonged period of war and anarchy. The same applies to the long-term international support for Virunga and Garamba NPs. Long-term conservation investment in PAs helps create conservation 'hubs' that have a better chance of surviving periods of civil war because institutions and governance are stronger.

More streamlined and coordinated financial mechanisms to support high-priority PAs (where several funding agencies/organisations) are present also lowers the administrative burden associated with managing multiple donors and/or relatively short-term contracts and improves the chances of positive conservation outcomes.

4.3 A landscape approach, including TFCAs, enhances biodiversity conservation

While species diversity is high in the moist forests of Central Africa, densities of species are relatively low and so for this reason most of the PAs, except for the very largest and best protected, are probably not large enough to ensure the long-term conservation of the full range of species and biological processes. This has led to a shift in conservation strategies in recent years with an increasing emphasis on a landscape approach to conservation, the idea being to enhance the ecological integrity of PAs and their surroundings by addressing conservation management issues in the multiple-use zones that link them. The strategy is to manage the impact of human activities in such a way that gene flows and ecosystem processes are maintained across the landscape, so that PAs are prevented from becoming isolated islands of biodiversity. Since most ecological landscapes lie astride international boundaries, a regional, transfrontier approach goes hand in glove with the landscape approach [60].

In Central Africa there are several examples where contiguous complexes of PAs straddle international boundaries as transfrontier PAs. In addition to ensuring protection over a larger area (important for wide-ranging species like elephant), the conservation costs are shared between the countries, and they provide refuges (reservoirs) for wildlife in the event of a breakdown of law and order in one of the countries. A good example is the complex of PAs in the Virunga landscape shared between DRC, Uganda and Rwanda. At the beginning of the 1990s, the hippo population of DRC's Virunga NP was over 25 000. Ten years later it was down to 500 individuals through poaching. However there is little danger of local extinction of this species because stability in Uganda ensures that the contiguous Queen Elizabeth NP serves as a reservoir for repopulation. The principle is the same for gorillas and elephants. Inter-state collaboration for the management of transfrontier protected areas also strengthens regional integration and security. Collaboration for the management of this transfrontier complex is achieved through the Greater Virunga Transboundary Collaboration agreement (Chapter 2, Section 3.4.2, Box 16).

([60]) UNESCO (2010). World Heritage in the Congo Basin, 63pp.

Stanley glacier on the Ruwenzori Mountains in Virunga National Park, DRC.
The long term support for Virunga from the EU since the second half of the 80s has been critical to the survival of this exceptionally important ecosystem. Spanning an altitudinal range of over 4 000 m, and covering an area representing only 0.3 % of the surface area of the DRC, Virunga NP is home to over half of DRC's mammal species, and two thirds of its bird species.

4.4 Partnerships with the private sector offer promising models for enhancing biodiversity conservation in Central Africa

Two types of partnership with the private sector have been tested in Central Africa: partnerships for the management of PAs and partnerships with extractive industries in buffer zones of PAs. Both have produced promising results.

Public-private partnerships for PA management

One of the major constraints to effective PA management through classic donor-funded technical assistance projects for PAs is that the technical partners responsible for project implementation do not have a strong enough mandate to take the required actions and make the difficult decisions (such as replacing corrupt or incompetent staff). PPP agreements give the implementing partner a stronger and clearer mandate with greater decisional independence (including powers to hire and fire) and greater administrative and financial flexibility. In effect, the private partner brings a more business-like approach to park management.

The involvement of the private sector partner also acts as an important lever for raising other sources of funding[61]. PPP agreements are particularly pertinent in countries where national capacities for PA management are very weak, although there was initial resistance to this kind of approach[62]. PPP agreements in DRC (Virunga NP, Garamba NP), Congo (Odzala-Koukoua NP), Chad (Zakouma NP) and Rwanda (Akagera NP) are delivering positive conservation results, often in extremely difficult contexts, and others are planned in the region (Salonga NP, Nouabalé-Ndoki NP, Okapi WR). Box 2 below describes the African Parks PPP model for PA management. A summary of the range of legal mechanisms through which the private sector can assist with PA management is given in the Summary document – Synthesis, Section 4.1, Table 3.

([61]) d'Huart J-P. (2013). Formulation d'un programme de partenariat public privé (PPP) dans le domaine de la conservation de la nature. Report to the European Commission.
([62]) APN Annual Report 2012: http://www.african-parks.org/

Box 2. **African Parks – A new model for protected area management**

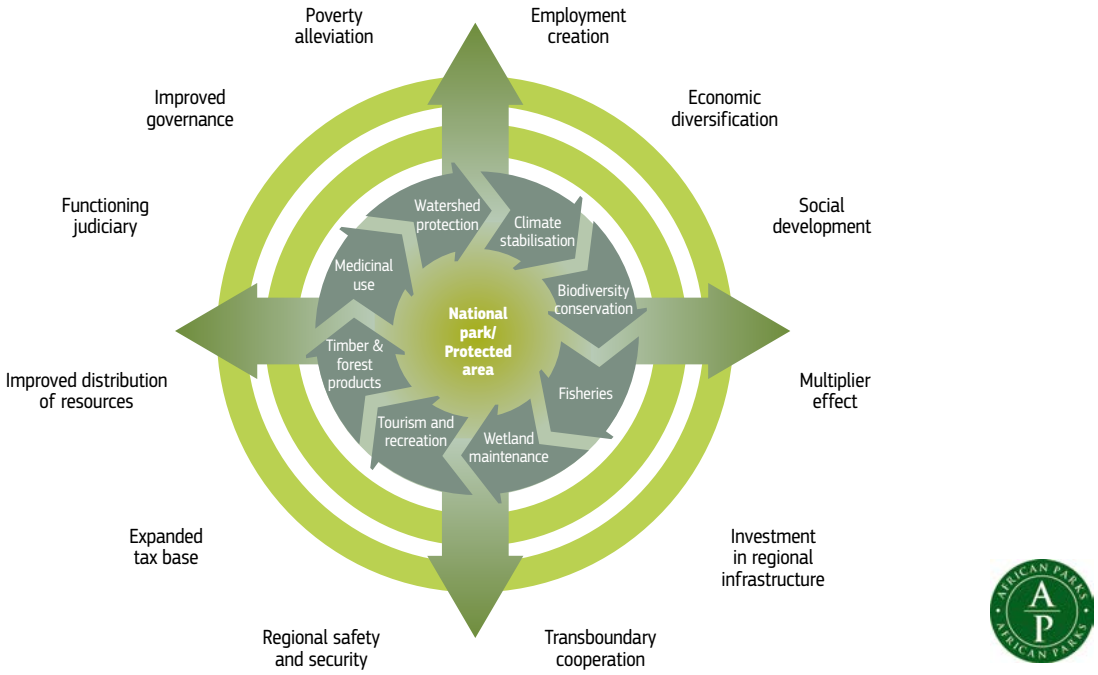
African Parks (AP) is a non-profit organisation that takes on direct responsibility for the rehabilitation and long-term management of national parks in partnership with governments and local communities. By adopting a business approach to conservation, supported by donor funding, African Parks aims to make each park sustainable in the long-term, thereby contributing to the economic development of the region. Fundamental elements necessary for the success of their model are full **accountability** for their work, for which they require a secure long-term management mandate, and sound **governance** structures to ensure full transparency and avoid unwarranted interference. African Parks currently manages eight parks in six countries – Chad, Republic of Congo, DRC, Malawi, Rwanda and Zambia – with a combined area of 5.9 million hectares.

The main **governing body**, African Parks Network (APN), based in Johannesburg, South Africa, is the strategic and decision-making entity which is responsible for the business plan for each park, determining capital investments, operating budgets, standard operating procedures and appointing skilled park management. Each park managed by AP is established as a **separate legal entity**, registered in the host country with its own board of directors. The board is represented by partner institutions, key stakeholders and AP representatives, and is directly accountable to government for the professional management of the park. AP aims to have majority representation at the park board level or to appoint the board chairman.

Four critical partnerships are necessary for an AP project. **Government** must support the AP approach and must be prepared to delegate management responsibilities to AP. **Community** considerations are built in to each project, often through a formal relationship with community structures represented on the park management board. **Donors** are required to support capital investment and annual operating costs until financial sustainability is achieved. **Commercial investors** are sought to develop tourism and other commercial enterprises in order to create a sustainable income base for a park.

A secure long-term mandate is a key to success, with a clear separation of functions between the State, which retains responsibility for legislation, policy and regulatory control, and AP which is responsible for implementation. Having clear day-to-day management control of the park is crucial, as is ensuring that commercial income flows are used to contribute to the park's financial sustainability. In the short-term, donor funding is key, whilst long-term income streams are a combination of donor funding, commercial revenues from tourism and related enterprises, endowment income and payment for ecosystem services.

The long-term aim of AP is to create a conservation-led economy in each region where it operates with the park at its core (diagram below). The multiplier effects in the region in terms of socio-economic development, improved distribution of resources, better governance, and much more are what will build conservation constituencies and hopefully dispel the political indifference that undermines efforts to promote biodiversity conservation and effective protected area management.



Park guards on patrol in Odzala-Kokoua National Park, Republic of Congo.

Private sector partnerships in buffer zones of protected areas

Logging concessions cover, or will soon cover, essentially all of the exploitable Congo Basin forests. While this may seem at first view a disaster scenario, in reality a well-managed logging concession in the periphery of an **actively managed** PA offers better possibilities for conserving the forest and its wildlife than a forest with no form of management regime and no control over how the forest is used. The importance of ensuring 'boots on the ground' within the PA while implementing collaborative agreements with adjacent logging concessions should be emphasised. For much of the eight-year period when Minkébé NP lost between 12 000 and 16 000 elephants (Section 2.1.2), there were active collaborative agreements with adjacent logging concessions, but surveillance within the park was almost non-existent.

Central African forest laws are generally sound and if implemented correctly can have considerable positive impacts for conservation. Concessionaires control access to their concessions and are legally bound to integrate wildlife protection and other conservation measures in their forest management plans. Forest Stewardship Council (FSC)-certified companies are generally keen to collaborate with specialist conservation organisations (Box 3). In logging concessions in Gabon, the way forward is seen as being to undertake Environmental Impact Assessments (EIAs and then to integrate the mitigation measures into the concessionaire's legally binding Environmental and Social Management Plan.

Partnerships with industrial mining companies are relatively new in Central Africa, but given the potentially massive impacts on biodiversity that they will have on the vast pristine TRIDOM transfrontier forest landscape, conservation practitioners are increasingly engaging with them. With the financial resources at their disposal, the political leverage that this gives them, and their need to safeguard their international image, there are clear opportunities to influence what happens to wildlife in their concessions and leverage biodiversity-offset arrangements.

Since almost all forest outside of PAs is (or will soon) be attributed to private operators, conservationists have to engage with them if we are to preserve connectivity between PAs and ecological functions across large tracts of forest.

Finally, as noted throughout this document, conservation NGOs play a very important role in the implementation of conservation activities in Central Africa. However it is important that their roles and mandates should be very clearly defined from the outset so that donors do not end up funding NGOs to implement activities for which they do not have the mandate from the host government.

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*A **Bongo**, the largest forest antelope in Central Africa, in **Odzala**-Kokoua National Park, Republic of Congo.*

Box 3. PROGEPP – A public-private partnership for managing the buffer zone of Nouabalé-Ndoki NP

The PROGEPP (*Projet de gestion de la périphérie du parc national de Nouabalé-Ndoki*) initiative in northern Congo, a collaboration between the Congolese forestry authorities, a logging company (CIB) and WCS in the buffer zone of Nouablé-Ndoki NP, was the first of its kind in Central Africa; variants of this type of collaboration have since been established by WWF in Gabon and Cameroon. Using a five-pronged approach PROGEPP combined law enforcement, the development of alternative activities, education and awareness-raising, and research and monitoring.

Given that the motivations of each partner for entering into this kind of partnership may be very different (logging companies want to improve their image and access to markets and financial resources, NGOs are motivated by gains in conservation, governments pursue socio-economic development), effective collaboration requires formal protocols that clearly define the roles and responsibilities of each partner. Partnerships based on a shared vision are more enduring than those of convenience, and all partners must be actively involved in the implementation of conservation actions on the ground. Trust, respect and transparency between partners help to overcome the inevitable challenges to the partnership. Finally the combined expertise and resources of the three partners allows conservation to be conducted at much larger scales than is possible when working only in protected areas. Conservation actions in logging concessions are most successful when communities are integrated early into the land use planning process and when the access rights of indigenous people to land and resources are recognised and guaranteed.

Successful conservation actions that were developed by PROGEPP include:

- application of strict internal company regulations concerning hunting and the transport of bushmeat;
- mobilisation of a law-enforcement guard force funded by the logging company but supervised by WCS and the government;
- management of hunting zones for local communities and logging company personnel;
- importation of domestic meat by the logging company for sale in the logging camps.

Small-scale husbandry initiatives had less long-term success.

Source: J. Poulsen (2009). Building private-sector partnerships for conservation: Lessons learned from the collaboration between WCS, CIB and the Republic of Congo in forestry concessions, USAID/WCS, 56pp.

Over 130 guards have lost their lives in Virunga NP since the start of the Congo wars.

4.5 Political will at the highest level is essential for effective biodiversity conservation

In most of the Central African countries there is a serious disconnect between the political discourse regarding natural resource conservation, and the resources that governments mobilise to conserve them. In most countries, PAs remain one of the lowest priorities in terms of national budgets. Most PA authorities are seriously underfunded and personnel are expected to work for salaries (if and when they are paid) that are well below what could be considered a decent living wage. Furthermore, little consideration is given to the fact that the work is arduous and can be particularly dangerous (Virunga NP has lost over 140 park guards in the past 20 years). National budgets often make no provision for capital investment, and corruption ensures that even the meagre budgets allocated are misappropriated. Finally, there are no proper career advancement structures for biodiversity conservation personnel, very little provision is made for training and retraining, and the high, and often arbitrary, turnover of key staff disrupts conservation initiatives. Too often biodiversity is considered to the 'affair of westerners' and the donor community is expected to pay for it. As a result, in several important PAs that have received overseas support since the early 1990s, conservation partners are still paying top-up salaries and/or bonuses to staff and covering almost all capital investment costs.

4.6 Creating conservation constituencies in forest environments has proved challenging

Creating a constituency for conservation in local communities around PAs is a key element of PA management but has proved to be one of the most challenging aspects for conservation projects in Central Africa. Various approaches are used: outreach programmes for agriculture, health centres, clean water sources, small hydroelectric turbines[63], community-run tourism enterprises, environmental education, etc., all with varying levels of success.

