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Larger than elephants

Inputs for the design of an EU strategic approach to Wildlife Conservation in Africa

**Volume 1
Synthesis**

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Consortium B&S

A joint patrol of Gabonese and Congolese forest guards with seized ivory in a poachers' camp on the Ivindo River, Gabon-Congo border. Photo © Victor Mbolo - WWF



Afar herdsman near the Filoha springs in Awash National Park, Ethiopia. Photo © M. Murray.



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ACRONYMS

AEC	African Economic Community
AES	African Elephant Summit
AfESG	African Elephant Specialist Group
AfRSG	African Rhino Specialist Group
AMD	African Mammal Databank
ARREST	Africa's Regional Response to Endangered Species Trafficking
AU	African Union
BIOPAMA	Biodiversity and Protected Areas Management
CAR	Central African Republic
CBD	Convention on Biological Diversity
CBFP	Congo Basin Forest Partnership
CBMRM	Community Based Natural Resource Management
CEMAC	Economic and Monetary Community of Central Africa
CI	Conservation International
CITES	Convention on International Trade in Endangered Species
COMESA	Common Market for Eastern and Southern Africa
COMIFAC	<i>Commission des Forêts d'Afrique Centrale</i> (Central African Forests Commission)
DG	Directorate General
DG DEVCO	EU Directorate General for Development and Cooperation
DG ENV	EU Directorate General of Environment
DOPA	Digital Observatory for Protected Areas
DRC	Democratic Republic of Congo
EAGLE	Eco-activists for governance and law enforcement
EAC	East African Community
ECCAS	Economic Community of Central African States (<i>Communauté Economique des Etats d'Afrique Centrale - CEEAC</i>)
ECOWAS	Economic Community of West African States
ECOFAC	Ecosystèmes Forestiers d'Afrique Centrale
ECOFAUNE	Ecosystèmes Fauniques du Nord-Est RCA
EIA	Environmental Impact Assessment
ETIS	Elephant Trade Information System
EU	European Union
GDP	Gross Domestic Production
GIS	Geographical Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IBA	Important Bird Area
ICCWC	International Consortium on Combating Wildlife Crime
IFAW	International Fund for Animal Welfare
IGAD	Intergovernmental Authority on Development
INTERPOL	International Criminal Police organization
IUCN	International Union for Conservation of Nature and Natural Resources
JRC	Joint Research Centre of EU
KfW	Kreditanstalt für Wiederaufbau - Development Bank
KLC	Key Landscape for Conservation
LAGA	The Last Great Ape organization
LIFE/LIFE+	EU funding instrument for the environment

MDG	Millenium Development Goal
MIKE	Monitoring the Illegal Killing of Elephants
MIKES	Minimizing the Illegal Killing of Endangered Species
NASCO	Namibian Association of CBRNM Support Organisations
NGO	Non-governmental Organization
NP	National Park
NTFP	Non-Timber Forest Products
PA	Protected Area
PPP	Public Private Partnerships
RAPAC	Réseau des Aires Protégées d'Afrique Centrale
REDD/REDD+	Reduced Emissions from Deforestation and Forest Degradation/REDD+
SADC	Southern Africa Development Community
SEA	Strategic Environmental Assessment
SSC	Species Survival Commission of IUCN
TEEB	The Economics of Ecosystems & Biodiversity
TFCA	TransFrontier Conservancy Aera
TRAFFIC	The Wildlife Trade Monitoring Network
UEMOA	<i>Union Economique et Monétaire Ouest-Africaine</i> (West African Economic and Monetoary Union - WAEMU)
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNODC	United Nations Office on Drugs and Crime
UNEP	United Nations Environmental Program
UNWTO	United Nations World Tourism Organisation
USAID	United States/ US Agency for International Development
USFWS	United States Fish and Wildlife Service
WAEMU	West African Economic and Monetary Union (<i>Union Economique et Monétaire Ouest-Africaine - UEMOA</i>)
WCO	World Customs Organization
WCS	Wildlife Conservation Society
WEN	Wildlife Enforcement Network
WCMC	UNEP World Conservation Monitoring Centre
WH	World Heritage
WLFC	Wildlife and Forest Crime
WWF	Worldwide Fund for Nature

0 RATIONALE

The impetus for developing the strategic approach proposed in these volumes has come from the growing global awareness of a wildlife crisis in Africa. Although the much publicised plight of the African elephant and rhino has placed the issue at the forefront of international debate, conservation practitioners working on the ground in Africa have known for a long time that the wildlife crisis is by no means limited to a few iconic African wildlife species which are only the visible portion of an iceberg that hides a steady erosion of wildlife over a wide range of species in all biomes. The scale of the wildlife crisis is immense and one of the main aims of this document is to underline (a) just how much needs to be done and why, (b) what are likely to be the most realistic and effective strategic priorities for saving Africa's wildlife heritage, given the rate of human population growth and associated habitat loss. It is also hoped that the document will serve as a way of federating the different wildlife conservation actors, both within and outside Africa, around a balanced series of common themes.

One of the key points that emerges from the following is that the pressure on land and natural resources in Africa has increased conspicuously in recent decades, and is set to increase considerably more as a result of ongoing demographic and economic trends; more than ever before, Protected Areas have to be at the heart of any strategic approach to wildlife conservation as these are the areas where the most intact assemblages of Africa's wildlife are found. A second key point is that African people living in wildlife-rich areas need to have tangible benefits in the preservation of Africa's wildlife if they are (a) to accept the costs of living with it and (b) be able to continue using it sustainably. Thirdly efforts to tackle the international illegal trade require concerted actions to stop the killing, stop the trafficking and stop the demand for wildlife and forest products. Fourthly good quality and up-to-date information is essential in order to inform the choice of strategic options and monitor outcomes. Lastly, all of the above will require a whole raft of institutional, policy and legal improvements or changes to occur in parallel.

Combining the above considerations brings us to an overall objective, or desired outcome, for the strategic approach to wildlife conservation:

A full suite of viable populations of the unique wildlife heritage of Sub-Saharan Africa maintained in healthy, functioning and resilient ecosystems supporting livelihoods and human development.

Thus the strategic approach developed herein is primarily targeted at the conservation of large functioning ecosystems or landscapes supporting key African wildlife populations. It contributes to wider goals of biodiversity conservation by, for example, protecting many small areas of outstanding importance to particular threatened taxa where those small areas fall within larger conservation landscapes. A secondary tactic supporting wider biodiversity goals is to make conservation funds available to agencies and projects protecting small important sites that cannot be contained in the large key landscapes identified.

The Strategic Approach to Wildlife Conservation in Africa is presented in six volumes as follows:

- Volume 1: Synopsis**
- Volume 2: Southern Africa**
- Volume 3: Eastern Africa**
- Volume 4: Central Africa**
- Volume 5: Western Africa**
- Volume 6: Additional Sections – Elephants, Rhinos, Trade, Madagascar, Birds, Other Wildlife**

The first five volumes are each arranged according to six chapters (following an Executive Summary): 0. Rationale; 1. Special Features of the Region; 2. Conservation Challenges and Issues; 3. Ongoing Conservation Efforts; 4. Lessons Learnt and Promising Approaches; and 5. Indicative Conservation Actions. A somewhat different format is found in Volume 6 which begins with three chapters (Elephants, Rhinos, Trade) that relate to the wildlife crises currently affecting elephants, rhinos, numerous 'bushmeat' species including many rare forest specialist species, and various plants and trees that have market value. These three chapters contain relevant background information and strategic approaches aimed at stopping the killing, the trafficking and the demand. There is a separate chapter on Madagascar because of its unique conservation status and geographic isolation. A fifth chapter introduces priorities for bird conservation, highlighting the coordinated conservation of European-African bird migrations. An annex provides additional information on various other wildlife groups (including fish, amphibians, insects, large carnivores and great apes) that warrant special mention.

We recognise that the wildlife crisis is not confined to the terrestrial environment and that marine ecosystems are also critically impacted by unsustainable harvesting. Furthermore, we are aware that issues relating to the impoverishment of the marine environment are as far reaching as those of the terrestrial environment. A separate, but linked, strategic approach is therefore required for marine ecosystems. Similarly a separate but linked strategic approach may be required for conservation of freshwater ecosystems which recognizes unique elements of the aquatic fauna. Some freshwater ecosystems are incorporated into this strategy, particularly those wetlands that have importance for water birds, or as terrestrial ecosystems in their own right (such as Okavango Delta, swamp forest areas in Central Africa, Rift Valley Lakes, the Sudd, Lake Chad, Senegal Delta and Inner Niger Delta), or have exceptional importance for biodiversity (Lakes Malawi and Tanganyika for example).

The European Union wishes to assist in building an inclusive strategic approach to the conservation of African wildlife that involves all political and organisational stakeholders working for the benefit of Africa, its wildlife heritage and its peoples. This document may be viewed as a first step in the process of building a consensus, after which the various strategic elements proposed will need to be translated into action through a series of programmes and projects for which detailed results and indicators will have to be developed and rigorous performance monitoring and accountability measures applied. Through cooperation we trust that the long-term future of African wildlife can be secured and that this will be done in such a way as to provide greatest benefits to the nations and peoples of Africa, and not least to the local people who live alongside and within some of the most spectacular wild ecosystems on the planet. The natural heritage of Africa greatly enriches the global natural heritage and we hope this strategic approach to its conservation will encourage others to adopt compatible strategic approaches in other regions.

1 INTRODUCTION AND SPECIAL FEATURES OF SUB SAHARAN AFRICA

1.1 BACKGROUND TO THE CURRENT STUDY

Africa – the cradle of human evolution and continent of iconic wildlife such as elephants, rhinos and lions - is facing an unprecedented wildlife crisis. A combination of habitat loss and degradation, poaching and changing climate amidst a context of poverty, political instability, weak governance and porous international boundaries is driving a high proportion of the continent's unique fauna and flora towards extinction. This constitutes a tragic loss of irreplaceable global heritage, a loss of resources desperately required for the livelihood of local communities, loss of vital ecological services, collapse of unique wildlife migration networks and fuels a vicious cycle of further poverty, corruption, and illegal operations by terrorist organizations.

The objective of this document is to identify at the scale of Sub-Saharan Africa the principal threats to wildlife (including animals and plants) and the most appropriate responses. This includes interventions to tackle both broad wildlife conservation needs and specifically the growing problem of illegal wildlife trade (including ivory, rhino horn, endemic species, bushmeat and rare timbers). Special attention is also given to improvement of the livelihood of rural populations in the vicinity of wildlife-areas with a view to reducing their reliance on unsustainable use of wild resources and illegal use of protected wildlife. A fundamental prerequisite to reach these objectives is to address indifference and low awareness of civil society at national and international level by communication and education.

The document outlines a proposed strategic approach at global, regional and local levels within an urgency timescale from immediate to long-term actions to stem the growing wildlife crisis in Africa. It is intended to help guide inputs and better coordinate programmes for wildlife conservation in Africa. Gaps in current attention are identified, innovative approaches are proposed and approaches currently showing success are recommended for up-scaling and wider application.

The full report is structured into 6 documents:

- **Synthesis**
- **Southern Africa** - Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe
- **Eastern Africa** - Burundi, Eritrea, Ethiopia, Kenya, Tanzania, Rwanda, Uganda, South Sudan, Somalia
- **Central Africa** - Cameroon, Central African Republic, Chad, Congo Republic, DR Congo, Equatorial Guinea, Gabon, São Tome e Príncipe
- **Western Africa** - Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo
- **Special Topics** - Elephants, Rhinos, Trade, Madagascar, Birds, Other wildlife.

1.2 AFRICA – ICONIC WILDLIFE CONTINENT

The word Africa is almost synonymous with wildlife and safari. Here we find vast wild landscapes of forests, savannahs, mountains, wetlands, coasts, and deserts with a dazzling range of animals from okapi to penguins. This is the home of the 'big five' – elephant, rhino, buffalo, lion and leopard so attractive to safari tourists. Africa is the cradle of Mankind, origin of our species and ape ancestors. Africa retains the last great migrations of mega-fauna, literally millions of antelopes trailing over great savannahs between seasonal feeding areas. The continent is home to many thousands of additional wildlife species which also show a high level of continental endemism as a result of Africa's long geological history of isolation. The island of Madagascar constitutes a unique mini-

continent with its own strange fauna of lemurs and unrivalled levels of endemism in most taxa. The rivers and lakes of Africa contain thousands of unique fish species including the endemic cichlids so familiar in aquaria or on the dining table as tilapia. The Congo basin alone contains an estimated 1,250 fish species¹. Africa contains 3 of the world's 17 "Megadiversity" countries – Democratic Republic of the Congo, South Africa and Madagascar².

1.3 PATTERNS OF WILDLIFE DISTRIBUTION

Wildlife is not distributed uniformly across the continent but follows patterns of geography, climate, vegetation, faunal barriers, Pleistocene refugia and anthropogenic transformations of the landscape. It is clearly not possible to conserve all parts of the continent. The challenge is therefore to identify the most important areas for wildlife and focus conservation inputs where they can deliver the best positive impacts.

Overall vegetation distribution shows a core of humid evergreen forests in the tropical zone of the Congo basin, Guinea coast and eastern Madagascar, whilst deserts prevail across North Africa and in SW coastal Africa. Between these extremes, vegetation grades from woodlands to savanna to arid scrub. This major pattern is complicated by a pattern of lakes and wetlands and a few high mountains and plateaus (Figure 1).

Different species are specialized to occupy different vegetation zones but their distributions also reflect factors of geographic isolation, radiations and refugia. The plants themselves show ancient phytochoria with high levels of endemism in regions of past floral radiation³. Animal taxa show widely different distribution patterns. Aquatic life shows great richness and endemism in isolated lakes and large river systems. Insects, birds and primates are best represented in the forest regions whilst ungulates and large carnivores are mostly distributed in savanna areas. Many rare endemics are confined to isolated montane regions. Other species, such as the African elephant, have a broader habitat use and are widespread across the continent.

1.3.1 Prioritization approaches

Many approaches have been developed to assess and prioritize the biological importance of different areas in Africa with respect to different criteria including diversity, endemism, endangered species, wilderness areas etc. All have their merits but no single approach comprehensively covers all aspects. They include WWF's global 200 selection of the most important eco-regions⁴, Conservation International's Megadiversity approach for areas with greatest overall biodiversity, or its Hotspot approach for areas combining high levels of biological importance with high levels of threat^{5, 6}, specific efforts to identify sites of plant importance⁷, bird importance⁸ or other taxa and the interesting approach of global irreplaceability⁹. Reference was made to all these approaches during the present work and the areas identified (section 5.1) do cover all the major ecosystems and consistently rate as high

¹ Darwall, W.R.T., Smith, K.G., Allen, D.J., Holland, R.A., Harrison, I.J., and Brooks, E.G.E.(eds.). 2011. *The Diversity of Life in African Freshwaters: Under Water, Under Threat*. An analysis of the status and distribution of freshwater species throughout mainland Africa. Cambridge, United Kingdom and Gland, Switzerland: IUCN. xiii+347pp+4pp cover.

² R.A. Mittermeier, P Robles Gil & C. Goettsch Mittermeier, 1997. Megadiversity. *Earth's Biologically Wealthiest Nations*. Conservation International

³ White, F. (1983) *The vegetation of Africa: A descriptive memoir*, UNESCO, Paris.

⁴ Olson, D. M., Dinerstein, E. 2002. The Global 200: Priority ecoregions for global conservation. *Annals of the Missouri Botanical Garden* 89(2):199-224.

⁵ Myers, N. et al. (2000) Biodiversity hotspots for conservation priorities. *Nature* **403**: 853–858.

⁶ Mittermeier, R.A. et al. (2004) *Hotspots Revisited: Earth's Biologically Richest & Most Endangered Ecoregions*. CEMEX, Mexico City

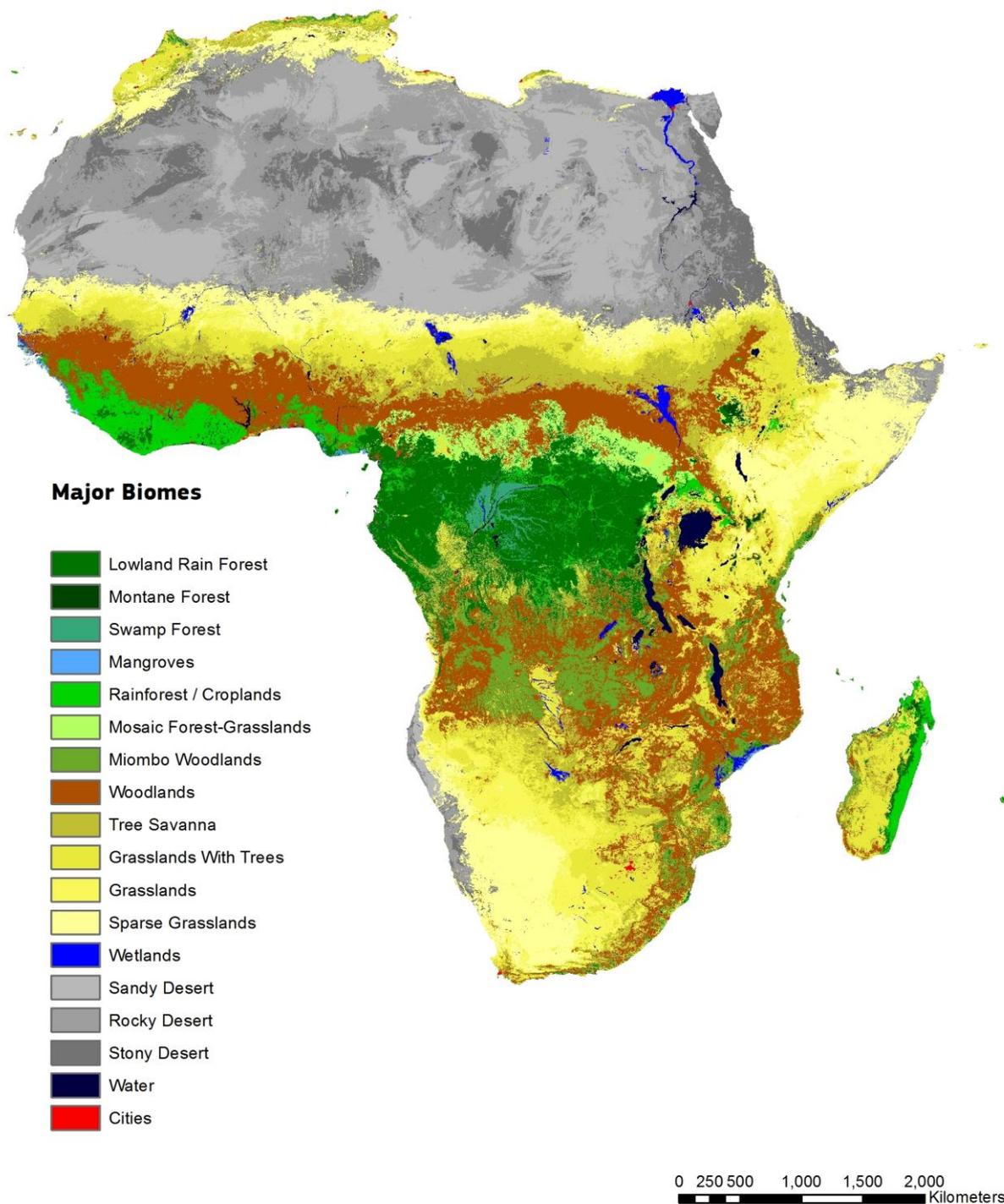
⁷ Davis, S.D. et al. (1994, 1995, 1997) *Centres of Plant Diversity: A Guide and Strategy for their Conservation*. Volumes 1–3. WWF, Gland, Switzerland and IUCN, Cambridge, UK.

⁸ BirdLife International (2013). *State of Africa's birds 2013. Outlook for our changing environment*. Nairobi, Kenya: BirdLife International Africa Partnership.

⁹ Le Saout et al 2013. Protected areas and effective biodiversity conservation. *Science* 342: 803-805.

importance for most taxa. For more detailed information on patterns of wildlife distribution in sub Saharan Africa the reader should refer to Volume 6, chapter 6.

Figure 1. Major African biomes (JRC)



1.4 THE SOCIO-ECONOMIC SETTING

As one after another of the former European colonies gained independence the second half of the 20th century has seen massive socio-economic changes across sub-Saharan Africa. Stability of the fledgling nations has been questionable with frequent civil wars, coups d'états, rebellions and cross-border incursions. Population rose dramatically from 220 million in 1950 to 800 million by the turn of the century and is projected to reach 2.1 billion by 2050 and almost 4 billion by 2100 (Table 1). **This exponential rise in the human population on the African continent will have a profound impact on the distribution and abundance of wildlife.** The case of Tanzania whose GDP is largely dependent on tourism based on wildlife starkly illustrates this point. At current rates of population growth by the end of the century the population of Tanzania will be two thirds that of the USA but in an area 10 times smaller. Worse still Nigeria, also with a surface area roughly 10 times smaller than the USA, is projected to have a population that will be double that of the USA.

New industries have emerged in the form of beef ranching, commercial plantations of traditional crops such as banana, mangos, yams, groundnuts, cola and oil palm plus new crops such as cocoa, rubber, coffee, tea, sisal. Forest regions have established timber production industries. Several countries have been able to build up significant industries based on eco-tourism. Overall, agricultural production (including fisheries) supplies most of the domestic economy but only c. 30% of African exports. The bulk of exports are derived from oil and gas reserves and the mining of gold, diamonds, copper, chromate, cobalt, manganese, phosphorus, aluminium and uranium with rare metals emerging as a new precious resource (eg coltan – Columbite and Tantalite metal ore used for producing tantalum capacitors in the electronics industry).

