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Larger than elephants

Inputs for the design of an EU Strategic Approach to Wildlife Conservation in Africa

Volume 5 Western Africa

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Hippotrague rouan

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ACRONYMS

ABS	Access and Benefits Sharing
ACP	Africa Caribbean Pacific
ADB - AfDB	African Development Bank
AFD	Agence Française de Développement
AfESG	African Elephant Specialist Group's statement of 2003
ANP	Africa Parks Network
AU	African Union
AWF	African Wildlife Foundation
AZE	Alliance for Zero Extinction
BIOPAMA	Biodiversity and Protected Areas Management Program
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resource Management
CENAGREF	Centre National de Gestion des Réserves de Faune
CI	Conservation International
CITES	Convention on International Trade in Endangered Species
CoP	Conference of the Parties
DNA	Deoxyribonucleic acid
DOPA	Digital Observatory for Protected Areas
EA	Eastern Africa
EAGLE	Eco Activists for Governance and Law Enforcement
EC	European Commission
ECOFAC	Programme Régional de Conservation et Utilisation Rationnelle des Ecosystèmes Forestiers d'Afrique Centrale
ECOWAS	Economic Community of West African States
EDF	European Development Fund
EFG	École de Faune of Garoua
ENEF	École Nationale des Eaux et Forêts
ERAIFT	École Régionale d'Aménagement intégré des Forêts et Territoires tropicaux
ETIS	Elephant Trade Information System
EU	European Union
FAO	Food and Agriculture Organisation
FEM	Fonds pour l'Environnement Mondial
FFEM	Fonds Français pour l'Environnement Mondial
FLEG	Forest Law Enforcement, Governance and Trade
FZS	Frankfurt Zoological Society
GDP	Gross Domestic Product
GEF	Global Environment Fund
GIZ	Deutsche gesellschaft für technische Zusammenarbeit (German technical cooperation)
GRASP	Great Apes Survival Partnership
HEC	Human Elephant Conflict
HWC	Human Wildlife Conflict
IBA	Important Bird Area
IBRD	International Bank for Reconstruction and Development [UN]
ICCWC	International Consortium on Combating Wildlife Crime
IDA	International Development Association

IUCN	International Union for Conservation of Nature
IUCN-PAPACO	Programme Aires Protégées pour l'Afrique du Centre et de l'Ouest
KCA	Key Conservation Area
KfW	Kreditanstalt für Wiederaufbau (German financial cooperation)
KLC	Key Landscape for Conservation
LAGA	Last Great Ape Organisation
LAGA	Last Great Ape Alliance
LEM	Law Enforcement Monitoring
MAB/UNESCO	Man and the Biosphere Program
MIKES	Minimising the Illegal Killing of Elephants and other Endangered Species
MIST	Management Information System
Mou	Memorandum of Understanding
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
NP	National Park
NRM	Natural Resource Management
NTFP	Non Timber Forest Products
OFAC	Central African Forest Observatory
OFINAP	Office national des aires protégées of Burkina Faso
PA	Protected Area
PES	Payment for Ecological Services
PES	Payments for Ecosystem Services
PFM	Participatory Forest Management
PHVA	Population and Habitat Viability Assessment
PPP	Public Private Partnership
PVA	Population Viability Analysis
Ramsar	The Ramsar Convention is an international treaty for the conservation and sustainable utilization of wetlands
REDD+	Reduced Emissions from Deforestation and Forest Degradation
RRIS	Regional Reference Information System
SMART	Self-Monitoring, Analysis and Reporting Technology
SSC	Species Survival Commission
STEWARD	Sustainable and Thriving Environments for West African Regional Development
TEEB	The Economics of Ecosystems & Biodiversity
TFCA	Trans-Frontier Conservation Area
ToR	Terms of Reference
TRAFFIC	The wildlife trade monitoring network
UICN	Union Internationale pour la Conservation de la Nature
UN	United Nations
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNESCO	United Nations Education, Science and Culture Organisation
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development
USFWS	United States Fish and Wildlife Service
WA	West Africa
WAEMU	West Africa Economy and Monetary Union
WAMPAN	West Africa Marine Protected Areas Network

WAPAN	West Africa Protected Areas Network
WAPOK	Savannas KLC between Benin, Burkina Faso, Niger and Togo
WAZA	World Association of Zoos and Aquariums
WCMC	World Database of Protected Areas
WCS	Wildlife Conservation Society
WHS-UNESCO	World Heritage Site
WWF	Worldwide Fund for Nature

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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.

EXECUTIVE SUMMARY

Aspects of WA biodiversity

The following aspects characterize the biodiversity of West Africa (WA):

- Wide diversity of habitats and species;
- Strong degradation;
- Greatest richness of biodiversity in lowland and mountain forests (the Guinea forest in WA contains half the mammal species on the African continent);
- Presence of some of the largest and most beautiful antelopes in the world;
- A pattern of extinction of mammals in the wild that is progressively higher moving from the coastal and forest biomes to the deserts (including the desert PAs);
- Progressive decline in the representation of biomes in PAs on moving from desert towards the forest and coastal areas.

The current interventions for conservation in WA do not ensure the protection of wildlife or its biodiversity heritage. Those interventions that assist in-situ conservation are highly concentrated in the savanna areas. Interventions in favour of ex-situ conservation do not protect some of the key endemic mammals at risk of extinction (e.g. WA lion). Survival of some key species (e.g. Oryx) requires the adoption of a mixed strategy of in-situ and ex-situ conservation due to poor genetic heritage of the mammals supposedly extinct in nature and existing only in captivity. The effects of climate change and the important development of industrialization in the southern countries in WA are causing significant in-migration of human populations. The effects of these phenomena are higher pressure and consequently greater degradation of coastal and lowland forest ecosystems which are the most threatened ecotypes in the region. The current fragility of biodiversity and the significant threats on the overall biodiversity heritage of Western Africa require conservation interventions that are highly specific to this region – this is in addition to the more general strategic approach outlined in volume 1.

For the strategic approach to wildlife conservation in WA, there is specific need for the following:

- *In situ* support for conservation which includes: (1) Specific strategies and actions for the four ecotypes: (a) Deserts, (b) Savannas, (c) Forests and (d) Mangroves/Coastal areas; (2) Special analysis for species and habitats that are highly threatened with extinction; and (3) Specific training in wildlife protection on the ground (see sections 5.1.2, 5.1.8, 5.1.9).
- Strengthening of management capacity in wildlife conservation with a focus on regional coordination: (1) Institutional support to raise capacity for wildlife conservation and strengthen coordination between countries of the region; and (2) Governance training for management authorities so that the landscape approach proposed by this strategic approach can be adopted (see sections 5.2.1, 5.2.5).

Organisation of the volume 5

The first chapter presents the key elements of the West African countries concerning: (i) development indicators, driving forces causing wildlife decline and the impacts of climate change; (ii) an overview of the wildlife in West Africa following an analysis by four major ecotypes (Deserts, Savannas, Forests and Mangroves/Coastal) including the coastal and marine PAs, the more threatened species and the risks of species disappearing; (iii) a quick analysis of two elements connected with long-term wildlife conservation: the need for regional institutional support and for conservation- capacity building in WA. The second chapter indicates the key direct threats and the key indirect threats to conservation in WA. The chapter presents analysis of:

- Four key direct threats to conservation: (i) availability of funds; (ii) institutional governance; (iii) illegal wildlife income and corruption and iv) weak planning, management, effectiveness and monitoring;

- Five key indirect threats to conservation: (i) population growth and poverty; (ii) fragmentation, reduction and isolation of PAs in the landscape; (iii) coup d'états, rebellions, civil unrest and religion fundamentalism, ebola crisis (epidemics/pandemics), and refugee crises; (iv) negative economic trends; (v) Policy and sectorial approaches.

The third chapter is a short presentation of the ongoing conservation effort organised for the four major ecotypes; Deserts, Savannas, Forests and Mangroves/Coastal. At present the ongoing conservation efforts are characterised by: (i) low funding for desert PAs with a strong involvement of NGOs, (ii) comparatively strong support in the savanna area; (iii) low funding for rainforest areas, with mixed interventions of government and NGOs; (iv) a small scale success story for the recovery of mangrove forests through a public-private partnership. The fourth chapter looks quickly at negatives and positives lessons learnt and promising approaches. The success of the promising approaches depends on the functional integration of three strategies: (A) consistent, uninterrupted interventions on the ground with specific strategic approach of intervention for each major ecotype but coordinated between them, (B) a decision support system based on the collection and organization of information on biodiversity and management effectiveness in collaboration with BIOPAMA (EU programme) and (C) shared decision-making at institutional and political levels.

The fifth chapter is the most developed and gives details about the two parallel processes, active and proactive, to try to establish or restore the fundamentals to a better wildlife conservation in West Africa. The active process has a focus on more feet on the ground to take action against key direct threats and for the protection of areas of high biodiversity, while the proactive process is an external support for better governance, monitoring and planning and against the key indirect threats on PAs.

The active process has five main activities: (1) Dissemination and analysis of the proposals about sites and priorities on conservation in WA; (2) Specific strategies and actions for the major ecotypes: Deserts, Savannas, Forests and Mangroves/Coastal; (3) Dismantling Wildlife traffic network; (4) Special analysis and (5) Wildlife protection training. The objectives of the active process are: (i) to balance the interventions between the four major ecotypes; (ii) to save threatened species from extinction; (iii) preservation of critical habitats (e.g. wetlands, Mount Nimba, mangroves); (iv) to improve management effectiveness of national and transborder parks; (v) to promote the initiatives of landscapes on conservation for maintaining connections between the blocks of PAs and (vi) to ensure a better representation of the realities of wildlife in WA.

The proactive process attempts, by creating an "Institutional Support and coordination" under WAEMU, to coordinate and promote: (1) Monitoring and Planning; (2) Communication; (3) Biological research; (4) Management-Governance training. The objectives of the proactive process are: (i) improving the availability and proper use of resources; (ii) ensuring a shared and harmonized implementation between countries; (iii) developing a stronger balance of conservation initiatives in the macro-ecotypes of West Africa; (v) greater attention about the specificities of conservation at national, regional and interregional level (e.g. highly threatened species, wetlands at risk of extinction, mangrove ecosystems). At present there is no organisation that provides the required institutional, technical and scientific capacities in WA; therefore this document recommends the combination of existing institutions and organisation with adequate support to establish a unit to implement the proposed strategic approach.

The annexes present basic information that will support the development of a strategic approach on conservation of biodiversity in WA: (i) key, threatened, rare and high value species; (ii) data of the main projects on conservation in WA and (iii) miscellaneous data about WA.

1. SPECIAL FEATURES OF WEST AFRICA

1.1 COUNTRIES OF WEST AFRICA



1. Benin
2. Burkina Faso
3. Côte d'Ivoire
4. Gambia
5. Ghana
6. Guinea
7. Guinea-Bissau
8. Liberia
9. Mali
10. Mauritania
11. Niger
12. Nigeria
13. Senegal
14. Sierra Leone
15. Togo

(see figure 1)

Figure 1. West Africa

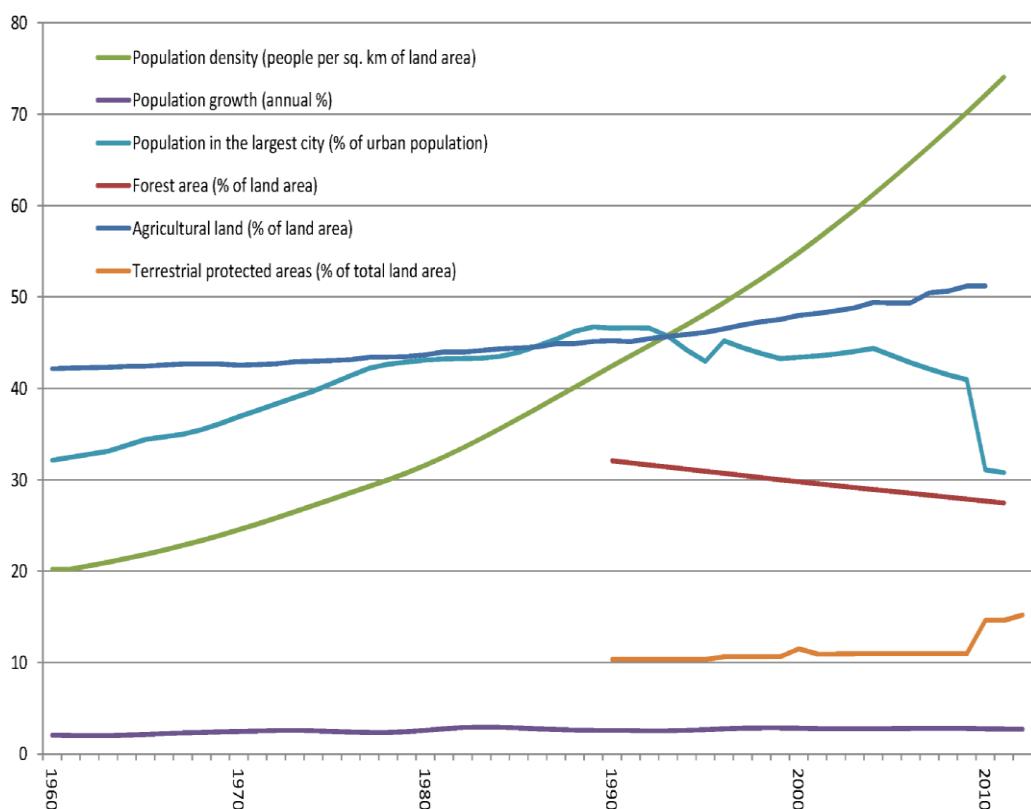
Cape Verde was not considered in the report because there are no protected areas (PA) in the country, but it was associated with this strategic approach in a few specific analyses.