In forested regions, so called 'community conservation' initiatives have had limited success for various reasons. Local populations living in these areas often do not have secure land tenure, and therefore control over the use of the forest resources. Local traditional land tenure is superimposed with State land tenure, but the State is generally incapable of effectively controlling how forest resources are used and by whom. This frequently leads to a situation of 'open access' to resources, resulting in overexploitation, especially when people with economic power (e.g. salaried workers in extractive industries), or better organisational capacities[64], migrate to an area.

(63) http://virunga.org/archives/virungas-first-hydroelectric-plant-online/

(64) The well organised and economically savvy Banande highlanders from the Albertine Rift migrating westwards to the Ituri forest in search of land have been the cause of a rapid acceleration of natural resource depletion (forest clearance for agriculture, artisanal timber extraction, gold mining) over the past two decades (ref: Réserve de faune à okapis – RFO – Management Plan).

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In June 2012 six tons of confiscated ivory were burnt in Libreville, Gabon.

Box 4. **The importance of high-level political support for conservation**

Gabon is setting the example of how strong political support in favour of biodiversity makes a significant difference to conservation outcomes. At the beginning of the 2000s, Gabon did not have a single national park. In 2002, a network of 13 national parks, designed by a team of experienced conservation scientists and encompassing almost all of the important biomes in the country, was declared by the President and enacted in law in 2007. Where there was conflict between proposed national park boundaries and logging permits, tough decisions were made and solutions found. In order to create Lopé National Park, a logging permit located inside the proposed national park boundary was cancelled and an equivalent area elsewhere was attributed to the concessionaire. A protected area agency, Agence nationale des parcs nationaux, (ANPN) was established, and its government budget has increased significantly and steadily since it was created. As the Agency develops the absorptive capacities to use these funds effectively, the inevitable teething problems are being addressed and progress is being made.

ANPN receives strong political support from the highest level for implementation of the government's flagship policies of 'Green Gabon' and 'Blue Gabon', which target the sustainable development of the terrestrial and marine environments. In just one year the EU fishing agreements were completely renegotiated, bogus fishing permits cancelled (involving the politically risky decision of closing down the fisheries industry for a month), no-fishing zones established and enforced, and a large extension to the network of marine protected areas proposed, encompassing 23% of Gabon's territorial waters. Illegally operating trawlers are being systematically seized and heavy fines imposed. Gabonese vessels are now equipped with tracking devices and followed by ANPN and the Fisheries Ministry, and fish catches are monitored and reliable statistics are starting to be compiled for the first time ever.

At the regional level, the president, together with the president of Chad, are showing strong leadership in the fight to stem the ivory poaching crisis. For example, a deal was brokered at presidential level to halt the killing of elephants in the famous Bayanga elephant bai in CAR by rebel forces loyal to the April 2013 putchists, and in 2012 Gabon publicly burned its entire five-ton stock of seized ivory (picture above).

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The chief of Obenge village, Oriental Province, DRC, expresses her point of view during a public meeting. An eight year consultation process with local communities lead to the creation of the Lomami National Park, DRC, and agreements on sustainable livelihood activities in the buffer zone.

Forest communities are also generally very poor, often poorly educated and are characterised by an individualistic approach to the use of forest resources. Indeed the concept of 'community' in forest-living peoples is misleading since the only really strong social unit is the family, and villages are simply stronger or weaker associations of families. Mobilising forest people to work together to adopt sustainable methods of natural resource use for the benefit of all is therefore complex, time-consuming and costly, and requires expertise from many different fields (biology, social science, agriculture, communications, etc.). Furthermore, community conservation models from Southern Africa have little relevance in the moist forest milieu. Much effort has been spent by conservation projects trying to develop 'alternative activities' to unsustainable resource use but there have been many more failures than successes. For example, attempts to introduce animal husbandry or fish farming, as alternatives to bushmeat, have rarely had lasting success because (a) there is no cultural tradition for these activities, and (b) hunting will remain the preferred source of meat protein as long as there remain populations, even very depleted ones, of wild animals in the forest. Essentially people will wait until there are no longer any animals before considering other meat sources, by which time it is almost too late.

4.7 Conservation projects should not be expected to resolve all the socio-economic problems of local communities

Following on from the above point, the 'conservation-linked-to-development' paradigm that dominates modern biodiversity conservation thinking has resulted too often in conservation projects having to address all the socio-economic problems of populations living around PAs, despite rarely having either the financial resources or the expertise to do this. Furthermore, it still remains to be clearly demonstrated that improving livelihoods of local communities inevitably leads to less pressure on natural resources. On the contrary, as livelihoods improve, local communities will often exert even greater pressures on biodiversity[65] (but see following point). While improving livelihoods and alleviating poverty will always be priority components of development aid, it is essential that conservation projects should be designed in such a way that they are accompanied by properly funded and resourced socio-economic development initiatives, with objectives compatible with wildlife conservation.

([65]) As forest people move into a monetary economy, their increased purchasing power enables them to acquire cartridges and wire for snares. There are many examples where salaried activities in the forest environment (logging concessions, infrastructure projects, even conservation projects) have led to increased hunting pressure.

Tourists watching and photographing mountain gorillas in Volcanoes National Park, Rwanda. Gorilla viewing is virtually the only example of non-consumptive tourism in forested Central Africa that generates significant revenues for protected areas and national economies.

4.8 The most successful community conservation initiative are linked to consumptive and non-consumptive tourism

Community conservation success stories are relatively rare in forested Central Africa. Consumptive and non-consumptive tourism (sport hunting and eco-tourism) have so far provided the best examples as they generate tangible spin-offs for local communities (employment, revenue sharing, a stake in the management of the resource). Mountain gorilla tourism generates millions of dollars annually and as a result is well supported, both at the community and national levels. Indeed mountain gorillas are a central element of Rwanda's international marketing image. Despite being located in an area of prolonged conflict, the warring parties have always understood the economic importance of gorillas and have ensured their protection[66]. While not generating such spectacular revenues, lowland gorilla tourism in CAR and Congo has also proved successful, particularly when it can be combined with wildlife viewing in forest clearings (*bais*), which provide unique opportunities for observing the large mammal fauna of the Central African forests. Constraints to lowland forest eco-tourism are the difficulties of access to these remote areas, the absence of an enabling environment for eco-tourism (serious local operators, adequate infrastructures, visa difficulties) and the challenging conditions of the lowland forest environment for tourists.

Safari sport hunting has been successful in preserving wildlife when safari operators collaborate with local communities to manage the resource and share the benefits. Surprisingly (given the history of conflict in the region) the best examples come from the savannah-woodland area of CAR. The European Commission-funded *Zones cynégétiques villageoises* (village safari hunting zones) in northern CAR was very successful[67] until the zone was overwhelmed by pastoralists and armed militia from Sudan and Chad. The key factors to its success were the presence of healthy populations of flagship trophy species for hunters (notably giant eland and bongo), the active participation of local communities in the protection and exploitation of the zone through collaboration agreements with the safari hunting operators, sharing of revenues and other spin-offs (e.g. meat) and a low human population density, enabling the benefits to be felt by everyone. In 2010, an aerial survey of the PAs and surrounding hunting zones showed that all the remaining wildlife was concentrated in the hunting zones[68]. A similar situation is currently being played out in Chinko[69] (eastern CAR) where a dedicated group of safari operators are successfully protecting a large area of Sudanian savannah woodlands containing surprisingly intact assemblages (though low densities) of wildlife, despite the chaos and conflict that has characterised CAR for the past two decades.

A promising model of community conservation is being tested by the African Wildlife Foundation (AWF) in the Maringa-Lopori-Wamba landscape in the bonobo range. Here the conservation project intervenes to improve farmers' access to markets for their agricultural products, as a livelihood alternative to unsustainable farming practices and commercial bushmeat hunting. The intervention involved providing local communities with a boat to transport crops from the forest landscape to DRC's main markets in Kinshasa and Mbandaka, as well as new methods of sustainable farming. The barge's round-trip journey takes approximately two months and transports up to 400 tons of product – crops travelling one way, humanitarian aid the other. The Congo Shipping Project has allowed farmers to sell produce for profit, increasing the overall income of their community. It is anticipated that farmers will have less incentive to engage in the commercial bushmeat trade and that farming practices will enable fallow periods to be lengthened, thus reducing the rate of forest degradation[70].

(66) Rebel forces occupying the gorilla habitat have even financed their activities by organising gorilla tourism.
(67) http://www.rapac.org/index.php?option=com_docman&task=cat_view&gid=85&Itemid=100206
(68) Bouché P. (2010). Inventaire aérien 2010 des grands mammifères dans le nord de la République Centrafricaine. ECOFAC.
(69) http://www.chinkoproject.com/#page-introduction
(70) http://www.awf.org/projects/congo-shipping-project

Gorilla heads, leopard and python skins seized by Gabonese government officials with the help of Conservation Justice, an NGO member of the EAGLE network of wildlife law enforcement. Illegal trade in protected species is widespread in Central Africa.

4.9 Wildlife law enforcement outcomes improve significantly if the entire judicial process is closely monitored

The EAGLE (Eco Activists for Governance and Law Enforcement) network of wildlife law enforcement NGOs[71] are achieving remarkable success with their approach to investigations, law enforcement operations, legal assistance for prosecution of cases and media coverage of the results. These organisations work closely with all the national law enforcement organisations (forest and wildlife, police, gendarmerie, customs, justice department, national representatives of INTERPOL) to detect and prosecute wildlife crime. A network of informers provides evidence, and when arrests are made, lawyers are on hand to make sure that the correct legal procedures are strictly adhered to (arrest protocol, witness statements, trial, etc.) in order to ensure successful prosecution. Cases are given wide publicity in the local and international media. High-level political support is important, particularly when high-level persons are prosecuted for wildlife crimes[72]. The wide publicity contributes to improving wildlife governance by raising understanding of the laws and serving as a warning to potential offenders.

4.10 Law enforcement alone is not a long-term solution to the bushmeat crisis

There are no examples in Central Africa where a comprehensive solution for tackling the bushmeat trade has been developed and tested. A review of experiences of livelihood alternatives for the unsustainable use of bushmeat commissioned by the Convention on Biological Diversity's (CBD) Bushmeat Liaison Group highlights the paucity of successful examples from Central Africa[73]. While interdiction and enforcement-only policies have been widely used, they are not the complete answer in the short and medium term. However, satisfactorily regulating and managing the entire supply chain, from sustainable hunting in the forest to the sale of disease-free meat in urban markets, is also highly problematic given the problems of governance in Central Africa. Bushmeat is a food security issue as much as a biodiversity issue[74] in rural environments and needs to be tackled from this perspective. By contrast, in urban areas bushmeat is more of a 'luxury' item so actions should focus on reducing the supply to urban markets by exerting pressure on the supply routes (roads, rivers, railways, airlines) and encouraging a shift in feeding habits away from bushmeat consumption.

(71) The EAGLE network comprises: LAGA (Cameroon); CJ (Gabon); PALF (Congo Brazzaville); RALF (CAR); GALF (Guinea Conakry); TALF (Togo).
(72) In Gabon, the Prefect (Senior Divisional Officer) of Mitzig, was successfully imprisoned for 12 months for wildlife crime and abuse of power. http://www.conservation-justice.org/CJ/?p=726&lang=en
(73) Secretariat of the Convention on Biological Diversity (2011). Livelihood alternatives for the unsustainable use of bushmeat. Report prepared for the CBD Bushmeat Liaison Group, *Technical* Series No 60, Montreal, SCBD, 46 pp.
(74) Nasi R., A. Taber and N. Van Vliet (2011). Empty forest, empty stomachs? Bushmeat and livelihoods in Congo and the Amazon basin. *International Forestry Review*, Vol. 13.

5

Indicative conservation actions

>5 _ Indicative conservation actions

5.1 *In situ* long-term support to protected areas in Key Landscapes for Conservation

Key Landscapes for Conservation (KLCs) are areas recognised to be of global wildlife importance with intact ecosystems capable of sustaining wildlife populations in the face of increasing isolation from other similar areas. The strategic approach must be first and foremost to concentrate efforts on helping the national PA agencies to secure the protection of priority PAs and their immediate buffer zones in KLCs. If wildlife cannot be protected here there is little chance that it can be preserved elsewhere, given the pressures on wildlife and the speed with which wildlife populations are being impoverished across the Central African region. A pragmatic and realistic approach is required that recognises that we cannot protect wildlife everywhere. Where it is feasible, efforts should be made to ensure connectivity between PAs, but it should be understood that this will not be possible everywhere. As a general principle, the areas where conservation efforts are likely to have the most success are those that are large and intact; in other words they have the full complement of species, in the 'right' proportions, and where the population structure of the longest-lived components (the trees) has not been too badly compromised by human activities, such as farming and logging. Areas where there are clear opportunities for developing effective collaboration with communities and private-sector operators in the buffer zones linking the PAs (FSC-certified logging concessions, mining companies) are also considered to be of particular importance. However, some PAs containing exceptional species richness and/or endemism, particularly in the highly threatened Afromontane habitats, are already so isolated that efforts will inevitably be focused almost entirely on protecting the PA.

The priority KLCs are those that meet as many of the following criteria as possible:

- recognised as a World Heritage Site for its global (scientific) importance;
- protects a functioning ecosystem with viable wildlife populations in the face of increasing isolation caused by an expanding rural population;
- established as a transfrontier conservation area or in the process of formal development as a TFCA;
- protects the most important populations of free-ranging elephants in the region;
- protects a key population (as rated by the appropriate IUCN SSC Specialist Group) of one or more of the other iconic Central African wildlife species (gorilla, chimpanzee, bonobo, okapi, forest elephant, endemic small primates, endemic ungulates, etc.) which are categorised as endangered or vulnerable according to IUCN Red List Criteria;
- protects a globally important dry-season concentration area for wildlife populations together with their wet-season dispersal zones;
- plays an important role in protecting important wintering grounds for Palearctic bird migrants (e.g. wetlands recognised as Important Bird and Biodiversity Areas – IBA);
- protects a regionally important hotspot of endemism and diversity;
- contains wildlife landscapes of exceptional scenic interest;
- protects a watershed that human populations are highly dependent on;
- plays a vital role in sustaining a key natural resource, such as a fishery or source of freshwater, that has critical national importance through public, commercial, recreational, artisanal or subsistence use.

In the moist forest zone, certain KLCs span international boundaries. These TFCAs provide good opportunities for economies of scale, sharing of conservation costs, regional cooperation for conservation and 'buffering' in time of civil unrest in one or other of the national components of the ecosystem (see also Section 4.3). Three such TFCAs stand out in the Central African moist forest zone: the **Greater Virunga TFCA** (DRC, Uganda, Rwanda), the **TRIDOM-TNS TFCA** (Cameroon, Gabon, Congo, CAR), and the **Gamba/Conkouati TFCA** (Gabon, Congo) (see Section 5.1.1. below for more detailed information). Between them they account for roughly one-third of the Central African region's category I-IV protected areas and almost certainly protect the majority of Central Africa's floral and faunal diversity. They also include most of the priority areas identified in the Central African Chimpanzee and Gorilla Action Plan and the Eastern DRC Great Apes Action Plan, and cover the majority of Africa's remaining forest elephants, of which Gabon alone probably holds 50%[75].