Despite this great wealth in natural resources, the economic development of the continent has been disappointing. Although Africa and Asia had similar levels of income in the 1960s, Asia has since outpaced Africa. Of the 49 countries listed globally as “Least Developed Countries” by UN 34 are in Africa. Poor performance has been blamed on lack of infrastructure, lack of investment, political instability and corruption. Corruption has involved extracting profit from trade and industry and exporting this capital overseas rather than reinvesting in local economies. Researchers estimate that from 1970 to 1996, capital flight from 30 sub-Saharan countries totalled \$187bn, exceeding those nations' external debts¹⁰.

Since 2000, the African economy has improved considerably. In 2013, Africa was the world's fastest-growing continent at 5.6% per annum, and GDP is expected to rise by an average of over 6% a year between 2013 and 2023¹¹. Growth has been present throughout the continent, with over one-third of Sub-Saharan African countries posting 6% or higher growth rates, and another 40% growing between 4% and 6% per year. China and India are increasingly important trade partners; 12.5% of Africa's exports are to China, and 4% are to India, which accounts for 5% of China's imports and 8% of India's. The Group of Five (Indonesia, Malaysia, Saudi Arabia, Thailand, and the United Arab Emirates) are another increasingly important market for Africa's exports¹².

One of the secrets of Africa's economic upturn has been the emergence of effective economic trading blocs and growing political maturity. Since 1975 a variety of different political and economic unions have evolved including the African Union (AU), African Economic Community (AEC), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), Southern African Development Community (SADC), Economic Community of Central African States (ECCAS), Economic and Monetary Community of Central Africa (CEMAC), Economic Community of West African States (ECOWAS), West African Economic and Monetary Union (WAEMU), and the New Partnership for Africa's Development (NEPAD - an economic development programme of the AU). These structures can play a key role in advancing conservation agendas. For example SADC is

¹⁰ Wrong, Michela (2005-03-14). "[When the money goes west](#)". New Statesman. Retrieved 2006-08-28.

¹¹ <http://www.worldbank.org/en/region/afr/overview>

¹² [Economic Report on Africa 2012](#)". United Nations Economic Commission for Africa (UNECA). p. 44. Retrieved 2 March 2013.

closely involved with the development of Peace Parks and TFCA's through its Protocol on Wildlife Conservation and Law Enforcement (Vol. 2, section 4.2.1.1). In Eastern Africa the EAC promulgated a Protocol on Natural Resource Management and the East African Legislative Assembly passed the EA Community Transboundary Ecosystems Bill (Vol. 3, section 3.4.2). In Central Africa ECCAS has set up an anti-poaching cellule in response to the upsurge in wildlife crime and trafficking and its links to national security (Vol. 4, section 3.1).

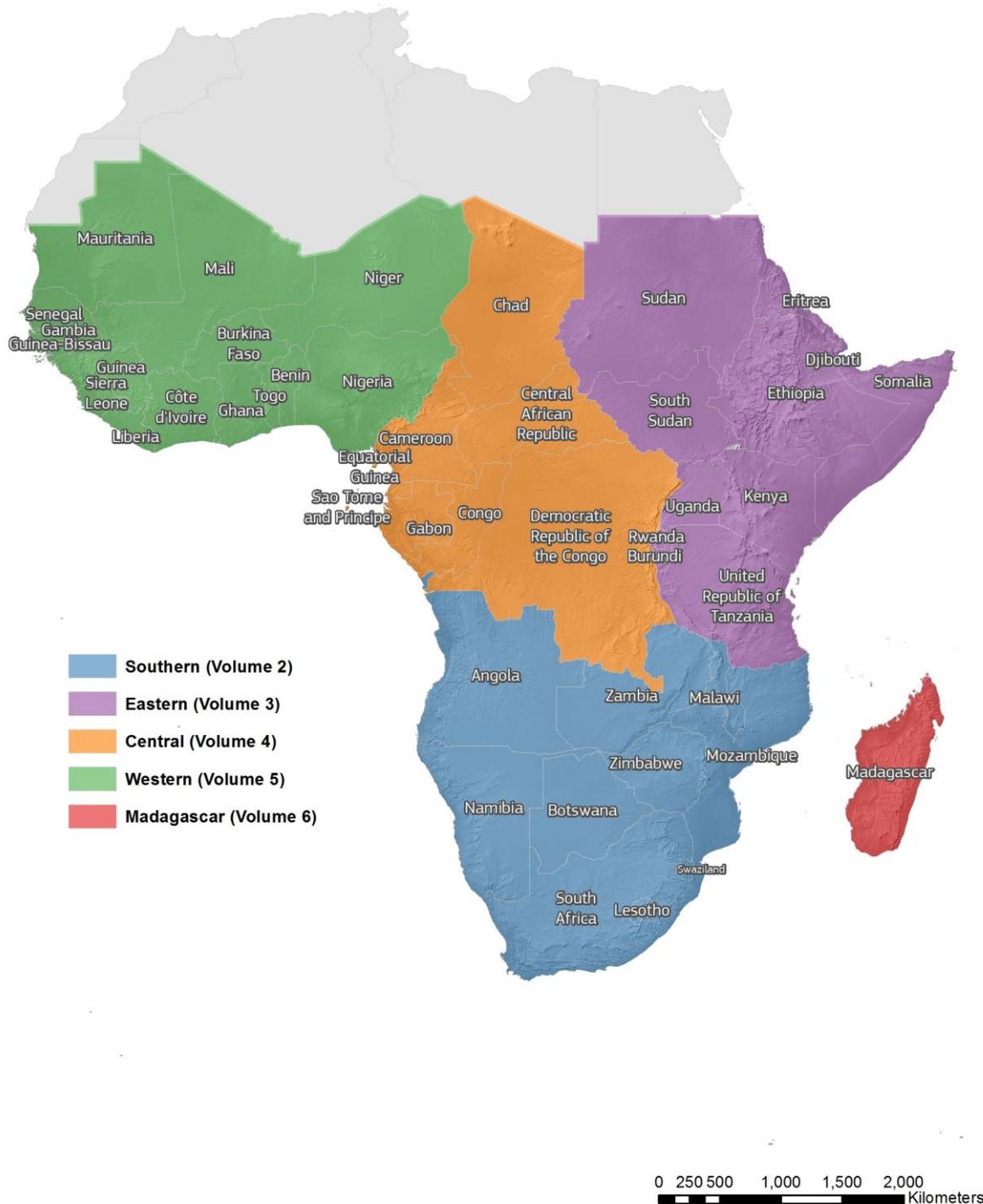
Table 1. Human Population Trends in sub Saharan Africa (countries covered in this document)

	Population Size (Millions)		
	2013	2050	2100
Southern Africa	151	298	525
Angola	21	54	97
Botswana	2	3	3
Lesotho	2	3	3
Malawi	16	41	85
Mozambique	26	60	112
Namibia	2	4	4
South Africa	53	63	64
Zambia	15	44	124
Zimbabwe	14	26	33
Eastern Africa	313	714	1 208
Burundi	10	27	56
Djibouti	0,9	1	1
Ethiopia	94	188	243
Eritrea	6	14	22
Kenya	44	97	160
Rwanda	12	25	36
Somalia	10	27	54
Sudan	38	77	116
South Sudan	11	25	39
Tanzania	49	129	276
Uganda	38	104	205
Central Africa	114	261	448
CAR	5	8	12
Cameroon	22	49	82
Chad	13	33	63
Congo	4	11	21
DR Congo	67	155	262
Equatorial Guinea	0,7	2	2
Gabon	2	3	5
Sao Tome and Principe	0,1	0,4	0,6
Western Africa	333	811	1 634
Benin	10	22	33
Burkina Faso	17	41	75
Gambia	2	5	8
Ghana	26	46	57
Guinea	12	24	36
Guinea Bissau	2	3	6
Ivory Coast	20	42	76
Liberia	4	9	16
Mali	15	45	101
Mauritania	4	8	12
Niger	18	69	204
Nigeria	174	440	913
Senegal	14	33	58
Sierra Leone	6	10	14
Togo	9	14	25
Madagascar	23	55	105
Africa & Madagascar	934	2 139	3 920

1.5 SPECIAL FEATURES OF THE REGIONS

For convenience it is common to consider sub-Saharan Africa as four regions – western, central, eastern and southern (Figure 2). Madagascar is biologically so distinct as to merit special regional treatment. Each region has shared features of geography, language and political relations. Each region also has distinctive characteristics in terms of wildlife and conservation priorities.

Figure 2. Countries of the 4 regions as defined in this document.



1.5.1 Southern Africa

The ten countries of southern Africa comprise the wealthiest and most developed region of Sub-Saharan Africa, although development of countries is rather uneven. They also exhibit very high diversity of habitats and species. Physically much of the region is a raised plateau edged by a great escarpment on its south eastern edge, including the dramatic Drakensberg Mountains and flat-topped Table Mountain. This combined with the southerly location results in colder southern winters than the rest of Africa and indeed penguins can be found at the most southerly points.

Physical wonders of the region include the great Etosha salt pans, the unique inland delta of Okavango and the great Victoria Falls on the Zambezi River. The region contains some large deserts such as the Kalahari - home of the Bushmen or San People. The ancient Namib Desert, which has been arid for 55 million years, is considered to be the oldest desert in the world. It extends along the coast of Namibia merging with the Kaokoveld Desert in Angola and the Karoo Desert in South Africa which has the world's richest flora of succulent plants. Fynbos shrubland forms a major element of the Cape Floristic Region which is one of the six recognised floral kingdoms of the world with some 9,000 vascular plant species of which 69% are endemic to South Africa. Another important centre of plant endemism lies on the eastern coast of southern Africa below the Great Escarpment.

Lake Malawi is the most southerly lake of the East Africa Rift system. It is 570km long. The lake contains more species of fish than any other lake on earth including an incredible radiation of more than 1,000 endemic species of cichlid fish. It also contains tilapia, a globally important food species, four mouth-brooding species of chambo (*Nyasalapia*), and many endemic molluscs.

With some of the oldest and largest reserves and parks in Africa, southern Africa contains more elephants and rhinos than the rest of the continent. Parts of the region face great pressure from expanding rural populations; however Namibia has the lowest human population density. With agriculture limited in arid regions the emphasis is placed on ranching, leading to the erection of thousands of fences which pose a hazard and barrier to the wildlife of the dry forest and savanna.

Southern African countries have had a long record of wildlife conservation and game management and have been pioneers of community-based natural resource use, transfrontier conservation and other innovative conservation approaches.

1.5.2 Eastern Africa

East Africa is the most complex and diverse of the four regions in terms of physical geography, climate, biodiversity and human culture and languages. The region includes the highest and lowest points on the continent and a range of habitats from rain forests and coastal reefs to deserts. Unique features include the montane fauna and flora of the Ethiopian highlands, the tropical glaciated mountains of Ruwenzori, Kenya and Kilimanjaro, the forested escarpments of the Albertine Rift valley, the great lakes of Africa including unique soda lakes with their amazing flocks of millions of pink flamingos, the unique Horn of Africa, the largest and most spectacular migrations of savanna wildlife – wildebeest, zebra and associated antelopes, gazelles and stalking carnivores – in the Mara-Serengeti region between Tanzania and Kenya or white-eared kob and tiang in Gambella-Boma between Ethiopia and South Sudan, plus some important relict forests of the East African coasts. The region contains many of the most famous and spectacular protected areas of the continent.

The famous Ngorongoro crater of Tanzania is a testimony to the volcanism of the region and the Virunga volcanos that form the border between eastern Africa and central Africa are still active today.

The 676 km long rift lake, Lake Tanganyika, is the longest freshwater lake in the world and only exceeded in total mass and absolute depth by Lake Baikal in Russia. The lake has a maximum depth of 1,470 m. It also harbours 250 cichlid fish and 150 other fish species. 98% of the cichlids are endemic. The much shallower Lake Victoria covers more area but is not a rift lake, shows less endemism but remains an important fishery for local populations of three countries.

The region contains many important fossil sites of early man and ancestral hominids with associated animal remains.

1.5.3 Western Africa

Western Africa comprising 15 countries, exhibits a gradation of aridity from the southern fringes of the great Sahara desert in the north, through the arid Sahel region, seasonally arid Western African savanna woodlands and very diverse evergreen rainforests along the Guinea coast region, fringed by tropical mangrove forest. The homogeneity of these zones is broken by isolated mountain blocks such as Mount Nimba, Loma Mountains, Fouta Djallon, Air and Jos plateau, some large lakes and rivers. The Guinea rainforests are divided into two distinct blocks by the Dahomey gap. The forest of southern Nigeria and Cameroon is transitional between Western and Central Africa as well as being a distinctive and very bio-diverse Pleistocene refuge in its own right. The region is characterized as having high biodiversity values in a wide range of ecosystems, but weak and underfunded management for biodiversity protection. Specially significant wildlife of Western Africa include several key endemics such as pygmy hippo, several other primates, duikers, birds, amphibians and reptiles. More widespread species of high conservation importance include elephant, lion, chimpanzee, desert cheetah, the Cross River gorilla, giant eland, giraffe and several northern antelopes (addax, oryx, roan etc.). Wetlands are of huge international significance for migrating waterbirds as well as local fisheries. Western Africa is the main wintering area for a large suite of Afro-Palaearctic migrant birds. Biological richness is very high in the small forest zone.

Matched to the climatic zones are patterns of human life patterns. The desert and Sahel regions are characterized by pastoral herders, whilst the more humid southern sectors are populated by farmers. As Sahel conditions have become increasingly unproductive as a result of climate change, overgrazing, and unsustainable cutting of its few trees for fuel and charcoal, herdsmen have been forced to move ever southwards. Meanwhile the creation of political or national boundaries has changed some of the original pastoral migration patterns. Greatly increased population density in the agricultural zones has led to the extension of farm clearance of woody vegetation into the forest zones and further north. The result is a clash of ethnic and religious groupings and life styles and the entire region has been repeatedly devastated by civil unrest. The region is also characterized by poor institutional governance and weak monitoring, poor planning and policy and sectorial approaches with unsustainable land and resources use.

The biodiversity rich forest zone is threatened by fragmentation, bushmeat hunting and conversion to agriculture whilst the arid savanna zone has been almost stripped of larger wildlife with a system of large but degraded and almost empty protected areas.

1.5.4 Central Africa

Central Africa contains the most extensive continuous forests in all of Africa. 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 Congolian swamp forests are the largest area of swamp forest on the planet. The Gulf of Guinea islands of Equatorial

Guinea and São Tome and Príncipe (named the Galapagos of Africa for the richness of endemism) 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 savannahs produce a number of biologically important and unique ecosystems.

Overall diversity, particularly floral diversity, of the central African forests is high, though not as high as the southern African region. 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. Iconic and endemic species include forest elephant, okapi, four subspecies of gorilla, bonobo, aquatic genet, and Congo peacock. 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.

The Congo basin is also a gigantic carbon sink and as such plays a vital role in regulating the planet's greenhouse gases. 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. It is important to underline that average rainfall over the Congo basin is relatively low (c. 2,000 mm) compared with Amazonia and south east Asia and places 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 profound. The vastness and apparent intactness of the moist tropical forests of the Congo basin forests therefore belies the extreme precariousness of its existence.

A key difference to other regions of Africa is the generally intact nature of vast areas of habitat outside protected areas, particularly in the moist forest zone, together with the low human densities. This means that it is not too late to do something for conservation. Elsewhere in Africa much of the natural habitat outside protected areas has already gone or is severely degraded.

1.5.5 Madagascar

Although separated from the African continent by a gap of barely 400 km, the island of Madagascar has evolved in isolation from Africa for 165 million years and from India for 65 million years. It exhibits both high species richness and extraordinary levels of endemism. There are more plant species in Madagascar than the entire Congo basin. Forests to the north and west are humid whilst those in the east and south are increasingly arid. The island constitutes a region of disproportionate conservation importance with high levels of endemism and high proportion of endangered species.

Special fauna of Madagascar include the famous lemurs, tenrec and chameleons. Several of the larger fauna were exterminated after the arrival of humans, including giant tortoises and the enormous elephant birds, whose fractured eggs shells can still be found today.

The main threat to forests is slash and burn agriculture, known as tavy in Madagascar. In the East, tavy is principally for hill rice whereas in the west and south it is practiced to cultivate a mixture of crops, usually cassava and a mixture of vegetables. As the human population has risen, fallow periods have decreased and more forests have been cleared. In addition, cutting for charcoal production and illegal harvest of rare timbers such as rosewood compounds the deforestation problem. Hunting for bushmeat is a direct threat to wildlife whilst mining

for ilmenite, nickel and cobalt is a new and growing threat that is impacting several protected areas including Ankarana and Isalo national parks.

1.6 THE ASIA DIMENSION

The rapid growth of Asian economies and most notably the growth of China over the past few decades profoundly impacts Africa's natural resource base. China is not only now the biggest market for mineral wealth of the continent but is also the largest market for timber (both legal and illegally sourced), and wildlife parts (both legal and illegal). Wildlife imports include rare woods, orchids, all types of reptiles, pangolins, primates, parrots, all parts of rhinoceros and ivory. Japan and Philippines are also important importers of elephant ivory whilst Viet Nam is now the biggest importer of rhino horn.

2 CONSERVATION ISSUES AND CHALLENGES

International attention, involving many very high profile individuals (royalty, world leaders, film stars and celebrity sportsmen), has been highly alerted to the devastating and horrific levels of poaching of elephants and rhino. More sustained awareness has been focused on the bushmeat trade and killing and eating of rare apes. Politicians and the UN General Assembly are alarmed at the growing evidence of links between wildlife trafficking, organised crime and terror organisations¹³. But these headline-grabbing issues are only the tip of the iceberg that we can call the 'African ecological crisis'.

Even if we could halt the poaching and wildlife trafficking tomorrow, Africa would still face a much deeper and more serious degradation of its natural environment, including its entire wildlife heritage and loss of ecosystem services that are vital for human development on the continent. Failure to tackle the several causes of such degradation endangers all cherished and iconic animals, migratory birds, important fisheries and possibilities for sustained use of natural resources including timber, fisheries, soils and grasslands. Loss of ecosystem services would inevitably lead to poverty, famines, civil strife, wars, spread of uncontrolled diseases, mass movements of refugees and collapse of many global economic institutions well beyond the confines of the African continent.

2.1 LOSS OF SPECIES

Red Data Lists and specialist reports continue to document a depressing catalogue of species losses and severe declines across Africa:

- African elephants have declined from 5-10 million in the 1930s to a mere 500,000 today. They still occur in 35-38 range states but poaching for ivory has re-emerged as a serious threat. It is estimated that 35,000 elephants were poached in 2013. Most seriously threatened is the forest elephant *Loxodonta africana cyclotis* which lost 62% of its population between 2002 and 2012 (Volume 4, section 2.1.2).
- The Southern white rhino was rescued by conservation action from the brink of extinction and now numbers about 20,000 but its northern race is feared to have gone extinct in its original habitat and the three races of black rhino have all crashed to a total of a mere 4,000 animals. (See special chapter on rhinos in Volume 6 of this report).
- Africa has lost between 30 and 50% of its lions over the past two decades and may now number as few as 32,000 animals. In Western Africa the situation is especially desperate. A recent 6-year survey showed that from a known occurrence in 21 protected areas in 2005, lions are now confirmed in only 4

¹³UN General Assembly resolution on Illicit Trafficking / Illegal Trade in Wildlife, Nov 2014

sites, roaming in just 1.1% of their historic range in Western Africa (Volume 5, section 1.2.2.4) and are extinct in all of their former range in northern Africa.

- The great apes are becoming increasingly endangered by bush-meat trade, deforestation, pet trade and human diseases. All are endangered and survival is realistic in only a few key localities of Western and Central Africa.
- Many other iconic mammals are listed as regionally or globally endangered including such familiar animals as cheetah, hippo, giraffe, large antelope, anteaters etc.
- 10% of African birds are listed as globally threatened. Of 119 Afro-Palaeartic long-distance migrant species (those breeding in Europe and wintering in Sub-Saharan Africa), 48 (40%) show marked declines in population. Vultures are especially threatened as a result of direct poisoning to remove their tell-tale evidence of poaching – they are killed as a result of carcasses being poisoned to eliminate carnivores and poisoned by eating the medicine diclofenac in carcasses of domestic cattle.
- African amphibians are becoming threatened as a result of spreading diseases and drying of moist habitat.
- Africa's freshwater fish richness is second only to that of South America and almost totally endemic. These species are vital for the functioning of freshwater ecosystems and of huge economic importance. Many millions of people rely on freshwater fish for food and income and many species of perch and tilapia have become globally important commercial species. 28% of Africa's freshwater fish species are listed as endangered. Main causes are shrinkage of lakes, pollution of waterways, invasive plants such as water hyacinth, overfishing and introduction of alien fish species.

IUCN's Species Survival Commission (SSC) publish global red lists of threatened species rated as critical (CR), endangered (EN), vulnerable (V) and least concern (LC) and encourage national efforts to make more detailed national red lists. Africa lists a high percentage of threatened species in most taxa and each revision or update adds ever more species to these lists. In historical times several significant animals have become extinct: quagga, bluebuck, western black rhino etc. Other species have become extinct over a large proportion of their range.

Africa is failing to meet Millenium Development Goals (MDG) and global targets under implementation of CBD to reduce and reverse such trends of biodiversity loss.

There is evidence of some regional variation in the pattern of species loss. When indices for population abundance of 69 species of large mammal within 78 protected areas over a 35 year period are compared the results (Figure 3) show sharpest losses in Western (and Central) Africa and a slight rise in southern Africa where species losses in the previous centuries had been highest.