1.1.1 Development indicators

The countries of West Africa have a population of 340 million and about 60% of the inhabitants live in rural areas. The average yearly income for each person in West Africa is \$800 (2011). This compares with an average yearly income for each person in Sub-Saharan Africa of \$1.500. The region's economic growth has averaged only 2.9% during the past three years, in contrast with what was the best GDP growth for Africa in the past, while its population has been growing by 2.8 – 2.9% a year. It is estimated that economic growth of about 6-7% a year would be required to meet the goal of cutting extreme poverty in half by 2020 (see table 1 and figures 2 and 3).

Table 1. Population, Annual Growth (%) and Estimated doubling time of population of West Africa

Country	July 1, 2013 projection	Average relative annual growth (%)	Estimated doubling time (Years)
Benin	9 742 000	3,24	22
Burkina Faso	17 323 000	3,28	21
Gambia	1 794 000	2,75	26
Ghana	26 441 000	2,56	27
Guinea	11 861 000	3,09	23
Guinea-Bissau	1 699 000	2,60	27
Ivory Coast	23 919 000	3,09	23
Liberia	3 881 000	2,10	33
Mali	16 678 000	3,29	21
Mauritania	3 461 000	2,58	27
Niger	17 493 000	3,85	18
Nigeria	177 096 000	3,24	22
Senegal	13 567 000	3,06	23
Sierra Leone	5 823 000	1,84	38
Togo	6 675 000	2,88	24
Total	337 453 000	2,90	25



Increasing population density and agricultural land with decreasing forest areas and formally maintained protected areas (source World Bank, Africa Development Indicators, specific elaboration)

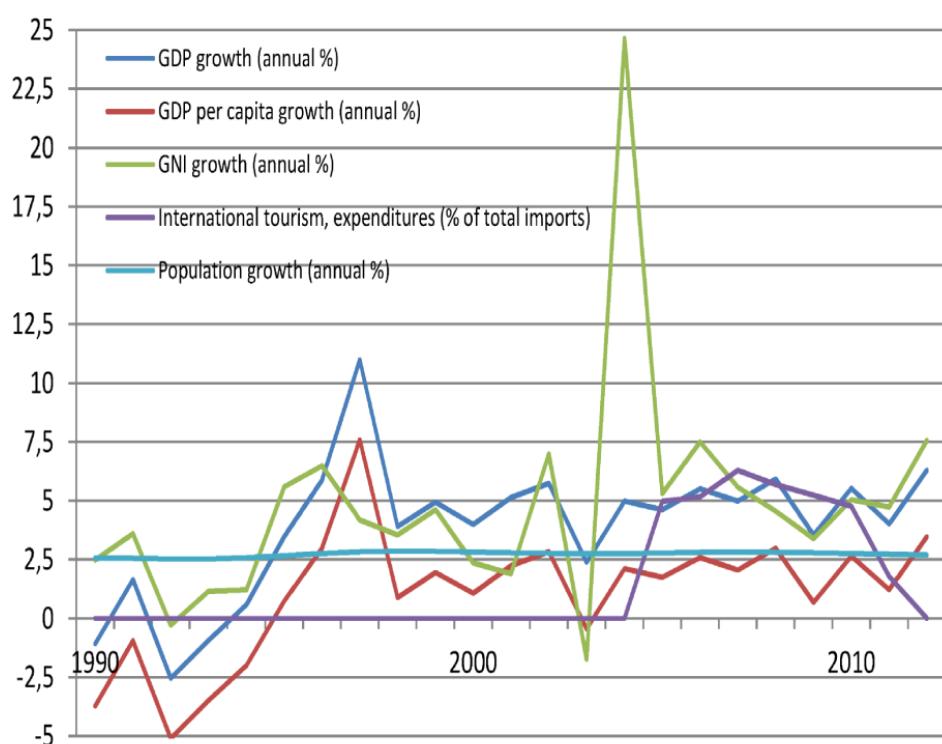
Figure 2. West Africa, Development indicators (1), 1960-2012

1.1.2 Conflict

Over the past 15 years, nine of the 15 members of the Economic Community of West African States (ECOWAS - Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Senegal, Sierra Leone and Togo) have experienced conflict ranging from high intensity civil wars to violence during elections. One of the most common reasons advanced for the prevalence of conflict is weak governance. The area accounts for more than 70% of military coups in Africa. There is a high degree of illicit trade in diamonds, timber and wildlife which can be directly related to the conflict. In the last years, the conflicts in Cote d'Ivoire and Mali have been particularly damaging for the region and also for biodiversity in the country. Maintaining peace in the region is seen as a prerequisite for improving its development outcomes. In 1999, it was estimated that \$800 million that could have been used for development was instead diverted into conflicts.

1.1.3 Food crisis

Underdevelopment, low rainfall, climate change, coup d'état, rebellion, civil and religious fundamentalism, epidemics (EBOLA) and unrest continue to disrupt local and cross-border staple food and livestock markets. Consequently the forced migrations, poverty, declining food stocks and rising food prices are all key factors that are contributing toward a chronic food crisis in Western Africa. Fifteen million people across Western Africa are directly or periodically affected by the food crisis. A higher-than-average staple food price is causing an increase in the illness rate in Western Africa as many people are becoming severely malnourished.



Note the insufficient reduction in population growth, increasing GDP and GNI growth, but a recent decline in tourism (source World Bank, Africa Development Indicators, specific elaboration)

Figure 3. West Africa Development indicators (2), 1990-2012

1.1.4 West Africa and the Millennium Development Goals

West Africa is lagging behind in its efforts to meet the Millennium Development Goals:

- Over 55% of West Africans live on less than \$1 / day;
- Life expectancy at birth is only 46 years;
- Secondary school enrolment is at 20 %;
- 42% of adults are illiterate;
- Malnutrition affects 29% of children under the age of five.

(Source World Bank, Africa Development Indicators)

1.1.5 Climate change



Area of climate change risk	Multiple and difficult effects to measure
Yellow: High risk areas	● Degradation of agricultural systems
Blue triangle: Large deltas threatened	■ Decreased precipitation ■ Desertification

Source: Atlas compilation of tomorrow's world, La Vie/Le Monde, source UNEP, Atlas of future world, Robert Laffont 2008; Maplecroft, Climate Change Vulnerability Index 2013

Figure 4. Illustrating Climate Change Vulnerability in West Africa

For WA, the most recent estimates of the effects of climate change show:

- High risk for the desert and savanna areas of the Sahelian zone;
- Increasing desertification of Sahelian Acacia savanna ecotypes and the West Sudanian savanna;
- Probable degradation of agricultural systems for: (1) the south-east of Nigeria, (2) the cross-border area between Guinea, Côte d'Ivoire, Liberia and Sierra Leone, (3) the cross-border area between Senegal, Gambia, Guinea Bissau and Guinea Conakry;
- Increased threat of floods on the Niger Delta (see figure 4).

1.1.6 Conclusions

West Africa has several negative aspects that are acting as constraints on conservation actions: (1) high political instability and security risks; (2) high population growth (featuring high concentrations in big cities but a reduction in the urban population) with an estimated doubling time of the population over the next 25 years; (3) economy growing slowly in relation to the objectives of the Millennium; (4) significant environmental fragility due to the pressures of deforestation, cyclical periods of drought, climate change; (5) constant food crises which increase the tendency of migration to coastal areas, and reduce the effectiveness of conservation in savanna and coastal areas because of the higher pressures on natural resources, pressure on land, and economic activities; (6) the high risks arising from climate change; (7) an insufficient awareness of wildlife by civil society.

1.2 OVERVIEW OF ECOLOGICAL CHARACTERISTICS OF THE WEST AFRICAN REGION

West Africa has high biodiversity value because of the wide range of ecosystems: deserts, savannas, forests, big rivers and floodplains, mountains, mangroves and seas. Despite greatly reduced wildlife populations, the region still has high conservation value¹ as: (a) large antelopes which can be considered among the most beautiful in Africa, such as the Giant eland, roan antelope, major (or western) hartebeest, addax, and also some spectacular small antelopes such as Zebra duiker and Jentink's Duiker including a newly discovered (2009) species of duiker (*Philantomba walteri*); (b) extensive and important terrestrial ecosystems, including the cross-border WAPOK complex of parks (W, Arly, Pendjari, Oti Monduri, Keran and hunting reserves of about 38,000 Km²) that host the largest elephant population in the region (with 20 to 60 elephants per 100 Km²)²; (c) many endemic and isolated populations of wildlife - giraffe (*G. c. peralta*), pygmy hippopotamus, manatee, lion, cheetah and African wild dog; (d) populations of two subspecies of chimpanzee and one highly threatened subspecies of gorilla; (e) high importance for migrating birds from Europe; (f) inland waters supporting a high diversity of aquatic species with high levels of endemism; (g) unique and critical habitat for the conservation of amphibians (e.g. Mount Nimba) which are the most endangered class of animals in the word.

1.2.1 Major Ecotypes

The WA region is analysed on the basis of four major ecological zones that correspond to the biomes and ecoregions adopted by the WWF. Due to the geopolitical area limitation, the biomes and some ecoregions of WA fall also in other regions of Africa. The major ecological zones (or ecotypes) of WA are (see table 2 and figure 5):

- **A – Deserts (Realms: Palearctic - Biome: Deserts and xeric shrubland).** The ecotypes of the desert area are: (1) Sahara Desert; (2) Atlantic coast; (3) South Saharan steppe and woodlands; (4) West Saharan montane xeric woodlands.
- **B – Savannas (Realms: Afrotropics - Biome: Tropical and subtropical grasslands, savannas, and shrublands).** The ecotypes of the savanna area are: (1) Sahelian Acacia savanna; (2) West Sudanian savanna; (3) Guinean forest-savanna mosaic; (4) Jos Plateau forest-grassland mosaic.
- **C – Forests (Realm: Afrotropics - Biome: Tropical and subtropical moist broadleaf Forests).** The ecotypes of the forest area are: (1) Guinean Montane Forests; (2) Western Guinean lowland forests; (3);

¹ The report analyzes only the terrestrial biodiversity

² Source: African Elephant Database (AED) / IUCN / SSC African Elephant Specialist Group (AfESG) - 1995 - 2005

Eastern Guinean forests; (4) Nigerian lowland forests; (5) Cameroonian Highlands forests; (6) Cross-Sanaga-Bioko coastal forests; (7) Niger Delta swamp forests; (8) Cross-Niger transition forests.

- **D – Mangroves/Coastal (Realm: Afrotropics - Biome: Mangroves).** The ecotypes of the mangrove area are: (1) Guinean Mangroves, and (2) Central African mangroves.