([75]) Maisels F., S. Strindberg, S. Blake, G. Wittemyer, J. Hart et al. (2013). Devastating Decline of Forest Elephants in Central Africa, *PLoS ONE* 8(3): e59469. doi:10.1371/journal.pone.0059469.

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An adult male mountain gorilla Volcanoes NP, Rwanda.

In the drier ecosystems to the north of the moist forest block, spanning the forest-savannah transition zone and the east Sudanian savannahs of CAR, northern DRC, southern South Sudan and southern Chad, there are a number of important sites harbouring wildlife characteristics of these zones. These include Zemongo/Chinko complex in eastern CAR, the Garamba NP/Bili-Uere complex in northern DRC and the Southern NP in South Sudan. However much of this area suffers from high levels of insecurity and conflict and is intensively used for wildlife trafficking. In these areas it is not only very difficult to work effectively within the existing PAs but opportunities for developing concrete conservation activities in the areas linking them are currently limited. However, although wildlife populations have been seriously depleted over much of this area, it is considered important not to abandon it since, given the very low human density and the vastness of the area, there is potential for recovery if security and law and order can be restored. The Wildlife Conservation Society (WCS) working in this area has had success developing what they refer to as Conservation Security Partnerships through which wildlife law enforcement is linked with efforts to address security threats to local people (Box 5).

In addition to these very large KLCs, a number of individual sites containing a single PA and its buffer zone should be targeted for support. Priority should be given to existing **World Heritage Sites** which, by virtue of their WHS status, are internationally recognised as being of global importance for nature conservation, and to sites which are on the countries' Tentative Lists for WHS status or which protect specific globally important features not found elsewhere.

In countries open to public-private partnerships (PPPs) for the management of their PAs, this approach should be promoted (DRC, Chad, Congo). Elsewhere, where the institutional context is favourable (such as in Gabon), support to the PA agency through collaborative agreements should be considered. This could include the secondment of qualified staff (expatriate or otherwise) to the national organisations with a dual management and training role.

Park rangers on patrol in Zakouma National Park, Chad.
Protected areas in the zone extending from northern Cameroon, through southern Chad, northern CAR, South Sudan and northern DRC have had to battle with heavily armed militia and rebels, often from Sudan, making raids with impunity into these countries to poach elephant and rhino. Their presence creates great insecurity for local communities.

Box 5. Conservation Security Partnerships – A concept for linking wildlife conservation efforts with efforts to address security threats to local people

The Wildlife Conservation Society (WCS), working in the South Sudan/CAR/north DRC transfrontier area, have developed the concept of Conservation Security Partnerships (CSPs) for operating in zones of high wildlife value where insecurity and lawlessness is an issue. It is based on a similar approach developed by the Northern Rangelands Trust of northern Kenya, and aims to embrace explicit conflict mitigation and security enhancement objectives together with wildlife protection and protected area management.

At the regional level, the CSP involves partnerships between wildlife law enforcement forces, police, military, international security organisations, for example United States Africa Command (AFRICOM), and local community leaders, which link wildlife law enforcement efforts to protect and secure wildlife with efforts to address security threats to local people (cattle raiding, local militia/rebels) as well as broader security threats to state and regional stability. For example, in Southern NP in South Sudan, park rangers are linked in with AFRICOM, Sudan People's Liberation Army (SPLA) and Uganda People's Defence Force (UPDF), as well as local community scouts, to eliminate LRA threats and contribute to elephant protection and anti-trafficking.

At the local level, Community-based Conservation Security Partnerships (CBCSP) involve local communities directly in monitoring illegal activities, intelligence gathering, first alert systems, joint patrolling with wildlife forces and inter-tribal peace processes, by using common security and wildlife conservation concerns as a neutral common ground.

The support for PA management should place particular emphasis on:

Strengthening anti-poaching and general law-enforcement activities:

- Equipment (and, importantly, mechanisms for proper management of the equipment) and law enforcement training, including paramilitary training, will be major components at many sites. Where feasible and appropriate, specialist anti-poaching/surveillance organisations should be involved[76].
- Establishing law-enforcement monitoring tools (Spatial Monitoring and Reporting Tool – SMART, CyberTracker[77] or others, Box 6) and protected area management effectiveness monitoring tools as standard features of park management procedures.
- Mainstreaming the Last Great Ape Alliance (LAGA) approach (investigations, operations, legal assistance, media coverage) into the PA management operations (see Section 4.9 above).

Ensuring that there are sufficient resources for regular monitoring of key conservation targets, particularly great apes (see the different great ape Conservation Action Plans[78]) and forest elephants. In addition to data on the target species, it should be remembered that these surveys generate a great deal of other essential information for managers, notably human activities. Over the past 20 years, much work has been done to refine the methodologies for large mammal survey methods in the moist forest environment and standard methodologies are now being used widely across the region, enabling more reliable comparisons to be made. However these surveys require considerable resources and until now have not been conducted with sufficient frequency. For forest elephants for example, in addition to the official Central African MIKE sites, a number of other important sites require urgent surveys. These are Lobéké, Nki, Mbam and Djerem NPs and Ngoila-Mintom zone (Cameroon); Conkouati and Ntokou-Pikounda NPs (Congo), Moukalaba-Doudou,Wonga-Wongue, Loango, Birougou, Mwagne, Ivindo, Waka and Monts de Cristal NPs (Gabon).

Aerial monitoring and surveys is a very cost-effective tool for which sufficient resources should be made available. While its usefulness over the open savannah ecosystems is self-evident, aerial monitoring over the moist forest ecosystem has also proved highly effective, particularly for monitoring the use of the ecologically important forest clearings (by humans and animals), and also for monitoring mining and logging activities (new roads and tracks, etc.). This should be an integral part of monitoring activities.

Training of field staff (wardens, assistant wardens, monitoring officers, community outreach officers): This is in addition to the specific anti-poaching training referred to above. This should include on-the-job training as well as formal training in specialised regional or international institutes (see also Section 5.3).

Box 6. Spatial Monitoring and Reporting Tool – SMART

In order to strengthen the effectiveness of monitoring and patrolling, a global consortium of NGOs and conservation agencies (WCS, WWF, Zoological Society of London – ZSL, Frankfurt Zoological Society, Convention for the International Trade in Endangered Species (CITES)-MIKE and North Carolina Zoo) have developed the Spatial Monitoring and Reporting Tool (SMART; www.smartconservationtools.org). SMART harnesses ranger-collected data on threats and performance by applying new technologies to local needs and capacities through an easy-to-use software tool, and a suite of best practices for patrol monitoring and management. At the local level, SMART can support anti-poaching by enabling identification of poaching hotspots, evaluation of ranger performance, and more efficient targeting of enforcement efforts; at the national level, the information can strengthen institutional communication channels to better allocate financial and human resources to improve anti-poaching efforts; and globally, the information provides standardised, reliable, and accountable measures of poaching and performance to prioritise funding streams and encourage better governance.

SMART is being implemented in more than 100 protected areas worldwide through technical support provided by SMART partners in collaboration with host government agencies. In Africa, SMART is being used in protected areas in 14 countries, with national-level adoption of the system already secured in Gabon and underway in Uganda, Kenya and Democratic Republic of Congo. The SMART Partnership is also engaged with several global institutions and conventions in joint efforts, such as CITES-MIKE and the World Heritage Centre. Through these and other multi-lateral and international mechanisms, SMART has the potential to become the global standard for improved law enforcement monitoring (LEM) across protected areas.

(76) http://maisha-consulting.com/
(77) http://www.cybertracker.org
(78) http://www.primate-sg.org/action_plans/

Community outreach activities in Lomami National Park, DRC, using locally produced and disseminated videos.

Community outreach activities to build conservation constituencies for the parks that are relevant to the particular contexts of the sites and which are practical and achievable. Outreach programmes developed by the park must not attempt to resolve all the socio-economic ills of the neighbouring populations. That task should be assigned to specialist organisations with appropriate budgets, and the objectives of the interventions must be compatible with the conservation objectives of the park, and preferably run in parallel with support to the PA. Addressing the issue of population growth, through strategic partnerships between development and conservation organisations to promote family planning, will be crucially important. Awareness building and effective communication between stakeholders will be an integral part of outreach activities. The International Conservation and Education Fund (INCEF)[79] approach is considered particularly effective for awareness-raising and dissemination of information in local communities. INCEF focuses on locally produced and disseminated videos as an educational tool to foster improvement of the health and well-being of human and wildlife populations. It does this by building the capacities of local media professionals to produce quality films in local languages, and building capacities among local education teams to disseminate the videos and measure their impacts.

5.1.1 Transfrontier Conservation Areas (TFCAs)

Brief descriptions of important KLCs spanning international boundaries as TFCAs are given below.

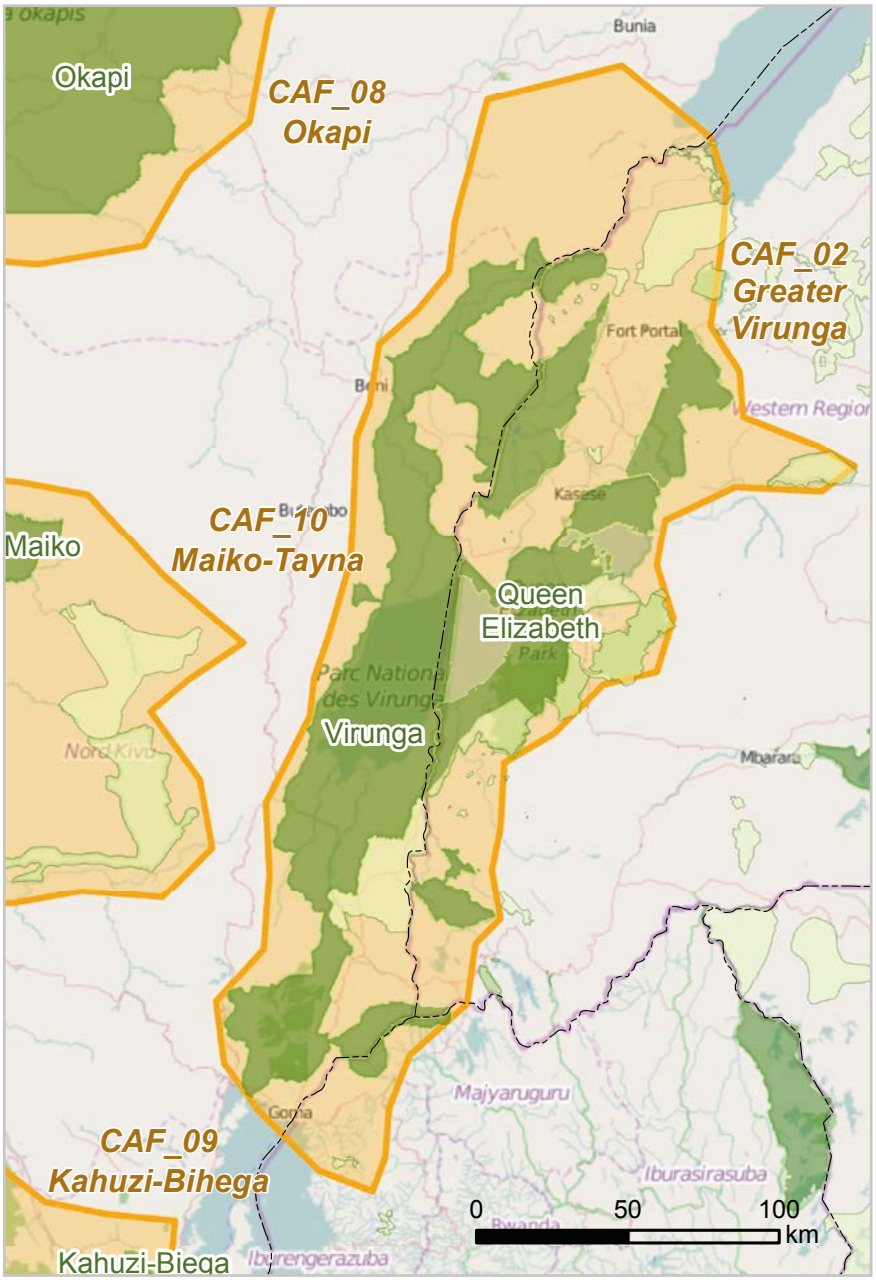
Greater Virunga TFCA

This complex encompasses 11 protected areas in DRC (Virunga NP), Rwanda (Volcans NP) and Uganda (Queen Elizabeth NP, Mgahinga Gorilla NP; Bwindi NP, Semiliki NP, Ruwenzori NP, Kibale NP, Kasyoha-Kitomi FR, Kalinzu-Maramagambo FR, Kyumbura WR). Covering about 12 860 km^2, and with an altitudinal range of 600 to 5 100 m, this area protects the world's remaining 800 mountain gorillas, as well as a significant proportion of the Albertine Rift endemics. It is considered one of the most species-rich regions on earth[80] and is undoubtedly one of the most spectacular landscapes in Central Africa. It is also the only area in Central Africa where very substantial tourism revenue is guaranteed (gorilla, chimpanzee, active volcanoes, Ruwenzoris, savannah fauna). Mountain gorilla tourism generates millions of euros annually for the national economies of the countries involved and enhances their international standing. Indeed, the safeguarding of the mountain gorilla population was one of the few issues over which the three countries, variously in conflict with each other over the past 20 years, were able to agree. The Greater Virunga Transboundary Collaboration, with its Executive Secretariat based in Kigali, Rwanda, is a mechanism established by the three countries for strategic, collaborative management of the Greater Virunga landscape. The gorilla population has increased steadily since the late 1970s. Tourism revenue is guaranteed to increase so long as the mountain gorilla population remains protected. Gorilla tourism is also one of the few examples from Central Africa where local communities benefit clearly from the presence of the park (and most recognise the fact that they do – an important nuance).

(79) http://www.incef.org/

(80) Plumptre A.J., M. Behangana, T. Davenport, C. Kahindo, R. Kityo, E. Ndomba, R. Ssegawa, P. Eilu, G. Nkuutu and I. Owiunji (2003). The Biodiversity of the Albertine Rift, *Albertine Rift Technical Reports* No 3.

Figure 3. The Greater Virunga TFCA



Main protected areas (IUCN cat. I to IV)

Other protected areas (IUCN cat. V and VI)

KLCs

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Rapids on the Dja River in Nki National Park, Cameroon. If plans for a hydroelectric dam materialize this important area for forest elephant and great apes will be lost.