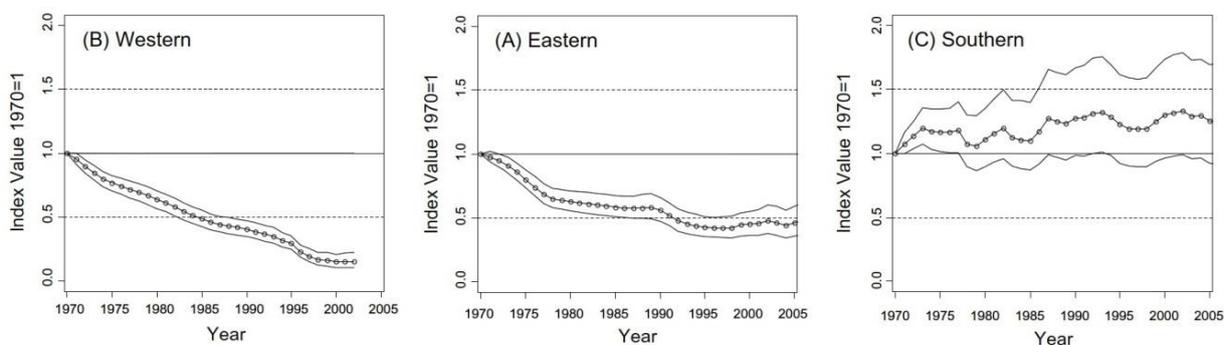


Figure 3. Relative trends in mammal population indices in Africa¹⁴

¹⁴ Source: Craigie, I.D. et al. 2010. Large mammal population declines in Africa's protected areas. *Biological Conservation* 143: 2221-2228.

2.2 LOSS OF ECOLOGICAL SERVICES

“Natural capital” – our ecosystems, biodiversity and natural resources – underpins economies, societies and individual well-being. The values of its myriad benefits are, however, often overlooked or poorly understood. They are rarely taken fully into account through economic signals in markets, or in day to day decisions by business and citizens, nor indeed reflected adequately in the accounts of society.

Clearing, fragmentation and degradation of natural habitats has already led to massive losses of ecological services like decline and pollution of water sources, loss of hunting and grazing habitats (Provisioning services); reduction of carbon fixation leading to accelerated climate change (Regulating services); recreation, aesthetic enjoyment, spiritual and tourism potential (Cultural services); desertification, soil formation and photosynthesis production (Supporting services).

Major losses result from :

- Degradation of savannah and grasslands. This is subtle and difficult to monitor but forest loss is very clear. Climate change, overgrazing, fire, lowered water tables and agricultural expansion have all contributed to degradation of Africa’s grasslands;
- Water sources drying up and becoming polluted, (resulting in the spread of diseases);
- Degradation of grazing areas (resulting in population migrations);
- Degradation of soil fertility (resulting in famines, expensive aid programmes and bad loans);
- Loss of non-timber products (game meat, fish, honey, medicinal plants etc.);
- Loss of tourism revenues and potential;

Elimination of keystone species such as elephants and seed dispersing primates has profound additional impacts on the regeneration of vegetation. Loss of bees and other pollinators is affecting pollination of fruits and vegetables as well as wild plants.

The TEEB (The Economics of Ecosystems & Biodiversity) programme has compiled and reviewed many studies evaluating these ecosystem services in economic terms. Some service values of wetlands, forests, pollinating species greatly exceed conversion values. Globally these services have been valued at 125 trillion \$/year in 2008¹⁵, up from an estimated 33 trillion \$/year in 1997¹⁶. The figure for Africa, which represents 20% of the global land area, must be greater than \$10 trillion/year, far higher than actual registered GDP. This figure is diminishing rapidly since ecosystems will continue to deteriorate if no restorative action is taken.

Loss of ecological services drives a vicious cycle of poverty leading to emigration and civil unrest, ethnic and civil wars, collapse of governance and accelerated plunder of more biological resources.

¹⁵ Costanza, R., Rudolf de Groot, Paul Sutton, Sander van der Ploeg, Sharolyn J. Anderson, Ida Kubiszewski, Stephen Farbe, R. Kerry Turner (2014) Changes in the global value of ecosystem services. *Global Environmental Change* 26: 152–158

¹⁶ Costanza et al. (1997) The value of the world’s ecosystem services and natural capital. *Nature* 387:253-260

2.3 DIRECT THREATS

Wildlife and ecosystems face a variety of major threats. The following are identified as the most serious:

2.3.1 Habitat loss and fragmentation

Net deforestation in the rainforests is estimated at 0.28% per year between 1990 and 2000 and at 0.14% per year between 2000 and 2010. Western Africa and Madagascar exhibit a much higher deforestation rate than the Congo Basin - three times higher for Western Africa and nine times higher for Madagascar¹⁷. In the drier ecosystems deforestation between 1990 and 2000 was estimated at 0.34% per year¹⁸. Agriculture and fuelwood are the key agents of deforestation. Fuelwood and charcoal represent 90% of all wood removal from the forests of Africa¹⁹. Deforestation rates are likely to increase significantly over the next decades as populations grow, new land is needed for subsistence and commercial agriculture, plantations and mining, and better access is provided by road networks. Large scale industrial agriculture and ranching in Southern and East Africa is another key agent of habitat loss and fragmentation. In Southern Africa, a major cause of wildlife decline has been the fragmentation of the habitat caused by the erection of game fences, as illustrated for central Namibia in Figure 4 below. Such “fencescapes” are increasingly found elsewhere including South Africa and Botswana. This situation has been seriously aggravated by the creation of a Beef Export Zone and subsidies offered under the Lomé and Cotonou Agreements that have led to extensive fencing, habitat fragmentation, and collapse of migratory wildlife populations²⁰ (Volume 2, section 2.3).



Figure 4. Veterinary fences in central Namibia have had a profound impact on migratory species (Eckardt unpubl.)

¹⁷ Mayaux P, Pekel J-F, Desclée, B, Donnay F, Lupi A, Achard F, Clerici M, Bodart, C, Brink A, Nasi R, Belward A. 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>.

¹⁸ Bodart, C., Brink, A., Donnay, F., Lupi, A., Mayaux, P., and Achard, F. 2013. Continental estimates of forest cover and forest cover changes in the dry ecosystems of Africa between 1990 and 2000. *Journal of Biogeography* (2013) 40, 1036–1047

¹⁹ Forests of the Congo Basin. State of Forests, 2010. Page 39.

²⁰ EIA Briefing document for members of the ACP-EU Joint Parliamentary <assembly Social Affairs and Environment Committee. Ljubljana, Slovenia, 15-20 March 2008

Industrial oil and mineral exploration and extraction are recognised as growing threats, especially in forest and wetland areas. Many permits overlap with protected areas, including World Heritage Sites. WWF has calculated that the percentage spatial overlap of leased oil and gas concessions with protected areas for the whole of Africa is 26.65%. If “not yet leased” concessions are included the figure rises to 46.57% spatial overlap with protected areas (Figure 4).



Figure 5. Overlap of oil and gas concessions with protected areas in Africa (source WWF)

Fragmentation of forests has disastrous impacts on forest wildlife populations. Key agents are slash and burn agriculture, fuelwood collection and charcoal. Fuelwood and charcoal represent 90% of all wood removal from the forests of Africa. 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 hydro-electric dams. Loss and fragmentation of other wildlife habitats - woodlands, savanna and mangroves - due to agricultural expansion and development isolates protected areas and potential corridors.

Populations of many African-Eurasian migrant birds are in serious decline because of threats along their flyways. In sub-Saharan Africa the key issue is habitat loss and degradation, particularly in the Sahel and humid zones to the south.

2.3.2 Overhunting and overfishing

Commercial bushmeat trade is emptying vast tracts of seemingly intact forest and savanna. Range of species includes rare apes and smaller primates as well as ungulates and rodents. It is the key wildlife issue in Western and Central Africa, and under-recognised in East Africa, Madagascar and some areas of Southern Africa.

Fishing in inland freshwater systems is unsustainable over much of sub Saharan Africa because fishing regulations (minimum mesh size, seasons, protection of spawning grounds, etc) are rarely respected. Furthermore, as bushmeat supplies dwindle through overhunting pressure on freshwater fish resources is likely to increase.

2.3.3 Illegal wildlife trafficking

Criminal organizations in ivory and rhino horn trafficking undermine security and good governance and hence effective conservation. Whilst elephant populations in Southern Africa appear stable, populations in the rest of Africa are declining dramatically, especially the forest elephant *L. a. cyclotis*. Rhinos are being exterminated even in well protected reserves of Southern Africa such as Kruger. Secondary species may be affected. Poachers spread poison around kills to destroy the tell-tale flocks of vultures.

Trafficking is also endangering numerous less profiled species such as apes (Western and Central Africa), other primates (all regions), reptiles (especially Madagascar), pangolins (humid regions), parrots (Western and Central Africa), valuable timbers (Western and Central Africa and Madagascar (rosewood)), orchids (humid regions) and abalone (marine regions) (see Volume 6, section 3).

2.3.4 Alien Invasive Species

Alien invasive species are a serious and increasing problem in all regions of Africa. Opening of forests, changing climate and deliberate introductions have resulted in growing lists of species that replace native flora and fauna and negatively impact ecology. Introduced pines, Australian Acacias, eucalypts, water weeds, fish, insects, molluscs and some birds and mammals are the main culprits.

2.4 DRIVERS OF THE THREATS

2.4.1 Population growth and poverty

Population growth and increasing poverty levels are inextricably linked in most of Africa. Although human population density across the Congo basin and in Namibia is low compared to other regions of Africa, overall rates of population growth are the highest on the planet and the population of Africa is expected to double by 2050 (Table 1). How Africa will feed this expected enlarged population presents a major challenge but the current agriculture in many countries of the continent is very inefficient, undeveloped and can be enormously improved. Extreme poverty in rural areas leads to overexploitation of natural resources because rural populations cannot

take a long term view of resource use. The burgeoning human population also leads to increasing levels of Human-Wildlife conflict resulting in loss of wildlife.

2.4.2 Poor governance

Poor governance is the overriding issue in Western and Central Africa and includes a suite of related failures : weak legislation and enforcement; dysfunctional health, education, justice and extension services; poor communications; poor planning; low hygiene; inefficient agriculture; misuse of natural resources and pollution of water resources; corruption and poverty. Also included is the phenomenon of “land grabbing” where for example multi-national agro-alimentary interests (e.g. oil palm) acquire huge surface areas of land without due process in terms of land use planning, environmental assessments and transparency of attribution (Volume 4, section 2.1.3).

2.4.3 Inadequate land tenure and local resource rights

The issue of land tenure and the alienation of rural populations from their wildlife heritage is a key driver of threats to wildlife. Over much of Africa the state is the owner of the land and its wildlife and existing legal and policy frameworks give little incentive for rural people to protect and sustainably manage the wildlife that they share the land with. This leads to a situation of “tragedy of the commons” where open access to the natural resources causes severe impoverishment, and even disappearance, of species and habitats.

2.4.4 National and regional conflict

Conflict has overwhelmed many countries of Africa and is especially significant in the Central African region. Many of these conflicts can in fact be described as natural resource conflicts. Conflict and poor governance feed off each other and result in loss of wildlife.

2.4.5 Political indifference and lack of awareness

Low knowledge of and appreciation of wildlife issues, lack of recognition of the vital ecological services delivered by healthy ecosystems and poor ecological understanding of the impacts of human activities and developments on those ecosystems are rife at all levels. Lack of awareness among EU population and leaders, African communities, planners, developers and leaders and Asian consumers all contribute to unsustainable exploitation and inadequate protection of African wildlife and ecosystems. When denied rights to use wildlife sustainably, local communities see wildlife only as a dangerous threat to life, crops and property or a competition to human development.

2.4.6 Climate change

Climate change is a threat with both global and a local causes. Desertification is driven by overgrazing, cutting and burning of vegetation and misuse of water resources. Opening of forests reduces the rates of transpiration that is re-deposited as secondary rainfall, often hundreds of miles away. Rising sea level threatens coral reefs and beaches. Rising temperatures are causing melting of African glaciers and are changing vegetation zones of the Afromontane regions. Wetlands of Northern and Western Africa are drying up. Droughts have profound impacts on vegetation, wildlife and humanity. Whilst Africa has already experienced many climate fluctuations

during the Pleistocene period and remaining species have some measure of proven resilience, some botanists expect significant species losses of between 25-68%, dependent on the severity of mean temperature change²¹

2.4.7 Endemic and emerging diseases

Endemic diseases affect conservation in two main ways. Malaria (spread by mosquitoes), river blindness, sleeping sickness and nagana (both spread by tsetse flies), elephantiasis and rinderpest all served as natural defences maintaining large areas of Africa as wild and undeveloped. Eradication of rinderpest and better control of other diseases has opened up these regions for human occupation and development. Meanwhile, some diseases that were stable in wildlife populations, but now given close access to human populations, have been able to make a host species jump to become serious human zoonoses such as HIV and Ebola (Volume 4, section 2.1.4). Resulting epidemics create population movements and breakdown of local economies, social services and wildlife protection. Chytrid disease now found on every continent has wiped out a number of amphibian species. It kills amphibians by blocking the transfer of vital substances through their skins, eventually causing cardiac arrest. The disease originated in Southern Africa and was probably spread by the pet trade or export of clawed frogs used in pregnancy testing.

3 ONGOING CONSERVATION EFFORTS

3.1 INTERNATIONAL, REGIONAL AND NATIONAL PLANNING FRAMEWORKS

Most countries in the sub-Saharan Africa are Party to the major international environmental conventions, in particular Ramsar Wetlands (1971), World Heritage Convention (1972), CITES (1975), Bonn Migratory Species (1979), Biological Diversity (1992), UN Framework Convention on Climate Change (1992), UN Convention to Combat Desertification (1994). Most countries are also members of IUCN which through its various Commissions sets the international management criteria and standards for different categories of PA, and coordinates efforts to conserve a wide range of plant and animal taxa of importance and concern.

Virtually all these treaties and bodies require their Member States to produce some sort of national Action Plan such as National Biodiversity Strategy Action Plans (NBSAPs) under CBD; Ivory Action Plans under CITES; and a wide range of species-specific Action Plans at regional and/or national levels driven by the Specialist Groups of IUCN's Species Survival Commission (elephants, rhinos, lions, hyenas, giraffes, great apes, etc.). Levels of implementation of these different action plans vary widely across the continent.

The countries' overall responses to wildlife issues are also influenced to a lesser or greater extent by the regional and sub-regional political bodies to which they belong including EAC, COMESA, ECCAS, ECOWAS, SADC, NEPAD, IGAD, COMIFAC.

3.2 STRATEGIC APPROACHES

3.2.1 Protected areas

Protected areas are at the heart of wildlife conservation in Africa and constitute the earliest strategic approach to wildlife conservation since colonial times. Today they represent a major form of land-use and, in southern and

²¹ Sommer, J. H., (2008) Plant Diversity and Future Climate Change – Macroecological analyses of African and global species distributions. Doctoral Thesis, Mathematisch-Naturwissenschaftliche Fakultät, Rheinische Friedrich-Wilhelms-Universität Bonn

eastern Africa, a significant contributor to employment and foreign exchange earnings. Other concepts that have evolved over the years and have been used to guide and inform wildlife conservation and protected area planning in Africa include Biodiversity Hotspots, Ecoregions, Water Basins, Conservation for Development, Biosphere Reserves and Transfrontier Conservation. These and other approaches are described in more detail in Volume 2, section 3.1 and the Annex of Volume 6.

Nominal PA coverage of sub-Saharan Africa is now 14,3%, with over 1,000 PAs of IUCN categories I-IV currently listed on the UNEP-WCMC World Protected Area Database. Category I-IV PAs in Sub-Saharan Africa are shown in Figure 6 below. Regional proportions are shown in Table 2. These figures leave most African countries somewhat short of the 17% terrestrial coverage agreed as the Aichi targets of CBD but well above that of many European countries. Most of the earlier and largest PAs in Africa are established in savanna biomes, targeted at African large mammals. Over the decades additions were made to cover major gaps in terms of representative coverage of all the major ecosystems including moist forests, mountain systems, woodlands and Karoo and Fynbos. Several large moist forest protected areas have been created in the Congo basin over the past 20 years, including a network of 13 National Parks in Gabon, enacted in 2007 (Volume 4, section 4.5, Box 4).

Whilst larger PAs are ecologically more resilient and offer better ecosystem functions, they are the most difficult to manage and have generally proved unable to resist the gangs of well-armed poachers who cross national borders with ease to decimate large mammal populations. In most of the countries of Central and Western Africa, and in some countries of East and Southern Africa, many PAs are “paper parks” with no real management because of inadequate staff, capacities and funding. Biodiversity has declined steeply in these areas. The protected areas where biodiversity is being most effectively protected are those that are receiving direct support from donor agencies and their technical partners through Technical Assistance, Public Private Partnerships (see 4.1.4 and 4.1.5 below) and other arrangements.

Table 2. Summary table of terrestrial PA coverage in sub-Saharan countries covered in this document

Region	Area of PAs (km ²)	Number of PAs (all categories)	Number of category I-IV PAs*	PA % cover
Western Africa	675,713	1,934	245	11,0
Central Africa	652,318	230	216	12,2
East Africa	824,578	1,676	365	13,2
Southern Africa	1,236,557	1,984	250	21,0
Total	3,389,164	5,824	1,076	14,3

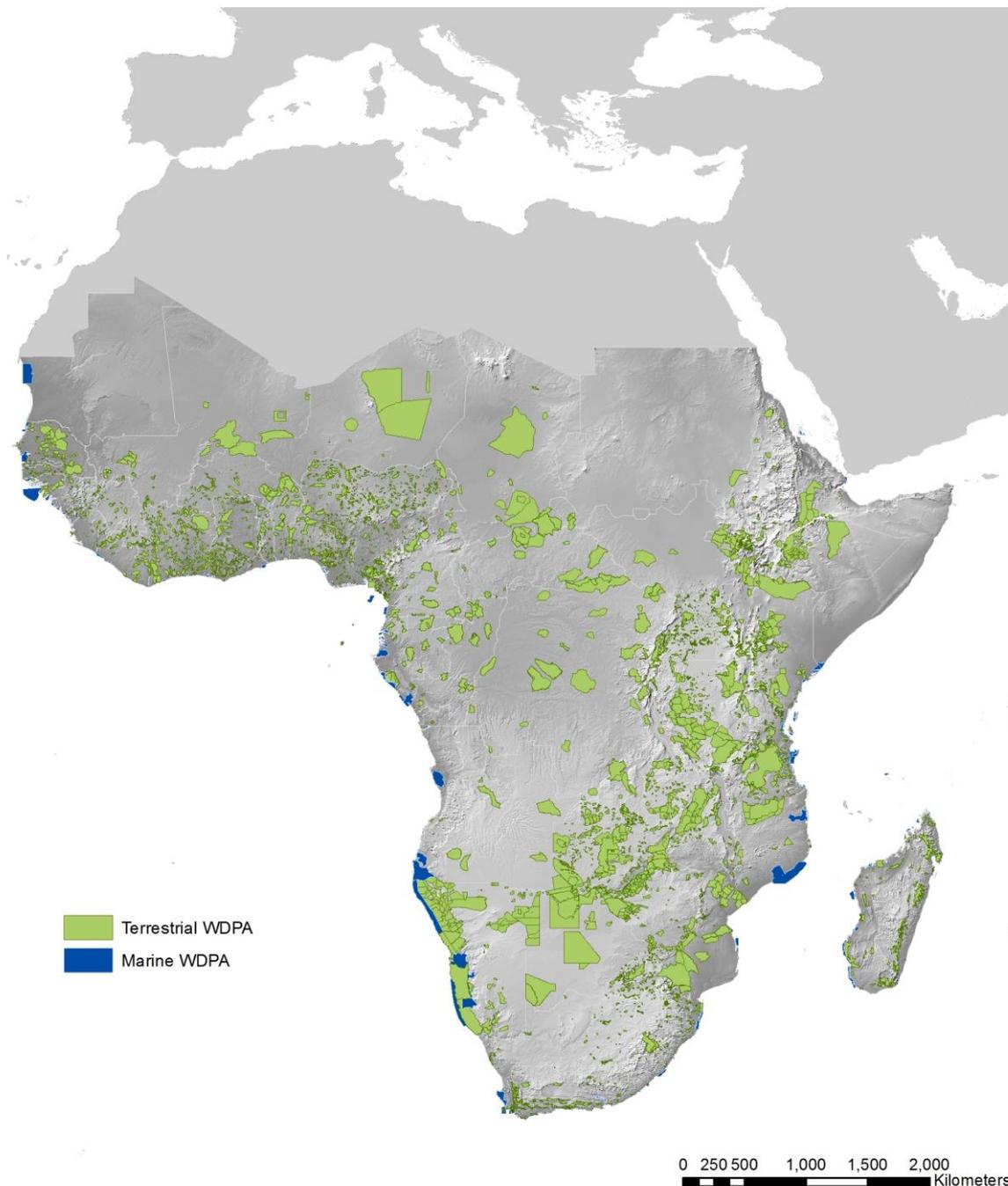
* This includes the many National Parks which are not yet reported as Category II protected areas in the WDPA data base (October 2014).