Table 2. Major Ecotypes, formally protected areas and indicative conservation status in West Africa

Biome	Ecotypes	Km ²	% Formally protected	Conservation Status	Countries of other regions
Realms: Palearctic	Deserts and xeric shrubland	A. Deserts			
		Sahara Desert	4.619.260	1,8	Vulnerable
		Atlantic coast	39.883	17,0	Relatively Intact
		South Saharan steppe and woodlands	1.101.700	6,0	Vulnerable
		West Saharan montane xeric woodlands	258.100	41,5	Relatively intact
Realms: Afrotropics	Tropical and subtropical grasslands, savannas, and shrublands	B. Savannas			
		Sahelian Acacia savanna	3.052.854	9,4	Vulnerable
		West Sudanian savanna	1.638.306	5,1	Critical/Endangered
		Guinean forest-savanna mosaic	673.600	9,7	Critical/Endangered
	Montane Grasslands and Shrublands	Jos Plateau forest-grassland mosaic	13.208	0,0	Critical/Endangered
	Tropical and subtropical moist broadleaf Forests	C. Forests			
		Guinean Montane Forests	31.078	9,2	Critical/Endangered
		Western Guinean lowland forests	206.666	15,6	Critical/Endangered
		Eastern Guinean forests	189.724	21,9	Critical/Endangered
		Nigerian lowland forests	67.335	17,3	Critical/Endangered
		Cameroonian Highlands forests	38.070	7,9	Critical/Endangered
		Cross-Sanaga-Bioko coastal forests	52.314	22,6	Vulnerable
		Niger Delta swamp forests	14.503	6,6	Critical/Endangered
	Mangroves	D. Mangroves/Coastal			
		Guinean Mangroves	22.790	11,3	Vulnerable
		Central African mangroves	29.783	10,9	Critical/Endangered
					Cameroon, Equatorial Guinea, Gabon

1.2.2 Conservation issues and challenges (key and threatened, rare and high value species)

1.2.2.1 *Elephants*

West Africa has lost more than 90% of the elephant population in the 20th century. There are little reliable data on the numbers of elephants in WA. Estimates indicate that elephant populations are small, isolated, and nearly two-thirds of them consist of little more than 100 elephants, with the exception of one population in the WAPOK complex (Oti-Mounduri and Keran in Togo home no elephants) which has a density of 0.58 elephant/Km² (CR 28%) (Bouché et al, 2013).

1.2.2.2 *Sahelo-Saharan Antelopes*

These vast arid lands contain relatively few, but highly charismatic and emblematic species. As result of the successive droughts during the 1980s and increasing human pressures, the Sahelo-Saharan antelopes are seriously threatened (Addax, Dama Gazelle and Darcas Gazelle) or even probably extinct (Oryx). The desert antelopes survive essentially through ex-situ conservation but their genetic heritage must be improved to ensure the survival of these species. In the future there should be carefully planned reintroductions, adapted to the specific needs of these highly mobile species, into an effectively managed network of protected areas.

1.2.2.3 *Primates*

Logging is considered as one of the most serious threats to biodiversity and to great apes particularly. In recent years, in Africa this view is more nuanced in the case of responsible sustainable logging in particular in FSC³ certified concessions, where specific ecological and social requirements are imposed and the ban on hunting of primates and especially great apes is strictly enforced. This is not the case in WA. In West Africa an estimated 80% of the region's original forest cover was gone by the 1980s, affecting not only the habitats of great apes but also the rainfall (during the last three decades, precipitation has diminished in West Africa even faster than it has in the drier regions of the Sahel (Paturel et al. 1995, Servat et al. 1997). In West Africa, the IUCN Red List lists as Critically Endangered the following primates: (i) Niger Delta red colobus; (ii) Preuss's red colobus and (iii) Cross River gorilla. The Endangered primates (IUCN Red List) are (i) White-naped mangabey; (ii) Drill; (iii) Preuss's guenon; (iv) Roloway monkey; (v) Benin subspecies of red-bellied guenon; (vi) Badius species of red colobus; and (vii) Nigeria-Cameroon chimpanzee.

1.2.2.4 *Carnivores*

West African lions have unique genetic sequences not found in any other lions, including those held in zoos or other form of captivity. Recent surveys (January 2014) have suggested that the African lion population is facing extinction across the entire West African region⁴. The results represent a massive survey effort taking six years and covering eleven countries where lions were presumed to exist in the last two decades. The team discovered that West African lions now survive in only 3 national parks and in the trans-frontier WAP complex. The PAs with lion are only in 5 countries: of West Africa: Senegal, Nigeria, Benin, Niger and Burkina Faso. Counting lions is extremely difficult, and we may never know precisely how many lions there are in West Africa, especially if few specialists suppose that we can find lions outside the PAs. In West Africa, the primary threats to the lions are: (1) the loss, degradation and fragmentation of lion habitats; (2) the decline of the lion's wild prey base and (3)

³ Forest Stewardship Council

⁴ The lion in West Africa is critically endangered, Panthera's Lion Program Survey, Dr. Philipp Henschel, PLOS ONE, 2014

human-lion conflict. The lion is the principal predator of domestic cattle, so livestock loss combined with poor capacity for managing human-lion conflict lead to the elimination of lions, particularly by poisoning (Di Silvestre, 2002). Trophy hunting is only practiced in three lion conservation units.

A West and Central Africa regional conservation strategy for cheetah and African wild dog is being drafted. The Saharan **cheetah** (Critically Endangered since 2009 in the IUCN Red List) is very rare but can still be found in small numbers in Algeria (Ahaggar and Tassili N'Ajjer) and Niger (Termit and Aïr), and possibly also in Mali, Chad and Mauritania. In the south, cheetahs are known to occur in the W Trans-border Park and the Arly Pendjari PAs. Although a persecuted species, this large carnivore is probably scarce by nature and also impacted by the effects of periodic droughts on its prey species.

African wild dogs have disappeared from much of their former range in West Africa where they were present in all regions from deserts to mountain summits with the exclusion of the lowland rainforest and the driest deserts. The species is virtually eradicated from West Africa, and survives only in Bafing – Niokolo Koba areas.

In West Africa, **leopards** remain widespread, albeit now patchily distributed within the region. The most marked range loss in West Africa has been in the Sahel belt, as well as in Nigeria. They have been locally extirpated from densely populated areas or where habitat conversion is extreme. There are no reliable continent-wide estimates of population size, but it is supposed that in the northern part of the WA savanna-forests there is a low density with less than 1 000 individuals, and in the southern part of the savanna-forests there is a medium density with between 1 000 and 10 000 individuals.

1.2.2.5 Other rare and threatened species

The Guinea forest in WA contains half the mammal species on the African continent and other important regional biodiversity values must be mentioned including the West African manatee, the rare pygmy hippopotamus, the zebra duiker and the drill, etc. In view of climate change and increasing frequency of droughts in WA, the number of water-dependent species such as manatees and crocodiles, will come under increasing threat.

1.2.2.6 Birds

West Africa plays a fundamental role for Palearctic (European–African) long-distance migratory birds which use the Palearctic Western route from Western Europe through Spain across the Straits of Gibraltar. The ecological networks of habitats play a decisive role for migratory birds, because they provide key sites along migration routes where birds can recover from their strenuous journeys. Many migratory birds have little choice in the selection of suitable areas to use. They need access to specific sites located along their migration routes. If one of these important sites is damaged or destroyed, it usually means disaster for the birds that depend on that site. So it is vital for West Africa to preserve a functional network of habitats for birds and especially the several wetlands in the Sahelian zone such as: Niger and Senegal rivers, the inner delta Niger (30,000 km² situated in the middle of the Sahelian landscape) and floodplains in Senegal and Niger, which are very important for millions of migratory birds.

1.2.2.7 Aquatic species in inland waters

The inland waters of western Africa support a high diversity of aquatic species with high levels of endemism. Many of these species provide direct (e.g. fisheries) and indirect (e.g. water purification) benefits to people. More than 14% of species across the region are currently threatened and future levels of threat are expected to rise significantly due to a growing population and the corresponding demand of natural resources. The West Africa

region supports a significant proportion of the world's species dependent upon freshwater wetland habitats. Given that the region represents approximately 5% of total global land mass (excluding Antarctica), it is apparent that many groups, waterbirds, plants and mammals in particular, are well represented within the region. Of the 1,435 species assessed here at the regional scale, just over 14% are regionally threatened.

1.2.2.8 Rare and high-value trees

In West Africa the movement of people south towards the humid tropical areas has resulted in depletion of natural resources: loss of primary forests and woodlands, repeated logging of the secondary vegetation, and depletion of a number of plant species. These include the extraction of trees for charcoal-making, general timber and high-value woods. Most affected of the high-value woods are (a) Afromosia or African Teak *Pericopsis elata* (endangered or critical endangered - with levels of exploitation that have been unsustainable in all countries and the species' habitat has declined, especially in Côte d'Ivoire⁵, Ghana and Nigeria), (b) the Meliaceae family (*Khaya* species), (c) Vène (*Pterocarpus erinaceus*), and (d) African Blackwood (*Dalbergia melanoxylon*).

This strategic approach document cannot analyse all the biodiversity aspects of the West Africa region. Consequently, we used the information from several sources already organized as macro- indicators and indicators or as aggregated data to examine the trends in the conservation status of key species. The analysis was complex because of the difficulties of obtaining updated and structured data. The results of the exercise should be considered only indicative of trends in conservation status based on information currently available (see Table 3 and Figure 5). For more details tables and maps are available by request.

Table 3. Synthetic indications of trends of the key, rare and high value species of major ecotypes

The number of arrows indicates the strength of the decline (red) or recovery (green).

A - Desert	B - Savannas	C - Forests	D - Mangroves	
Scimitar Oryx	▼▼▼	Lion	▼▼▼	
Saharan cheetah	▼▼▼	Wild dog	▼▼▼	
Dama Gazelle	▼▼	Cheetah	▼▼▼	
Addax	▼▼	Leopard	▼▼▼	
Dorcas Gazelle	▼	Giant eland	▼▼▼	
Afrotropical- Palaeartic and piscivorous birds	▼	Manatee	▼▼	
		Elephant	▼	
		Afrotropical- Palaeartic and intra-African migration birds	▼	
		Chimpanzee	=	
		Giraffe	▲	
		Roan antelope	▲	
		Buffalo	▲▲	
		Niger Delta red colobus Preuss's red colobus Cross River gorilla Roloway monkey Drill Nigeria-Cameroon chimpanzee Pygmy hippopotamus Jentink's duiker Forests Elephant	▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼ ▼▼▼	
			Niger Delta red colobus West African manatee	▼▼▼ ▼▼▼ ▼▼▼

⁵ CITES, 7 September 2012, country currently subject to a recommendation to suspend trade of *Pericopsis elata*