Greater TRIDOM-TNS TFCA

This TFCA covers a very large area of essentially contiguous moist forest spanning the borders of three countries (Cameroon, Gabon and Congo). It includes two Central African landscapes known as TRIDOM (Tri-national Dja-Odzala-Minkébé) and TNS (Tri-national Sangha) but is also extended to include Lopé NP WHS and Lac Tele Community Reserve, since the habitat linking all these PAs is almost contiguous and much of it is under concession to the logging and mining industries.

It covers 15 protected areas in Gabon (Ivindo NP, Mwagne NP, Minkébé NP, Lopé-Okanda WHS), Cameroon (Dja WR WHS, Nki NP, Boumba Bek NP, Lac Lobeke NP, Kom NP), Congo (Odzala NP, Nouabalé-Ndoki NP, Ntokou-Pikounda NP, Lac Tele CR) and CAR (Dzanga-Ndoki NP, Dzanga RS). The TNS part of this KLC differs from other PAs in this landscape in that it is a transfrontier World Heritage Site (the first in the world) composed of four contiguous protected areas managed within the framework of a tri-national agreement[81] between the governments of CAR, Cameroon and Congo, and funded through its own Trust Fund (see below). Lopé-Okanda is both a natural and cultural World Heritage Site.

This vast area of over 250 000 km² contains the majority of Central Africa's forest elephants, lowland gorillas and chimpanzees, as well a wide cross-section of the Congo Basin fauna. Floristically, the PAs together protect a substantial proportion of the Congo Basin flora[82]. Almost all the forest in between the PAs is, or soon will be, under the management control of extractive industries (logging and mining). This offers many possibilities of PPP in order to enhance wildlife conservation in the concessions and thus preserve forest connectivity between the networks of PAs (see Section 5.2). Some of the PAs have extraordinary tourist potential (TNS, Odzala, Ivindo) because of the presence of many forest clearings with guaranteed viewing of forest elephant and gorilla and a wide spectrum of other forest animal species. In TNS, Odzala and Ivindo, tourist infrastructures have already started attracting international tourism, although it is still a long way from being a profit-making operation. The private sector partner in Odzala has invested in particularly impressive high-end infrastructures[83], which is a clear indication of the conservation importance and tourism potential of this site.

Over the past 15 years, conservation partners and logging companies have developed collaborative partnerships and tested methodologies for wildlife management, anti-poaching and sustainable hunting in the logging concessions adjacent to this complex of protected areas. Lessons learned from these partnerships should be used to guide evolving partnerships with the mining sector, a more recent arrival in the landscape with an enormous capacity to influence, both negatively and positively, what happens here. PPP management agreements exist for the management of Odzala NP and Nouabalé-Ndoki NP.

In 2007, the TNS Trust Fund (FTNS) was established with support from the World Bank/WWF Alliance for Forest Conservation and Sustainable Use, Deutsche gesellschaft für technische Zusammenarbeit (GTZ), WCS, AFD and USAID-CARPE. Currently the FTNS has a capital of approximately EUR 25 million provided by KfW, AFD and Regenwalt Striftung through the 'Krombacher Regenwald Kampagne'. These funds are invested in international markets and are expected to produce a stable revenue stream to cover targeted activities for conservation and sustainable development.

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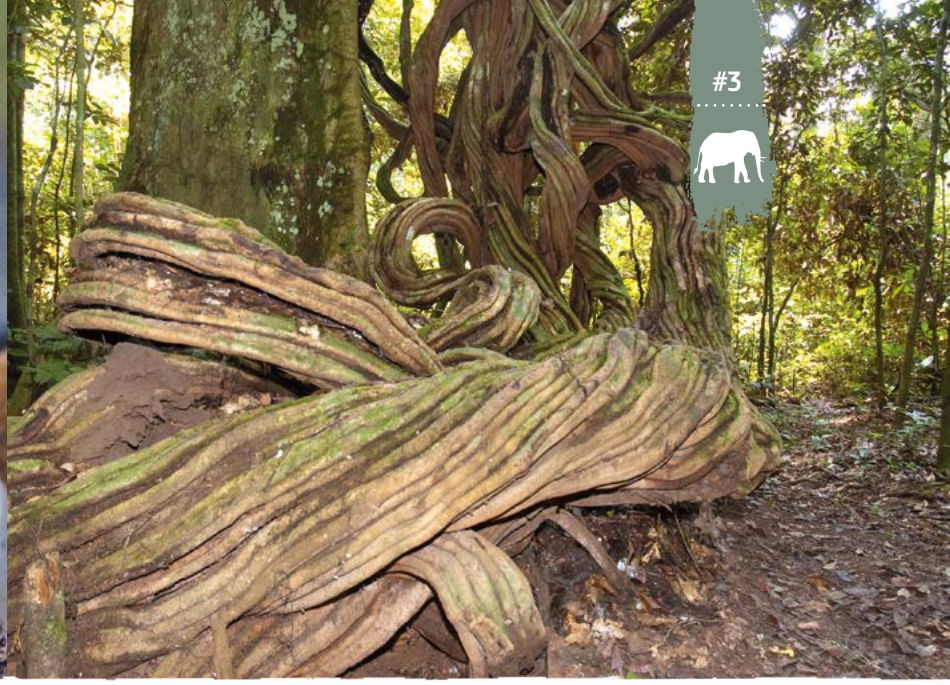
(81) A tri-national cooperation agreement between Gabon, Cameroon and Congo also exists for TRIDOM.

(82) Wieringa J.J. and M.S.M. Sosef (2011). The applicability of relative floristic resemblance to evaluate the conservation value of protected areas. *Plant Ecology and Evolution Fast Track*, 1-7.

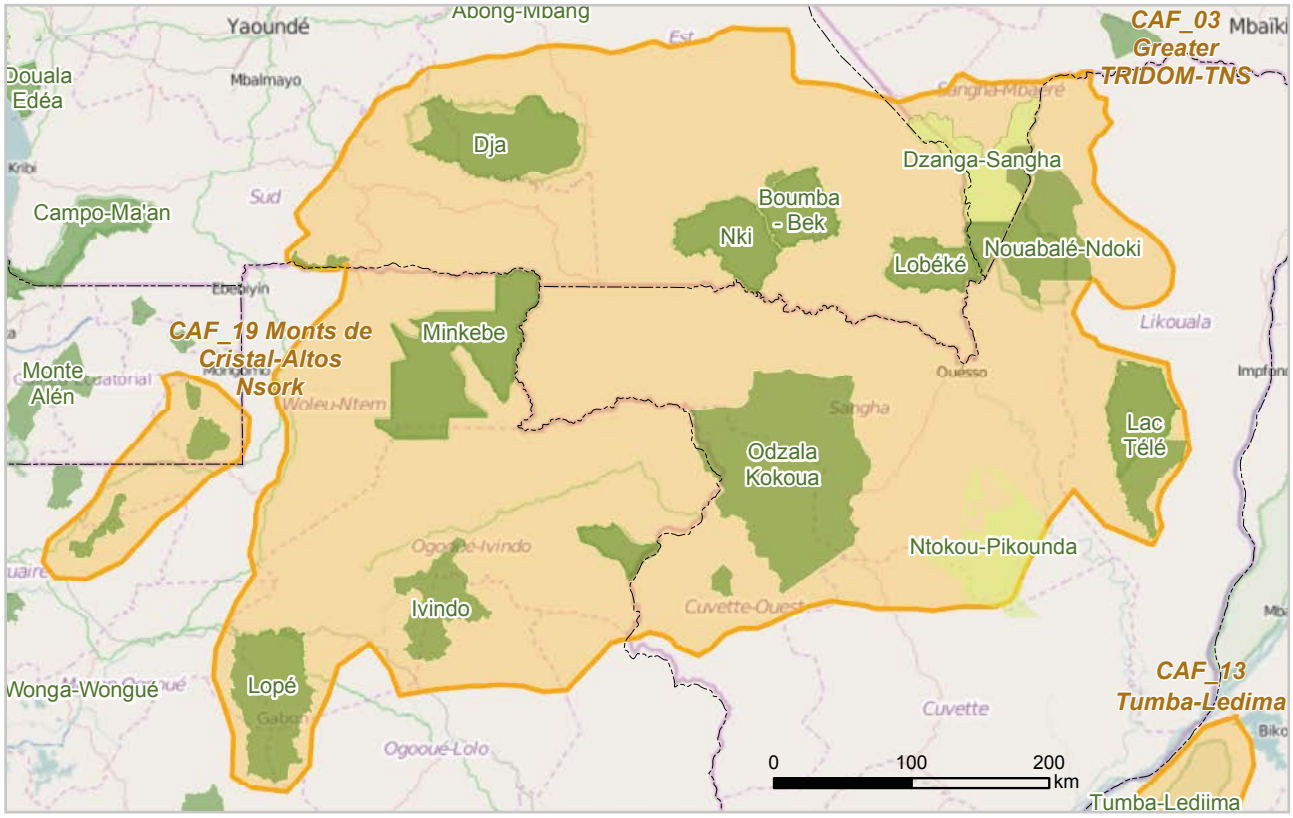
(83) Odzala Wilderness camps: http://www.odzala-kokoua.com/

Sitatunga female and calf searching for seeds in dung left by elephants in Maya Maya Nord forest clearing, Odzala-Kokoua National Park, Republic of Congo.



A giant liana in Nouabalé-Ndoki National Park, Republic of Congo.

Figure 4. The Greater TRIDOM/TNS TFCA



Main protected areas (IUCN cat. I to IV)

Other protected areas (IUCN cat. V and VI)

KLCs

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Historically the Giant Eland (Derby's Eland), the world's largest antelope, was found in the narrow band of woodlands and wooded savannahs extending from Senegal to the Nile. Currently it survives only in highly fragmented populations in Senegal, Guinea Bissau, Nigeria, Cameroon, Central African Republic and South Sudan. Old males are among the most highly prized big game trophies and sport hunting is likely to be a key to the future of this species (section 4.8).

Gamba/Mayumba/Conkouati TFCA

This complex includes four PAs in Gabon (Mayumba NP, Loango NP, Moukalaba-Doudou NP) and Congo (Conkouati NP), and is important because it encompasses some of the best examples of coastal forests and wetlands in Central Africa. The landscape is also globally important for four species of marine turtle that nest on the beaches and 17 Cetaceans, including an important population of humpback whale which is easily observed during the breeding season from June to September. The extensive areas of inland lagoons harbour populations of the endangered West African manatee, as well as terrestrial large mammal assemblages including gorilla, chimpanzee, forest elephant, forest buffalo and hippo, all of which can sometimes be observed on the beaches. The area therefore has major tourist potential, in addition to its global importance for wildlife conservation.

Over the past 15 years, conservation and research partners, notably WWF and the Smithsonian Institution, have developed innovative and successful partnerships with private-sector logging and oil companies[84] active in the area to enhance biodiversity conservation. These types of partnership should be continued and developed.

Garamba/Bili-Uele/Southern/ Zemongo-Chinko TFCA

It is recognised that this TFCA is significantly different from the others described above in that the area is characterised by extreme insecurity and lawlessness, which has led to the depletion of wildlife populations over the past 25 years. However it is considered important to maintain a presence in the zone to (i) secure the PAs, one of which is a WHS in Danger, and (ii) contribute to conservation security in the intervening zones. Trafficking of wildlife to northern Sudan from this area, as well as from further south in the Congo Basin, occurs across this vast, largely uncontrolled area. There is therefore a need, and good potential, for a broad northern DRC/eastern CAR/south-western South Sudan conservation-security partnership (Box 5 above) that includes the wildlife services of the three countries, NGOs operational in the areas (WCS, APN, Chinko Project), AFRICOM, US Departments of State and Defense, and local military operators (SPLA, UPDF, UN armed missions). Gabon's ANPN has also recently become involved in helping the CAR Government with wildlife security issues, including in Chinko.

(84) The Smithsonian Institution collaborates with Shell Oil: http://nationalzoo.si.edu/SCBI/Collaborative-Research-Initiatives/Gabon-Biodiversity-Program.cfm
5 The WWF collaborates with oil and logging companies on land-use planning, wildlife management and anti-poaching, and alternative livelihoods: http://awsassets.panda.org/downloads/wwf_gamba_fact_sheet_en_300410.pdf

Biologically the area contains vast intact areas of biodiversity-rich forest-savannah mosaic, as well as the drier Sudanian savannah and woodland wilderness areas. As recently as the early 1980s this area supported the highest density of elephant in Africa and there is potential for recovery given the low human densities and the intactness of vast areas of natural habitat. The area contains three national parks: Garamba NP in DRC, and Lantoto NP (contiguous with Garamba) and Southern NP in South Sudan. Other PAs are the vast Bili-Uere complex of wildlife and hunting reserves in DRC and the Zemongo Wildlife Reserve and Chinko Hunting Reserve in CAR. Garamba NP has the most important elephant population remaining in the region (although currently suffering intense poaching pressure from the Lord's Resistance Army (LRA) and Sudanese gangs[85]). Southern NP remains a stronghold for giant eland and also contains roan, hartebeest and wild dog[86]. The Chinko-Zemongo complex has a remarkably intact (though low density) array of wildlife species typical of the forest-savannah ecotone, including giant eland, buffalo, bongo, lion, elephant, chimpanzee and giant forest hog. Similarly recent surveys in the long abandoned Bili-Uere complex have confirmed important pockets of wildlife, particularly in the forest sections of the forest-savannah mosaic[87, 88].

The Monts de Cristal – Altos Nsork TFCA

This mid-altitude mountain range spanning Gabon and Equatorial Guinea represents a Pleistocene refuge with the highest species richness and diversity of any site in western Central Africa, including perhaps the greatest plant diversity in Africa. With a unique combination of primary rainforest and cloud forest, it has one of the highest numbers of butterfly species in Africa (many species are found only in these two countries). It has a significant population of elephant and mandrill, and is a key water source for the region.

The Korup-Takamanda-Mount Cameroon TFCA is covered in Chapter 4 (Western Africa).