3.2.2 Devolution of wildlife management responsibility

In East and Southern Africa there have been important moves towards devolution of responsibility for wildlife use and management in various types of PA (Wildlife Management Areas, Village Forest Reserves, privately or communally owned Conservancies, etc.) and the results in terms of wildlife protection have been globally positive with wildlife populations making sometimes spectacular recoveries. In Kenya for example there are several hundred Community and Private Wildlife Conservancies that engage in the non-consumptive utilization of wildlife (i.e. tourism). Since ownership and ultimate responsibility for all wildlife is vested in the State, regardless of whether it is inside or outside the formal PA estate, the Conservancy movement is of great assistance to the Kenya Wildlife Service which seeks only to register Conservancies and assist in the development of their

management effectiveness (Volume 3, section 3.4.1). Similarly in Namibia non-consumptive and consumptive use of wildlife in communal area conservancies deliver positive conservation outcomes while generating significant benefits for the communities (Volume 2, sections 3.1.5). With the exception of Ghana, states in Central and Western Africa have not yet fully embraced the concept devolution of responsibility for management of wildlife to local communities, and indeed this kind of approach is probably not yet realistic given the weak state of institutions and civil society and the widespread issue of poor governance. Nevertheless some recent changes in wildlife and conservation laws (e.g. DRC) have opened the door for the development of this kind of approach in the future.

Figure 6. IUCN category i-iv Protected Areas and World Heritage Sites of Sub-Saharan Africa



3.2.3 Landscape and Transfrontier Conservation

The landscape approach to conservation is one in which complexes of PAs are conserved hand-in-hand with the eco-sensitive and wildlife friendly development of intervening and surrounding areas. This landscape approach has been widely embraced by conservation agencies in Africa as a way of enhancing ecological connectivity and gene flows across viable habitats linking PAs.

The Transfrontier Conservation approach is a relatively new conservation initiative, developed initially in Southern Africa, that brings together a complex and diverse mosaic of land uses spanning international borders under one shared or joint management structure. It includes national parks and game reserves, forest reserves, wildlife and game management areas, communal land and private land. It has the role of combining conservation and development and promotes culture and peace and offers a promising approach to the conservation of iconic African wildlife within intact ecosystems. In Western and Central Africa the transfrontier conservation approach is also being embraced although the concept is less developed and does not, for example, bring together management of a mosaic of land uses under a shared management structure. Instead there are simply intergovernmental agreements for coordinated management for transfrontier areas where there are in most (but not all) cases contiguous protected areas. Where the PAs in transfrontier conservation areas of the Congo basin are not contiguous, the inter-zone areas are largely occupied by logging and/or mining concessions with which the aim is to build collaborative relationships for conservation (Volume 4, section 4.3).

3.2.4 Combating illegal trafficking of wildlife.

Africa has not escaped the ravages of the global illegal trade in wildlife and its products, the fourth largest illegal trade after narcotics, humans and counterfeit products (Volume 6, section 3). Of all Africa's iconic "flagship" species few if any have greater relevance to the conservation of the continent's overall wildlife and wilderness than the elephant and the rhino. An estimated 100 elephants and 3 rhinos are being lost daily and the issue has become a cause for great international concern, and a key catalyst for the elaboration of the present document. However many other African plants and animals are also entering the illegal trade from precious woods to apes, birds, reptiles, amphibians and fish.

Sections 1-3 of Volume 6 examine the current status of elephants, rhinos and the illegal wildlife trade in general. They summarize the different strategies being developed to combat poaching and illegal trade. Various strategic approaches for elephants and rhinos are being used including global awareness raising, monitoring of populations and poaching levels (e.g. MIKES), monitoring the trade (e.g. ETIS), law enforcement (including paramilitary operations), stopping the demand, forensic investigation to determine the provenance of ivory and rhino horn, and addressing human elephant conflict. The currently intractable issue of a regulated legal trade in ivory and rhino horn versus a total ban is also examined. On the general issue of illegal wildlife trade important international trade regulators and monitors that are of direct relevance to Africa include the ICCWC, CITES, TRAFFIC, INTERPOL, UNDOC and WCO.

3.3 INTERNATIONAL CONSERVATION PARTNERS

Wildlife conservation in Africa is heavily reliant on external support, particularly in Central and Western Africa where conservation is generally low on national agendas and state institutions responsible for wildlife conservation and law enforcement are particularly weak. In these regions biodiversity conservation is delivered predominantly through international donor agencies, conservation NGOs and other technical partners working in

partnership with the national forestry, wildlife and protected area authorities. NGOs work with funds provided by donor agencies but also mobilize many sources of private funding.

While the role of conservation NGOs in East and Southern Africa remains very important, national institutions are generally better organized than in Central and Western Africa and less reliant on them to help manage PAs. Nevertheless they are still heavily reliant on bi- and multi-lateral aid organizations and private donors to help fund conservation activities and policy development.

African Protected Areas benefit from several global programmes. UNESCO offers support to 41 natural or mixed World Heritage Sites nominated as containing 'outstanding universal value'. Another UNESCO programme supports 52 Man and Biosphere Reserves (MAB) in Sub-Saharan Africa, selected for the study of the impacts of human activities on natural areas. 168 wetland sites of global significance are listed as Ramsar Sites. More than 1,200 sites are identified by BirdLife International as Important Bird Areas (IBAs) and work with local partners to help protect many of these. The programmes of many international NGOs are geared to support a long list of key biodiversity areas, biodiversity hotspots and other sites of importance for specific wildlife across the continent. More details of ongoing efforts are presented in the four regional volumes 2-5 of this document.

The International Union for the Conservation of Nature (IUCN) provides assistance and sets standards for many areas of wildlife conservation worldwide, through its several specialized commissions. The World Commission on Protected Areas provides help in reviewing, planning and management of protected areas and publishes a series of best practices guidelines to help various aspects of this work. The commission also helps UN in the implementation of the Programme of Works on Protected Areas under the Convention for Biological Diversity (CBD). The Global Environmental Facility (GEF) provides funds and projects to support this programme.

Being listed or recognised as globally important may help a site negotiate better investment from its national government and puts it in a good position to apply for additional funds or projects from international sources but is no guarantee of adequate support. Indeed 12 of the 41 World Heritage Sites are currently included on the List of World Heritage in Danger.

Despite these many programmes the level of external support to PAs in Africa falls a long way short of the actual needs.

4 LESSONS LEARNED AND PROMISING APPROACHES

Despite several decades of initiatives, projects and programmes by more than 100 conservation agencies and NGOs, the overall trends of biodiversity status across Africa are continuing deterioration. Why have these efforts failed and what hope is there that we do have better solutions? From the four regional analyses a number of common themes emerge as well as themes specific to particular regions.

4.1 PROTECTED AREAS

4.1.1 Protected Areas have proved the test of time but require long term support.

Increasingly wildlife populations and fragile habitats have become confined to protected areas within the wider landscape. Over much of sub Saharan Africa the areas with the most intact assemblages of biodiversity are in protected areas, or areas under active management like sport hunting zones. In Western and Central Africa in particular, the protected areas where biodiversity is being most effectively protected are those that are receiving support from donor agencies and their technical partners because most national protected area agencies are weak and under-resourced. It follows therefore that **external funding support for PAs needs to be long term**. This is particularly the case in Western and Central Africa, but is also relevant for East and Southern Africa. In Africa the costs of biodiversity conservation and PA management greatly outweigh the level of resources that

most if not all the African countries mobilize from national budgets, and with a handful of exceptions almost all of African PAs will never be able to generate sufficient revenue to cover their management costs.

4.1.2 Governance and resourcing of PA / NRM agencies

The under-valuation of ecosystem services and biodiversity by governments is a fundamental driver of the institutional weaknesses that generate inefficient, ineffective and corrupt management practices. These weaknesses centre on human resources that are too few in number, poorly paid and equipped, ill-trained and inadequately supervised. Whether for routine operations or capital development, the level of resources made available to PA / NRM agencies is invariably inadequate. Badly paid and unsupervised field staff in particular will always be corruptible.

4.1.3 PA design: connectivity and the landscape approach

Recent and developing trends are exposing weaknesses in the designs of PA systems. These include failure to include representative examples of all major ecotypes, and the erosion of connectivity through the accelerating transformation of hitherto undeveloped areas between PAs. For example elephants seldom if ever spend a full year within a PA, and so it is the species most affected by the ongoing appropriation of unprotected habitat, and the one causing the most serious conflict with man as a result (Volume 3, section 3.3). In response, new PAs and corridors between PAs must be created wherever possible in order to improve PA resilience and long term system viability. This is in line with the overall landscape approach to conservation (section 3.2.3) which aims to enhance ecological connectivity and gene flows across viable habitats linking PAs.

It is widely accepted that veterinary cordon fencing for disease management in Southern Africa has been environmentally damaging especially in relation to wildlife migration. Environmentally sensitive alternatives are now being developed such as a Commodity-Based Trade approach and other integrated disease management models (Volume 2, section 4.1.4) which it is hoped will result in considerably less negative impacts on wildlife migration.

4.1.4 Transfrontier Conservation Areas (TFCA)

As ecosystems often span international boundaries the landscape approach has led to the emergence of the concept of Transfrontier Conservation Areas (section 3.2.3). This new conservation paradigm emerged in Southern Africa with the first Peace Park in 1990. It is defined as an area, or component of a large ecological region, that straddles the boundaries of two or more countries, encompassing one or more protected areas as well as multiple resources use areas. The TFCA combines policies on wildlife conservation, community development and the promotion of culture and peace under one roof. It brings together a complex and diverse mosaic of land uses under one shared or joint management structure. The concept has been embraced at the highest political level in the SADC countries where there are currently 18 existing and potential TFCAs in various stages of development.

One of the key advantages of the transfrontier approach to conservation is the opportunity to plan and undertake both conservation and development at the scale of landscapes which incorporate entire ecosystems. This enables more effective conservation, more efficient use of natural resources and greater social and economic involvement of communities. Five levels of TFCA management can be recognised: (i) landscape management for migratory species (ii) landscape management for livelihoods development (iii) water basin management (iv) PA management (v) promotion of culture and peace (Volume 2, section 4.2.1.4). In conflict torn Central Africa transfrontier conservation has the added advantage of providing protection for a shared species in the event of

conflict and breakdown of law and order in one or other of the countries (Volume 4, section 4.3). The most profitable form of land-use in the TFCAs in Southern Africa is a combination of wildlife-based tourism and full diversification of natural resource-based enterprises. The various enterprises include non-consumptive tourism, safari hunting, the sustainable harvesting of meat, crafts and non-timber forest products, and the provision of ecosystem services such as water and carbon sequestration.

In Western, Central and Eastern Africa the transfrontier conservation approach is also being embraced although the concept is less developed and does not bring together management of a mosaic of land uses under a shared management structure. The situation also differs in that, unlike in Southern Africa where most TFCAs are situated in marginal land in terms of productivity and services, the moist forest areas of Central Africa are not marginal lands and the dominant land use is industrial logging and mining. However the presence of organized industrial private sector operators opens the possibility for enhancing wildlife conservation through public private partnerships (section 4.1.6 below).

4.1.5 Public Private Partnerships for management of PAs

One of the major constraints to effective protected area 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 (Volume 4, section 4.4, Box 2). The involvement of the private sector partner also acts as an important lever for raising other sources of funding. PPP agreements are particularly pertinent in countries where national capacities for protected area management are very weak. Table 3 below summarizes the legal mechanisms through which the private sector can assist with PA management.

4.1.6 Public Private Partnerships for wildlife management in buffer zones

Given that logging concessions will soon cover all of the exploitable forests in the Congo basin partnerships with well managed logging concessions, particularly if they are adjacent to an actively managed PA, can considerably increase the surface area over which positive conservation outcomes can be achieved (Volume 4, section 4.4, Box 3). 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 legally binding forest management plans. FSC-certified companies, of which there are an increasing number in Central Africa, are generally keen to collaborate with specialist conservation organizations. In large TFCAs such as the greater TRIDOM/TNS in central Africa effective collaborative agreements of this nature would greatly enhance connectivity between the PAs.

Similarly early engagement with the rapidly expanding mining and oil and gas sectors in Africa is going to be crucial for conservation. In the TRIDOM landscape of central Africa planned industrial mining concessions cover the landscape with considerable overlaps with PAs (Volume 4 section 2.1.3, Figure 2). For the oil and gas sector over 26% of PAs in Africa have leased concessions overlapping with them but if yet-to-be leased concessions are added the figure rises to over 46.6% (Figure 4, section 2.3.1). The key will be early engagement of all stakeholders in the process of integrated land-use planning. This presents very obvious challenges in countries with limited human and financial resources, absence of cross-ministerial working, lack of good quality and accessible data, lack of a strong civil society and in some situations existing or potential conflict, amongst many

other reasons. Based on assessed needs, however, investment in better data, mapping and GIS for land-use decision making and socio-economic scenario planning is a key pre-requisite. Such investment can help identify the best areas for development and identify the most necessary areas for protection to conserve vital ecosystems services, biodiversity and major eco-system processes and wildlife spectacles, such as the annual wildebeest migration in Kenya/Tanzania.

Table 3. Legal mechanisms through which the private sector may assist governments or communities in PA management (source WCS)

MECHANISM	DESCRIPTION	EXAMPLES	STRENGTHS	WEAKNESSES
TECHNICAL ASSISTANCE	Private entity provides advice, financial support, training, and/or assistance with technical or scientific tasks while management authority rests with government (or community)	FZS in Serengeti; WCS in Cross River	Government managers have legitimate law enforcement authority; helps build national capacity	Success depends on capacity of government partner and/or willingness to follow advice of TA; frequent tension between TA and official PA director so is success largely dependent on human factors; arrangement may lack transparency, with <i>de facto</i> relationship closer to co-management or concession
CO-MANAGEMENT	Agreement between government and private entity divides responsibilities and establishes mechanisms for joint implementation and for conflict resolution at multiple hierarchical levels	WCS in Niassa; Carr Foundation in Gorongosa	Transparent and legitimate assignment of responsibilities; leverages authority of government, capacity of private partner, and opportunities for capacity building	Frequently complex arrangement with significant transaction costs; can fail if trust deteriorates; actual power relationship between partners may be unequal
JOINT APPOINTMENT	One or more senior managers simultaneously hold(s) position(s) in government and private entity	ACF in Virunga	In principle, seamless co-management partnership	Outcome depends on qualities of and relationships between key individuals; potential lack of transparency and conflict of interest
JOINT LEGAL ENTITY	Government and private partner (and potentially other stakeholders) create new joint venture and delegate management authority to it	APN in Zakouma; WCS in Nouabalé Ndoki	Combines national legitimacy of TA with conservation expertise of concession	High legal and administrative transaction costs. Many governments will not agree to delegation. Potential long-term loss of capacity / derogation of responsibility by state. Potential problems with shared law enforcement responsibility.
AGENCY AGREEMENT; LEASE OR CONCESSION	Government leases land or grants or sells (or pays to deliver) conservation authority to private entity	WCS in Makira; APN in Garamba NP	Full authority vested in qualified PA managers; simple management structure	May face political opposition over questions of sovereignty which can lead to problems of law enforcement authority; may not build national PA management capacity
PRIVATE OWNERSHIP	Government sells land to private entity	Ranches in Laikipia Kenya, Zimbabwe, South Africa	Clear and simple authority with strong incentives for long-term good management	Same challenges as concessions; may not be legally possible in e.g. francophone countries. Community participation may be weak. Does not build capacity of national PA management authorities.

4.1.7 Monitoring and research

Park ecosystems respond to both internal changes, such as disease outbreaks, fire and vegetation succession, and to external changes, species introductions, climate change and surrounding land-use change. As the pace of change quickens, there is even greater need for high quality research and monitoring services to devise and manage effective conservation responses. Ranger-based management information systems using GPS and GIS mapping software (e.g. MIST and its successor SMART (Volume 4, section 5.1, Box 6), or Cybertracker²², to give spatial information on poaching wildlife signs and ranger effort are progressively being mainstreamed into PA management systems and are proving to be highly useful management tools.

Conservation orientated and fundamental research will always be vital components of PA and buffer zone management and the range of relevant topics is very wide indeed. Understanding how species and ecosystems respond to human activities (hunting, logging, farming, fencing, fire, pastoralism, irrigation, etc...) will become ever more relevant as human population growth continues to accelerate.

4.2 ENGAGING WITH LOCAL COMMUNITIES AND CBNRM

Engaging with communities around PAs and promoting sustainable NRM is undoubtedly one of the most complicated issues that NRM agencies have to face across Africa. The basic premise underlying all CBNRM is that illegal and unsustainable natural resource use by the rural poor can be halted by giving them ownership of, and management responsibility for the resource, so that they may directly benefit from its use and their livelihoods improve accordingly. Consequently they will automatically acquire a vested interest in protecting it from unsustainable exploitation.

Sport hunting and photo tourism can generate significant benefits for local communities, particularly in the more open biotopes of Southern and Eastern Africa where access is relatively easy and the iconic African savanna species abound. It has proved far less easy to develop community based consumptive and non-consumptive tourism in the moist forest environment where access is difficult, visibility limited, the environment “hostile” for the client and the “carrying capacity” (in terms of numbers of tourists) limited.

Apart from generating benefits directly linked to the utilization of wildlife, CBNRM also addresses other ways of improving livelihoods while minimizing environmental damage. This can include measures to reduce the costs of living with wildlife (self-help against Human Wildlife Conflict), as well as to promote alternative crops, or improve agronomy and livestock breeds. It also involves the introduction of new “holistic” approaches for the improved exploitation of rangelands, as well as new techniques of soil and carbon friendly “conservation agriculture”. In the forest sector Participatory Forest Management (PFM) approaches include REDD+, Payment for Ecosystem Services and the use of recognised certification of sustainability to add value to specific forest products in trade.

However CBNRM is not a panacea that alone will neutralize the unsustainable utilization of natural resources that is driven by poverty. Various factors are at play to ensure that there are no neat solutions:

- In many African countries rural populations do not have clearly defined user rights over wildlife and other natural resources so have no stake in ensuring sustainable use of it. Land tenure law is often complex and overlaps and contradicts with traditional tenure (e.g. Central Africa). This leads to a situation of “open access” to resources resulting in overexploitation. In Southern Africa recognition of use rights has progressed much further than in the other regions but even here issues of poor governance at the local level have imposed limitations on the CBNRM approach in some areas (Volume 2, section 4.1.3).

²² <http://www.cybertracker.org>

- CBNRM schemes and indeed agricultural expansion cannot escape the fundamental undermining issue which is that human populations continue to rise everywhere while the resource does not increase. Thus as the population increases, in order for the harvest to remain steady (ie sustainable), each person will have to accept a smaller share of the harvest, in other words a declining income. (Volume 3, section 3.7). CBNRM is therefore more difficult where population pressure on land is already high and governance is weak.
- The notion of “community” among forest living people in Central Africa is misleading because they have such individualistic approach to the use of natural resources (Volume 4, section 4.6). Mobilizing 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.

The ultimate solution for sustainable CBNRM must depend on a combination of two things. The first is greater government efforts to introduce legislation that supports local ownership and rights to wildlife and natural resources together with assistance for business start-up and for monitoring their sustainable use. The other is to reduce the population growth rate to the greatest extent possible, thereby minimizing the scale of the poverty alleviation challenge. Some countries, notably China, have grasped this nettle with albeit unpopular measures but at least they are not in denial of this fundamental problem, as are most countries in Africa. Family planning within CBNRM areas is essential if they are to be sustainable in the long term.

Lastly the conservation linked to development paradigm (for poverty alleviation) 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. 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.

4.3 UNDERVALUING OF ECOLOGICAL SERVICES

Ecological services are grossly undervalued, even in countries in which the link between parks and tourism is economically important and well recognised. The under-valuation of ecosystem services and biodiversity by governments is a fundamental driver of ill-considered ecosystem conversions, and of the institutional weaknesses that generate inefficient, ineffective and corrupt management practices. Clearly a better understanding of ecosystem values should result in governments investing more heavily firstly in the agencies responsible for land use planning, SEA and EIA, and secondly in those responsible for protecting natural resources and/or managing their utilization. The greater “investment” required has several forms, ranging from policy, legal and structural reforms, to greater capital investments and operational budgets. Importantly the latter should cover enhanced manpower; improved salaries, allowances and working conditions (especially in the field); as well as more and better training (Volume 3, section 3.5).

4.4 LAW ENFORCEMENT

While *in situ* anti-poaching will always be a key component of wildlife management recent failures to protect elephants and especially rhinos in areas considered extremely safe underline the fact that *in situ* protection measures can never be impenetrable. Conservation outcomes improve significantly if resources are mobilized to monitor closely the entire judicial process from arrest to prosecution. This requires wildlife authorities to work closely with all the national law enforcement agencies (forest, police, customs, justice department, national representatives of INTERPOL) to detect and prosecute wildlife crime. Such national-level multi-agency Wildlife Enforcement Networks (WEN) are lacking in most countries (Volume 6, section 3.7). The EAGLE (Eco Activists

for Governance and Law Enforcement) network of wildlife law enforcement NGO's in Central and Western Africa is having success with their approach of investigations, law enforcement operations, legal assistance for prosecution of cases and media coverage of the results (Volume 4, section 4.9). In most countries there is also a severe lack of skills in intelligence-based methods for law enforcement, in particular forensic investigations to determine the origins of seized ivory (Volume 6, section 1.4.5).

In most countries sanctions for wildlife crime are inadequate, and the ratio of arrests to convictions is very low because of corruption, dysfunctional legal systems and lack of understanding of the importance of wildlife crime.

4.5 WILDLIFE MIGRATION AND DISEASE MANAGEMENT

Veterinary cordon fencing in Southern Africa has been environmentally damaging especially in relation to wildlife migration. However there are opportunities to develop environmentally sensitive disease control measures that include a number of control measures: (a) Commodity Based Trade (Volume 2, section 4.1.4) (b) use of geographical barriers, such as mountains, lakes and unsuitable habitats to achieve natural separation of livestock from potential wildlife carriers of disease; (c) vaccines; and (d) certain kinds of control of livestock movements.