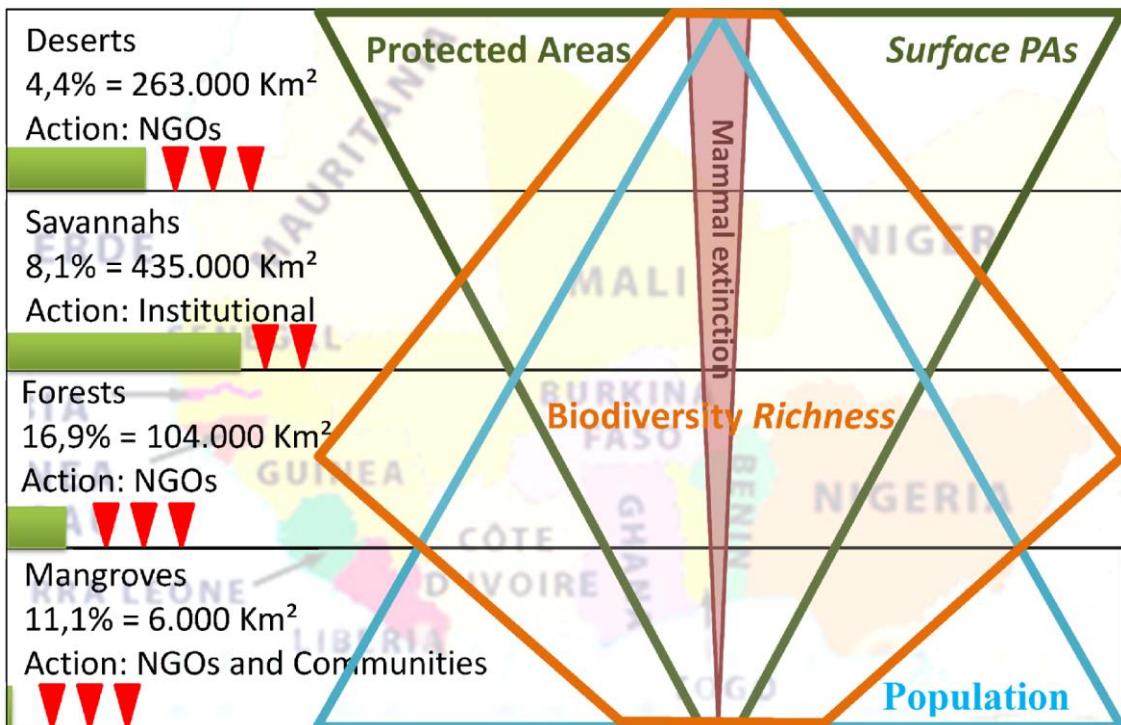
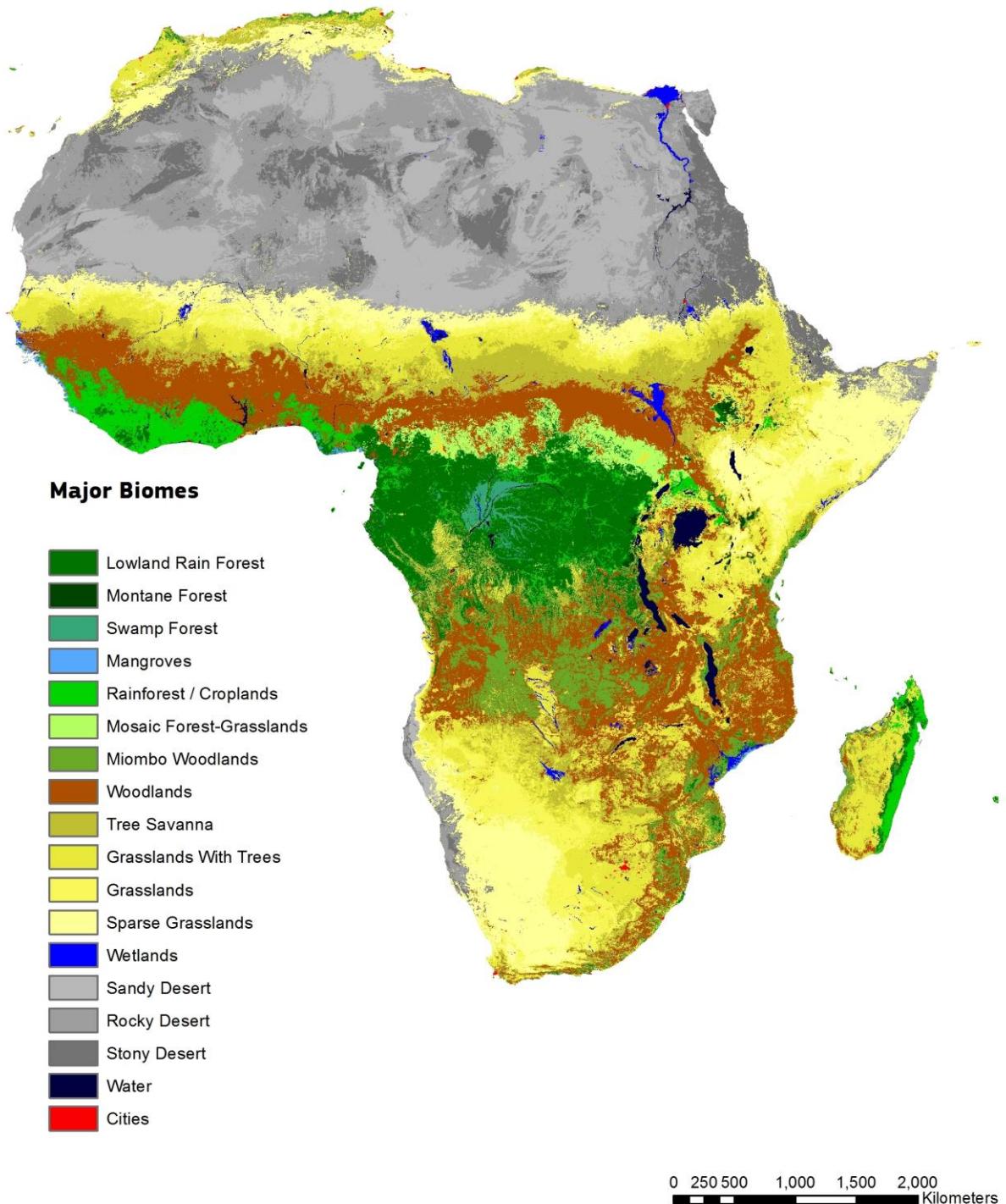


Figure 5. Schematic representation of conservation in WA according to the major ecotypes.

Note for each Major Ecotype:

1. the geometric rhomboids shows indicatively (a) proportion (of ecotype surface area) of PAs between the different ecotypes, progressively smaller going from deserts to mangroves areas (green); (b) human population size, progressively larger from deserts to coastal areas (blue); (c) biodiversity richness, more important in forests ecotypes (orange) and (d) mammal extinctions, stronger in the deserts and savannas than in forests and mangroves ecotype (pink).
2. the green histogram represents the combined area of PAs in each ecotype as a percentage of the total area of PAs in WA, red arrows denote declines in species status. High species declines in the desert areas indicate problems facing desert mammals.

Figure 6. Overview of ecological characteristics of the West African region



1.3 OVERVIEW OF REGIONAL-SPECIFIC ASPECTS OF THE WEST AFRICAN REGION

1.3.1 Regional institutional support

There are two principal economic and political regional institutions: the Economic Community of West African States (ECOWAS) with 15 countries (Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Senegal, Sierra Leone and Togo) and the West Africa Economy and Monetary Union (WAEMU) with 8 countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo). The WAEMU is more operational than the ECOWAS and acts more directly on the harmonization of policies and interventions in the areas of agriculture, forestry and conservation. The WAEMU may occur throughout the West African region at the request of countries; institutions use this possibility for moving forward on convergence plans (strategic plans) on management of wildlife and forest resources. This approach could help if oriented towards the definition of a common regional conservation strategy.

1.3.2 Conservation capacity building in WA

This analysis considers the available institutional capacities and the present and future management needs of protected areas in WA. The IUCN training needs study for West and Central Africa⁶ highlights current inadequacies. In particular it concludes that training institutions in West and Central Africa: (1) do not provide skills for improving management effectiveness of PAs, (2) do not provide an adequate knowledge base and practical tools for PA management, (3) do not adequately address the needs of biodiversity conservation. The study identifies the most important training needs and the institutions that offer courses on the subject, but does not address the training requirements for rangers in terms of protection and interactions with resource-users in the buffer zones. We recommend that capacity building for PA management effectiveness is enhanced by integrating WA and CA training institutions.

In WA there are currently two training schemes supported by IUCN and implemented in collaboration with the University of Senghor - Egypt: (1) university degree (DU) capacity building in protected area management (training of 8 weeks in Ouagadougou - Burkina Faso) (2) Masters in Development, specializing in management of protected areas (2 years, in Alexandria - Egypt). In CA the formal training options are: (1) a Masters, with an option in PA management, at the "École Nationale des Eaux et Forêts" (ENEF) of Cape Esterias in Gabon, (2) a training LMD with the "École Régionale d'Aménagement intégré des Forêts et Territoires tropicaux (ERAIFT) in Kinshasa – DRC, and (3) a three year professional certificate to be developed at the "École de Faune of Garoua" (EFG) in Cameroon.

Further analysis is required of existing capacity building activities, and the new skills required by PA managers and rangers are still to be identified. The recipients of capacity building should be: (1) the departments of wildlife and protected areas, (2) the parastatal agencies responsible for PAs management (e.g. the CENAGREF in Benin or the OFINAP in Burkina Faso), (3) PA managers and rangers, (4) the national and international conservation and development NGOs, (5) the local administrations and communities as part of the implementation of decentralized natural resource management policies, (6) the private sector (companies related to the sectors of forest, ecotourism and safari hunting).

Finally, if the future PA management and governance training requirements are to be adequately covered in West and Central Africa, the type of training offered by regional institutions must evolve in line with modern conservation approaches. The capacities of the institutions to dispense this training must be greatly strengthened. In addition a selected number of PAs where ranger training can be given must be identified and long term financial and technical partnerships built to ensure uninterrupted high quality training opportunities.

⁶ Yves Hausser. 2013. Assessment of the regional needs and training availabilities for professionals of protected areas in West and Central Africa. IUCN.

2. CONSERVATION CHALLENGES AND ISSUES

2.1 KEY DIRECT THREATS TO CONSERVATION IN WA

In West Africa, we differentiate between 'direct threats' which comprise the proximate human activities or processes that impact on wildlife (in the past, present or future) such as unsustainable fishing or logging, and 'indirect threats' which are the ultimate drivers of biodiversity decline such as human population growth, poverty increase and government budget reductions. Thus direct threats are synonymous with sources of stress and proximate pressures. The principal direct threats to the survival of wildlife in the various ecosystems of WA are **loss of habitat for wildlife** and **unsustainable hunting** by humans.

West Africa still has one of the highest annual population growth rate of any region on the continent (or in the world), estimated at about 2.6% in 2012 (AfDB 2012)⁷. Economic development (and particularly the growth of commercial agriculture and extractive industries) has accelerated in forest-zone countries as several civil conflicts have subsided. West Africa currently has the fastest rate of GDP growth on the continent, predicted at 6.8% in 2013 and 7.4% in 2014 (AfDB 2013)⁸. These drivers are reinforced by the tendency of all human beings (not just those in West Africa) to give priority to their short-term self-interests, and to consume resources beyond their immediate survival needs.

In the forest zone of Western Africa, the **area of relatively undisturbed high-canopy rain forest in West Africa has been steadily declining over the last 100 years**. Outside the few national parks that protect rain-forests and some forest reserves, the rate of forest loss may recently have accelerated. Good data are lacking for many countries in the region, but the estimated annual percentage forest loss in Nigeria in 2000-2010 was the highest in the world, at 3.7% (FAO, 2010). Forest is being lost to subsistence agriculture, the expansion of industrial-scale plantations of oil palm and other crops (including "land grabs" that involve foreign companies), timber and fuelwood harvesting, mining operations, road and dam construction, and the spread of settlements. In other words, West Africa today is being affected by the same kinds of development that long ago destroyed the original forest cover of much of Europe, the USA and large areas of East Asia. It is difficult to single out one of these threats as more significant than another – and they vary in extent from country to country – but **farming and plantation agriculture are probably causing greater forest loss than any other activities**.

Hunting of wild animals for meat has been a major factor in the decline of larger mammals in West Africa for a very long time, probably related in significant part to high human population density and long-established trade networks. Hunting for subsistence has always been important, but as human populations have continued to grow and urbanization increase, hunting has become increasingly commercialized, and supports an important "bushmeat trade".

The bushmeat trade is pushing some mammals species (**and rain-forest primates especially**) **towards extinction**, in part because their populations have often been reduced to small, highly vulnerable isolates by loss of habitat (Oates et al 2000). Mammals species of the West African forest zone rated as Critically Endangered (CR) or Endangered (EN) on the IUCN Red List are: *Cephalophus jentinki* (Jentink's duiker, EN); *Choeropsis liberiensis* (Pygmy hippopotamus, EN); *Gorilla gorilla* (Gorilla, CR – only in Nigeria in the West African region);

⁷ Africa's Demographic Trends,
<http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/FINAL%20Briefing%20Note%204%20Africas%20Demographic%20Trends.pdf>

⁸ west Africa Monitor, http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/West_Africa_Monitor_2013.pdf

Mandrillus leucophaeus (Drill, EN – only in Nigeria in W. Africa); *Pan troglodytes* (Chimpanzee, EN); *Procolobus badius* (West African red colobus, EN); *Procolobus preussi* (Preuss's red colobus, CR – only Nigeria in W. Africa). Several subspecies are also rated as CR or EN, and many species and subspecies (including the African elephant) are listed as Vulnerable.

There are only a few areas within the West African forest zone where all wildlife is fully protected by law. From Guinea to the Nigeria-Cameroon border there are **only 11 national parks distributed across eight countries in the forest zone**, together with a handful of wildlife or game sanctuaries. Most of the national parks are small (less than 50,000 ha in area) and therefore not of maximum value for the long-term protection of viable populations of large mammals. Liberia, which lies at the heart of the Upper Guinea forest region, and which is clearly a biodiversity hotspot, has only a single national park, Sapo. Even within the few national parks, management is generally weak and hunting for bushmeat often rife.

2.1.1 Availability of funds for PAs

Analysis

Funding is a critical limiting factor for all the PAs in Western Africa. International and domestic funding for PAs have struggled to keep pace with the growth in the number and area of PAs and the economic crisis. Governments have progressively reduced funding due to the negative economic trend in the region that began in 1960 with the most difficult times in the 1990s. Despite the current economic recovery in WA, and the endorsement of international environmental treaties and the commitments for the creation of more protected areas, government funding for PAs is still very low. On an area basis of just US\$150/km²/year (source: ODA Official Development Assistance), only a few EU projects of PAs in Western Africa spend close to this target (about US\$120-140/km²/year) while private funding for game reserves in WA is far less, although the size of this contribution is unclear. In conclusion, the current spending on PAs is grossly inadequate, not only to support the costs of existing sites, but also to ensure the creation and effective management of a representative regional system of PAs.

The existing low level of financial support for biodiversity in WA is mirrored by a low capacity level in the management of PAs. It is extremely rare to find examples of good management effectiveness of wildlife in the region. The funds invested in conservation give only weak and very short effects without long-term sustainability outcomes. This funding gap has historical reasons arising from the way that institutions were established. Whereas institutions providing capacity-building in forest management and the creation of strong forestry bodies in the countries were developed, the same process was not implemented for wildlife management. The lack of capacity to manage wildlife has led to a general underestimation of the value of wildlife in government. The final result was the development of an operating strategy for natural resources that did not incorporate improved management of wildlife. This situation stands in marked contrast with that in EA and SA.