Figure 5. The Gamba-Mayumba-Conkouati TFCA

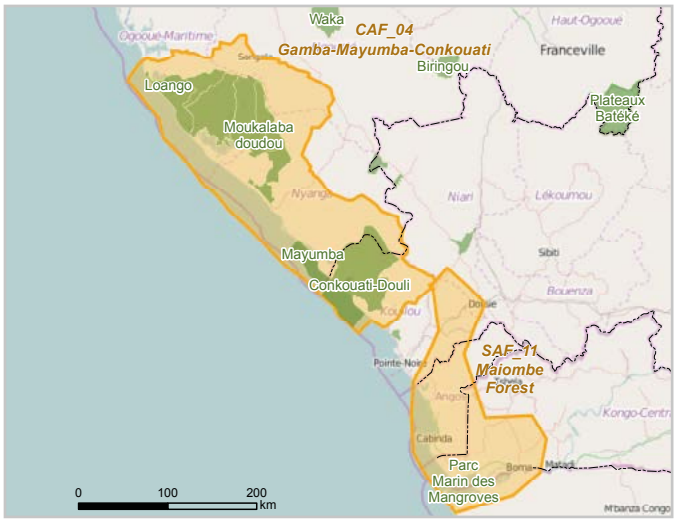
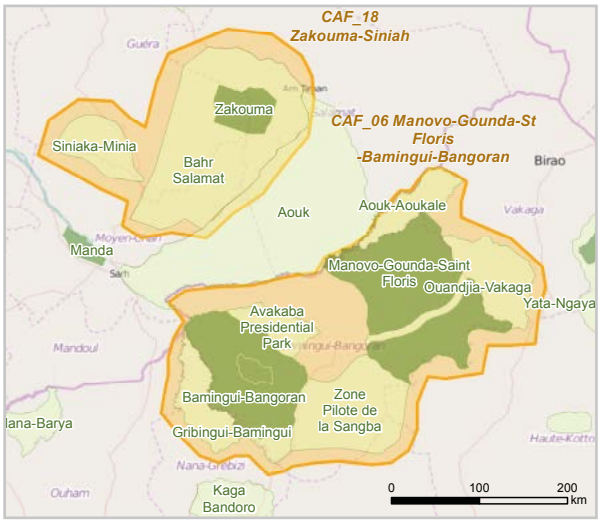


Figure 6. The Zakouma-Siniah and the Manovo-Gounda-Saint Floris-Bamingui-Bangoran KLCs



Main protected areas (IUCN cat. I to IV) | Other protected areas (IUCN cat. V and VI) | KLCs

(85) http://www.african-parks.org/Blog_150_Update%3A+Garamba+National+Parks+Poaching+Crisis.html
(86) Grossmann F., P. Elkan, C. Tiba, J. Moi, P.P. Awol, J. Lita, P. Demetry and S. Kenyi (2011). Aerial Surveys of Wildlife, Livestock, and Human Activity in and around Existing and Proposed Protected Areas of the Republic of South Sudan 2009-2010. WCS Report No 4 to USAID and Government of South Sudan.
(87) Elkan P. et al. (in prep.). Aerial surveys of Wildlife, Livestock, and Human activity in the Bili-Uere landscape, Democratic Republic of Congo. WCS and ICCN technical report on survey conducted in 2013.
(88) Hart J. (2014). Summary of elephant surveys in North Central DRC 2007-2013. Lukuru Wildlife Research Foundation. Draft report submitted to AfEDB, September 2014.

5.1.2 Other priority KLCs

While the TFCAs described in Section 5.1.1 above provide a reasonably comprehensive coverage of Central Africa's biodiversity and key flagship-species populations, the following KLCs, some of which contain only a single PA, are also considered as highest priority for support, either because they are already on the World Heritage Tentative List (and therefore have the potential to meet the Outstanding Universal Value criteria of the World Heritage Convention) or because they protect unique or highly endangered species or ecosystems.

Democratic Republic of Congo:

- **The remaining three DRC World Heritage Sites:** Okapi WR, Kahuzi-Biega NP and Salonga NP: (Virunga NP is covered in the Greater Virunga TFCA, and Garamba NP in the Garamba-Bili Uere-Southern-Chinko TFCA.) Their status as WHSs confirms their global importance. Globally important DRC endemics are protected by these sites (okapi, Grauer's gorilla, bonobo, Congo peacock, aquatic genet, numerous small primate endemics). The Okapi Wildlife Reserve is the most important protected area for the Eastern chimpanzee (about 6 000 individuals) and contains the DRC's largest forest elephant population (estimated at 1 200 in 2011 [89]).
- **Lomami NP (in the process of being gazetted):** This area contains several DRC endemics including the iconic bonobo and okapi. Scientists have also recently described a new endemic monkey species, the *lesula* monkey (*Cercopithecus lomamiensis*) [90] and a second new species is currently being described. This is a very remote area of moist forest with relatively limited human and development pressures on its boundaries.
- **Lomako-Yokokala NR:** A priority area for bonobos in the northern part of its range (IUCN Bonobo Conservation Strategy) and an area where long-term research has been conducted.
- **Tumba-Lediima NR:** A priority area for bonobos in the western part of its range (IUCN Bonobo Conservation Strategy). In addition, the swamp forests of Lac Tumba (together with those of Lac Tele CR in the Congo Republic – see below) constitute the largest area under protection of the vast and unique Congolian swamp forests.
- **Itombwe-Kabobo:** The Itombwe Massif and the adjacent Kabobo-Luama landscape on the Albertine Rift are both in the process of becoming protected areas: the **Itombwe Natural Reserve** and the **Ngamikka National Park** respectively. These contain the highest number of Albertine Rift endemics of any site on the Albertine Rift with many species that are unique to the two sites. Recent discoveries include three mammal and five plant species, and a possible ten new amphibian species. Kabobo-Luama landscape may have as many as 2 000 chimpanzees, while the Itombwe Massif has both chimpanzee and Grauer's gorilla populations.
- **Maiko NP:** Given the highly heterogeneous distribution of the Grauer's gorilla (making it vulnerable to local extinctions outside of PAs), this park is important for the protection of this DRC endemic. Several other Congo endemics occur there (Congo peacock, okapi, aquatic genet). This park is currently very difficult to operate in because of problems of access and the presence of Simba rebels who have been living in the park since the late 1960s.
- The two Katanga national parks – **Kundelungu NP and Upemba NP** – and the ***Zone annexe*** connecting them: These are the only national parks in the Central African region that protect the miombo woodland ecosystem. The endemic Congo zebra survives in Upemba NP and there is strong potential for recovery of wildlife populations given proper protection. The area also has significant tourist potential (spectacular landscapes).

Central African Republic:

- **Gounda-St Floris World Heritage Site and the surrounding Village Safari Hunting Zones (*Zones Cynégétiques Villagoises*) (ZCV):** Although this area is currently overwhelmed by conflict, the past history of community conservation successes based on consumptive tourism in the ZCV justifies keeping this area on the list of priority zones where interventions could restart if and when security returns to this area. A key feature of this zone is the large population of giant eland.

Cameroon:

- **Bouba-Ndjida-Benoué:** An area of Sudanian savannah, Bouba-Njida previously contained >500 savannah elephants, but has potential for recovery. Both have giant eland populations.
- **Mbam and Djerem NP:** This is a large, mostly intact area of the biodiversity-rich savannah-forest transition ecotone and has one of the largest remaining populations of savannah elephants in Central Africa (estimate 800).
- **Mount Oku and Ijim Ridge:** Although not category I-IV PAs, the area contains the Oku Floral Sanctuary (*Sanctuaire à flore d'Oku*) and contains the largest extent of, and highest, Afro-montane forest in West Africa, the only Alpine bamboo forest and the only Podocarpus forest in West Africa. It also has exceptional floral, herpetological and bird endemicity.

Chad:

- **Zakouma NP:** This is Chad's emblematic protected area which was brought back from the brink by >30 years of sustained support for protection. Zakouma is the flagship-protected area of the Sudanian savannah ecosystem. Conservation efforts in the park (managed by the African Parks Network - APN under a PPP) receive political support at the highest level. It also has very significant tourist potential.

([89]) Vosper A., J. Masselink and F. Maisels (2012). WCS RFO Program: Great ape and human impact monitoring in Okapi Faunal Reserve, Democratic Republic of Congo. Final report to USFWS – GACF Agreement 96200-0-G100. WCS.

([90]) Hart J.A., K.M. Detwiler, C.C. Gilbert, A.S. Burrell, J.L. Fuller et al. (2012). Lesula: A New Species of Cercopithecus Monkey Endemic to the Democratic Republic of Congo and Implications for Conservation of Congo's Central Basin, *PLoS ONE* 7(9): e44271. oi:10.1371/journal.pone.0044271.

Equatorial Guinea:

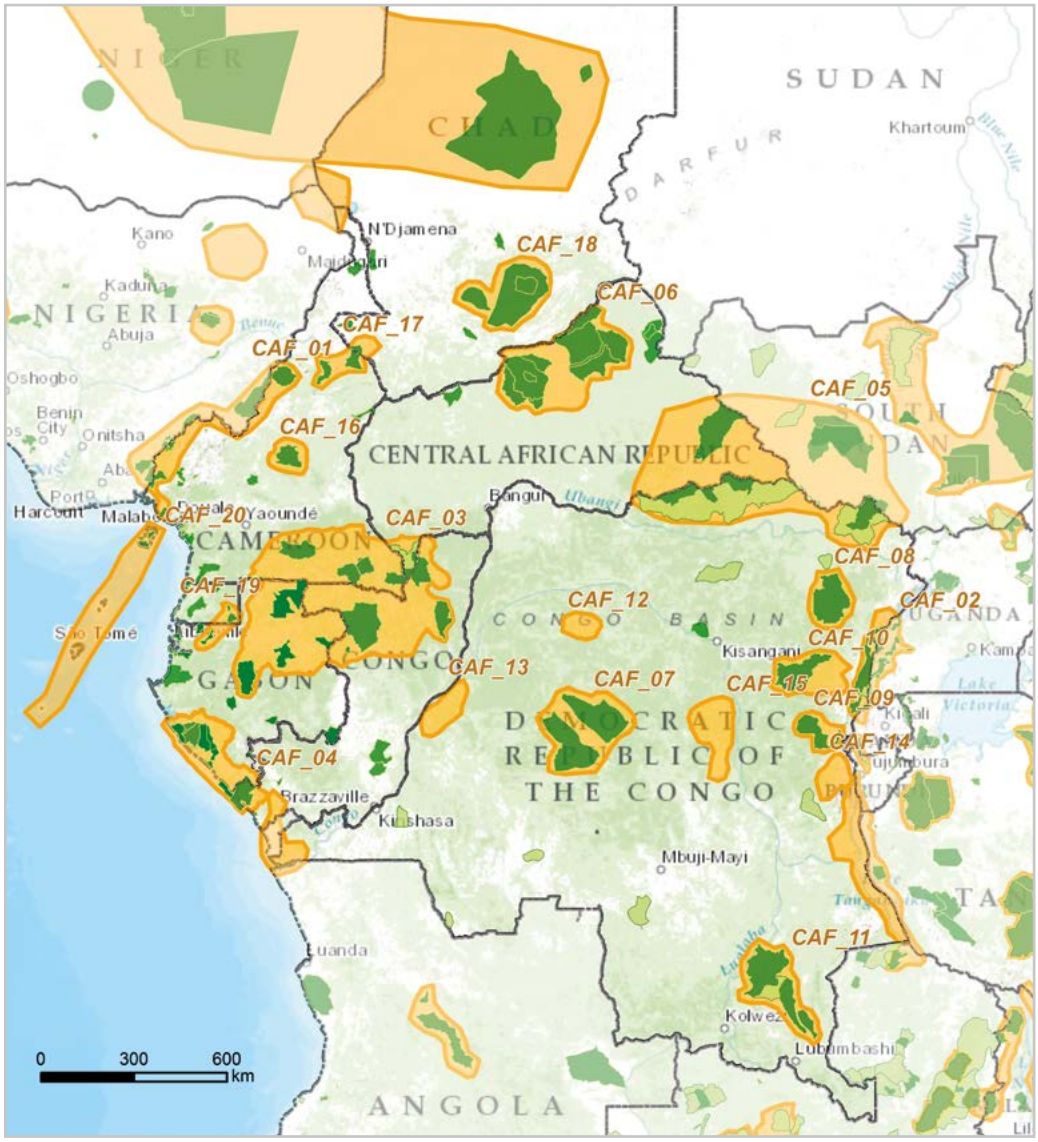
- **Pico Grande NP (HP) and Pico Basile NP:** Spectacular forest-covered volcanic landscapes with a large altitudinal range (0-3 000 m) and harbouring important Gulf of Guinea primate endemics. Also globally important beaches for marine turtle. These areas are on the WHS Tentative List.

São Tome & Príncipe:

- **Obo NP São Tomé and Zona Ecológica Príncipe:** These areas protect important plant and bird endemics and are vital for watershed protection. They are also landscapes of outstanding scenic interest with good tourist potential. They are also on the WHS Tentative List.

The complete list of KLCs, their special features and current partners is presented in Table 1 next page.

Figure 7. Map of proposed KLCs in the Central African region



CAF-01 Cross River-Takamanda-Mt Cameroon
CAF-02 Greater Virunga
CAF-03 Greater TRIDOM-TNS
CAF-04 Gamba-Myumba-Conkouati
CAF-05 Garamba-Bili-Uere-Chinko-Southern
CAF-06 Manovo-Gounda-St Floris-Bamingui
CAF-07 Salonga
CAF-08 Okapi
CAF-09 Kahuzi-Bihega
CAF-10 Maiko-Tayna
CAF-11 Kundelungu-Upemba
CAF-12 Lomako-Yokokala
CAF-13 Tumba-Ledima
CAF-14 Itombwe-Kabobo
CAF-15 Lomami
CAF-16 Mbam Djerem
CAF-17 Bouba Ndjida-Benoue
CAF-18 Zakouma-Siniah
CAF-19 Monts de Cristal-Altos Nsork
CAF-20 Picos and Obo

TABLE 1. Summary of key features of the Central African KLCs

KLC (countries)	Protected areas	Size (km²)	Special features of site justifying selection	Multi and bilateral donors and other funders present	Principal international technical partners supporting national PA institutions**
Greater Virunga* (CD, UG, RW) (overlaps with Eastern African region)	• Virunga NP (CD) WHS in Danger • Volcans NP (RW) • Mhahinga NP (UG) • Queen Elizabeth NP (UG) • Bwindi NP (UG) WHS • Semiliki NP (UG) • Ruwenzori NP (UG) WHS • Kibale NP (UG) • Kasyoha-Kitomi FR (UG) • Kalinzu-Maramagambo FR (UG) • Kyumbura WR (UG)	See Eastern Africa	• Albertine Rift montane and mid-altitude forest, East Sudanese savannah, wetlands • WHS x 3 • Entire mountain gorilla population and important chimpanzee populations • Majority of Albertine endemics • Exceptional tourism potential • Protection of vital freshwater fish stocks • Watershed protection	• EU • UNESCO • Belgium • WB/GEF • HGBFMF • USAID • USFWS	• ACF • WCS • WWF • AWF • ZSL • FZS • DFGF
TRIDOM/TNS* (CM, GA, CG, CF)	• Minkébé NP (GA) • Ivindo NP (GA) • Mwagne NP (GA) • Dja WR (CM) WHS in Danger • Nki NP (CM) • Boumba Bek NP (CM) • Lac Lobeke NP (CM) part of TNS WHS • Odzala NP (CG) • Nouabalé-Ndoki NP (CG) part of TNS WHS • Ntoukou-Pikounda NP (CG) • Lac Tele CR (CG) • Dzanga-Ndoki NP (CF) part of TNS WHS • Dzanga SR (CF) • Lopé NP (GA) WHS (natural and cultural)	c. 250 000	• Northwest Congolian forest, northeast Congolian forest, Sangha aquatic ecoregion, Atlantic equatorial coastal forest • WHS x 4 • Majority of Central Africa's remaining forest elephant • Majority of Central Africa's lowland gorilla and chimpanzee • Major portion of Congo Basin flora; including several endemic plants (e.g. in Lopé) • Important area of Congolian swamp forest (Lac Tele) • Endemic sun-tailed monkey (Lopé) • Hundreds of mineral rich forest clearings (*bais*) • Ancient rock art (Lopé) • High tourist potential in several of the PAs – Odzala, TNS, Lopé, Ivindo • Good potential for PPPs with logging and mining sector and with protected area management specialists	• EU • USFWS • USAID • KfW • GIZ • GEF/UNDPADB • Netherlands	• WWF Netherlands • WCS • AP • FTNS
Gamba/Mayumba/ Conkouati* (GA, CG)	• Loango NP (GA) • Moukalaba-Doudou NP (GA) • Mayumba NP (GA) • Conkouati NP (CG)	c. 12 600	• Atlantic equatorial forest, southern Congolian savannah forest mosaic, equatorial coastal aquatic ecoregion • Extensive inland wetlands • Endangered manatee population • Forest elephant and apes • Globally important for marine turtles, whales and dolphins; • High tourist potential • Protects regionally important marine fish stocks • Potential for PPP with logging and oil sectors	• USFWS	• WWF • WCS • SI