4.6 TRADE IN WILDLIFE PRODUCTS

In Southern Africa and no doubt elsewhere in Africa, conservation can be assisted by sustainable use of natural resources and legal trade. Use tends to be sustainable when the landholder has the full rights to the species; it tends not to be sustainable when products are harvested by bodies that do not have a direct stake in the resource. This approach to conservation requires close monitoring and tight management but can be highly successful. In Central and Western Africa "regulated" trade in wildlife products such as African grey parrots is completely out of control because of poor levels of governance (Volume 4, section 2.1.2). High prices in consumer countries drive unsustainable "regulated" and illegal trades in many other products including apes, small primates, tortoises (Madagascar), African blackwood, cichlid fish (for aquaria), to name but a few.

In the special case of ivory and rhino horn, sky rocketing prices in markets in China and SE Asia have overwhelmed trade restrictions and law enforcement measures to fuel a new wave of elephant and rhino poaching that is out of control. There is a considerable divergence of opinion amongst professional conservationists as to whether or not totally banning the trade in ivory is in the elephants' best interests or not (Volume 6, section 1.2.3). The debate is intractable and it is probable that there never will be any single or perfect solution to the ivory trading dilemma. This underlines the importance of improving *in situ* protection, while at the same time working to stop demand from the ultimate consumer.

4.7 BUSHMEAT CRISIS

The commercial bushmeat trade is responsible for significant wildlife declines in most of Africa. In Central and Western Africa it is arguably the single most important cause of wildlife declines (Volume 4, section 5.4) with demand greatly outweighing the sustainable level of production of the forest ecosystems. The breakdown of traditional rules for hunting, and legal frameworks that do not give forest peoples a stake in the management of their wildlife resources, has led to a situation of "open access" to wildlife. 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 locally (ie not sold outside the area). This is an increasingly rare situation. The

reality is that, because of the high levels of urbanization, most of the bushmeat is consumed as a “luxury” item in urban areas.

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 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 harvesting have been built, most of the wildlife will already have disappeared from the forests outside of protected areas. 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 in rural areas. In urban areas, where bushmeat is generally not a food security issue, the aim should be to reduce consumption by a combination of law enforcement and strategies to change eating habits.

In Southern Africa the bushmeat problem, while serious, is less acute. Possible reasons for this include the greater availability of alternative domestic animal protein sources in rural and urban areas and better law enforcement. Also there are fewer small forest species so the impact of bushmeat trade on biodiversity is less

4.8 POOR GOVERNANCE AND LACK OF POLITICAL WILL FUNDAMENTALLY UNDERMINE CONSERVATION EFFORTS.

No lasting progress in wildlife conservation can be achieved if there is **no political will at the very highest level to mainstream natural resource conservation in national development agendas**. In most African countries there is a serious disconnect between the political discourse regarding wildlife conservation, and the resources that governments are prepared to mobilize to conserve wildlife. Most protected area agencies are consistently underfunded and understaffed even in countries where tourism provides a strong economic incentive to value wildlife. Manpower and operating budgets are inadequate, and flawed human resource management procedures and lack of career development opportunities for staff leads to low morale and corruption. However, the strong political backing for the transfrontier conservation movement in southern Africa which from the outset received the strongest possible endorsement from President Mandela, and is now being spearheaded by SADC, is a notable exception to this trend and a beacon of hope and faith in the future of African wildlife and conservation. Other examples of strong political leadership from Heads of State improving conservation outcomes include Namibia, Botswana, Gabon and Chad.

5 INDICATIVE PRIORITY CONSERVATION ACTIONS

Despite significant programmes of the UN and many international conservation agencies and including considerable interventions over three decades by EU (ECOFAC, PAPE, BIOPAMA, MIKE, MIKES, ICCWC, ECOFAUNE, REDD+ and various public-private partnership initiatives) all reviews indicate that most African ecosystems face accelerating degradation and growing lists of wildlife species facing extinction, including iconic and keystone species that define African Wildlife – elephant, rhino, hippo, cheetah, gorilla and chimpanzee. High profile publicity has been given recently to a new crisis of illegal wildlife trade which sees well equipped poaching units moving across national borders to target key species concentrations and spirit away their valued parts. The EU joins the recent commitment by several agencies to rise to the new challenges.

Concern is further sensitized by the emerging links between hunting of rhino and elephant, as well as other natural resources (e.g. minerals from DRC, charcoal from Somalia) as a source of funds for terrorist and civil rebel groups in various parts of Africa. Wildlife crime fuels civil strife and corruption as well as robbing local communities of the natural heritage on which their thrifty livelihoods depend.

Ivory and rhino horn hog the headlines but the less publicized trade in other species and especially bushmeat is also becoming highly commercialized, including imports to EU countries. Great swathes of habitat are almost cleared of edible wildlife including elimination of endemic ungulates, rare monkeys and endangered gorillas and chimpanzees.

Even the immediate loss of wildlife is dwarfed in terms of real long-term losses to the continent by the gradual loss of functioning ecosystems and their valuable ecosystem services. Given that biodiversity underpins the provision of ecosystem services that are vital to human well-being and livelihoods, long-term sustainable achievement of the Millennium Development Goals (MDG) requires that biodiversity loss is controlled as part of MDG 7.

A strong commitment to reversing the ecological degradation of Sub-Saharan Africa is essential for humanitarian, security, environment, socio-economic and biodiversity reasons. The EU is uniquely placed to provide this essential support because it has a long history of relevant expertise in this field, large financial resources, delegations in every country, existing agreements at Pan-African and regional scales, the ability to back up action with political leverage, ability to integrate actions with other thematic initiatives and, as China's largest trading partner, considerable influence with Chinese authorities.

A stronger EU response is mandated by obligations under several key directives and commitments, including:

- EU 2020 Biodiversity Strategy targets a bigger EU contribution to averting global biodiversity loss under CBD and other programmes;
- EU commitment to support Bonn Convention on migrating species including Agreement on the Conservation of African-Eurasian Migratory Waterbirds;
- EU Thematic Programme on Global Public Goods and Challenges;
- EU commitment to combat organised and serious international crime including Europol;
- Joint Africa - EU Strategy Action Plan including especially commitments to Peace and Security, Democratic Governance and Human Rights and Climate change and Environment;
- The EU commitment to international efforts to tackle climate change including the LIFE programme;
- Commitments under Birds Directive to protect bird populations of all EU natural birds including migrants;
- EU's common Foreign and Security Policy;
- EU and member states commitments and obligations as members of the UN Convention on Biological Diversity (CBD) including transfer of technology;
- Declaration of the February 2014 London Conference on Illegal Wildlife Trade.

Given the scale of human growth, anticipated development projects and extractive industries and significant challenges of climate change, it is recognised that we expect a considerable further retreat of nature before rates of biodiversity loss are halted. It is not feasible to protect all 2000+ existing category I-IV protected areas or implement all admirable conservation plans for the continent. A prudent strategy for conservation in Africa would focus on a limited number of key landscapes smartly selected to harbour the highest diversity of species and focus on keystone species which epitomize the wildlife ecosystems of Africa and which serve as surrogates for 'total' biodiversity.

It should be stressed that EU interventions need to improve strategic approaches to planning and development across the board, and to apply them not only to protected area management and illegal trade, but to tackling key drivers of ecosystem degradation (population growth, conflict, weak governance, etc.). These fall outside the scope of this document but they are highlighted because of the huge impact they ultimately have on the effectiveness of wildlife conservation. They have to be tackled in parallel with conservation measures and must be designed to be consistent with conservation objectives. Also required, but beyond the scope of this document, are actions to support ecosystem conservation on Oceanic islands, Africa's critical marine environment and northern Africa (including the hot issue of large-scale trapping of migrant birds).

The proposed entry points for the EU strategic approach for wildlife conservation for Africa are:

1. *In situ* support for conservation of Africa's Key Landscapes for Conservation (KLC), Transfrontier Conservation Areas (TFCA) and individual sites of outstanding conservation value including but not necessarily limited to those recognised by other approved classification schemes eg IBA, RAMSAR etc.;
2. Strengthening sectoral management and coordination for wildlife conservation;
3. Facilitating legal reforms for local ownership and rights to wildlife and natural resources
4. Dismantling wildlife crime networks;
5. Tackling the unsustainable natural resource trade (bushmeat, fishing, fuelwood, charcoal);
6. Research and Monitoring;
7. Awareness raising and communication.

5.1 *IN SITU* SUPPORT FOR KEY LANDSCAPES FOR CONSERVATION (KLC) AND IMPORTANT INDIVIDUAL SITES

In situ conservation of Africa's most important conservation landscapes is placed at the heart of this proposed strategic approach. These are the sites where the best remaining assemblages of flora and fauna remain and it is essential that they be secured for posterity in the face of the inexorable intensification of threats. **The rationale here is that the pace of wildlife loss is so rapid that it will outpace efforts to tackle the various drivers of threats causing wildlife loss (i.e. population growth, poor governance, conflict and political indifference). KLCs are designed to safeguard wildlife and ecosystems in the medium to long term.**

Whilst the balance of respective actions varies between regions, the strategic approach prioritizes support for large, relatively intact, representative KLCs, containing key protected areas, key species and enabling adequate connectivity to allow for migration needs and species range adaptations to changing climate. Since functioning ecosystems and migrating species often span international boundaries many of the KLCs identified form part of Transfrontier Conservation Areas (TFCA). In the case of Western Africa ecosystems are so fragmented that specific strategic approaches are proposed for the four major ecotypes: deserts, savannahs, forests and mangrove/coastal areas (Volume 5, section 5.1.2) and specific measures proposed to promote the landscape approach (Volume 5, sections 5.2.1 and 5.2.5). The lack of up to date information, and the highly fragmented and threatened nature of habitats and species in Western Africa means that special analyses must be a key component of the *in situ* conservation work (Volume 5, section 5.1.8).

The priority KLCs are those that met as many of the following criteria as possible (Box 1).

Box 1. Criteria used to identify the most important Key Landscapes for Conservation (KLCs)

- Protects a functioning ecosystem with viable wildlife populations in the face of increasing isolation caused by an expanding rural population.
- Recognised as a World Heritage Site for its global (scientific) importance.
- Established as a Transfrontier Conservation Area or in the process of formal development as a TFCA.
- Protects a globally important dry-season concentration area for wildlife populations together with their wet-season dispersal zones
- Protects a long-distance terrestrial wildlife migration, or the range occupied historically by such a migration where there is opportunity to recover that migration through barrier removals.
- Protects the most important populations of free-ranging elephants in each region
- Protects the important populations of the African black rhino or of the Southern White Rhino.
- Protects a key population (as rated by the appropriate IUCN SSC Specialist Group) of one or more of the other iconic large African wildlife species, including predators, primates and ungulates, which are categorised as endangered or vulnerable according to IUCN Red List Criteria. Particular attention is given to species that typically occur at low density and/or occupy large home ranges, and which consequently require large and intact ecosystems for sustaining their free-ranging populations.
- Plays an important role in protecting important wintering grounds for Palearctic bird migrants (eg wetlands recognised as Important Bird Areas – IBA).
- Protects a regionally important hotspot of endemism and diversity that requires ecosystem-scale (versus microhabitat-scale) protection.
- Contains wildlife landscapes of exceptional scenic interest.
- Protects a watershed or aquifer that has direct conservation benefit through tight linkages with downstream water-dependent ecosystems that are themselves of global importance.
- 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

The proposed strategic approach recognises that even a long list of such supported landscapes will miss a lot of important individual smaller sites of outstanding conservation value and fail to protect many endangered species. Using similar criteria, but with a greater focus on species or habitats of special attention rather than large landscapes and functioning ecosystems, the strategic approach also identifies the most important individual PAs from the four Regions.

Figure 7 below and Table 5 in Appendix 1 summarise the different KLCs and individual sites identified and proposed for support in the four regions.

At the site level the elements of support will be dictated by the specificities of the different regions, but should include at least the following:

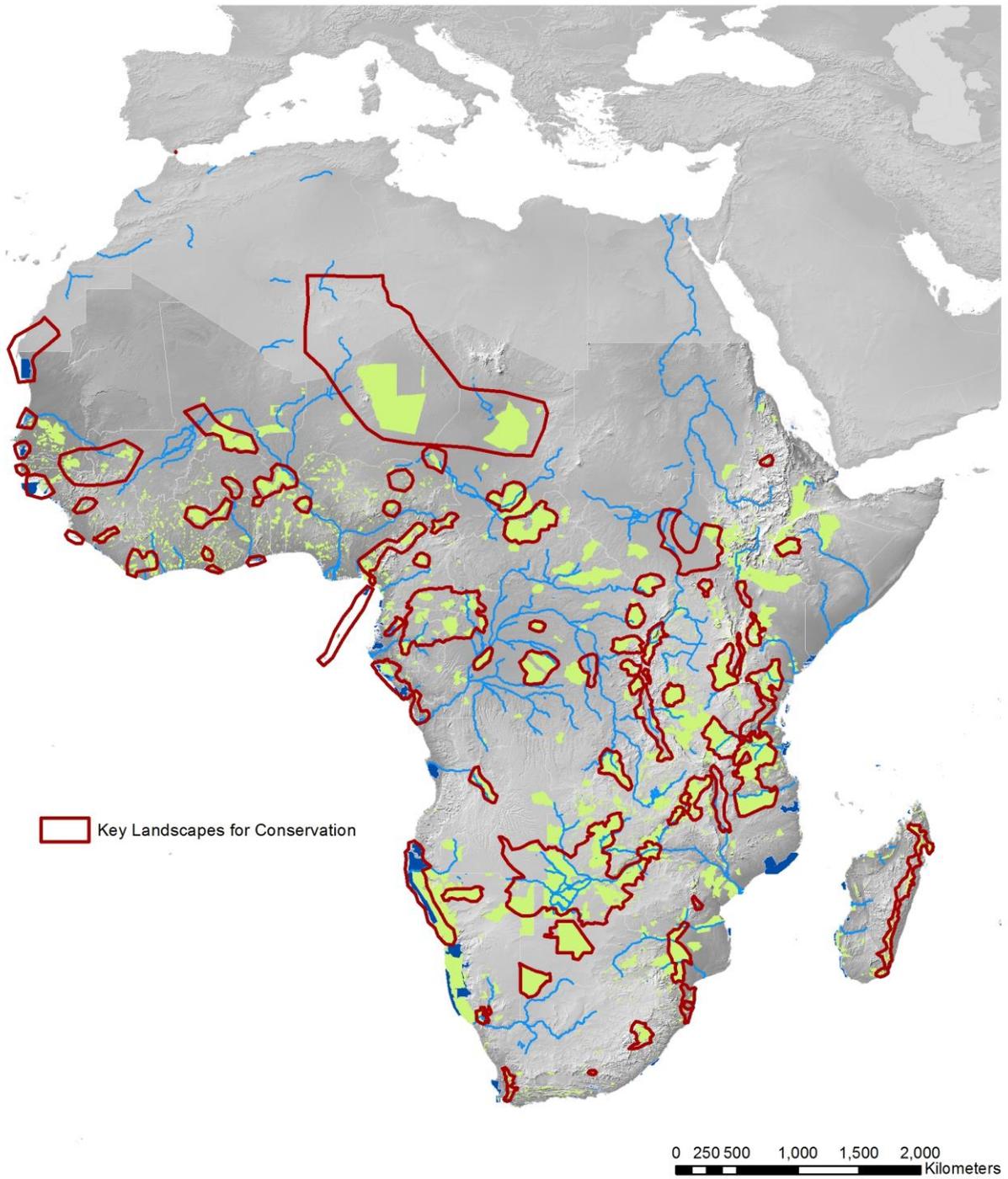
- *Protected area management.*
This includes management and business planning, capital investment in infrastructures and equipment, law enforcement, surveillance and intelligence, liaison with local communities, and monitoring of species, habitats, threats and internal staff performance. It also includes on the job training for field-based PA staff. Where Public Private Partnerships (PPP) for management of PAs is appropriate these will be encouraged and supported (section 4.1.4).

- *Landscape Management for Conservation.*
This involves raising capacities of park management for planning and implementing wildlife management at the landscape level including buffer zones, wildlife corridors, and restoration of animal migration. In the Central African moist forest region, where the landscape is dominated by the industrial extractive industries (logging and mining), opportunities for PPP with the private sector extractive industries to enhance wildlife conservation in concessions should be actively pursued.
- *Landscape Management for Livelihoods*
This element, which is particularly relevant to Southern and Eastern Africa, will assist with establishing and overseeing wildlife and natural resource conservancies on private and communal lands. An important aspect of wildlife conservancies on private land is the removal of internal fences between properties accompanied by joint management of land and wildlife resources. In communal lands long-term training in many aspects of CBNRM will include natural resource governance, wildlife conservation, human-elephant conflict (and conflict with wildlife in general), land-use conflicts, livestock disease, ecotourism, safari hunting, business management, administration of community institutions, and legal issues. Given the overriding threat to wildlife and habitats posed by population growth particular attention should be given to strengthening family planning in KLCs. In Central Africa, where successful options for livelihood activities have proved more difficult to develop, pilot schemes to test sustainable bushmeat and fish harvesting should be developed. Developing PES and REDD+ projects within KLCs should also be supported.
- *TFCA Governance*
This involves supporting cross-country cooperation and policy development for TFCA governance structures. It will also be of assistance to the overall institutional reform processes (section 5.2) and contribute to greater cooperation in the governance of TFCAs and other PAs.
- *Awareness Raising and communication*
This element supports awareness building in the surrounding communities through training, information, materials, publications, communications, visits to the protected areas, etc.

At the national level support should be aimed primarily at government departments and agencies responsible for wildlife conservation and their liaison with institutions in associated sectors (agriculture, logging, mining, education, etc.). This feeds in to the overall support for institution strengthening and reform processes (section 5.2).

At the regional level The TFCA approach in Southern Africa and beyond requires key reforms in national laws to give landholders and rural communities the right to manage wildlife, woodlands and other natural resources for their own benefit. Individual country reforms can take many years to achieve. The most effective approach will be to offer the relevant expertise at the regional and Pan-African level, the latter possibly through support to NEPAD. In the other regions where the TFCA concept is less well developed support will focus on building political support for TFCAs through relevant regional institutions (EAC, ECCAS, ECOWAS, COMIFAC etc..) and developing the necessary legal and institutional frameworks (section 5.2).

Figure 7. Map of proposed KLCs



5.2 INSTITUTION BUILDING - STRENGTHENING SECTORAL MANAGEMENT AND COORDINATION FOR WILDLIFE CONSERVATION

This document has underlined the general weakness of government agencies responsible for PA and natural resource management. The *in situ* support for KLC therefore has to be accompanied by significant support to strengthen these institutions. Institution building must be tackled at both the regional level and the national level.

5.2.1 National level

At the national level programmes supporting sectoral reform (including policy and legal), institutional restructuring and strengthening of management authorities (including the design or re-design of PA systems, and training) are very cost-effective conservation investments because all PAs, and all wildlife (whether in PAs or not), stand to benefit. Resources should therefore be made available to support national-level institutional and/or PA system reforms on an *ad hoc*, if-and-when requested basis. In some countries, particularly Western and Central Africa fundamental overhauls of management authorities will be required and this will take many years. For this reason PPP arrangements for management of PAs (section 5.1) is an advantage as it enables sites to be effectively secured while institutional reform is in progress. Furthermore PPP arrangements contribute directly to improving governance in the wildlife conservation sector, with obvious positive spin-offs for the management agencies (Volume 4, section 4.4, Box 2). Building stronger coordination between agencies within the regions, particularly in Western Africa (Volume 5, section 5.2.1) should also be supported.

Improved **training** is required at all levels of seniority in wildlife management and related issues in land-use and environmental governance, but in most African countries there are deficiencies in training of mid-level officers (wardens and senior site officers). The percentage of wildlife management staff with formal training in wildlife management varies considerably amongst African countries. Tanzania leads the way with almost 100%, followed by countries in southern and eastern Africa, (e.g. Botswana with 50%), to less than 5% in Ethiopia, Burundi and the DRC²³. Furthermore support should be given to ensuring that training curricula better reflect modern approaches and governance systems for conservation including greater community participation. This is particularly important for Western and Central Africa. These approaches require new skills particularly for planning and implementation of cross-sectoral and participatory management for conservation and sustainable use of natural resources in order to be able to address livelihood issues.

There are therefore obvious opportunities for (i) supporting middle management officers to attend the various African wildlife training institutes: Garoua Wildlife College (Cameroon), College of African Wildlife Management (Tanzania), Southern African Wildlife College (South Africa), Kitabi College of Conservation and Environmental Management (for the Albertine Rift Rwanda, Burundi, DRC), Kenya Wildlife Service Training Institute (Kenya), Botswana Wildlife Training Institute (Botswana), as well as the various other schools and University departments that offer degrees and Masters in aspects of wildlife management in the different regions (see regional volumes) and (ii) modernising the *curricula* to incorporate the latest approaches to wildlife management. However given the large number of potential candidates (it is estimated that more than 5,000 middle management staff, wardens and deputies are needed for Africa's protected areas) capacities of existing colleges need to be increased, possibly new training structures created, and a much larger number of scholarships made available to them to cater for the greater demand. A stronger emphasis on off-campus training as part of the curricula offered by the colleges is considered important. Building links with Universities (both within African, and abroad where appropriate) will

²³ P. Scholte, F. Manongi, T. Sylvina, M. Batsabang, R. Nasasira, G. Otiang'a-Owiti and F.Tarla. 2014 (draft report). Fifty years of professional wildlife management education in Africa.

allow colleges to focus on their specific practical training, drawing on larger organisations for more general education and accreditation management, while also offering college graduates more perspectives to pursue further education.