High population growth, political instability and unfavourable natural processes (desertification and fragility to climate change) have contributed to the reduction of protected areas as they become utilised for agricultural and pastoral uses.

Investments in wildlife conservation in WA must be oriented in a variety of activities: building PA management capacity, protecting endangered species, improving communication about the values of biodiversity, improving the monitoring of biodiversity, and tackling corruption and illegal trafficking. The only hope for WA biodiversity is to restore the fundamentals of conservation and to bring about sustainability in the uses of natural resources.

Effects

Under resourcing is the most important constraint acting on management effectiveness. The PAs of Western Africa do not have enough staff, resources, equipment and infrastructure to ensure the control of conservation areas (including anti-poaching measures and bio-monitoring) and the development of community-based supporting activities in the buffer zones. This results in degradation and encroachment of the PAs which can ultimately lead to their degazettement.

2.1.2 Institutional governance of PAs

Analysis

In most WA countries the State is the owner of the land and of the natural resources. In the past, governments established numerous and large protected areas, and classified forests and game reserves. To manage the various conservation aspects, the governments created centralised institutions for forestry, parks or wildlife and more recently for the environment.

Effects

The indirect drivers such as population growth, poverty increase, government budget reductions, increased democratization and decentralization, and sectorial approaches render ineffective many aspects of direct centralised management of wildlife and protected areas by the State. Also their institutions are ill-adapted to cope with rapid structural changes in the countries. Protected area agencies are seen by WA governments as a relatively low priority, and until now tend to be too centralized. Their staff structures are often out of date, staff training is inadequate, and their enabling legislation is too restrictive.

2.1.3 Illegal wildlife trade income and corruption

Analysis



Given the decline in purchasing power of salaries over the past 30 years and the increased incomes possible from illegal wildlife trade, corruption has spread and it is growing at all levels with the involvement of populations, local and central government bodies including forest rangers and officers, police, army and justice. The increasing importance of the WA coast as a key transit hub for drugs is another potential danger for the illegal wildlife trade.

Poaching levels of elephant in WA have increased since 2006 but not as rapidly as in the other regions. However in WA the rise in poaching is particularly worrying because the small fragmented populations could disappear completely. In the WAPOK complex however the populations is estimated at nearly 8 000 individuals (WAEMU/UNDP, 2013) which is more robust although 150 elephant were lost in 2013 (Box 1).

Figure 7. Illegal live baby chimpanzee trade

The issue of bushmeat hunting is highly politicized and the commercial circuits are well organized to supply the urban areas where it is consumed. The high rate of bushmeat harvest, combined with habitat loss and alteration, has led to very severe population declines. It has already resulted in widespread local extinctions throughout the Upper Guinea Forest Ecosystem of West Africa. The forests and savannas with no large animals are known as the 'Empty Forest' or 'Savanna Syndrome'.

The large and small antelopes of Western Africa can be considered amongst the most beautiful in the continent (including giant eland, roan antelope, major hartebeest and Zebra duiker) but they are the object of black-market traders who will smuggle live animals into wealthy countries, including other African countries such as South Africa (Figure 7).

Effects

Poaching in the small and highly fragmented elephant populations of West Africa is high, and increasing throughout the region. Ivory trafficking through Nigeria is the major illegal wildlife trade in WA. ETIS statistics⁹ indicate Nigeria and Togo are the major exit points but ten other countries are also involved either as source countries for export, transit countries or countries with significant domestic markets. Nigeria is the country with the largest flows of illicit ivory but more recently other countries such as Togo have become involved in large-scale smuggling of ivory. Most of this ivory appears to originate in Central Africa, but Nigeria was also identified as the destination of major shipments of ivory from Kenya, suggesting that ivory from as far away as Eastern Africa may now be moving through this country. The increasing involvement of Chinese buyers in Nigeria, as well as the involvement of organised crime syndicates in the illegal wildlife trade and deforestation for cannabis cultivation, means that Nigeria is playing an increasingly important role in biodiversity loss in WA.

⁹ UNEP, CITES, IUCN, TRAFFIC (2013). *Elephants in the Dust – The African Elephant Crisis*. A Rapid Response Assessment. United Nations Environment Programme, GRID-Arendal. www.grida.no

Box 1. Importance of WAPOK



THE WAPOK COMPLEX

The WAPOK complex is a large area about 38,000 km² of intact habitat that is of great importance to the survival of large mammals in West Africa, including many that are endangered. These different blocks constitute the largest remaining wilderness and the only functional ecological complex in WA.

This large landscape of contiguous conservation areas is located at the frontiers with Burkina Faso, Benin, Niger and Togo. The landscape encompasses one transborder park (W), two national parks (Pendjari and Keran), two more important faunal reserves (Arly and Oti Monduri), one Giraffe area not classified, 10 hunting concessions and many adjacent villages' hunting zones.

The complex is situated in a transition zone between savanna and forest lands. The site reflects the interaction between natural resources and humans since Neolithic times and illustrates the evolution of biodiversity in this zone. The park is known for its large mammals: lions, cheetahs, leopards, giraffe, buffalos, roans, hartebeests, manatees, baboons, hippopotamuses. In WA the complex provides a home for the biggest, and in a few cases the last, populations of lions, elephants, cheetahs, manatees and giraffe. The WAPOK area is also known for its bird populations, especially transitory migrating species, with over 350 species identified in the complex.



The 'W' National Park, was so named because of the local configuration of the Niger River.

The PAs in the complex are listed as a UNESCO World Heritage Site (W-Niger and Pendjari -requested), all as MAB/UNESCO (W was the first MAB transborder regional park to be classified in Africa), many of them as Wetlands of International Importance (Ramsar) and as BirdLife International Important Bird Areas. The area is largely uninhabited by humans, having been (until the 1970s) a Malarial and Tse-Tse zone comprising wetlands formed by the delta of the Mekrou River with the Niger. Historically, the area has been at one time a major area of human habitation, judged by the important archaeological sites (mostly tombs and furnaces - it is quite possible that the iron age in the savanna areas of WA started in the W transborder park) found in the area (see the analysis of the ECOPAS project).

Benin, Burkina Faso and Niger have implemented an inter-state cooperation agreement based on the ecological complex of adjacent protected areas with national parks, wildlife reserves and hunting zones forming a large regional complex (WAP from the name of the major PAs of each country: Regional Park W, Arly Faunal Reserve and Pendjari NP). After several years of intervention, under the supervision of the WAEMU and the support of the EU and German funds, there was an improvement on the status of the natural ecosystems. Given the success of the conservation intervention in the WAP complex, Togo in the years 2006-2009 proposed to join the initiative with adjacent PAs Oti-Mandouri and Keran so the complex has been enlarged and has now become WAPOK (this name comes from the names of the most important PAs of the four neighbouring countries (W-A-P-O- K)). At present, the situation in the WAPOK complex is at risk of degrading with increasing pressures from elephant poaching, mining, increasing poverty in rural and urban areas and desertification. Conservation interventions should be based on a participatory approach involving the political and technical representatives at central and decentralized levels, traditional authorities, users, people, private sector, NGOs, national and international institutions and the civil society.

One favourable factor is that bushmeat is no longer the most important source of protein in the region because the wildlife populations have been so depleted by years of unsustainable hunting for meat. Furthermore analyses in Ghana indicate that among cocoa farmers, the value of harvested bushmeat is relatively low and contributes little to household production. Ungulates and primates have been replaced by rodents as the most commonly eaten wild animals.

The illegal live mammals' trade is concentrated on Togo. The country acts as a hub for the transit of large and small WA antelopes destined for hunting reserves of other African countries and even outside of Africa (see the officially sanctioned captures of giant eland in Niokola-Koba National Park for export). A small illegal wildlife trade in ivory trinkets, birds and live small animals occurs along the coasts from Nigeria to Mauritania.

2.1.4 Weak planning, management effectiveness and monitoring of PAs

The analyses of the illegal wildlife trade (above) have some common and specific aspects. First, we present here some possible common solutions.

Analysis

The quality of PA management effectiveness in WA is poor, and in some cases very poor. The IUCN management assessments conducted in the PAs of WA scored far less than PAs in other African regions. To put this in wider context, the overall mean for the assessment of African PAs is well below the world mean.

Effects

PAs in WA are managed with insufficient knowledge of the biodiversity values, trends and threats arising from direct and indirect causes. There is a lack of planning, monitoring, adaptive management and proactivity. Inadequate resources and weak capacities to implement the management processes lead to the general loss of biodiversity in the region and a loss of ecosystem services provided by the PAs. At present, the WAPOK complex, composed of PAs and hunting reserves covering more than 38.000 Km², is the only functional and stable ecological complex, despite the high threats that it faces. Major parks and reserves in WA are highly degraded, but even so a few can still be recovered. Specific projects are needed to preserve important or endemic species. In a few degraded protected areas, the administration still provides an institutional presence in the hope of a possible recovery of the area at some later date. The general tendency, however, is to reduce the conservation areas because of lack of funds and capacities to manage them.

Solutions

As planning, management and monitoring are closely linked, integrated solutions must be found. We recommend the following general solutions:

- Improving information to build a more effective monitoring and decision-support system in order to facilitate: (i) legitimacy, accountability and fairness in park management, and (ii) adaptive management and proactivity;
- Emphasising the role of stakeholders and rights-holders, local, national and international NGOs, private sector and other non-traditional partners with a view to improving management effectiveness over a broader landscape which includes the PAs and the buffer zones;
- Strengthening institutional capacities (and providing training opportunities) to govern management frameworks and for multi-scale management of protected areas at local, national and regional levels;
- Integrating "species-based" and "habitat-based" approaches;
- Protecting the original ecosystem is generally less costly than ecosystem restoration;
- Integrating *in situ* and *ex situ* conservation of genetic diversity which can serve the needs of restoration of ecosystems and PAs.

2.2 KEY INDIRECT THREATS TO CONSERVATION

Indirect threats to conservation have been defined as the ultimate factors, usually social, economic, political, institutional, or cultural, that enable or otherwise add to the occurrence or persistence of proximate direct threats. (Source: A Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions.)

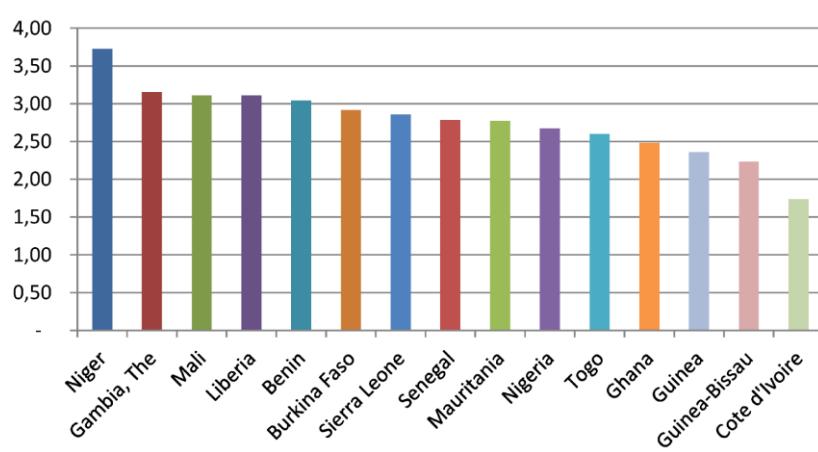
Halting biodiversity loss (or reducing it to a minimal level) requires tackling the combined effect of human activities. The indirect drivers of biodiversity loss are related to economic, demographic, socio-political, cultural, and technological factors. Also, indirect drivers affect biodiversity loss differently from direct drivers. Charismatic mega-fauna, such as elephants, benefit from intense conservation efforts and research when subject to direct or indirect threats to their conservation. By contrast when many endangered species of antelopes, amphibians, insects and plants are affected by indirect drivers but fail to draw the same amount of attention as the charismatic mega-fauna.

The solutions are global and are listed at the end of this chapter (see below).

2.2.1 Population growth and poverty

Analysis

In West Africa, population growth is between 2.5 and 3.5% per annum and this is resulting in increasing levels of poverty over an ever enlarging area. The effect is greater than any of the other African regions and is placing enormous pressure on the capacity of the environment to provide services for human well-being (see figure 8).



Source World Bank, Africa Development Indicators, specific elaboration

Effects

As the demand for resources increases, all the protected areas in WA face pressure from grazing, cultivation, and harvesting of wood, meat, fish, water, and pharmacopoeia. In Burkina Faso the populations in the buffer areas of some parks and reserves draw 33% of their basic needs from the natural resources of the PAs.

Figure 8. Annual population growth rate in percent as average of 10 years (1993-2012)

2.2.2 Fragmentation, reduction and isolation of PA in the landscape

Analysis

As land outside protected areas is exploited more and more intensively in WA, the increasing isolation of protected areas in the landscape poses a serious threat to the long-term viability of many wildlife populations.