KLC (countries)	Protected areas	Size (km^2)	Special features of site justifying selection	Multi and bilateral donors and other funders present	Principal international technical partners supporting national PA institutions**
Garamba/Bili-Uere/ Southern/Chinko* (CF, CD, SS) (overlaps with Eastern African region)	• Garamba NP (CD) WHS in Danger • Bili-Uere complex of hunting domains (CD) • Southern NP (SS) • Lantoto NP (SS) • Zemongo-Chinko (CF)	c. 150000	• Northern Congolian forest – savannah mosaic, Sudanian savannah • WHS x 1 (Garamba – on list of WHS in Danger) • Biodiversity-rich forest-savannah mosaic in transition zone linking with vast intact areas of Sudanian savannah. Wildlife reflects this mix of habitats: chimpanzee, bongo, giant forest hog, forest and savannah elephant, giant eland, roan, hartebeest, wild dog	• USFWS • EU • World Bank • GEF • Spain (AECID, MAAMA) • Fundación Biodiversidad • Life Web	• WCS • APN • Chinko Project • Lukuru Foundation • AWF
Gounda-St Floris-Bamingui-Bangoran and surrounding hunting blocks (CF)	• Gounda-St Floris NP (WHS in danger) • Bamingui-Bangoran NP • Zone Pilote de Sangba	c. 50000	• Sudanian savannah • WHS in Danger • Until recent conflict good CBNRM results from safari hunting in Zone Pilote de Sangba buffer zone	• EU	• AGRECO consulting firm
Salonga (CD)	• Salonga NP, WHS in Danger	33350	• Eastern Congolian swamp forests, central Congolian lowland forest • WHS in Danger • Bonobo, endemic small primates	• EU	• WWF
Okapi (CD)	• Okapi WR, WHS in Danger	13750	• North-eastern Congolian lowland forest • Okapi, forest elephant, chimpanzee, bongo, Congo peacock, aquatic genet • 17 species of diurnal and nocturnal primates	• KfW • GTZ • UNESCO	• WCS • GIC
Kahuzi-Biega (CD)	• Kahuzi-Biega NP, WHS in Danger	6000	• North-eastern Congolian lowland forest • Albertine Rift Afro-montane forests	• GTZ/KfW • UNESCO	• WCS
Maiko-Tayna (CD)	• Maiko NP • Tayna Community Reserves	c. 11000	• North-eastern Congolian lowland forest • Grauer's gorilla (important site for this species, given its very heterogeneous distribution in eastern DRC) • other endemics including okapi, aquatic genet, Congo peacock		• FZS
Upemba-Kundelungu (CD)	• Upemba NP (CD) • Kundelungu NP • Zone annexe (buffer zone)	34000	• Miombo woodland (only protected example in Central African region • Last remaining population of Congo zebra	• KfW • EU	• GFA consulting firm • BAK
Lomako-Yokokala (CD)	• Lomako-Yokokala WR	3625	• Central Congolian lowland forests; eastern Congolian swamp forests • Bonobo, elephant, sitatunga, etc.	• USAID	• AWF

KLC (countries)	Protected areas	Size (km²)	Special features of site justifying selection	Multi and bilateral donors and other funders present	Principal international technical partners supporting national PA institutions**
Tumba-Lediima (CD)	• Tumba-Lediima NR	7500	• Central Congolian lowland forest, Congolian swamp forest • Bonobo • Together with Lac Tele in Congo this is the largest area of protected Congolian swamp forest • Protection of vital freshwater fish stocks		• WWF
Itombwe-Kabobo (CD)	• Itombwe proposed PA • Mitsotshi-Kabobo proposed PA • Luama Hunting Domain	c. 10000	• Albertine Rift mid-altitude forest, forest-savannah transition • Chimpanzee – one of the few viable chimp populations in the Albertine Rift • Endemic subspecies of Angolan colobus and red colobus • Albertine bird endemics	• USFWS • USAID • Rainforest Trust • Critical Ecosystems Partnership Fund	• WWF • WCS
Lomami (CD)	• Lomami NP (in process of gazetting)	c. 10000	• Central Congolian lowland forests • Bonobo, okapi, Congo peacock, two newly described species of small primate	• KfW • Abraham Foundation • Arcus Foundation	• Lukuru Foundation
Boubanjida-Benoué (CM)	• Buba Ndjida NP • Benoué NP	4000	• Northern Congolian forest-savannah mosaic, east Sudanian savannah • Savannah elephants, savannah ungulates (23 antelope species) including giant eland	• France • Germany • EU	• GTZ
Mbam and Djerem (CM)	• Mbam and Djerem NP	4500	• Forest-savannah transition • One of largest remaining savannah elephant populations in Central Africa • Gorilla, chimpanzee, forest-savannah ecotone species	• USFWS	• WCS
Mt Oku – Ijim Ridge (CM)	• Mt Oku – Ijim Ridge	200	• Afro-montane forest • Largest extent of, and highest, Afro-montane forest in Western Africa, the only Alpine bamboo forest and the only Podocarpus forest in Western Africa • Exceptional floral, herpetological, and bird endemicity		
Zakouma-Siniaka Minia (TD)	• Zakouma NP • Siniaka Minia GR	23600	• A rare example of intact Sudanian savannah ecosystem with viable wildlife populations • Good tourism potential	• EU	• AP

KLC (countries)	Protected areas	Size (km²)	Special features of site justifying selection	Multi and bilateral donors and other funders present	Principal international technical partners supporting national PA institutions**
Monts de Cristal-Altos Nsork* (GA, GQ)	• Monts de Cristal NP • Altos-Nsork NP	c. 2 500	• Atlantic forests • Pleistocene refuge, with the highest species richness and diversity of any site in western Central Africa • Mandrill • Vital water catchment area • On WHS tentative list		
Pico Grande and Pico Basile (GQ)	• Pico Grande NP • Pico Basile NP	850	• Gulf of Guinea lowland and montane forest • Spectacular forest-covered volcanic landscapes with a large altitudinal range (0-3000 m) • Five endemic subspecies of primate • Globally important beaches for marine turtles • On the WHS Tentative List		
Obo-Zona Ecológica Príncipe (ST)	• Obo NP (São Tomé) • Zona Ecológica (Príncipe)	300	• Gulf of Guinea lowland and montane moist forest • Plant and bird endemics • Vital for watershed protection • Landscapes of outstanding scenic interest with high tourist potential • On the WHS Tentative List	• BirdLife International • EU	
Central Africa total (km²)	**53*** **	**c. 630000**			

(*) Denotes that the area is also a TFCA.

(**) Many of these technical partners also mobilise their own sources of core funding.

(***) Excluding Greater Virunga shared with East Africa

Country abbreviations (ISO-2): CD – Democratic Republic of Congo; CF – Central African Republic; CG – Congo Republic; CM – Cameroon; GA - Gabon; GQ – Equatorial Guinea; RW – Rwanda; SS – South Sudan; ST – São Tomé and Príncipe; TD – Chad; UG – Uganda.

Notes:

- The surface areas quoted are approximate because, unlike PAs, the boundaries of landscapes around and between the PAs are not officially defined.
- The difference in the surface area total compared with the one presented in the Synthesis is due to a) adjustments in the estimations of surface areas of certain KLCs and b) the fact that surface areas for shared landscapes are only counted once.

5.2 Engage with the private sector extractive industry to enhance biodiversity conservation outside protected areas

Since almost all forest outside the protected areas is (or will soon) be attributed to private extractive industry operators, conservationists have to engage with them if we are to preserve connectivity between protected areas and ecological functions across large tracts of forest. Currently the most promising opportunities for this type of collaboration are in the forests of Gabon, northern Congo and southern Cameroon in the Greater TRIDOM/TNS landscape. Since protected areas cover only 20% of the forest in this zone, the areas attributed as concessions cover the overwhelming majority of the forest, and therefore probably still contain much of the zone's wildlife.

Ideally collaborative agreements should be established between the government forestry/wildlife institutions, the extractive industry concessionaires and conservation organisations with the objective of developing and implementing best practices to avoid wildlife loss as a result of the extractive activities. The exact nature of measures will depend on the particular circumstances of each case but it will be necessary to work on several fronts including wildlife and socio-economic surveys to create baselines, establishing strong company internal regulations concerning wildlife issues, implementing wildlife surveillance strategies, biodiversity offset mechanisms for 'no net loss' of biodiversity, and monitoring conservation outcomes. Working with local communities in the concessions to clarify owner and user rights of forest resources, particularly wildlife, will be a crucial step in the process of managing sustainable hunting of bushmeat species. These measures should be an integral part of a company's management plan, which is a legally binding document (see further discussion in following section on tackling the bushmeat issue). The inclusion of adherence to wildlife laws in the matrix of FLEGT legality criteria would further enhance the conservation outcomes in non-FSC forest concessions.

Priority should be given to working with mining and logging companies that are located within the Greater TRIDOM/TNS and Gamba/Mayumba/Conkouati TFCAs (Section 5.1.1).

5.3 Training and institution building

In Central Africa, much important training of wildlife managers (wardens, monitoring officers, community conservation officers, rangers, etc.) takes place on site in the form of on-the-job training within the framework of externally funded projects. While the value of this kind of training is undeniable, and has led to the emergence of many highly competent national conservation practitioners, the weakness of the protected area agencies to which they belong (absence of career opportunities, poor management of staff, governance issues) means that many of these individuals end up leaving their institutions for better paid, and more stable and fulfilling jobs with INGOs or international agencies where they have real career opportunities. The other common scenario is that, because of the lack of competent PA authority staff, individuals from outside of the management authorities are brought in to a site and trained, but once trained very few of them are integrated into the national authority (nor do many of them even wish to be integrated).

There is therefore an urgent need for fundamental institutional reform in almost all of the Central African PA authorities. PA management needs to be professionalised and proper career prospects offered for people entering the service. This is such a necessary fundamental change that many years of institution building will be required before tangible results will be seen in terms of improved PA management. It will also require a genuine political will for change (and improved governance) in order to overcome the resistance to change that undoubtedly exists within certain countries of the region. However, as noted in Chapter 2, Section 5.4.2, institutional reform of PA management authorities is a cost-effective conservation investment because all PAs and wildlife stand to benefit.

Developing institutional capacity and tackling poor governance across the board is of vital importance to wildlife, both within and outside protected areas. The EU should provide support for mainstreaming biodiversity into development strategies and policies, building governments' institutional capacities, improving the coordination and communication between ministries and ensuring that governmental decision-making processes include appropriate environmental expertise.

Three simultaneous lines of action are therefore required:

- Continue with on-the-job training at sites within the framework of externally supported interventions (see Section 5.1 for more detail). Training should be a standard component of all interventions in support of the sites identified in this report.

- Support the main regional training centres (EFG, ERAIFT, ENF in Cameroon, DRC and Gabon respectively) in collaboration with their other international partners. This would involve capacity building for the institutions themselves, as well as providing scholarships for students. Other training centres located in the heart of the moist forest zone,

Smoked monkey (left) and monitor lizard (right) sold at markets in Brazzaville (Congo) and Gamba (Gabon) respectively. The bushmeat trade to urban markets results in unsustainable levels of hunting.

such as the Alphonse Makanga Training Centre in Lopé, could be supported and links strengthened with the above-mentioned regional training centres.

- Support national-level institutional support/reform for national PA authorities and all other authorities involved in natural resource and land management in countries demonstrating genuine political commitment to see the reforms through.

5.4 Tackling the bushmeat issue

Over-exploitation of wildlife threatens food security and wildlife. It is recognised as a global concern by the Convention on Biological Diversity[91], which has established a Liaison Group on Bushmeat to work with the CITES Central Africa Bushmeat Working Group. In Central Africa, demand for bushmeat is higher than the sustainable level of production. One of the most important root causes of overhunting is the breakdown in traditional controls over access to land and hunting areas, and the fact that legal frameworks of the Central African nations do not recognise local control over traditional lands and the rights of local populations to manage or regulate hunting on these lands[92]. As a result, traditional rules over hunting have broken down and in many areas there is now a situation of open access with little or no control by local communities over hunting by outsiders.

Faced with the scale of bushmeat hunting and the evident impoverishment of large areas of forest in Central Africa, conservationists have tended to favour a law-enforcement approach to prevent irreversible impoverishment of the forests. Development-orientated actors suggest that a regulated bushmeat trade, which maintains the supplies of appropriate species from forests, can contribute to economic growth in areas where there are few other options, but conservationists argue strongly that sustainable offtake can only be achieved where human populations do not exceed about 1 inhabitant/km² and where the meat is consumed at home (i.e. not sold outside the area)[93]; but this is an increasingly rare situation in Central Africa. As long as rural populations remain poor and the demand for bushmeat in urban markets remains high, an unsustainable trade in bushmeat will continue to exist. Establishing a regulated and sustainable system of harvesting bushmeat will therefore be extremely complex and time-consuming to achieve, given the fundamental changes to legal frameworks that must occur across Central Africa and the scale of capacity building of local communities for wildlife management that will be necessary.

The legitimate fear of conservationists is that by the time the regulatory frameworks are in place and capacities of local communities for sustainable wildlife management have been built, most of the wildlife will already have disappeared from the forests outside the protected areas.