In the short to medium term the challenge will be to ensure that trained individuals return to their institutes rather than being attracted away by better career opportunities in the private or NGO sectors. The only way to avoid this is through the above mentioned support for institution building and reform so that NRM agencies provide attractive and stable career opportunities. If training can be delivered in a modular and in-service manner, attainment of specific skills and competence levels can serve as a motivation for career development.

Much of the basic ranger training is currently done on site by specialist training organizations and this should continue to be a strongly supported element of EU support (covered under section 5.1 above for *in situ* support for KLCs). Specific sites in the regions that are particularly suited for field training in terms of ecosystems and facilities should be identified and developed. With the increasing importance of organized networks of armed wildlife criminals, para-military techniques and intelligence gathering operation are increasingly important components of training.

5.2.2 Regional level

Given the importance of the landscape approach and TFCAs for the conservation of African ecosystems it is evident that concerted efforts at the regional level need to be made to continue developing the concept and supporting the development of the necessary regional planning and management structures. While the TFCA concept is firmly entrenched in conservation thinking in Southern Africa the level of political interest and support is weaker in the three other regions. In Eastern Africa the East African Community, its Secretariat and its NRM Protocol provide a sound platform on which TFCAs could be developed but greater impetus could be given to the idea by developing a specific plan for the development of TFCAs in EA and having it endorsed by the EAC. It is proposed that this should be modelled on the instruments and institutions developed for TFCAs by SADC. A similar approach could be adopted for the Central and Western African regions. It should be noted that as a member of SADC (as well as ECCAS) the DRC is well placed to benefit from the Southern African leadership and experience in this field. For Western Africa it is proposed to support the establishment of a special task force for Institutional Support and Coordination under WAEMU. This task force, supported by IUCN based in Western Africa, would be responsible for monitoring and planning, communication, research and management-governance training (Volume 5, section 5.2.1)

5.3 FACILITATING LEGAL REFORMS FOR LOCAL OWNERSHIP AND RIGHTS TO WILDLIFE AND NATURAL RESOURCES

The landscape approach to conservation requires key reforms in national laws to give landholders and rural communities the right to manage wildlife and woodlands for their own benefit. Reforms to policy and law are required in most countries of Africa. Individual country reforms can take many years or decades to achieve. While not ignoring the necessity to work on policy and legal reforms at the national level it is proposed that an effective approach will be to offer the relevant expertise at the regional and Pan-African level through the various political, economic and development communities (SADC, NEPAD, EAC, ECCAS, WAEMU, COMIFAC etc.) and their associated technical organs. For example for Southern Africa (Volume 2, section 5.1.3) it is proposed that a SADC TFCA *Joint Programme to Enable Legal Frameworks* be established with SADC for the purpose of communicating to member states the need for reforms in resource rights and land tenure. It would provide advice and practical assistance in harmonizing relevant legislation, policies and approaches in natural and cultural resource management across international borders within the TFCA context. In addition a sister programme

would be established within NEPAD so that individual African states can be encouraged to adopt TFCAs, and the linked land-reforms, as a way of implementing NEPAD. Harmonisation of policies and legal frameworks is particularly important with respect to wildlife crime in order to avoid the “migration” of wildlife criminal networks to countries where penalties are weakest. In Central Africa harmonisation of forestry and fiscal policies is a key pillar of the COMIFAC Convergence Plan (Volume 4, section 3.1, Box 1) and should continue to be supported.

5.4 WILDLIFE TRAFFICKING: DISMANTLING WILDLIFE CRIME NETWORKS AND CURBING THE DEMAND

It is obvious that efforts to curb the trade in any wildlife commodity be it ivory, apes or parrots, will require essentially the same preventative and investigative procedures and involve the same range of enforcement agencies. It follows that any action taken to strengthen the capacity of the wildlife enforcement machinery stands to benefit very many species, and would therefore represent money very well spent.

With so much that needs doing, and with so many other actors also trying to help, these recommendations represent a conscious attempt to avoid an all-inclusive, over-ambitious programme, and instead to identify a realistic selection of interventions that have the potential to generate a very good return on investment in terms of ultimate impact.

The plight of two of Africa’s most iconic species, the elephant and the rhino, has focused world attention on the massive scale of the illegal wildlife trade in wildlife products and the ramifications that this has not only for biodiversity conservation but also for governance and national security (since rebel groups across Africa are deeply involved in it). Volume 6 of this document presents measures required specifically for elephants and rhinos as well as more generally for the whole issue of the illegal wildlife trade. While there are a number of anti-trafficking measures that are specific to each of these two iconic species, there is a raft of measures that are equally relevant for the wildlife trade in general since what works for rhinos and elephants will likely also be beneficial for other species targeted by the illegal trade. *In situ* conservation measures for rhino and elephant are covered in section 5.1. The special issue of the bushmeat trade is covered in section 5.4 (and in Volume 4, section 5.4).

It should be underlined that strategies for tackling trafficking and demand reduction have been developed by various international organizations, notably through the International Consortium on Combating Wildlife Crime (ICWC) which brings together the world’s leading agencies involved with this issue (CITES, INTERPOL, UNDOC, WCO and the World Bank). UNDOC has also developed its own global programme for combating wildlife and forest crime. These ongoing initiatives are highly pertinent with respect to the present strategic approach for wildlife conservation in Africa.

The Wildlife Trade section of Volume 6 presents an analysis of the strategic options for combating the illicit trade in wildlife. There are 4 strategic approaches which need to be pursued simultaneously at international, regional and national levels. These are:

- **Strengthening policies and laws** - to make wildlife trafficking a serious crime with appropriate penalties)
- **Stopping the killing** - by strengthening anti-poaching, law enforcement monitoring, PPPs and community development.
- **Stopping the trafficking** - through international coordination in wildlife trafficking, inter-agency networking at the national and regional levels, Wildlife Enforcement Networks, information management and monitoring systems, and specialized tools such as container control programmes, controlled deliveries, tracking the money, and forensics to determine the origins of wildlife products.

- **Stopping the demand** - educate and influence consumers, develop alternatives, destruction of stockpiles, legal moratoria and bans, high profile diplomacy and advocacy.

The reader is referred to sections 3.4 – 3.8 of the Wildlife Trade section of Volume 6 for a detailed analysis of these strategic approaches.

The following actions need support :

5.4.1 Actions to strengthen policies and laws

The EU and its Member States should act on all of the many relevant recommendations arising from its own Expert Conference on the EU Approach against Wildlife Trafficking of 10 April 2014, whether domestic or international in nature. However, not all of the suggestions submitted by those consulted in the course of this exercise were adopted. One that should be included is the need for EU countries to close domestic ivory markets and destroy any stockpiles of ivory (Volume 6, section 3.9.1).

Several of the actions recommended under the other strategic headings will indirectly support the strengthening of wildlife trade-relevant policies and laws, either internationally or nationally.

5.4.2 Actions to stop the killing

In Volumes 2-5 of this document, a compelling case is made for the EU to concentrate a greater proportion of its support for wildlife conservation in Africa on a number of carefully selected Key Landscapes for Conservation or KLCs. The most effective contribution the EU could make to stop the killing at field level, would be to provide the necessary inputs (training, equipment etc.) as part of its support packages to KLCs (section 5.1).

Approaches to alleviate rural poverty, which is a fundamental driver of poaching at the field level, can also be addressed within the context of support to KLCs (see 3.7 in Volume 3 for Eastern Africa, and section 5.1.1.2 in Volume 2 for Southern Africa for example).

5.4.3 Actions to stop the trafficking

5.4.3.1 *Continue and expand support for international trade regulation*

The EU should continue as an important financier of CITES' core functions and mandated actions, and more especially should not only continue, but expand also, its support for all ICCWC operations, especially those of UNODC which is taking the lead in so many relevant fields ranging from forensics to controlled deliveries to indicators. This overall position with respect to CITES and ICCWC is exactly consistent with that recommended by the recent Expert Conference on the EU Approach against Wildlife Trafficking. UNODC's *Global Programme for Combating Wildlife and Forest Crime* is considered particularly worthy of support as it elaborates on all these initiatives, and its anti-trafficking components are particularly well thought-out and constructed. Since this is a ready-to-go programme, much needed in a crisis situation, which ticks all the boxes with regard to appropriate action, and is organised regionally, it is strongly recommended to fund its entire African component.

Consideration should also be given to supporting the following more focused interventions which are anyway consistent with UNODC's Global Programme:

5.4.3.2 *Support the establishment of national WENs.*

The WEN approach to establishing functional, well-coordinated multi-agency enforcement mechanisms offers a great deal of promise in the anti-trafficking context. While the need for national WENs is clear, the case for establishing formal regional WENs does not have full consensus. It is recommended therefore that priority be given to supporting the establishment of national-level WENs, primarily by funding the application of ICCWC's Wildlife and Forest Crime Analytic Toolkit or other means of capacity self-assessment in any and all countries that would benefit from this, and secondarily by extending support to facilitate implementation of the resultant National Action Plans.

5.4.3.3 *Develop a cadre of international Wildlife Security Officers.*

The structure of the organized groups involved in wildlife trade-related crimes has five different levels, from poacher to the end consumer:

- Level 1: Field (protected area, communal and private land): Poachers (individuals or groups)
- Level 2: Local: Receivers/Couriers
- Level 3: National: Couriers/Buyers/Facilitators
- Level 4: National: Exporters
- Level 5: International: Forwarders/Importers/Traders/Consumers

Investigation complexity differs significantly between Levels 1 and 5. Current enforcement activities in source/supply States address criminal syndicate members from Levels 1 to 2 relatively effectively (although with varying degrees of success of course). However these individuals are often easily replaced, and the threat will continue to exist for as long as enforcement activities do not address the driving force behind them at Levels 3 to 5. Organized crime syndicate members on Level 5 are located in transit/consumer countries and beyond the reach of enforcement authorities in supply countries. It is for this reason that increased international cooperation and coordination are vital. Thus the main challenge for national enforcement agencies is at Levels 3 and 4. This is because identifying and catching the king-pins or "big fish" involved needs inter-agency intelligence-led approaches that are both proactive and reactive, and which can penetrate the layers of secrecy and corruption that protect these people and facilitate their activities. Unfortunately these skills are not well developed, in a wildlife context at least, so it is in this area that national WENs can be expected to add most value provided they are staffed by people skilled in intelligence analysis methods including social network analysis.

However, development of these skills is not straightforward. Probably the best way to develop them is for selected WEN officers to work alongside a person already experienced in the relevant methods, i.e. through on-the-job, or experiential, learning. This could be delivered by embedding - for 2 to 3 years - suitably qualified Technical Assistants (TAs), or Wildlife Security Advisers, within national-level WENs or WEN-equivalents. It is recommended therefore that the EU develops an appropriate TA resource that could be supplied on request, and the obvious and ideal partner to lead this initiative is ICCWC. This resource could consist of former police, military, customs and intelligence officers from EU member states, especially those who have worked on other similar forms of organised crime (drugs, human-trafficking, arms etc.).

TA would also help drive many routine aspects of WEN functionality, and optimise links to international agencies such as INTERPOL, EUROPOL, the proposed AFROPOL and WCO. Any resultant improvement in dealing with Levels 3 and 4 in the criminal hierarchy would bring disproportionately massive returns on the investment in terms of saving wildlife. It follows that the deployment of national Wildlife Security Advisers represents a very promising approach to adopt.

5.4.3.4 Forensic laboratories for Africa

The need forensic capacities to determine the provenance of rhino horn and ivory is arguably most pressing in Southern and Eastern Africa, these being the regions in which the majority of the continent's elephants and rhinos especially are found today. Even so, a significant amount of seized ivory originates in Central Africa meaning a facility is needed in that region also. At present there are two facilities with the potential to provide regional forensic services for ivory and rhino horn, namely the VGL lab in Pretoria for Southern Africa, and the KWS lab in Nairobi for Eastern Africa. For Central Africa, a lab planned in Gabon has regional potential.

Subject to the inputs of other donors, it is recommended that the EU should provide complementary assistance towards the development and sustainable operations of these labs as a matter of priority and for the following reasons. Firstly, a substantial amount of investment has already gone into developing a real collaboration between the VGL and KWS labs, so it makes sense to support and expand the work that has already been done in that regard. Secondly, all such labs have the potential to determine the identity and provenance of very many types of wildlife product, not just ivory and rhino horn, thus contributing to the overall effort to address illicit wildlife trading in general.

5.4.4 Actions to stop the demand

Two approaches are recommended:

5.4.4.1 Support UNODC's demand reduction efforts

Adding further weight to the principal recommendation already made in 5.3.2.1 above to support UNODC's Global Programme, is that fact that it will also address the demand side of WLFC through awareness raising at global and national levels. UNODC will build on its existing expertise in running effective global awareness campaigns, such as the Blue Heart Campaign against Human Trafficking and its successful video campaign against Transnational Organized Crime. Dedicated media outreach both on traditional and new forms such as social media will be deployed. To maximise impact, UNODC will learn lessons from other agencies, for instance the anti-trafficking campaign launched by UNWTO, UNODC and UNESCO in March 2014 titled "*Your Actions Count – Be a Responsible Traveller*".

5.4.4.2 Deploy Wildlife Conservation Envoys

It is generally agreed that the scale and nature of the illegal wildlife trade calls for an effort to sensitise both supply and consumer Governments at the highest possible level, in order to secure the greatest possible chance of influencing them to make a determined and effective response. Given the limited success of events like the African Elephant Summit in actually interacting with Heads of State, there is merit in the idea of the EC dispatching official envoys to carry this message to them.

Many other international organisations use instantly recognisable film, music and sports stars to promote their mission. For example the Kenya-based Save the Elephant has effectively tapped into the huge celebrity status of the Chinese basketball star Yao Ming, and the Chinese actress Li Bingbing to sensitise the Chinese ivory-buying public. The EU could follow suit, and there are many celebrities of European nationality who would be suitable. In terms of access to Heads of State (and influential First Ladies) however, the envoy would need appropriate diplomatic credentials. This would not be an issue if the envoy was royalty for example, and it is notable here that certain members of the British royal family are already very concerned and closely involved with wildlife conservation generally, and trade issues particularly.

Irrespective of their identity, an official EU Wildlife Conservation Envoy could not only lobby Heads of State for action against the illicit wildlife trade, but could at the same time publicise and promote the major new funding initiative(s) that it is hoped the EC eventually will adopt as a result of the present study.

5.5 TACKLING THE ISSUE OF UNSUSTAINABLE WILD ANIMAL PROTEIN USE

Although there is a tendency to focus on the question of unsustainable bushmeat trade (ie meat from terrestrial wildlife) the unsustainable harvesting of freshwater fish is probably of equal importance. The two are anyway closely linked with users switching from one to the other as a function of seasons and availability.

As noted in 4.9 wild animal protein is often a food security issue in rural environments but rarely in urban environments, which is where the great majority of it is consumed. Ideally the ultimate goal should be to achieve sustainable harvesting of wild animal protein for local consumption in rural areas and eliminate consumption of bushmeat as a luxury item in urban areas. This will require following three strategic approaches simultaneously:

1. *Reducing the demand for wild animal protein* by a combination of developing alternative sources of protein at a cost similar to bushmeat for rural consumers, developing alternative livelihoods to make people less economically dependent on selling bushmeat, and strict enforcement of laws for protected species for retailers, urban consumers and transporters.
2. *Improving the sustainability of the supply by better management of the resource* by developing models of wildlife management with local communities, research and extension, and engagement with the extractive industries to integrate conservation measures into their management plans and internal regulations.
3. *Creating a conducive and enabling institutional and policy environment* so that communities have security of user rights, and a clear regulatory framework for **local** marketing of bushmeat and other wildlife products (from permitted species).

However given the high levels of rural poverty, the relatively low levels of investment needed to hunt and sell bushmeat and fish, and the pervading problem of poor governance, there is a tendency for villagers in subsistence economies to use local wildlife as a cash crop²⁴. The unsustainable bushmeat trade will therefore continue to be a particularly intractable problem for many years to come and for which there is, as yet, no “silver bullet” solution. Establishing the appropriate policy and regulatory framework for sustainable harvest for local consumption will take very many years, particularly in Central and Western Africa, by which time the fear is that many wildlife populations will have been irreversibly impoverished. It is therefore recommended that in the medium term the EU focuses its support on establishing a series of pilot projects working with local communities to test models of sustainable harvest for local consumption. This does not ignore the importance of working at the policy and regulatory level, rather the idea is that the results of the pilot projects should feed into national debates on policy and law.

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/livelihoods programme;

²⁴ Abemethy KA, Coad L, Taylor G, Lee ME, Maisels F. 2013. Extend 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>

- 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 and sustainable animal protein at a competitive price (e.g. or small-scale intensive production of domestic species such as chickens where chicken feed can be produced locally without involving habitat loss – see Volume 4, section 5.4). Reasons for the lack of success of schemes to raise wild animal species as alternative protein sources, particularly forest species, should be clearly understood before attempting further such initiatives;
- 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, protected area and research partners with local communities would bring important added value in terms of scientific method, local governance building, law enforcement and awareness building.

The essential law enforcement component of dealing with the bushmeat trade would be covered within the framework of *in situ* support to NRM agencies presented in 5.1. Squeezing the supply lines for bushmeat to urban areas will be an essential focus of law enforcement activities, but it should be recognised that this will undoubtedly be socially and politically highly sensitive since many powerful/influential people have vested interests all along the supply chain.

5.6 RESEARCH AND MONITORING

The research and monitoring activities that are a central component of PA management activities are covered under section 5.1 (*in situ* support for KLCs). This section addresses the broader regional and continental aspects of R&M in relation to wildlife conservation. The special case of elephants is also included in this section.

The following broad areas are considered important and worthy of EU support. It should be noted that they are all areas where many organisations, including the EU itself, are already involved.

5.6.1 Information management

The EU, in collaboration with several international partners including IUCN, is already heavily implicated in bringing together a wide range of data sets relating to changing land use, PAs, biodiversity, etc. and placing these in the public domain. The BIOPAMA project proposes the creation of regional observatories in Africa and then to connect the collected information in a more general system, DOPA (Digital Observatory for Protected Areas), managed jointly with IUCN. Similarly the Observatory of Central African Forests (OFAC) promotes good governance and sustainable forest management by providing Central African stakeholders within the framework of COMIFAC and CBFP with a powerful tool for data sharing. The remarkable series of reports “*The Congo Basin Forests: State of the Forests*” is a particularly important output. The EU should continue to support these important initiatives.

5.6.2 Elephants

5.6.2.1 *Monitoring of illegal killing and surveys of key elephant populations*

From the outset in 2001 the MIKE programme, managed by the CITES Secretariat and implemented in collaboration with IUCN, has been supported by the EU. MIKE and its successor MIKES (see Volume 6, section 1.4.3.1) aim to inform and improve decision-making on elephants by measuring trends in levels of illegal killing of elephants, identifying factors associated with those trends, and by building capacity for elephant management in range States. To date MIKE operates in a large sample of sites spread across elephant range in 30 countries in Africa and 13 countries in Asia. There are some 60 designated MIKE sites in Africa which taken together represent 30 to 40% of the continental elephant population. Long term support for this initiative is absolutely vital as the information it provides is critical for informed debate within CITES, including the complicated and contentious issue of a legal ivory trade. However there are many other sites apart from MIKE sites that need to be surveyed, especially forest sites in Central Africa (details in Volume 4, section 5.1). The need to support objective and repeatable enumerations of forest populations is really critical, because without the live elephant numbers the strength of MIKES information will be greatly reduced.

In order to secure full value for money already invested in or committed to the overall MIKE programme therefore, it is recommended that the EU secures additional and indefinite funding to this end in line with African Elephant Summit Urgent Measure 5. Similarly the EU should sustain its support indefinitely for the closely related ETIS programme also. Without continual monitoring, the objective basis on which to decide what trade-related actions are needed, where, and how urgently, will be lost.

5.6.2.2 *Elephant movements*

While powerful arguments can be put forward for ecological research on a very wide range of iconic African species the case of the elephant is particularly compelling because of the very large areas over which they have to range. These movements, very often far outside the boundaries of PAs, bring them into greater contact not only with elephant poaching gangs but also with rural farmers. Human elephant conflict is an issue that alienates local populations and leads to further killing of elephants. Much effort is spent trying to address the problem of elephant movements outside PAs, including the concept of secure elephant corridors. Care needs to be taken that potential corridors are not just drawn on maps without taking wildlife's natural movement and habits into account. It follows that money on research to identify real travel routes would be well spent before millions are invested in corridor developments that may fail.

5.6.3 Natural resource use in the informal sector

Recent research coordinated by CIFOR has highlighted the hitherto underappreciated fact that the informal sector exploiting fuelwood, charcoal, timber and other NTFP (including bushmeat) greatly exceeds that of the formal sector both in quantity and value. Not only is this a "lost resource" in economic terms but it also hides the full scale of natural resource loss and the impact that this ultimately will have on livelihoods. Research and monitoring in relation to bushmeat harvesting has been alluded to in 5.4 above. CIFOR has identified a number of knowledge gaps and research priorities for bushmeat²⁵ which fall under three general headings:

²⁵ Varun Swamy and Miguel Pinedo-Vasquez. 2014. Bushmeat harvest in tropical forests. Knowledge base, gaps and research priorities. Occasional paper 114. CIFOR.

- Livelihoods: better understanding the many socio-economic and cultural factors that influence patterns of bushmeat consumption;
- Game populations (bushmeat species): better understanding of basic ecology and demographics of hunted species, particularly understanding the difference between forest specialists and forest-fringe species and the capacity of secondary forest, fallows and other non-primary habitats to sustain bushmeat species;
- Ecosystem function. Understanding the long-term effects of defaunation on ecosystem function.