Effects

The primary effects of isolation of protected areas are: (i) habitat loss (pastoral and forested lands converted to agriculture); (ii) disturbance from human infrastructures (wildlife abundance increases with distance from human settlements); (iii) overhunting (widespread along protected area boundaries) and (iv) disease (transmission from livestock, domestic animals, and humans).

2.2.3 Coup d'états, rebellions, civil unrest and religion fundamentalism, Ebola and refugee crises

Analysis

With the exception of Senegal and Ghana which have had a relatively long period of stability, the WA countries have suffered from political instability, conflicts with rebel movements, civil unrests, conflicts linked with religious fundamentalism and refugee crises.

Effects

Breakdowns in law and order generally have devastating effects on PAs, as recently seen in Ivory Coast. Protected areas and their natural resources become targets for everyone: (i) populations for land, grazing, wood, bushmeat, etc; (ii) illegal traders who target the most precious woods and wildlife; (iii) armies who use wildlife and natural resources as sources of money and food; and (iv) rebels and religious fundamentalist movements who use PAs as places of refuge and sources of funding. Protected areas in WA have, and are still suffering greatly, from these effects. However in cases where there are decentralized systems, and where NGOs and community groups are involved, the PA management and governance have proved better able to partially save conservation areas (e.g. Sapo National Park in Liberia, where the local community was involved in the park's management).

2.2.4 Negative economic trends

Analysis

Between 1960 and 2002, declining national economies and steady population growth in WA meant that the combined effect of servicing international debts and providing education and health care for the burgeoning populations resulted in a reduction of funding for protected areas. Poverty has led to increasing level of poaching and illegal activities in the PAs, and the prolonged political crisis in the Côte d'Ivoire also threatening the economic recovery in WA. The peaceful solution to the crisis in Côte d'Ivoire brought some relief, but higher international oil and food prices have now started to cause inflation.

Effects

The situation for PAs has remained unchanged. PA staff are poorly paid and equipped, materials and equipment are totally inadequate, and infrastructure is poorly maintained. Illegal grazing, wood cutting, agriculture, and poaching in PAs continue, sometimes with the complicity of the PA rangers.

2.2.5 Policy and sectorial approach

Analysis

Investment in the primary sectors like agriculture (e.g. cotton), pastoralism (e.g. transhumance grazing systems), forestry (e.g. logging concessions or firewood provision), wildlife conservation (e.g. new PAs) or in sectors such as mining operations or energy infrastructure all affect the socio-economics of the region and raise a range of political, administrative, economic, industrial, environmental, infrastructural and energy issues. As elsewhere in Africa, the WA countries, with the support of donors and private funds, implement their policies, strategies and projects with a sectorial approach without the inter-sectorial coordination and collaboration that is essential to ensure mainstreaming of natural resource conservation and management issues.

Effects

Governments and populations continue to regard PAs as unproductive areas to be exploited on a short time base (unsustainable exploitation) rather than as important economic and spatial elements of the landscape. Consequently pressures on PAs are increasing and resulting in biodiversity loss and degradation of many ecosystem services.

Possible global solutions to indirect drivers

People make decisions concerning biodiversity based on a range of values related to their well-being, including the use and non-use values of biodiversity and ecosystems. The well-being of local people must dominate many responses, including those relating to protected areas, governance, and wildlife management. Responses to indirect drivers with a primary goal of conservation could be the following:

- Manage protected areas for a wide range of sustainable uses (as is found in IUCN category VI PAs). This is extremely important where, as in WA, biodiversity loss is sensitive to changes in key drivers;
- Design and manage PA systems in the context of an ecosystem approach, with due regard to the importance of corridors and interconnectivity of PAs, if it is possible;
- Mainstream natural resource conservation and ecosystem services in all the primary sectors such as agriculture, pastoralism, forestry, fisheries, mining and in energy;
- Adopt inter-sectorial coordination and collaboration to ensure mainstreaming of biodiversity conservation and management issues;
- Capture the benefits and reduce the costs of wildlife for local communities, especially the local opportunity costs in line with the principle of equitable sharing;
- Increase transparency and accountability of government and private-sector through involvement of concerned stakeholders and rights-holders in decision-making on biodiversity;
- Increase coordination among multilateral environmental agreements and between environmental agreements and other international economic and social institutions;
- Raise the level of public awareness, information-communication and education.

3. ONGOING CONSERVATION EFFORTS

The historical analysis in WA over the last 15-20 years shows that the external funding for conservation was about \$780 million. In terms of percent of the allocation of these funds, Nigeria and Ghana received more than 15%, whilst the smaller countries (Gambia, Guinea Bissau), the less secure countries (Sierra Leone) and the countries of the desert ecotype received about 1-3% of the funds. Funding for transborder protected areas was about 10% of the total. The regional programmes on conservation used about 12% of the available funds.

The analysis can also be extended to each major ecotype.

3.1 DESERTS

International NGOs have long been involved in arid land conservation through reserve management, genetic research, wildlife monitoring, wildlife veterinary work, captive breeding and reintroductions and tourism development (e.g. Zoological Society of London, and Sahara Conservation Fund). Currently conservation in the desert ecosystem is focused on Termit & Tin Toumma (Niger). In the Desert Atlantic Coast there are “Important Bird Areas” (IBAs) such as the Banc d’Arguin NP and the Diawling NP (Mauritania), and Djoudj NP (Senegal).

3.2 SAVANNAS

Savanna PAs have received significant support, particularly from the EU. Today the effort is focused on the WAPOK complex (W, Arly, Pendjari Oti Monduri -Keran- Benin, Burkina Faso, Niger and Togo). Other PAs receiving lower and more irregular levels of support are Comoé (Côte d'Ivoire); Mole (Ghana); Niokolo Koba NP (Senegal); Gourma Elephant FR (Mali); the Sahel Wildlife Reserve (Burkina Faso) and the Volta Trans-Border Ecosystem Wildlife Corridors (Burkina Faso and Ghana).

3.3 FORESTS

There have been numerous projects in support of rainforest PAs but only a few of these areas still retain their biological value. Where the administration alone is responsible for management, the PAs are effectively “paper parks”. PAs with important biological values are: Gola Forest Reserve and Loma Mountains (Sierra Leone), Sapo (Liberia), Tai (Ivory Coast), Cross River (Nigeria), and Ankasa and Bia Conservation Areas (Ghana). There are interesting possibilities for a landscape approach in which the PA is at the core of wider sustainable land uses. The particular landscape approach could be adjusted according to a wide range of conditions and land-use practices, from strict protection to intensive development. The communities surrounding PAs could benefit from forest and biodiversity resources and services whilst contributing to their conservation.

At the same time, well managed commercial forest blocks contribute to the protection of PAs and biodiversity. The landscape approach is, therefore, a wider mosaic of land uses where the protected areas form part of the overall socio-economic network: human settlements, agricultural areas, forested and non-forested areas. Interesting possibilities for a landscape approach are: (i) Gola Forest Reserve (Sierra Leone) and the Lofa and Foya Forest Reserves (Liberia), (ii) Mount Nimba & East Nimba Nature Preserve (Guinea , Ivory Coast and Liberia) , (iii) Outamba - Kilimi National Park (Sierra Leone) and Madina Oula, Soy & Oure Kaba sub-prefectures (Guinea). It is important to underline that there are still important forests blocks that could complement the overall biodiversity of this ecotype but these do not have protected area status. Granting this added protection should be a priority.

3.4 MANGROVES/COASTAL

There are few PAs in the mangroves forests. The Niger Delta, the most important area of mangrove forest in Africa, and the third most important in the world, does not have a protected area. In WA the most important example of mangrove conservation is the public-private partnership for conservation, management and sustainable use of mangrove forests in Guinea Bissau (Orango National Park, Tarafes Cacheu Natural Park and Cacheu Mangrove, Lagoas de Cufada, Cantanhez Forest, Rio Grande de Buba, Cufada, and Cantanhez Forest). In Guinea Bissau, the intervention enabled six new conservation areas to be created – a rare success story in the conservation of this important ecosystem. In the other countries actions on mangroves are basically shared between the administration, communities and NGOs: as with Songor Lagoon and Keta Lagoon Ramsar site (Ghana) and Niumi National Park (Gambia). Other coastal conservation actions target “Important Bird Areas”: the Banc d’Arguin NP and the Diawling NP (Mauritania), the Saloum Delta NP and the Lower Casamance NP (Senegal). The remaining blocks of mangrove forests constitute an opportunity for the establishment of new conservation areas. This action should also be a priority.

In conclusion biodiversity conservation in WA is characterised by (i) low funding for desert PAs but with the benefit of strong involvement by NGOs, (ii) an almost constant level of support going to the protected savanna areas; (iii) low funding for rain forest protected areas with mixed interventions of government and NGOs; (iv) a small scale success story for the recovery of mangrove forests through a public-private partnership.

4. LESSONS LEARNED AND PROMISING APPROACHES

4.1 NEGATIVE LESSONS LEARNED

- The fragility of ecosystem conservation in WA is made worse by the continuing nature of the key indirect threats (instability, high population growth, etc.). The phenomenon is further amplified by the absence of a culture and tradition in PA management and the lack of education and training in wildlife and protected areas management.
- The futility over the long-term of short-term investments in conservation in countries where indirect threats to natural resources and biodiversity are high.
- The severe drought cycles linked to climate change have led to the spread of pastoralism and transhumance essentially at the expense of savanna PAs. This phenomenon is made even more acute by the investment of powerful and influential people (politicians, administrators, traders) in livestock. As a result it is extremely difficult to oppose the illegal occupation of PAs by transhumant herders.
- The enormous challenges posed by corruption, particularly in public institutions.
- Wasting a huge potential in promoting an exclusively ethnic and cultural tourism in the deserts areas and omitting to invest in ecotourism and safari hunting despite that potential (i.e. WAP transborder park and the wildlife reserves).
- The abandonment of the fundamentals of PA management (control of territory, anti-poaching activities, bio-monitoring, etc.) in favour of less expensive and more popular actions; new strategies for the maintaining of PA control alongside conflict management have not been instigated.
- Encouraging NGOs to take on a major role in conservation has not always helped state structures to address their issues of weak capacities. Furthermore the predominant position occupied by NGOs has sometimes led to a situation where the main priority of the NGO is to maintain its position of power and influence rather than to pursue the conservation objectives.

4.2 POSITIVE LESSONS LEARNED

- Long-term and sustained conservation investments and professional management, as in the case of the EU funded W Trans-border Park project, has been shown to have very positive conservation outcomes in terms of reduced illegal activities, increased wildlife, ecotourism development and environmental education.
- The potential of public-private partnerships for conservation and sustainable development in the mangrove forest ecosystem in Guinea Bissau.
- The importance of the work of strongly motivated national and international NGOs with clear objectives: e.g. the conservation of desert antelopes, assisting government in law enforcement as in relation to the trade in great apes and ivory, and the protection of great apes (e.g. Last Great Ape Organisation – LAGA/NGO in wildlife law enforcement), giraffes and other charismatic species.
- Using cultural heritage, even in times of conflict, to promote the protection of important areas such as the conservation activities in the Gola Rainforest National Park which have involved the communities of both Sierra Leone and Liberia who share similar cultures as well as many species of plant and animal use.
- The potential of sport hunting areas (e.g. Burkina Faso) which help to maintain the only functioning ecosystem (including its elephant population) in the major savanna ecotype of WA.
- The potential for a species to become a national symbol as in the case of the giraffe in Niger. During the great drought of 1984 about 50 giraffes moved south to Niger from Mali. Currently the population

numbers nearly 400 animals, living outside a PA and protected jointly by local populations and the national wildlife service.

4.3 PROMISING APPROACHES

Improving biodiversity conservation in WA should be based on the regional integration of three strategies: (A) consistent, uninterrupted interventions on the ground with a specific strategic approach to each major ecotype, with strong coordination between ecotypes; (B) a decision-support system based on the collection and organisation of information on biodiversity and management effectiveness in collaboration with the BIOPAMA EU programme; and (C) shared decision-making at institutional and political levels (Figure 9). The success of this overall approach will depend on the functional integration of these three specific strategies.