(91) CBD Decision XI/25 on Sustainable use of biodiversity: bushmeat and sustainable wildlife management: https://www.cbd.int/decision/cop/default.shtml?id=13186
(92) Sustainable Management of the Wildlife and Bushmeat Sector in Central Africa. FAO/GEF project document, 2010, 99pp.
(93) Robinson J.G. and E.L. Bennett (2000). Hunting for sustainability, Columbia University Press, New York.

Law enforcement will therefore remain a necessary activity running in parallel with pilot schemes to test and develop models for the regulated participatory management of bushmeat harvesting.

Bushmeat is a food security issue in rural environments, whereas in urban areas this is not necessarily the case. The protein gap therefore needs to be tackled in rural areas by combinations of various actions at different points of the value chain and of the enabling environment. Three strategic approaches are therefore necessary: (i) reducing the demand for bushmeat; (ii) improving the sustainability of the supply by better management of the resource, and (iii) creating a conducive and enabling institutional and policy environment. **The ultimate goal should be to achieve sustainable harvesting of bushmeat for local consumption in rural areas, and eliminate bushmeat consumption in urban areas.**

5.4.1 Reduce the demand for bushmeat

Hunters and rural consumers:

- Develop alternative sources of protein at a cost similar to bushmeat. With an estimated yearly extraction rate in the Congo Basin of 4.5 million tons of bushmeat, cattle ranching is never going to be an ecologically sustainable solution since an estimated 25 million hectares of forest would have to be converted to pastures [94]. Pigs and chickens have much higher conversion rates than do cattle and both can thrive on kitchen scraps and crop residues. Near Ouesso, one of the region's biggest bushmeat markets, opportunities exist for producing chicken feed locally (from soya and maize) at a price below bushmeat [95]. Developing sustainable fisheries in the rivers and lakes should also be investigated as fish are so important in local diets and can be a substitute for bushmeat. However, as noted in Section 4.10, attempts to develop alternatives for bushmeat have so far had limited success in Central Africa. Requiring extractive industry concessionaires to import domestically produced meat for their workers should also be a standard requirement.
- Improve economic opportunities in productive sectors. This will cover a wide range of possibilities depending on the local context.
- Raise awareness through environmental education and awareness-building via local media using the International Conservation and Education Fund (INCEF)-type approach.

Retailers and urban consumers:

- Strictly enforce the ban on the sale and consumption of protected and endangered species. Protected species found on sale should be publicly destroyed.

International consumers:

- The international trade must be completely stopped. Heavy fines should be levied for possessing or trading bushmeat, regardless of the status and provenance of the species.
- A concerted effort is needed to raise awareness among personnel stationed at exit points (ports, airports, border posts).
- Airline and shipping companies should commit to banning the transport of all bushmeat (regardless of its status) and should be made accountable for enforcing this. Regardless of the issue of sustainability, the international trade in bushmeat constitutes a serious public health risk.

5.4.2 Improve the sustainability of the supply by better management of the resource

This will require developing models of wildlife management with local communities, research and extension, and engagement with the extractive industries.

Hunters and rural consumers:

- Work with hunters and rural communities to establish hunting rules that allow harvesting of resilient species but ban the hunting of vulnerable species. This process will involve participatory land-use planning at the local community level and should lead to the definition of hunting rules (period, location, hunting tools, quotas, etc.), and simple methods to self-monitor their activities. This will be a highly complex undertaking requiring adequate financial and technical resources. Lessons learned from past experiences in the region (e.g. PROGEPP) should be drawn on rather than trying to 'reinvent the wheel'.

Research and extension services:

- Understanding the dynamics of hunting and its impact on the dynamics of heavily hunted resilient species and their more vulnerable competitors is highly complex and will require a concerted effort in terms of research and monitoring by appropriate research bodies. The SYVBAC programme [96], established by TRAFFIC, is one such monitoring initiative.
- Analysing the relationships and trade-offs between bushmeat and other protein sources is also a key component of improving the sustainability of the supply. Rural communities will usually switch from bushmeat to fish as the price or availability fluctuates with the seasons. However, a decline in one resource can lead to overharvesting of the other so understanding the feedback loop between fish and meat catches is essential. Understanding the factors determining when and

(94) Nasi R., A. Taber and N. Van Vliet (2011). Empty forest, empty stomachs? Bushmeat and livelihoods in Congo and the Amazon basin, *International Forestry Review*, Vol. 13.
(95) Pers. comm. with WCS representatives.
(96) SYVBAC: SYstème de suivi de la filière Viande de brousse en Afrique Centrale.

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Ba'Kola semi-nomads with traditional duiker hunting nets in the buffer zone of Odzala-Kokoua National Park, Republic of Congo.
In many areas traditional rules over hunting have broken down resulting in a situation of 'open access' with little or no control by local communities over hunting by outsiders.

under what circumstances consumers will transition to domestic meat is also key to achieving sustainability in the supply of bushmeat.

Extractive industries

The extractive industries dominate the forest landscape and have considerable potential to influence how the bushmeat 'crisis' will evolve. Current legislation in most of the Central African countries requires conservation to be integrated into their sustainable forest management plans, for example the setting aside of no-logging 'conservation series', and they have the responsibility to ensure that their personnel respect wildlife legislation. However, companies should go further in a number of ways:

- Internal regulations and codes of conduct concerning wildlife in the concessions should become part of the companies' standard operating procedures. The transportation of bushmeat should be strictly forbidden on company vehicles and manned checkpoints with trained personnel should be established on the main logging roads in the concessions.
- Companies should be required to provide alternative sources of protein for their workers at cost.
- Companies, in collaboration with experienced technical partners, should organise and support community hunting schemes for communities living within their concessions.
- Companies should subscribe to certification schemes that will give them preferential access to environmentally sensitive international markets, which are prepared to pay a premium for sustainably sourced timber from concessions where wildlife regulations are respected. The same principle applies for the mining concessions.

5.4.3 Create a conducive and enabling institutional and policy environment

For participatory wildlife management to become a reality, national polices, laws and regulations must be able to grant to communities the rights to the land and wildlife that they will manage, and allow community members to market locally the bushmeat and other wildlife products (from permitted species) that are harvested. These provisions are not yet firmly integrated in the policy and legal frameworks of the Central African countries. Several countries are, however, developing policies or strategies for wildlife management (CAR, DRC, Gabon, Congo) and only one country (Congo) makes very general provisions in its wildlife law for participatory wildlife management (but which cannot be rendered operational until the ministerial regulations are passed). None of the legal frameworks clearly allow the marketing of bushmeat from community-managed lands and the general perception is that the bushmeat market chain is illegal. The distinction between sales for local consumption and trade further afield remains very blurred and is a source of recurring conflict.

Action will be required at several levels:

National policy-making

- Policies, laws and regulations will need to be revised in order to provide an adequate legal framework for enhancing ownership and tenure rights and allowing participatory wildlife management.
- At the same time it will be necessary to legitimise the bushmeat debate in order to properly address the fraught question of the legality of the bushmeat market chain, and acknowledge the contribution of bushmeat to food security in national strategies.

Confiscated weapons and illegal ivory in Odzala-Kokoua National Park, Republic of Congo.

International policies

- Companies or individuals not complying with CITES regulations must be firmly punished and denounced ('name and shame').
- Wildlife issues must be systematically covered within internationally supported policy processes.
- A clear link must be made between the international bushmeat trade and emerging disease risks.

Local institutions

- Once the policy and regulatory frameworks are in place, local institutions that have a vested interest in protecting their wildlife resource should be supported and capacities strengthened for managing and monitoring a sustainable local trade in bushmeat.

Finally, it should be reiterated that in urban areas, where the great majority of bushmeat is consumed, bushmeat is generally not a food security issue. A bushmeat strategy for the region should therefore concentrate on achieving sustainable off-take in rural areas but should not try to 'develop' or manage the bushmeat chain in urban areas. **Ultimately the aim should be to see the bushmeat trade in urban areas disappear** by squeezing the transport lines to the urban markets through control of the major access routes (roads, rivers, railways, airlines). Dissuasive penalties for transporting bushmeat on trains, internal airlines, public and private transport (logging trucks, buses, boats) would require strong political will but could significantly reduce the volume of trade to the cities.

Since there are no 'silver bullet' solutions to the bushmeat problem, it is recommended that a series of pilot projects be established in the countries in order to test different approaches in the range of contexts across the region. These pilot projects should build on lessons learned from other ongoing initiatives of this type and should be replicated as and where feasible.

Ideally pilot projects should comprise as many of the following components as possible:

- be conducted in an area contiguous with a PA that is receiving long-term support from the EU (or other agency). This would be part of the PAs' community conservation/livelihood programme;
- be conducted in collaboration with a private-sector partner (e.g. in Central Africa with an FSC-certified logging company) as part of its community development obligations;
- include, or be associated with, a component for developing alternative domestic animal protein at a competitive price (e.g. intensive chicken production where chicken feed can be produced locally without involving habitat loss);
- include, or be associated with, a scheme to develop sustainable harvesting of freshwater fish (either wild-caught or fish farming);
- a strong research and monitoring component, ideally in association with an experienced research organisation – sustainable harvesting of wildlife, particularly in the forest ecosystem, is still a very inexact science.
- a strong community-relations component for awareness building and local governance structures.

Associating private sector, PA management and research partners in the work with the local communities would bring important added value in terms of scientific method, local governance building, law enforcement and awareness building.

5.5 Dismantling wildlife crime networks and curbing the demand

This aspect is treated fully in the section on wildlife trade of Chapter 5. The recommendations of that chapter are entirely relevant to the Central African context.

There has been a concerted effort over the past year to translate the ten-point Action Plan of the Marrakech Declaration into concrete actions in the Central African region. The Marrakech Plan proposes a series of actions around three key themes:
(i) building collaboration between organisations and agencies;
(ii) strengthening law enforcement;
(iii) properly penalising wildlife crime.

Central Africa's response has been to adopt a regional action plan entitled PAPECALF (Action Plan for the COMIFAC sub-region for strengthening the enforcement of national wildlife laws) and to initiate a process leading towards the establishment of national coordinating units (NCUs) for fighting wildlife crime. These NCUs will bring together all the arms of government concerned by wildlife crime – justice, interior, defence (police, criminal police, INTERPOL), finance (customs), wildlife – as well as the NGOs involved in wildlife enforcement, such as the EAGLE network and WWF. The presence of NGO wildlife enforcement networks (WENs) is essential in order to guarantee full transparency. Representatives of diplomatic missions should also be involved in the NCU.

As the NCUs will bring together so many government departments, it is proposed that they should work directly under the Office of the Prime Minister. The mission of the NCUs will be to:

- establish a mechanism for collecting, storing and sharing information on wildlife crime;
- build awareness about wildlife criminality among stakeholders and disseminate information on wildlife laws;
- strengthen capacities of actors involved in combating wildlife crime.

In addition to supporting the process of establishment of effective wildlife crime NCUs, support from the EU should also include:

- **Continued support for international trade regulation** through support for the CITES core functions and expansion of the International Consortium on Combating Wildlife Crime (ICCWC). The ICCWC is a collaborative effort of five intergovernmental organisations: CITES, INTERPOL, United Nations Office on Drugs and Crime (UNODC), World Bank and the World Customs Organisation, which works to bring coordinated support to the national wildlife law-enforcement agencies, as well as to the sub-regional and regional networks that are fighting wildlife crime on a daily basis. The aim is to ensure better-coordinated responses to wildlife crime in order to increase the risk of detection and punishment for wildlife criminals. UNODC is currently aiding Gabon in developing a plan for improving criminal investigations for wildlife crime and establishing forensic investigation capacities. This kind of initiative should be supported and expanded.

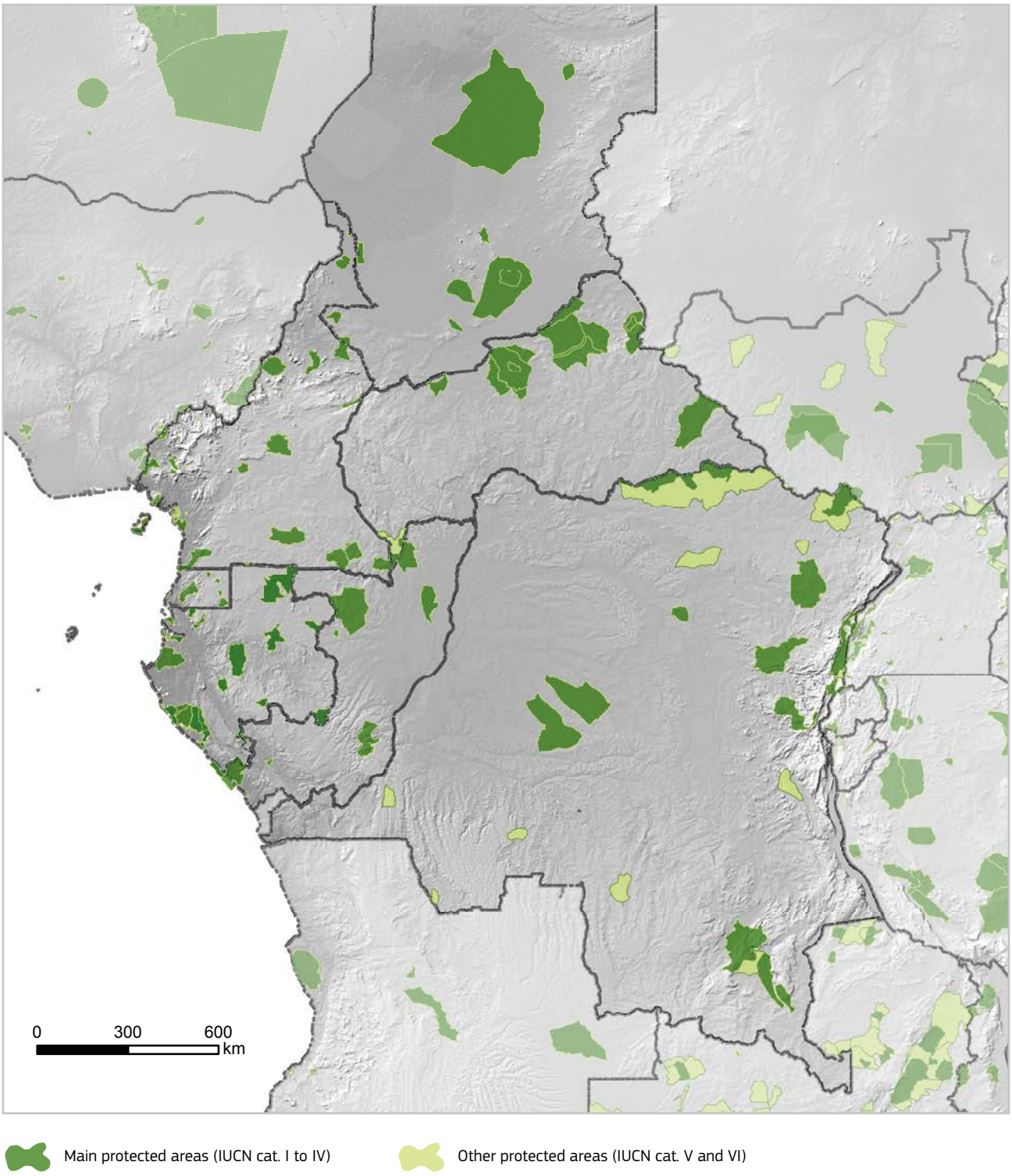
- **Support for the EAGLE network of NGO wildlife law enforcement organisations.** Given the problems of governance and capacities in the sub-region, the EU should support the EAGLE network. These NGOs, run by highly motivated national and international staff, have demonstrated over the past five years their effectiveness and efficiency (they work with very modest budgets). They work well with national law-enforcement agencies and make an important contribution to strengthening their capacities. They also help to ensure greater transparency and a wide media coverage of wildlife crime operations.