5.6.4 Birds

Section 5 of Volume 6 describes the status of African birds. Many species are becoming endangered in parallel to other wildlife taxa as habitat is degraded and fragmented but some species face specific threats such as poisoning of vultures and pollution and loss of vital wetlands. Of particular concern to the European public is the decline of many species that migrate to Africa for the winter months. Such species are dependent not only on the suitability of winter habitat but also the many stopover and replenishment areas along the migration flyways especially in the Sahel (Volume 2 Section 2.7.2, Figure 11). Many water birds are threatened by the decline in African wetlands

Tackling these issues requires considerable research and monitoring. Additionally, since birds are mostly diurnal, quite easily recognised at moderate distance without capture and there are large numbers of avid birdwatchers available to record data, birds are an ideal taxon for monitoring the overall health of wetlands and other wildlife ecosystems.

Such assistance could be extended by support to the BirdLife International project coordinating protection of Afro-Palaearctic migrants through its network of African partner organisations.

Key activities to be undertaken under this programme include:

- Improved monitoring and tracking of Afro-Palaearctic migrant birds
- Identification of mortality factors and causes
- Identification and protection of key wintering and stop-over sites.
- Ensuring that reforestation efforts in the Sahel under the Great Green Wall for the Sahara and the Sahel Initiative and forest zones are designed to be bird-friendly/bio-friendly
- Strengthen protection of key wetland sites used by migrant waterbirds under Ramsar Convention and Convention on Migratory Species initiatives

5.7 AWARENESS RAISING AND COMMUNICATION

High importance is attached to this activity because of the overriding need to evolve a conservation policy that is embedded in African society (Volume 2, section 5.5). Awareness raising, interpretation of conservation, information and communication require a substantially greater investment than they have typically received in the past. An important part of achieving this goal is to provide up-to-date and accurate information on conservation issues, including natural resources management, biodiversity, African cultural traditions that are related to natural heritage, eco-tourism, protected areas and the TFCA approach.

Awareness raising and communication will be integral parts of all *in situ* conservation efforts (section 5.1 of this volume). Here is addressed communication at the regional and international levels. Broadly speaking the EU should be looking to give added value to existing and demonstrably effective awareness building and communication activities. For example, in addition to the kind of information made available through the initiatives

described in 5.5.1 (Information Management) it is recommended that the EU renews its support for the important work done by the AfESG and AfRSG which have for years, on limited budgets, provided invaluable services and inputs in terms of: (i) general coordination; (ii) technical guidance and advice given to CITES, managers across the African elephant Range States, donors, interested parties and the general public; (iii) maintenance of the African Elephant Database and periodic publication of the Status Reports and the journal *Pachyderm*. The EU's previous core support grant to the AfESG was highly successful and its evaluation showed a high level of delivery against objectives. We therefore recommend not only that the EU should provide fully comprehensive core funding to the AfESG and AfRSG, but also to all other Specialist Groups with a remit in Africa. A suitably well-endowed programme should be negotiated with IUCN's Species Survival Commission.

Other regional / international communication / awareness building activities need to be facilitated. Networked approaches can be particularly effective. There are for example a number of disparate networked approaches to wildlife conservation in southern Africa including the CAPE partnership for conservation of the Cape Floristic Region, and NASCO – the Namibian Association of CBNRM Support Organisations.

5.8 FUNDING

It is difficult to give a precise calculation of the level of funding required to have significant impact on the success of wildlife conservation over this large area. Several sources give guidance and all show that the funding requirements are very high and considerably greater than what is currently being mobilised.

In the period 1980-1984, Leader-Williams and Albon²⁶ showed that a minimum annual expenditure on protected area conservation of \$230 per km² was required to prevent a decline in rhino numbers from poaching and a minimum expenditure of \$215 per km² to prevent a decline in elephant. In today's money the rhino figure would be about \$529 per km² (€425 per km²). The 70 KLCs identified in the current document cover approximately 2.5 million km² of which PAs make up about half the territory and so the overall minimum cost of protecting those parks would be approximately **€531 million per year**.

Martin (2003)²⁷ used information from Zimbabwe's National Parks in 1997 to show that protection and management needs for small protected areas required higher investment per unit area than larger areas e.g. 1,000km² needed US\$0.3 million for operating costs, 10,000km² needed US\$1.07 million per yr and 100,000km² needed \$6.6 million per yr. The operating costs included salaries, field allowances, equipment, fuel for transport and maintenance costs and included provisions for senior field and research staff.

Allowing for variations in salaries and fuel costs from country to country in the SA region, the operational costs were estimated by the formula:

$$\text{Annual Recurrent Expenditure/km}^2 \text{ in US\$}, C_R = 50 \left(1 + \frac{2}{A} + \frac{3}{\sqrt{A}} \right)$$

For new parks there was a substantial additional cost of capital requirements which was estimated by the formula:

$$\text{Total Capital Expenditure/km}^2 \text{ to set up a new park in US\$}, C_C = 500 \left(1 + \frac{1}{A} + \frac{1}{\sqrt{A}} \right)$$

²⁶ Leader-Williams, N. & Albon, S.D. 1988. Allocation of resources for conservation. *Nature* 336: 533-535.

²⁷ Martin, R.B. 2003. Conditions for effective, stable and equitable conservation at the national level in southern Africa. A paper prepared for Theme 4 at a workshop titled Local Communities, equity and protected areas as part of the preparations for the Vth World Parks Congress of the IUCN held in Durban, South Africa, September 8 – 17, 2003.

(where area A is expressed in thousands of square kilometres for both formulae).

The 70 KLCs identified in the current document cover approximately 2.5 million km² and contain about 300 protected areas. Given that PAs occupy only 50% of this KLC area, they average about 4,200 km² each. Using Martin's formulaic method, with costs updated to 2015, the total operational costs for a park of 4200 km² is €136 per km², and for 300 PAs of this size the cost would be €171 million per year.

If all the PAs required rebuilding of their entire infrastructure during a ten year period then there would be an additional one-off capital cost of €1080 million or €108 million per year bringing the total expenditure for operational and capital expenditure to **€279 million per year**.

In 2004 Blom²⁸ calculated that the PA needs (capital and recurrent costs) for the Congo Basin and the Niger delta alone was in the order of US\$1.3 billion over 10 years, i.e. US\$ 130 million (€104 million) per year for an area roughly equivalent to the Central African region as defined in Volume 4. Extrapolating up to all of Sub-Saharan Africa gives a rough total of **€416 million per year**.

Taken together these three methods of estimating required expenditure indicate that the KLC network would require **from €279 million to €531 million per year** for effective management (in 2015) assuming that interventions were restricted to conventional park management and law enforcement techniques alone. Community programmes in the areas outside the parks are likely to increase costs by at least 50% which would bring the estimated costing range up to €418 to €796 million. Taking the median value of **€607 million per year, roughly €6 billion will be required over 10 years**.

If we now look at the actual expenditure on PAs we can see that it is considerably less than what is required. In 2002, Cumming estimated that southern African states (with the exception of KwaZulu-Natal) were allocating less than US\$50 per km² per year to their parks which works out at no more than 25% of the expenditure considered necessary according to Martin's (2003) estimation of about €194 per km² per year for the total annual requirement (calculated as €136 per km² for operational costs and approximately €58 per km² for capital expenditure assuming complete re-investment in infrastructure every 10 years).

In 2005 BirdLife International reported that approximately US\$300 million per year was spent managing around 1,250 protected areas (covering approximately 9% of the continent) and that this was considerably less than the US\$ 800 million per year considered necessary for an expanded and comprehensively managed protected areas system²⁹.

While recognizing the approximate nature of these estimations, and the fact that there are certainly significant differences in costs depending on the countries/regions and the habitat types, they nevertheless suggest that funding requirements for the proposed strategic approach which centres on 70 KLCs is likely to be at least **400 to 500 million euros per year**. At this level EU inputs would have a major impact over the most significant areas and species on the continent, more than doubling the total global investment in African PA conservation but still only reaching 60% of estimates for conserving the total PA system of the continent.

Table 4 below provides a very general overview of costs for the proposed strategic approach. Precise cost estimations will require time consuming detailed site by site analyses taking into account the specificities of the different sites such as levels of local salaries, the contribution of other donors, the state of development of the sites, etc. This level of detailed analysis is beyond the scope of this document.

²⁸ Blom, A. 2004. An estimate of the costs of an effective system of protected areas in the Niger Delta – Congo Basin Forest Region. *Biodiversity and Conservation* 13: 2661–2678.

²⁹ BirdLife 2008 State of the World's Birds. Indicators for our changing world.

Table 4. Indicative funding levels for proposed strategic approach (Million Euro over 10 years)

Strategic Component	Where	Type of Intervention	Indicative funding levels (Million €)
1. In Situ support for KLCs and other important sites			
	All regions	<ul style="list-style-type: none"> • Long-term integrated support agreements for KLC management, closely coordinated with other agencies, partners and local communities, covering: <ul style="list-style-type: none"> - PA management - Landscape management for conservation - Landscape management for livelihoods,; • PPP agreements; • Collaborative agreements with NRM agencies; • Grants for species actions by local and international NGOs; • Support for implementation of action plans of respective IUCN SSC groups; • Special site-based elephant and rhino actions (surveys, monitoring, law enforcement); 	6.000
2. Sectoral strengthening, reform and coordination			
	All regions	<ul style="list-style-type: none"> • Reform of NRM agencies; • Training (support to training schools, grants to students, on the job training); • Governance structures for TFCAs; • Mainstreaming conservation into national planning processes; • Regional coordination of conservation actions in WA; 	300
3. Facilitating legal reforms for local ownership and rights to natural resources			
		<ul style="list-style-type: none"> • Supporting individual national policy and legal reforms; • Support at Regional and Pan African level for policy reform; 	100
4. Dismantling wildlife crime networks			
	Africa, Europe, Asia	<ul style="list-style-type: none"> • Support CITES core functions; • Support ICCWC and UNDOC actions; • Establishment of national WENs; • Forensic labs; • Wildlife Security Officers; • Site-based actions (covered under 1 above); • Policy and law reform covered under 3 above); 	400
5. Tackling unsustainable animal protein trade			
	All regions	<ul style="list-style-type: none"> • Demand reduction - law enforcement, alternative livelihoods and protein sources (covered under 1 above); • Pilot projects to develop sustainable models for harvesting wild protein for local consumption; • Creating enabling environment (covered under 3 above); 	200
6. Research and Monitoring			
	All regions, Europe, Asia	<ul style="list-style-type: none"> • Information management (BIOPAMA, Forest Observatoires, Remote sensing, TRAFFIC, ETIS, etc...) • Support for MIKES programme; • Understanding ecological impacts of natural resource harvesting in informal sector (bushmeat, fishing, fuelwood, charcoal etc) • Understanding trade in informal sector • Other specific research topics (birds, migrations, invasive species, diseases, etc...); 	300
7. Awareness raising and communication			
	All regions, Europe, Asia	<ul style="list-style-type: none"> • Support demand reduction initiatives in Africa and Asia • Wildlife Conservation envoys • Diplomatic leverage and dialogue with African and Asian partners • UNDOC demand reduction actions • IUCN SSC specialist groups • Site-based conservation education and awareness covered under 1 above. 	400
TOTAL			7.700

6 APPENDIX 1. LIST OF PROPOSED KEY LANDSCAPES FOR CONSERVATION

Table 5. List of proposed KLCs

Key Landscapes for Conservation (KLC) identified as priorities under the current review

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
SOUTHERN AFRICA					
Kavango Zambezi TFCA	AO, NA, BW, ZM, ZW	400,000	<ul style="list-style-type: none"> Miombo woodland Zambezi flooded grasslands Savanna 	<ul style="list-style-type: none"> Liuwa Plains NP (ZM) Kafue NP (ZM) Matusadona NP (ZM) Chizarira NP (ZM) Hwange NP (ZM) Naxai Pan NP (BW) Chobe NP (BW) Moremi GR (BW) Okavango Delta WHS (BW) 30 additional reserves 	<ul style="list-style-type: none"> Unique Okavango delta wetlands Wildlife migrations Large elephant population Other large mammals Peace Park
Great Limpopo TP	MZ, ZA, ZW	87,000	Miombo woodlands	<ul style="list-style-type: none"> Limpopo NP (Moz) Kruger NP (SA) Gonarezhou NP (Zim) + 2 additional sanctuaries and further Pas in phase 2 	<ul style="list-style-type: none"> Riverine woodlands Regional endemism
Kgalagadi TFNP	BW, ZA	37,256	Desert	<ul style="list-style-type: none"> Gemsbok NP (Bot) Kalahari Gemsbok NP (SA) + 1 additional reserve 	<ul style="list-style-type: none"> Unique Kalahari Gemsbok etc.
Lower Zambezi – Mana Pools TFCA	ZM, ZW	25,000	Miombo woodlands	<ul style="list-style-type: none"> Mana Pools NP (WHS), Sapi and Chewore Safari Areas (Zim) Lower Zambezi NP (Zam) 6 additional reserves 	<ul style="list-style-type: none"> Zambezi River Floodplain Escarpment Large mammal populations
Maloti-Drakensberg TFCA	LS, ZA	13,000	Montane	<ul style="list-style-type: none"> Maloti Drakensberg Transboundary World Heritage Site which comprises Sehlabathebe National Park (LS) and uKhahlamba Drakensberg Park (SA) 	<ul style="list-style-type: none"> Southern mountains Escarpsments Rich endemic flora Wetlands

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
					<ul style="list-style-type: none"> • San culture
Ais-Ais – Richtersveld TP	NA, ZA	6,681	Desert, riverine	<ul style="list-style-type: none"> • Ais-Ais Hot Spring Game Park (Nam) • Richtersveld NP (SA) 	<ul style="list-style-type: none"> • Fish River canyon
Lubombo TFCA	MZ, ZA, SZ	4,195	Coastal plain	<ul style="list-style-type: none"> • Links 5 TFCA projects • Hlana Royal NP (Swa) • Tembe Elephant Park (SA) • Maputo Special Reserve (Moz) • +12 state PAs and other reserves and private land 	<ul style="list-style-type: none"> • High biodiversity • 5 Ramar sites • Wetlands, Woodlands
Chimanimani	MZ, ZW	2,056	Mountains and miombo woodlands	<ul style="list-style-type: none"> • Chimanimani NP (Zim) • Chimanimani NR (Moz) 	<ul style="list-style-type: none"> • Forest, scenery, wildlife and culture
Malawi / Zambia TFCAs	MW, ZM	4,134	Montane grassland and wetlands	<ul style="list-style-type: none"> • 3 PAs including Nyika National Park Vwaza and Marsh Wildlife Reserve 	<ul style="list-style-type: none"> • Montane grassland & flora • Wetlands • Restocking programme
Maiombe Forest TFCA	AO, CG, DRC	to be defined	Tropical rainforest	<ul style="list-style-type: none"> • Dimonika Biosphere Reserve (Congo) • Luki Forest Biosphere Reserve (DRC) • +6 other reserve with little protection in practice 	<ul style="list-style-type: none"> • South-western part of Congo • Basin rainforest; • Chimpanzees & lowland gorillas
Niassa – Selous TFCA	MZ, TZ	See Eastern Africa	Dry forest	<ul style="list-style-type: none"> • See under Eastern Africa • Selous Game Reserve (WHS) (Tan) • Mikumi NP (Tan) • Niassa Game Reserve (Moz) 	<ul style="list-style-type: none"> • Wide variety of wildlife habitats • Large mammal populations important for elephant, hippo, buffalo, sable and wild dog • Migration corridor with village wildlife management areas
Etosha Pan NP	NA	22,750	Desert, salt pans	<ul style="list-style-type: none"> • Etosha Pan NP 	<ul style="list-style-type: none"> • Unique salt pans, waterholes, • black rhino, elephant, springbok, gemsbok, etc.
North Luangwa NP	ZM	4,636	Miombo and Mopane woodlands Riverine forest	<ul style="list-style-type: none"> • North Luangwa NP 	<ul style="list-style-type: none"> • Luangwa River and floodplain • Woodlands, Escarpment • Large mammal populations including black rhino
South Luangwa NP	ZM	9,050	Miombo, Zambezan and Mopane woodlands Riverine forest	<ul style="list-style-type: none"> • South Luangwa NP 	<ul style="list-style-type: none"> • Luangwa River and floodplain • Woodlands, Escarpment • Large mammal populations
Central Kalahari GR	BW	52,800	Bushland Grassland	<ul style="list-style-type: none"> • Central Kalahari GR 	<ul style="list-style-type: none"> • Bushland and grassland over Kalahari Sands; • Large mammal populations • Traditional home of Bushmen, or San

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
Mountain Zebra NP	ZA	284	Grassland Dry shrubland	<ul style="list-style-type: none"> Mountain Zebra NP 	<ul style="list-style-type: none"> Cape mountain zebra (endangered) Other large mammals
Gangandala-Luando	AO	9,366	Miombo	<ul style="list-style-type: none"> Gangandala NP Luando Strict Nature reserve 	<ul style="list-style-type: none"> Last refuge of Giant Sable; other large mammals of miombo
Cape Floral Region Protected Areas	ZA	c. 2,000	Fynbos	8+ PAs including Cape Peninsula NP and De Hoop NR. A process is underway for inscription of 'Cape Floral Region PAs' as a World Heritage Site)	<ul style="list-style-type: none"> Cape Floral Region is one of the world's 18 biodiversity hot spots 69% of the estimated 9,000 plant species in the region are endemic 1,435 species identified as threatened
Madagascar forests	MG	c. 2,000	Humid to dry forests	16 (2 World Heritage Sites)	<ul style="list-style-type: none"> Lemurs and other endemic fauna and flora, World Heritage
Southern Africa sub-totals		655,260		114 (6)	

Name of proposed KLC	Countries (ISO2 code)	Size (km2)	Ecotype/biome	Protected areas	Special features/significance
EASTERN AFRICA					
Mara-Serengeti-Ngorongoro	KE, TZ	25,000	Savanna	<ul style="list-style-type: none"> • Maasai Mara NR (KE) • Serengeti WHS/NP (TZ) • Maswa GR (TZ) • Grumeti GR (TZ) • Ikorongo GCA (TZ) • Loliondo GCA (TZ) • Ngorongoro WHS/CA (TZ) • + Conservancies • + whole Mara Catchment (mostly KE) 	<ul style="list-style-type: none"> • Major plains game migration, • large carnivores, • elephant, rhino, • unique crater
Greater Virunga*†	DRC, RA, UG	15,000	Albertine Rift mid altitude and Montane forest East Sudanese savanna; Wetlands	<ul style="list-style-type: none"> • Virunga WHS/NP (DRC) • Volcans NP (RW) • Mgahinga NP (UG) • Queen Elizabeth NP (UG) • Bwindi WHS/NP (UG) • Semuliki NP (UG) • Ruwenzori WHS/NP (UG) • Kibale NP (UG) • Kasyoha-Kitomi FR (UG) • Kalinzu-Maramgambo FR (UG) • Kayumbura WR (UG) 	<ul style="list-style-type: none"> • Albertine Rift Ecoregion • 3 WHS; • Entire mountain gorilla population and important chimpanzee populations; • Majority of Albertine endemics; • Exceptional tourism potential; • Protection of vital freshwater fish stocks; • Watershed protection;
Rift Valley Lakes WHS-Natron	KE, TZ	c. 320	Soda lakes	<ul style="list-style-type: none"> • L Bogoria NR (KE) • L Nakuru NP (KE) • L Elementeita NWS (KE) • Soysambu Conservancy (KE) • L Natron (TZ) • + catchment areas 	<ul style="list-style-type: none"> • Serial WHS, • flamingos, water birds, • rhino
Greater Kilimanjaro*	KE, TZ	c. 40,000	Montane, forest, savanna	<ul style="list-style-type: none"> • Kilimanjaro WHS/NP (TZ) • Chyulu NP (KE) • Amboseli NP (KE) • Tsavo West NP (KE) • Tsavo East NP (KE) • South Kitui NR (KE) 	<ul style="list-style-type: none"> • Glaciated mountain, • montane endemics, • carnivores, • very important elephant area, rhinos

Name of proposed KLC	Countries (ISO2 code)	Size (km2)	Ecotype/biome	Protected areas	Special features/significance
				<ul style="list-style-type: none"> Taita Hills FRs (KE) Mkomazi NP (TZ) + conservancies and WMAs 	
Selous-Niassa*†	TZ, MZ	96,200	Miombo woodland, wetlands, savannah	<ul style="list-style-type: none"> Selous WHS/GR (TZ) Niassa NR (MZ) Mikumi NP (TZ) Udzungwa NP (TZ) Kilombero GCA (TZ) + WMAs, conservancies and hunting blocks 	<ul style="list-style-type: none"> Migration corridor, very important elephant area, buffalo, hippo, possibly rhino and many other animals
Simien Mountains	ET	c. 5,000	Montane	<ul style="list-style-type: none"> Simien NP 	<ul style="list-style-type: none"> Montane endemics, gelada baboon, wolf, ibex
Lake Turkana National Parks WHS	KE	1,615	Lake, desert	<ul style="list-style-type: none"> Sibiloi NP Central Island NP South Island NP Turkana GR 	<ul style="list-style-type: none"> Fossil sites, desert species
Greater Mt Kenya	KE	c. 22,000	Montane, forest, savanna	<ul style="list-style-type: none"> Mt Kenya-Lewa Downs WHS/NP/FR Samburu NR Buffalo Springs NR Shaba NR + NRT Conservancies 	<ul style="list-style-type: none"> Glaciated mountain, alpine flora, forests to arid savanna, very important elephant area, rhino, Grevy's zebra and other game
Sudd-Badingilu-Boma-Gambella	ET, SS	250,000	Savanna, wetland	<ul style="list-style-type: none"> Zeraf GR (SS) Shambe NP (SS) Badingilu NP (SS) Boma NP (SS) Gambella NP (ET) + other satellite PAs 	<ul style="list-style-type: none"> Major plains game migration
Bale Mountains	ET	c. 5000	Montane, forest	<ul style="list-style-type: none"> Bale Mts NP Mena-Angetu FR + other PAs 	<ul style="list-style-type: none"> Alpine flora, montane endemics
Lakes Tanganyika and Malawi*†	TZ, BI, DRC, TZ, ZM and TZ, MW, MZ	63,000	Freshwater lakes, forests	<ul style="list-style-type: none"> Mahale Mountains NP (TZ) Gombe Stream NP (TZ) Sumbu NP (ZM) Lake Malawi WHS/NP (MW) 	<ul style="list-style-type: none"> Endemic fish fauna, chimpanzees
Eastern Arc forests	KE, TZ	c. 10,000	Highland forest	<ul style="list-style-type: none"> Udzungwa NP (TZ) 	<ul style="list-style-type: none"> Endemics. Primates