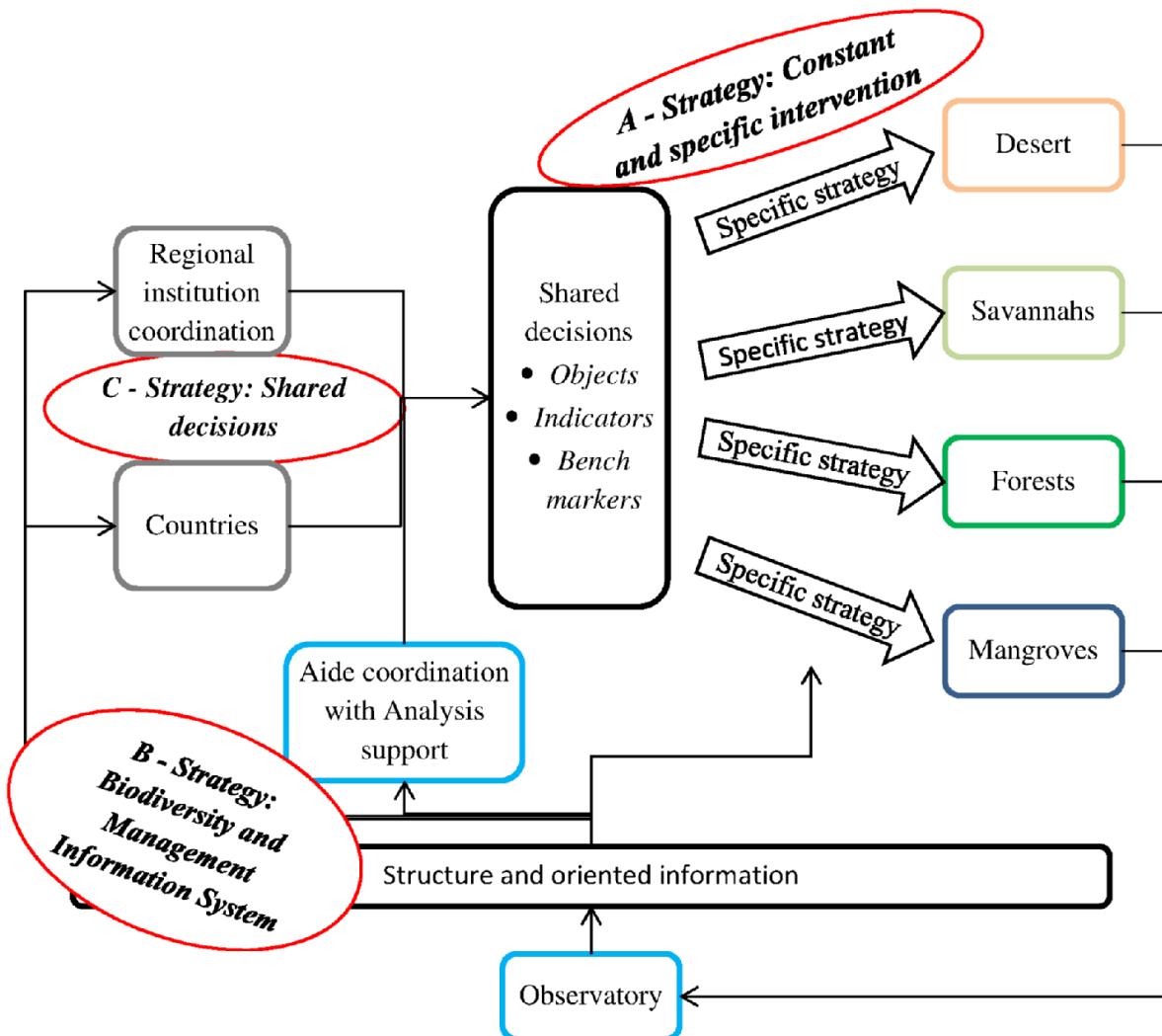


Figure 9. Promising approach to improve the protection of biodiversity in WA

4.3.1 Constant and specific intervention on the ground

The strategic approach is based on the consistency of interventions in the four major ecotypes: (1) Deserts, (2) Savannahs, (3) Forests and (4) Mangroves/Coastal. The specific intervention strategies on the ground are based on a composite approach (only in alphabetical order): (i) composite *in-situ* and *ex-situ* conservation, (ii) ecosystem approach, (iii) habitat approach, (iv) *in-situ* conservation, (v) species approach. Below are presented the proposed priority intervention approaches for each major ecotype in WA (Table 4).

Table 4. Composite strategic approach for interventions in the four major ecoregions

Priority	Deserts	Savannas	Forests	Mangroves/Coastal
1	Species	<i>In-situ</i> conservation	<i>In-situ</i> conservation	Ecosystem
2	<i>In-situ</i> conservation	Ecosystem	Ecosystem	<i>In-situ</i> conservation
3	Composite <i>in-situ</i> and <i>ex-situ</i> conservation	Species	Species	Habitat
4	Habitat	Composite <i>in-situ</i> and <i>ex-situ</i> conservation	Habitat	Species
5	Ecosystem	Habitat	Composite <i>in-situ</i> and <i>ex-situ</i> conservation	Composite <i>in-situ</i> and <i>ex-situ</i> conservation

4.3.2 Biodiversity and Management Information System

In WA, data on conservation are scattered, often out of date and not focused on the issues to be solved. The sources of information at the global level are very generic and do not allow the development of a strategic approach with a coordinated series of conservation activities. The BIOPAMA¹⁰ project proposes the creation of regional observatories in Africa and then to connect the collected information in a more general system (DOPA¹¹, managed jointly with IUCN). Through this project the EU has an opportunity to turn the simple provision of information into a system that will enable conservation data to be organized and used in a decision-support system to identify priorities, formulate strategies and monitor the impact. The synergies between information, decision making and conservation action are essential.

Box 2. Biodiversity and Protected Areas Management Project (BIOPAMA)

BIOPAMA: The Biodiversity and Protected Areas Management Programme (BIOPAMA) is an initiative of the ACP Secretariat funded by the European Union. BIOPAMA aims to address threats to biodiversity in African, Caribbean and Pacific (ACP) countries while reducing poverty in communities in and around protected areas. Specifically, the program will enhance existing institutions and networks by making the best available science and knowledge available for building capacity to improve policies and better decision-making on biodiversity conservation, protected areas management and access and benefit sharing.

BIOPAMA consists of two components:

1. Protected areas component (jointly implemented by IUCN, International Union for Conservation of Nature and the EC-Joint Research Centre), that includes:
 - 1.1. Capacity building for regional and national institutions and agencies and protected areas managers;
 - 1.2. Improved access to and availability of biodiversity data through the establishment of regional observatories and information systems to improve decision making.
2. Access and Benefits Sharing (ABS), component implemented by the Multi-donor ABS Capacity Development Initiative managed by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

The actions of the protected area component will be implemented in four BIOPAMA regions: West and Central Africa, Eastern and Southern Africa, the Caribbean and the Pacific. One of the main objectives is establishing Regional Observatories that should support the conservation interventions in the field with:

- Developing a Regional Reference Information System (RRIS)
- Supporting decision-makers at various levels (regional, national, and local – PA level)
- Strengthening capacity-building
- Operating a regional review on information needs and gap analysis
- Indicating priorities of PA funding (ACP/EU ++ and addressing Aichi targets and national reporting obligations to MEAs
- Supporting the assessment of biodiversity values mainstreaming biodiversity
- Contributing to improve PA Management Effectiveness
- Proposing the assessment of ecosystem services - arguments for protection

¹⁰ BIOPAMA, The Biodiversity and Protected Area Management Programme

¹¹ DOPA, Digital Observatory for Protected Areas

Box 3. Digital Observatory for Protected Areas (DOPA)

THE DIGITAL OBSERVATORY FOR PROTECTED AREAS (DOPA)

DOPA has been developed by the Joint Research Centre of the European Commission to support the European Union's efforts "to substantially strengthen the effectiveness of international governance for biodiversity and ecosystem services (EC/COM/2006/0216 final)" and more generally for "strengthening the capacity to mobilize and use biodiversity data, information and forecasts so that they are readily accessible to policymakers, managers, experts and other users" (UNEP/CBD/COP/10/27).

DOPA is conceived as a set of distributed Critical Biodiversity Informatics Infrastructures (databases, web modelling services, broadcasting services, ...) combined with interoperable web services to provide a large variety of end-users including park managers, decision-makers and researchers with means to assess, monitor and possibly forecast the state and pressures on protected areas at local, regional and global scale. Aside the services hosted at the JRC, databases contributing to DOPA are typically The Red List of Threatened Species (IUCN), the World Database of Protected Areas (IUCN and UNEP-WCMC), and the species occurrences provided by the GBIF.

In particular, DOPA aims to

1. provide the best available material (data, indicators, models) agreed on by contributing institutions which can serve for establishing baselines for research and reporting (e.g. Protected Planet Report, National Biodiversity Strategies and Action Plans);
2. provide free analytical tools to support the discovery, access, exchange and execution of web services (databases and modelling) designed to generate the best available material but also for research purposes, decision making and capacity building activities for conservation;
3. provide an interoperable and, as much as possible, open source framework to allow institutions to develop their own means to assess, monitor and forecast the state and pressure of protected areas and help them to further engage with the organizations hosting critical biodiversity informatics infrastructures.

DOPA Explorer (Beta version, 2013: http://ehabitat-wps.jrc.ec.europa.eu/dopa_explorer/) has been developed to provide simple means to explore areas around all marine and terrestrial protected areas that are greater than 150 km², identify those with most unique ecosystems and species, and assess the pressures they are exposed to because of human development. Ecological data derived from near real-time earth observations are also made available although currently limited to African protected areas.

Two other main interfaces to the web services are planned for the period 2014-16: (1) DOPA Validator (2015) will allow registered users to validate/invalidate the information summarized in DOPA Explorer and provide additional observations about individual protected areas; (2) DOPA Analyst (2016) will be providing end-users with a broad range of modelling tools for forecasting climate change impact on protected areas, assessing connectivity, computing niche models or to allow end-users to simulate consequences of adding or removing a protected area on regional indicators.

Reference: Dubois, G., M. Schulz, J. Skøien, A. Cottam, W. Temperley, M. Clerici, E. Drakou, J. van't Klooster, B. Verbeeck, I. Palumbo, P. Derycke, J-F. Pekel, J. Martínez-López, S. Peedell, P. Mayaux (2013). An introduction to the Digital Observatory for Protected Areas (DOPA) and the DOPA Explorer (Beta). EUR 26207 EN, EC. Luxembourg: Publications Office of the European Union 72 p. See more at: <http://dopa.jrc.ec.europa.eu/content/publications-resources#sthash.kYTkHhtQ>

4.3.3 Shared political and institutional decisions

In WA, the severity of conservation problems imposes a strong need for a supranational dialogue. In WA, safeguarding the populations of elephants, the desert ecotype wildlife, the specificities of the rainforests, and the wetlands and mangroves requires greater coordination between countries of the region and greater collaboration between countries and donors on the subject. This collaboration can be achieved firstly by empowering a special unit at the institutional policy level (i.e. WAEMU) and a strong coordination of activities among donors, always to take place through this special unit at institutional level. The creation of a special unit at the institutional level should provide greater awareness in government decision-making. The creation of a coordinated response by donors ensures greater synergy of interventions in financing long-term, specific and emergency interventions (see chapter 5.2.1 for implementation).

5. INDICATIVE CONSERVATION ACTIONS / PRIORITY CONSERVATION NEEDS

Having reviewed the main conservation issues in West Africa, including the status of wildlife in 4 major ecotypes and the nature of direct indirect threats to wildlife, we now move on to consider a strategic approach for the conservation of biodiversity in WA.

The most important points to remember about conservation in WA are the following:

- High biodiversity values in a wide range of ecosystems, but weak funds, management, protection and sustainable development of wildlife and other natural resources;
- Strong direct threats such as loss of habitats and fragmentation, unsustainable poaching, and poor institutional governance with weak monitoring and planning;
- Strong indirect threats such as human population growth and poverty, a weak policy and sectorial approach with unsustainable land and resource use.

This strategic approach focuses on the following key needs:

- A An active conservation process with more feet on the ground to counter the direct threats and to enhance protection of biodiversity whilst at the same time promoting its high values;
- B A proactive process with more external support for better governance, monitoring and planning, and in support of actions taken to reduce indirect threats on conservation.

A. Active process

The active process has its own goals: (i) to balance the interventions between the four major ecotypes; (ii) to save threatened species from extinction; (iii) to preserve critical habitats (e.g. wetlands, Mount Nimba, and mangroves); (iv) to improve management effectiveness of national and transborder parks; (v) to promote the initiatives of landscape-based conservation including the maintenance of connections between blocks of PAs; and (vi) to ensure a better awareness and representation of the realities of wildlife in WA.

The active process has five main activities:

1. Dissemination and analysis of the proposals for site conservation and for other conservation priorities in WA;
2. Specific strategies and actions for the major ecotypes: Deserts, Savannas, Forests and Mangroves/Coastal;
3. Dismantling the wildlife trafficking network;
4. Special analyses;
5. Training in wildlife protection.

The objective of the first activity (Dissemination and analysis of...) is to confirm the conservation strategic approach for WA and to refine the details necessary for the implementation of the proposals. The action is scheduled only for the first year.