- The mobilisation of specialist international **wildlife security advisors** (Chapter 5, Section 3.9.3.3) in support of the NCUs. Dismantling wildlife crime networks requires specialist skills that are rarely available in the region.

Appendices

> _ Appendices

Figure 8. Protected areas in the Central African region



Appendix 1. The Congo Basin Forest Partnership (CBFP)

The partnership brings together the ten Member States of the COMIFAC, donor agencies, NGOs, scientific institutions and private-sector representatives. It currently has 48 members who share the commitment to enhance communication and coordination among each other and to create synergies between their respective projects, programmes and policies, in support of the COMIFAC Convergence Plan.

Governments:
Belgium, Burundi, Cameroon, Canada, Central African Republic, Chad, Democratic Republic of Congo, Equatorial Guinea, European Commission, France, Gabon, Germany, Japan, Netherlands, Republic of Rwanda, São Tomé and Príncipe, South Africa, Spain, United Kingdom, United States of America.

International Organisations:
African Development Bank, COMIFAC, FAO, Global Mechanism of the United Nations Convention to Combat Desertification, Great Apes Survival Partnership, International Tropical Timber Organisation, Secretariat of the Convention on Biological Diversity, Secretariat of the Convention on Migratory Species, UNDP, UNEP, UNESCO, World Bank.

NGOs and research groups:
African Wildlife Foundation, Centre for International Forestry Research, CUSCO International, Conservation International, Forest Trends, IUCN, Jane Goodall Institute, Last Great Ape Organisation, Réseau Africain de Forêts Modèles, The Nature Conservancy, Wildlife Conservation Society, World Resources Institute, WWF International.

Private sector:
American Forest and Paper Organisation, Inter-African Association of Forest Industries, International Technical Association for Tropical Timber, Society of American Foresters.

Source: http://www.cbfp.org

Appendix 2. List of non-governmental funders and technical partners active in Central Africa

The major NGOs implementing conservation activities in Central Africa are (in alphabetical order):

- **African Parks Foundation:** http://www.african-parks.org/ – promotes a business approach to conservation through PPP agreements. Manages in Central Africa Zakouma NP (Chad), Odzala-Kokoua NP (Congo), Garamba NP (DRC).
- **African Wildlife Foundation:** http://www.awf.org/where-we-work – active in DRC and Cameroon. Focuses on areas of great ape importance, including Maringa-Lopori-Wamba landscape in DRC, a key area for bonobo, where they support conservation, research and livelihood initiatives. Their innovative Congo shipping project enables farmers in this remote bonobo area to access markets for their produce.
- **Conservation International:** http://www.conservation.org – supports community-based natural resource management initiatives in the Maiko-Tayna-Kahuzi-Biega landscape, which encompasses the Grauer's gorilla range. Also active in Equatorial Guinea. Part of the Critical Ecosystem Partnership Fund http://www.cepf.net/Pages/default.aspx
- **Frankfurt Zoological Society:** https://www.fzs.org/en/projects-2/current-projects/ – currently supports park management activities in Virunga NP and Maiko NP. Until end 2013 also active in Upemba NP.
- **Fauna and Flora International:** http://www.fauna-flora.org/ – a founding member of the International Gorilla Conservation Programme. Supports conservation of two subspecies of lowland gorilla in Cameroon, and various conservation activities in World Heritage Sites in DRC. Helped ICCN develop its community conservation strategy.
- **International Gorilla Conservation Programme:** http://www.igcp.org – a consortium of AWF, FFI and WWF in partnership with the protected area authorities of DRC, Rwanda and Uganda for the protection of the mountain gorilla population and sustainable livelihood development. Active since 1991.
- **IUCN West and Central Africa:** http://www.iucn.org – involved in developing and implementing protected area management tools, World Heritage and Ramsar site evaluations, capacity building of civil society.
- **Jane Goodall Institute:** http://www.janegoodall.org/ – active in eastern DRC and southwest Congo (Tchimpounga chimpanzee rehabilitation centre). Developed a great ape action plan for eastern DRC.

- **Lukuru Foundation:** http://www.lukuru.org – operates in DRC, focusing on research and conservation of bonobos in Lukuru and Lomami. Also conducts research in the Bili-Uere forest-savannah transition zone of north DRC.
- **Les Amis du Bonobo du Congo:** http://www.lolayabonobo.org/ – manages a sanctuary for confiscated bonobos in Kinshasa and releases them back to the wild. Has a highly effective public awareness and education programme.
- **TRAFFIC:** http://www.traffic.org/overview/ – The wildlife trade monitoring network, known as TRAFFIC, is the leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development. It investigates and analyses wildlife trade and trends, informs and supports government and intergovernmental cooperation to adopt, implement and enforce effective wildlife policies and laws, and provides information and advice to the private sector to ensure that sourcing of wildlife uses sustainability standards and best practices.
- **Virunga Foundation:** http://acfvirunga.org/ – manages Virunga NP under a PPP agreement with ICCN. Although the conflict in this region makes law enforcement a dominating theme, tourism development (particularly mountain gorillas and volcanoes) remains highly relevant. Innovative livelihood initiatives to address the domestic energy requirements have also been developed (micro-hydroelectric plants, energy-efficient stoves and fuel). Education and health are also important sectors supported by the park. See also http://www.virunga.org
- **White Oak Conservation Centre (Gilman Conservation International):** http://wildlifeconservationglobal.org/ – active in the Okapi Wildlife Reserve (DRC) through its Okapi Conservation Project since 1987 where it has provided substantial and uninterrupted support for okapi conservation, general reserve management, and livelihoods and education initiatives.
- **Wildlife Conservation Society:** http://www.wcs.org/where-we-work/africa.aspx – active in all countries of the forested Central African region at the landscape and species levels (great ape, forest elephant, marine mammals, etc.). Deeply involved in park management, capacity building, and conservation-orientated research and monitoring. Has been one of the leading organisations developing and promoting methodologies for monitoring and research in forested environments. A major player in the Central African conservation landscape.
- **World Wide Fund for Nature:** http://wwf.panda.org/who_we_are/wwf_offices/cameroon/ – active at the landscape and species levels (great apes, elephant). WWF is involved in protected area management, policy development, capacity building, community forests and fighting wildlife criminality. It is a major player in the Central African conservation landscape.
- **Zoological Society of London:** http://www.zsl.org/about-us/ – active in DRC, Cameroon, Gabon and Equatorial Guinea. Undertakes research on the bushmeat issue and tests livelihood alternatives. Also works on single species conservation initiatives (okapi, mountain and lowland gorilla).
- **Zoological Society of Milwaukee:** active in Salonga NP, DRC for the past 30 years. Focuses on bonobo research, monitoring, training and support for anti-poaching, and education and adult literacy.

Other private organisations supporting conservation activities include:

- **Arcus Foundation**: www.arcusfoundation.org – an important funder for projects targeting Central Africa's three great apes through numerous grants to conservation NGOs.
- **Abraham Foundation:** http://abrahamfoundation.org/ – supports conservation NGOs implementing conservation activities in DRC and Cameroon, focusing on elephant and great apes. The annual Abraham Awards are given to Congolese field conservationists who have made an outstanding contribution to conservation. In recent years, many of the awards have had to be made posthumously to the families of guards who have lost their lives in the line of duty.
- **Aspinall Foundation:** http://www.aspinallfoundation.org/ – rehabilitation of gorillas in gallery forests of two protected areas on the Batéké plateau in Gabon and Congo, and support for management of the two parks.
- **Ape Alliance:** http://www.4apes.com/ – supports initiatives for Grauer's gorilla (Kahuzi-Biega), bonobo (Lukuru) and chimpanzee (Tchimpounga Rehabilitation Centre).
- **Berggorilla & Regenwald Direkthilfe:** http://www.berggorilla.de/ – a German-based NGO focusing on fundraising and lobbying for gorilla conservation.
- **Biodiversité au Katanga:** http://www.bakasbl.org/ – a Congolese NGO in the Province of Katanga, southern DRC, dedicated to biodiversity conservation through research and education.
- **BirdLife International:** http://www.birdlife.org/ – the world's largest nature conservation partnership with 13 million members and 120 partner organisations worldwide. Gathers information and monitors Important Bird and Biodiversity Areas (IBAs) and supports conservation initiatives throughout Central Africa through its network of partners and volunteers.
- **Bonobo Conservation Initiative:** http://www.bonobo.org/ – works in several protected areas of the bonobo range in DRC and implements education and sustainable development initiatives.
- **Born Free Foundation:** http://www.bornfree.org.uk/ – supports chimpanzee sanctuaries in DRC and Cameroon, and supports Kahuzi-Biega NP in DRC and LAGA's activities in Cameroon.
- **Dian Fossey Gorilla Fund International:** http://gorillafund.org/page.aspx?pid=407 – dedicated to the conservation and protection of gorillas and their habitats through research, support for protection and community conservation activities.
- **Howard G. Buffet Foundation:** http://www.thehowardg-buffettfoundation.org/ – through its Africa Great Lakes Peace Initiative it supports conservation, agriculture and economic development (USD 100 million mobilised between 1999 and 2014). Currently supports livelihood initiatives in the buffer zone of Virunga NP.

- **International Fund for Animal Welfare:** http://www.ifaw.org/european-union – a highly effective pressure group combating international wildlife crime through political advocacy and support to conservation and law-enforcement activities on the ground, with a particular focus on elephant.
- **International Conservation and Education Fund:** http://www.incef.org/ – focuses on locally produced and disseminated videos as an educational tool to foster improvement of the health and well-being of human and wildlife populations. It does this by building capacities of local media professionals to produce quality films in local languages, and building capacities among local education teams to disseminate the videos and measure their impacts.
- **International Primate Protection League:** http://www.ippl.org/gibbon/ – supports primate initiatives in Equatorial Guinea (Bioko), Cameroon (LAGA) and Congo (chimpanzee rehabilitation).
- **Liz Claybourne and Art Ortenberg Foundation:** http://www.lcaof.org/ – focuses on elephant conservation and support for park and buffer-zone management. Has been a major donor to WCS in Central Africa.
- **Margot Marsh Biodiversity Foundation:** provides small grants to a variety of primate conservation activities in Central Africa.
- **MacArthur Foundation:** http://www.macfound.org/ – supports a wide variety of conservation actions (surveys, capacity building, park management, education) through small grants to individuals and NGOs. Part of the Critical Ecosystem Partnership Fund.
- **Mohammed bin Zayed Species Conservation Fund:** http://www.speciesconservation.org/ – support for bonobo conservation in Tchuapa-Lomami-Lualaba.
- **Murry Foundation:** http://www.themurryfoundation.com – the foundation's activities include: constructing and maintaining schools for orphaned children, ensuring animal welfare, rehabilitation and release sanctuaries for endangered animals, supporting AIDS/HIV projects, and land acquisition for projects.
- **Prince Bernhard Nature Fund:** http://www.pbnf.nl/ – supports small local initiatives towards the conservation and wise use of natural resources. The fund aims to help save critically endangered flora and fauna.
- **Rufford Foundation:** http://www.rufford.org – a UK-based charity making numerous small grants for a wide range of nature conservation and sustainable livelihood projects. Funds projects throughout Central Africa.
- **The Thin Green Line Foundation:** http://www.thingreenline.org.au/ – focuses on supporting rangers with training, equipment and other resources in high biodiversity value conflict zones. Provides support for the widows and children of rangers.

Universities, international research organisations active in Central Africa include:

- **Centre for International Forestry Research (CIFOR):** http://www.cifor.org/ – research themes cover climate change, smallholder and community forests, conservation and development trade-offs, globalised trade and investment, and production forests.
- **Environmental Investigation Agency (EIA)**: http://www.eia-international.org/ – an independent campaigning organisation committed to protecting the natural world from environmental crime and abuse. Areas of expertise are ecosystems and biodiversity, environmental crime and governance, climate change.
- **French Agricultural Research Centre for International Development (CIRAD):** http://www.cirad.fr/en – research themes include biodiversity and development, alleviating food insecurity, sustainable management of forest ecosystems, monitoring the emergence of agro-industrial plantations, animal disease epidemiology.
- **International Tropical Timber Organization (ITTO):** http://www.itto.int/ – an intergovernmental organisation promoting the conservation and sustainable management of tropical forests.
- **Joint Research Centre (JRC):** http://ec.europa.eu/jrc/ – the EU's JRC oversees the implementation of the BIOPAMA and OFAC projects, and supports local organisations through capacity building, provision of mapping and other data.
- **Kyoto University:** http://www.kyoto-u.ac.jp/en – undertakes research on great apes in DRC and Gabon.
- **Max Planck Institute for Evolutionary Anthropology:** http://www.eva.mpg.de/ – focuses on gorilla and bonobo research and conservation in CAR, Gabon, DRC, Rwanda and Uganda. Developed and houses the IUCN/A.P.E.S. great ape database and mapper.
- **Rainforest Foundation UK:** http://www.rainforestfoundationuk.org/ – supports indigenous forest peoples in their efforts to protect their environment and fulfil their rights to land and sustainable livelihoods. Has produced many excellent analyses on forest-related issues (climate change, indigenous peoples, conservation, law and policy, rights and livelihoods).
- **South Dakota State University (SDSU):** monitoring of forest cover change in the Congo Basin, particularly in and around protected areas, and training. A partner in the Central African Forest Observatory (OFAC).
- **University of Stirling:** involved in primate research for many years.
- **University of Maryland:** a partner of OFAC doing forest cover mapping and analyses, and training.
- **Université Catholique de Louvain:** a partner of OFAC doing forest cover changes and analyses, and training.
- **World Resources Institute:** http://www.wri.org/ – forest mapping of the Congo Basin. Has produced forest atlases of each of the rainforest countries of Central Africa.
- **World Agroforestry Centre (ICRAF):** http://www.cgiar.org/ – a consortium of 15 research organisations working on a wide range of agroforestry and sustainable agriculture issues.