Name of proposed KLC	Countries (ISO2 code)	Size (km2)	Ecotype/biome	Protected areas	Special features/significance
				<ul style="list-style-type: none"> • Usambara Mts FRs (TZ) • Pare Mts FRs (TZ) • Taita Hills FRs (KE) 	
Ruaha-Rungwa-Kitulo-Kipengere	TZ	c.25,000	Miombo woodland, southern highland forest	<ul style="list-style-type: none"> • Ruaha NP • Muhezi GR • Kizigo GR • Rungwa GR • Mbomipa WMA • Umemarua WMA • Kitulo NP • Mpanga Kipengere GR • Mt Rungwe NR 	<ul style="list-style-type: none"> • Very important elephant area and other game, forest, montane grassland and endemics
Moyowosi-Kigosi	TZ	c. 40,000	Miombo woodland, wetlands	<ul style="list-style-type: none"> • Moyowosi GR • Kigosi GR • Burigi GR 	<ul style="list-style-type: none"> • Very important elephant area and other game. • Malagarasi river and swamps
Nyungwe-Kibira*	RW, BI	1,400	Mid-altitude forest	<ul style="list-style-type: none"> • Nyungwa NP (RW) • Kibira (BI) 	<ul style="list-style-type: none"> • Forest and endemics
Imatongs-Kidepo*	SS, UG		Highland forest and savanna	<ul style="list-style-type: none"> • Imatong Central FR (SS) • Agora FR (UG) • Kidepo GR (SS) • Kidepo NP (UG°) 	<ul style="list-style-type: none"> • Forest and endemics, savanna
Lantoto-Garamba*†	SS, DRC	15,000	Northern Congolian forest –savannahh mosaic	<ul style="list-style-type: none"> • Garamba WHS/NP (DRC) • Lantoto NP (SS) • + contiguous Domaines de Chasses 	<ul style="list-style-type: none"> • very important elephant area, buffalo, hippo and many other important species
Eastern Africa sub-totals		c. 676,000		52 (excluding Greater Virunga – counted in Central Africa Region)	

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
WESTERN AFRICA					
Desert Niger-Chad-Algeria	NE, TD, DZ	c. 700,000	Deserts and xeric shrubland and tropical/subtropical grasslands, savanna, shrublands	<ul style="list-style-type: none"> • Termit & Tin Toumma NNR • Aïr and Ténéré NP • Addax Sanctuary NNR • Ouadi Rimé-Ouad NP • Fada Archei NP • Tassili-n-Ajjer NP • Ahaggar NP 	<ul style="list-style-type: none"> • Rare Saharan large mammals: Scimitar Oryx, Dama Gazelle, Addax, Dorcas Gazelle and Saharan cheetah
Senegal Delta (SN Delta/ Diawling – Djoudj)	SN, MR	c. 2,465	Wetlands	<ul style="list-style-type: none"> • Diawling NP • Djoudj NP- Senegal Delta (WL1) • Saint-Louis MPA • Ndiael Wildlife Reserve • Keur Momar Sarr Forest Reserve 	<ul style="list-style-type: none"> • Coastal wetlands for migratory and water birds
Banc d'Arguin NP; Réserve Intégrale de Cap Blanc NNR and Dakhla NP	MR, Western Sahara	c.33,850	Coastal wetlands, coastline and coastal waters and desert	<ul style="list-style-type: none"> • Banc d'Arguin NP • Réserve Intégrale de Cap Blanc NNR • Dakhla NP 	<ul style="list-style-type: none"> • Coastal wetlands for migratory and water birds; coastline and coastal waters for critically endangered Mediterranean monk seal; desert sector
WAPOK (W, Arly, Pendjari, Oti Monduri-Keran)	BJ, BF, NE, TG	35,000	Sahel and subtropical grasslands, savannahs, and shrublands	(22 PAs, the more important:) <ul style="list-style-type: none"> • W transborder parc • Pendjari NP • Arly Faunal Reserve • Oti Monduri Faunal Reserve • Keran NP 	<ul style="list-style-type: none"> • Lion, Wild dog, Cheetah, Leopard, Elephant, Giraffe, Manatee, Roan antelope, Buffalo
Comoe – Mole	CI, GH	16,500	Tropical and subtropical grasslands, savannahs, and shrublands	<ul style="list-style-type: none"> • Comoé NP • Mole NP 	<ul style="list-style-type: none"> • Leopard, Elephant, Roan antelope, Buffalo
Niokolo-Badiar-Bafing-Boucle du Baoulé - Faleme et Fouta Djallon region	GN, ML, SN	c. 25,000	Tropical and subtropical grasslands, savannahs, and shrublands	(9 PAs, the more important) <ul style="list-style-type: none"> • Niokolo Koba NP • Badiar NP • Bafing NP • Boucle du Baoulé NP • Falémé area NC • Fouta Djallon area NC 	<ul style="list-style-type: none"> • Lion, Giant eland, Roan antelope, Buffalo, chimp, elephant
Gourma Elephant- Sahel Faunal Reserve and Inner	BF, ML	23,900	Tropical and subtropical grasslands, savannahs, and	<ul style="list-style-type: none"> • Gourma Elephant NP • Sahel Faunal Reserve 	<ul style="list-style-type: none"> • Elephant and wetlands of critical importance to the migrating waterbirds

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
Niger IBA			shrublands	<ul style="list-style-type: none"> Inner Niger Delta (WL2) 	
LION KCAs	Nigeria	8,200	Tropical and subtropical grasslands, savannahs, and shrublands - West Sudanian savanna	<ul style="list-style-type: none"> Kainii Lake NP Yankari NP 	<ul style="list-style-type: none"> Lion, Elephant
Volta Trans -Boundary Ecosystem Wildlife trans-boundary corridor	BF, GH	c. 3,000	Tropical/subtropical grassland, savannahs, shrublands	<ul style="list-style-type: none"> Ranch de Gibier and "Forêt classée de Nazinga Hunting zones surrounding Nazinga 	<ul style="list-style-type: none"> Elephant, Roan antelope, Buffalo
Cross River NP; Korup NP; Mont Cameroon; Tamakanda NP; Gashaka-Gumti NP; Tchabel Mbabo Wildlife Reserve and Faro NP*	CM, NG	c. 19,100	Mount Cameroon Afro montane	<ul style="list-style-type: none"> Cross River NP Korup NP Mont Cameroon Tamakanda NP Gashaka-Gumti NP Tchabel Mbabo Wildlife Reserve Faro NP 	<ul style="list-style-type: none"> Afro-montane endemics, Cross river sub species of gorilla
Tai NP; Nzo Faunal Reserve; Grebo National Forest; Sapo NP	LR, CI	16,500	Tropical and subtropical moist broadleaf Forests	<p>(10 PAs, the more important:)</p> <ul style="list-style-type: none"> Tai NP Nzo Faunal Reserve Grebo National Forest Sapo NP 	<ul style="list-style-type: none"> Endemic species (pygmy hippo, chimpanzee, Jentink's and zebra duikers), more than 1,300 vascular plant species recorded); 12 endemic birds
Nimba / Nimba Nature WH	GN, CI, LR	3,800	Tropical and subtropical moist broadleaf Forests	<p>3 PAs incl.</p> <ul style="list-style-type: none"> Nimba Mountains Strict Nature Reserve in Guinea and Côte d'Ivoire East and West Nimba Nature Reserve in Liberia 	<ul style="list-style-type: none"> Water tower and unique biodiversity. Rich flora, 317 vertebrate species (duikers, big cats, civets, Chimpanzees, and several types of viviparous toads), many inverts.
Gola- Lofa - Foya Forest Reserves Trans-border Park; Mano NF, Wologizi NF; Wonegizi NF and Zياما MAB	SL, LR, GN	6,700	Tropical and subtropical moist broadleaf Forests	<p>(9 PAs, the more important:)</p> <ul style="list-style-type: none"> Gola- Lofa - Foya Forest Reserves Trans-border Park Mano NF Wologizi NF Wonegizi NF Zياما MAB 	<ul style="list-style-type: none"> Forest Elephant, Pygmy Hippo Jentink's Duiker, Water chevrotain, Leopard and thirteen species of primate, one of the highest densities of chimpanzees in WA and CA Africa (Loma Mountains) More than 300 forest dependent birds; more than 25 are threatened or restricted-range species
Outamba-Kilimi NP and Forest Reserves Kuru Hill	SL, GN	7,500	Tropical and subtropical moist broadleaf Forests	<p>(6 PAs, the more important:)</p> <ul style="list-style-type: none"> Outamba-Kilimi NP 	<ul style="list-style-type: none"> Forest elephant, Pygmy hippo, Leopard, nine species of primates, more than 250 species of birds

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
(in Sierra Leone) and Pinselli and Soya				<ul style="list-style-type: none"> • Forest Reserves Kuru Hill • Pinselli and Soya NC 	
Forest KCAs: Ankasa-Bia Conservation Areas	GH	1,800	Tropical & subtropical moist broadleaf forests	(5 PAs, the more important:) <ul style="list-style-type: none"> • Ankasa NP • Bia NP 	<ul style="list-style-type: none"> • Endangered monkeys, amphibians and birds • Manatee
Rio Cacheu Mangroves NC; Lagoas de Cufada NC; Rio Grande de Buba NC; Cantanhez Forest NC and Iles Tristao NC	GW, GN	4,800	Mangroves	<ul style="list-style-type: none"> • Rio Cacheu Mangroves NC • Lagoas de Cufada NC • Rio Grande de Buba NC • Cantanhez Forest NC • Iles Tristao NC 	<ul style="list-style-type: none"> • Best developed mangroves in western Africa with migratory and water birds and endangered species (Manatee and the Pygmy hippo). • Success story of forests governance
Mangroves KCAs	SL, SN, GH	c. 3,100	Mangroves and coastal	<ul style="list-style-type: none"> • Sherbro et Turtles Islands NC –Sierra Leone • Saloum Delta NP-Senegal • Basse Casamance NP-Senegal • Keta Lagoon Ramsar site - Ghana • Songor Lagoon NC-Ghana 	<ul style="list-style-type: none"> • Mosaic of delta rivers, rivers, sandy coast and islands and islets with mangroves, savannahs and forests and marine areas. • Breeding ground for turtles and wetlands of critical importance to the migrating waterbirds
Western Africa sub-totals		c.832,940		115	

Name of proposed KLC	Countries (ISO2 code)	Size (km²)	Ecotype/biome	Protected areas	Special features/significance
CENTRAL AFRICA					
Cross River-Takamanda-Mt Cameroon-Korup* (overlaps with West Africa Region)	CM, NG	See Western Africa	<ul style="list-style-type: none"> • Mount Cameroon Afro montane 	<ul style="list-style-type: none"> • Cross River NP • Korup NP • Mont Cameroon • Tamakanda NP • Gashaka-Gumti NP • Tchabel Mbabo Wildlife Reserve • Faro NP 	<ul style="list-style-type: none"> • Afro-montane endemics, Cross river sub species of gorilla,
Greater Virunga* (overlaps with Eastern Africa Region)	DRC, RW,UG,	15,000	<ul style="list-style-type: none"> • Albertine Rift Montane and mid altitude forest • East Sudanese savanna • Wetlands 	<ul style="list-style-type: none"> • Virunga NP (DRC) (WHS) • Volcans NP (Rw) • Mhahinga NP (Ug) • Queen Elizabeth NP (Ug) • Bwindi NP (Ug) • Semiliki NP (Ug) • Ruwenzori NP (Ug) • Kibale NP (Ug) • Kasyoha-Kitomi FR(Ug) • Kalinzu-Maramgambo FR (Ug) • Kyumbura WR (Ug) 	<ul style="list-style-type: none"> • 3 WHS • Entire mountain gorilla population and important chimpanzee populations; • Majority of Albertine endemics; • Exceptional tourism potential; • Protection of vital freshwater fish stocks; • Watershed protection
Greater TRIDOM-TNS*†	CM, CF, GA, CG,	250,000	<ul style="list-style-type: none"> • Northwest Congolian Forest • Northeast Congolian Forest • Sangha Aquatic ecoregion • Atlantic Equatorial Coastal Forest 	<ul style="list-style-type: none"> • Minkébé NP (Gab) • Ivindo NP (Gab) • Mwagne NP (Gab) • Lopé NP (Gab) • Dja WR (Cam) • Nki NP (Cam) • Boumba Bek NP (Cam) • Lac Lobeke NP (Cam) • Odzala NP (Co) • Nouabalé-Ndoki NP (Co) • Ntokou-Pikounda NP (Co) • Dzanga-Ndoki NP (CF) • Dzanga SR (CF) • Lac Tele Community Reserve (Co) 	<ul style="list-style-type: none"> • Vast contiguous block of mainly intact moist forest • WHS X 4;(3 Natural, 1 Cultural and Natural) • Majority of Central Africa's remaining forest elephants; • Majority of Central Africa's lowland gorillas and chimpanzees; • Endemic sun tailed monkey (Lopé) • Ancient rock art (Lopé) • Major portion of Congo basin flora; • Good potential for PPPs with logging and mining sector and with protected area management specialists;

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
Gamba-Myumba-Conkouati*	GA, CG	12,600	<ul style="list-style-type: none"> Atlantic Equatorial Forest Southern Congolian Savannah Forest mosaic Equatorial coastal aquatic ecoregion 	<ul style="list-style-type: none"> Loango NP (Gab) Moukalaba-Doudu NP (Gab) Mayumba NP (Gab) Conkouati NP (Co) 	<ul style="list-style-type: none"> Inland wetlands; Endangered manatee population; Forest elephant and apes; Globally important for marine turtles (4sp), whales and dolphins (17sp) High tourist potential; Protects regionally important marine fish stocks, Potential for PPP with logging and oil (ISO2 codes) sectors.
Garamba-Bili Uere-Chinko-Zemongo-Southern*	CD, SS, CF	150,000	<ul style="list-style-type: none"> Northern Congolian forest –savanna mosaic; Sudanian savanna 	<ul style="list-style-type: none"> Garamba NP (WHS) Bili-Uere Hunting Domains Zemongo R Southern NP 	<ul style="list-style-type: none"> Largest DRC elephant population; hippos, giraffe, lion, savanna ungulates; bongo, giant eland, giant forest hog,
Gounda-St Floris - Bamingui-Bangoran and surrounding hunting blocks	CF	50,000	<ul style="list-style-type: none"> Sudanian savanna 	<ul style="list-style-type: none"> Gounda-St Floris NP (WHS in danger) Bamingui-Bangoran NP Zone Pilote de Sangba 	<ul style="list-style-type: none"> WHS Until recent conflict good CBNRM results from safari hunting in Zone Pilote de Sangba buffer zone
Salonga	CD	33,350	<ul style="list-style-type: none"> Eastern Congolian swamp forests, Central Congolian lowland forest 	<ul style="list-style-type: none"> Salonga NP (WHS) 	<ul style="list-style-type: none"> WHS Bonobos, endemic small primates,
Okapi	CD	13,750	<ul style="list-style-type: none"> Northeastern Congolian lowland forest 	<ul style="list-style-type: none"> Okapi WR (WHS) 	<ul style="list-style-type: none"> Okapi, forest elephant, chimpanzee, forest buffalo, Congo peacock, Aquatic genet
Kahuzi Biega	CD	6,000	<ul style="list-style-type: none"> Northeastern Congolian lowland forest, Albertine Rift Afro montane forests 	<ul style="list-style-type: none"> Kahuzi Biega NP (WHS) 	<ul style="list-style-type: none"> Grauer's gorilla, forest elephant, small primates, forest buffalo
Maiko-Tayna	CD	11,000	<ul style="list-style-type: none"> Northeastern Congolian lowland forest 	<ul style="list-style-type: none"> Maiko NP Tayna Community Reserves 	<ul style="list-style-type: none"> Grauer's gorilla (important site for this species given its very heterogeneous distribution in eastern DRC) and other endemics including Okapi, Aquatic genet, Congo peacock
Kundelungu-Upemba	CD	34,000	<ul style="list-style-type: none"> Miombo woodland Wetlands (Lake 	<ul style="list-style-type: none"> Upemba NP Kundelungi NP 	<ul style="list-style-type: none"> Endemic Congo zebra and other plains mammals Spectacular landscapes

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
			Upemba, Zone Annexe)	<ul style="list-style-type: none"> Zones Annexe (buffer zone) 	<ul style="list-style-type: none"> Tourism potential Very important watershed protection
Lomako-Yokokala	CD	3,625	<ul style="list-style-type: none"> Central Congolian lowland forests, Eastern Congolian swamp forests 	<ul style="list-style-type: none"> Lomako-Yokokala WR 	<ul style="list-style-type: none"> Bonobo, elephant, sitatunga etc.
Tumba-Lediima	CD	7,500	<ul style="list-style-type: none"> Central Congolian lowland forest Congolian swamp forest 	<ul style="list-style-type: none"> Tumba-Lediima NR 	<ul style="list-style-type: none"> Bonobo Together with Lac Tele in Congo this is the largest area of protected Congolian swamp forest Protection of vital freshwater fish stocks
Itombwe-Kabobo	CD	10,000	<ul style="list-style-type: none"> Albertine Rift mid altitude forest Forest savanna transition 	<ul style="list-style-type: none"> Itombwe proposed PA Mitsotshi-Kabobo proposed PA Luama Hunting Domain 	<ul style="list-style-type: none"> Chimpanzees – one of the few viable chimp populations in the Albertine Rift Endemic subspecies of Angolan Colobus and red Colobus Albertine bird endemics
Lomami	CD	10,000	<ul style="list-style-type: none"> Central Congolian lowland forests 	<ul style="list-style-type: none"> Lomami (in process of gazetment as a NP) 	<ul style="list-style-type: none"> Bonobo, Okapi, Congo peacock, two newly described species of small primate
Mbam and Djerem	CM	4,500	<ul style="list-style-type: none"> Forest savanna transition 	<ul style="list-style-type: none"> Mbam and Djerem NP 	<ul style="list-style-type: none"> One of largest remaining savanna elephant populations in Central Africa; Gorillas, chimps, forest savanna ecotone species,
Buba Ndjida-Benoue	CM	4,000	<ul style="list-style-type: none"> Northern Congolian forest savanna mosaic, East Sudanian savanna 	<ul style="list-style-type: none"> Buba Ndjida NP Benoue NP 	<ul style="list-style-type: none"> Savannah elephants, savanna ungulates (23 antelope species) including giant eland
Mt Oku –Ijim Ridge	CM	200	<ul style="list-style-type: none"> Afromontane forest 	<ul style="list-style-type: none"> Oku Floral Sanctuary 	<ul style="list-style-type: none"> Largest extent of, and highest, afromontane forest in Western Africa, the only Alpine bamboo forest and the only Podocarpus forest in Western Africa. Exceptional floral, herpetological, and bird endemism
Zakouma	TD	23,600	<ul style="list-style-type: none"> Sahelian acacia savanna 	<ul style="list-style-type: none"> Zakouma NP 	<ul style="list-style-type: none"> Savannah elephant, savanna ungulates High tourism potential
Monts de Cristal-Altos Nsork*	EG, GA	2,500	<ul style="list-style-type: none"> Atlantic Forests 	<ul style="list-style-type: none"> Monts de Cristal NP Altos-Nsork NP 	<ul style="list-style-type: none"> Pleistocene refuge, with the highest species richness and diversity of any site in western Central Africa Mandrills, Vital water catchment area

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
					<ul style="list-style-type: none"> On WHS tentative list
Pico Grande and Pico Basile	EG	850	<ul style="list-style-type: none"> Gulf of Guinea lowland and montane forest 	<ul style="list-style-type: none"> Pico Grande NP Pico Basile NP 	<ul style="list-style-type: none"> Spectacular forest covered volcanic landscapes with a large altitudinal range (0 – 3000m); 5 endemic sub species of primate; Globally important beaches for marine turtles. On the WHS Tentative List.
Obo-Zona Ecologica Principe	STP	300	<ul style="list-style-type: none"> Gulf of Guinea lowland and montane moist forest 	<ul style="list-style-type: none"> Obo NP (Sao Tome) Zona Ecologica (Principe) 	<ul style="list-style-type: none"> Plant and bird endemics; Vital for watershed protection. Landscapes of outstanding scenic interest with high tourist potential; On the WHS Tentative List.
Central Africa sub-totals (km²)		c. 650,000		61	
GRAND TOTALS (km²)		c. 2,800,000		340	

*† Denotes a TFCA shared by two regions