The second activity (Specific strategies and actions...) entails (i) prioritizing interventions for the most important Key Landscapes for Conservation (KLCs) and Key Areas for Conservation (KACs); (ii) itemizing the main objectives of every single KLC and KCA; and (iii) preparing proposals to prevent the further decline of wetlands and to create new or larger KLCs and KCAs.

For each major ecoregion, the process provides priorities of implementation based on criteria related to species, habitats and typologies of conservation (Table 4). The ecoregion of mangroves also includes the marine and coastal PAs, but a harmonised and more detailed analysis than could be undertaken here with incorporation of the strategic plan for marine protected areas on the Atlantic coast of Africa as implementation of the Abidjan Convention.

The third activity is part of the active conservation approach with activities on the ground. It will include the following supporting actions:

- Dismantling wildlife trafficking networks in four sub-actions:
 - Political and diplomatic support;
 - Intelligence and security;
 - Judiciary and Conviction of illegal activities on PAs;
 - Security communications.

The fourth activity on special analysis is split into three sub-activities:

- Monitoring and planning of highly threatened species and habitats;
- Population and Habitat Viability Assessment (PHVA);
- Establishing new or larger KLCs and KCAs.

The fifth activity on wildlife protection training will assist in winning back control of the parks and in curbing – poaching. It has three steps:

- Identify conservation sites with the capacity to deliver basic training for new rangers;
- Prepare and implement training programmes targeting the specific needs of each PA;
- Support implementation of the appropriate anti-poaching programmes for each PA.

B. Proactive process

The proactive process attempts to support and boost the active process on a long term basis by creating a unit of “institutional support and coordination” allocated under the WAEMU with the support of a special task force. The establishment of a regional coordination unit should exclude the creation of a new regional entity, but aim for the strengthening an existing regional institution in the specific field of conservation by the introduction of a task force. This proposal recommends strengthening the existing regional institution of WAEMU in the specific field of conservation by a special unit reinforced by a task force of experts.

A unit under the WAEMU will have the mission of coordinating and promoting the following:

- *Monitoring and Planning* in coordination with the Observatory installed by BIOPAMA in West and Central Africa with the duty of organizing and directing the conservation information as a decision-support system at local, national and regional levels;
- *Communication* to increase the awareness of the region for conservation through a far-reaching communication process;
- *Biological Research* that is highly targeted and oriented towards the improvement of management effectiveness on specific aspects of conservation in WA;
- *Management-Governance Training* for raising the capacity of senior level officers of PAs and central government so that they are equipped to adopt the most advanced and suitable techniques for long-term management and conservation of biodiversity in WA.

5.1 ACTIVE PROCESS

5.1.1 Dissemination and analysis of the proposals about sites and conservation priorities in WA

The implementation of inputs and proposals for intervention in the short and medium term requires the transmission of information through regional channels (ECOWAS - WAEMU) in favour of national institutions, NGOs and representatives of stakeholders in conservation. The information is intended to confirm the general conservation strategic approach and refine the details necessary for the implementation of the proposals. The EU should promote the first initiative, but in the future the regional Observatory setup by the BIOPAMA project will support the coordination of the regional and national institutions by its regional reference information system on conservation (see boxes 2 and 3).

This intervention should be carried-out under the coordination of WAEMU.

5.1.2 Support for conservation of the major ecoregions: Deserts, Savannas, Forests and Mangroves/Coastal

The strategic approach to conservation in West Africa is fundamentally based on national parks management. The highly degraded situation and the strong, persistent threats suggest the need for a more structured intervention on conservation based on:

- a) major ecoregions, to extend the interventions of conservation from savannas and forests to the areas that have received less attention in the past such as desert PAs and mangroves and coastal-marine PAs;
- b) species, so as to prevent extinction of the rare and charismatic species (desert antelopes, elephants, primates, carnivores, giraffes, eland, pygmy hippopotamus, birds, plants and amphibians);
- c) habitats, to defend sensitive areas such as the wetlands, the water basin, the inner deltas, and the montane habitats;
- d) Key Landscapes of conservation (KLCs), to allow for better management of habitats and species;
- e) Transborder Conservation Areas (TFCAs), through better regional coordination and to act as a symbol of a possible peace process between neighbouring countries;
- f) Key Conservation Areas (KCAs), to guarantee the basic intervention of conservation in support of specific habitats and species.

The strategic approach organises these interventions according to the four major ecoregions to ensure a balance between the different conservation realities of WA and to spread the current strong focus for Savanna protected areas. This strategic approach put more attention to key, rare and endangered species, and special and unique habitats in the KLCs, TFCAs and KCAs.

Consequently the strategic approach will carry out conservation actions on the following:

- A. KLCs of Deserts Major Ecoregions;
- B. KLCs, KCAs and endangered wetlands of Savanna Ecoregions;
- C. Existing KLCs and KCAs and new or larger KLCs and KCAs (in Liberia, Ghana and Nigeria) of the Forest Ecoregions;
- D. KLCs, KCAs and new or larger KLCs and KCAs (in Nigeria, Ivory Coast, Liberia, Sierra Leone, Senegal, Guinea) of Mangroves/Coastal Ecoregions.

Beginning with the Desert ecoregion, this strategic approach presents specific proposals for conservation of every site and for each major ecoregion. For summarised global data, see Table 27 and Figure 14.

The elements of each site are presented in table format under the following headings:

- Conservation objectives
- Key Species
- Key habitats

The summary elements of each major ecotype are presented in table format under the following headings:

- Protecting biodiversity;
- Countries;
- Biomes / Ecotypes;
- Main Protected Areas and priorities;
- Analysis;
- Objectives and Proposed actions;

5.1.3 Specific strategies and actions for the major Desert ecotypes

The habitats of the Desert ecotype are heavily influenced by drought. So in the most arid zones, degradation is found where water (oases, etc.) is present. Otherwise the Sahara is a vast area of largely undisturbed habitat. The areas of steppe and woodlands in the desert are also heavily influenced by drought and the effects are exacerbated by large numbers of domestic livestock.

The desert areas of the Atlantic coast are severely degraded (overgrazing, cutting of trees for firewood and timber, and soil erosion aggravated by drought are contributing to desertification). The chief faunal values are along the coast where key migratory staging posts for the birds using the Atlantic Coastal Flyway are found. The large mammal species have suffered from uncontrolled hunting but the coast also supports the world's largest population of the critically endangered Mediterranean monk seal (*Monachus monachus*).

It is recommended that the highest priority be given to key landscapes of conservation and key protected areas in the following ecotypes:

- Desert with the ecotypes of Sahara Desert; South Saharan steppe and woodlands and West Saharan montane xeric woodlands;
- Atlantic coast.

For summarised global data: see table 8 and figure 10.

The proposal for the WA Desert ecotype is to establish one large Desert Key Landscape of Conservation.

Niger-Chad-Algeria Desert KLC (416,750 km² of PAs)

The conservation field activities should focus on the area between the Niger, Chad and Algeria where there are probably the only remaining PAs that contain populations of many of the larger ungulates of this ecotype. However, this vast area has long been plagued by political insecurity and civil unrest, and the current situation of the desert wildlife is far from certain.

Many desert species track seasonally variable and patchy resources and require large natural landscapes to persist. Consequently, and if necessary, *in-situ* conservation should cover the entire area between the priority PAs. Special habitats to protect are the water sources and riparian habitats which are critical for the persistence of many desert species. For this reason, agreements between countries should be defined to determine a common intervention strategic approach at the regional level.

The Desert KLCs encompass 3 PAs of Niger [(1) 97,000 km² Termit & Tin Toumma – (2) 78,339 km² Air and Ténéré – (3) 12,754 km² Addax Sanctuary], 2 PAs of Chad [(4) 83,000 km² Ouadi Rimé-Ouadi – (5) 1,739 km² Fada Archei] and 2 PAs of Algeria [(6) 98,900 km² Tassili-n-Ajjer – (7) 45,000 km² Ahaggar].

The key threats to be addressed are the reduction of large mammal populations and the Saharan cheetah and the poorness of the genetic heritage of the desert antelopes. The large spaces and the system resilience, despite climate change, argue for adopting these measures:

- (i) species approach, together with a
- (ii) combined *in-situ* and *ex-situ* conservation approach to protect the endangered species in the priority PAs (see below) and to preserve and improve the genetic heritage of desert antelopes with *ex-situ* conservation.

To have the greatest probability of conservation success, *in situ* and *ex-situ* conservation techniques should be applied synergistically and must:

- be flexible to act in areas and countries as soon as security conditions allow it;
- save the habitat in which the species can live and reproduce (PAs and ecosystem);
- preserve and improve the genetic heritage (DNA¹²), under the responsibility of WAZA¹³, with a view to the possible reintroduction of species in their natural habitat. Care must be taken to ensure that the natural habitat is preserved until reintroduction can take place (see Table 5).

Table 5. Key elements of the Niger-Chad-Algeria Desert KLC

Elements	Priority elements
KLC	Key Landscape for Conservation in the desert ecotype between Niger, Chad and Algeria
Conservation objectives	1. Protection of desert and semi-desert habitats and desert antelopes
Key Species	– Scimitar Oryx ; Saharan cheetah ; Dama Gazelle ; Addax
Key habitats	– Water sources and riparian habitats which are critical for the survival of many species

The proposal for the Atlantic coast is to establish two KLCs as follows.

Senegal-Mauritania-WL1 Atlantic Coastal KLC (2,465 km² of PAs)

This landscape includes: (1) the contiguous 659 km² Diawling NP in Mauritania, (2) the 209 km² Parc National des Oiseaux du Djoudj and (3) the nearby 461 km² Saint-Louis Marine protected area, (4) the 486 km² Ndiae Wildlife Reserve and (5) the 650 km² Forêt de Keur Momar Sarr in Senegal.

This complex contains the most important wetlands in WA (WL1 in Figure 10) and consists of lagoons, saline flats and a small area of mangroves, as well as dunes, alluvial plains and an interconnecting network of rivers, lakes and ponds. There are seasonally inundated and marshy areas with small channels, especially adjacent to the river, and some of these are extremely important for birds in some years or at certain times of year, depending on flood and rain water-levels. The PAs and the buffer areas are incorporated in sites classified as IBAs (Table 6).

¹² DNA, Deoxyribonucleic acid (DNA) is a molecule that encodes the genetic instructions used in the development and functioning of all known living organisms and many viruses

¹³ WAZA, World Association of Zoos and Aquariums

Table 6. Key elements of the Senegal-Mauritania Atlantic Coastal KLC

Approach	Priority elements
KLC	Atlantic coast key landscape of conservation between Mauritania and Senegal
Conservation objectives	1. Conservation, restoring and monitoring the sites and habitats 2. Promote resilient ecological transborder networks 3. Protection for the wintering Western Palearctic waders
Key Species	– Over two million wintering Western Palearctic waders, from fifteen different species
Key habitats	– Inland delta in a shallow depression lying within the flood-plain of the Senegal River

Mauritania – Western Sahara Atlantic Coastal KLC (33,850 km² of PAs)

This landscape encompasses (1) the 11,876 km² Banc d'Arguin National Park and (2) the 3,100 km² Réserve Intégrale de Cap Blanc in Mauritania and (3) the 18,888 km² Dakhla National Park (split into two distinct sectors: coastal and inland) in Western Sahara. The Presqu'île du Cap Blanc, that supports the world's largest population of the critically endangered Mediterranean monk seal, is protected by the Dakhla National Park (Western Sahara) and the contiguous Réserve Intégrale de Cap Blanc (Mauritania).

The marine part of the national parks include shallow open sea and seagrass beds, intertidal flats, channels and creeks, clumps of mangrove, as well as coastal desert habitats. Adjacent to the Mauritanian park lays one of the world's richest fishing grounds. The terrestrial part of the PAs includes areas of Saharan vegetation and a much larger inland desert sector for the Dakhla National Park.

The landscape hosts one of the world's most diversified communities of nesting piscivorous birds in the world (Hoffmann, 1988). At least 108 bird species have been recorded, representing both Palaearctic and Afrotropical realms. The number of wintering shorebirds is estimated to be over three million (Table 7).

Table 7. Key elements of the Mauritania – Western Sahara Atlantic Coastal KLC

Approach	Priority elements
KLC	Atlantic coast key landscape of conservation between Mauritania and Western Sahara
Conservation objectives	1. Conservation, restoring and monitoring the sites and habitats 2. Protection for one of the world's most diversified communities of nesting piscivorous birds in the world 3. Prevent bird and Mediterranean monk seal extinctions 4. Promote resilient ecological transborder networks
Key Species	– Over three million wintering shorebirds – At least 108 bird species of nesting piscivorous birds – The critically endangered Mediterranean monk seal
Key habitats	– Shallow open sea, coastal desert habitats, clumps of mangrove

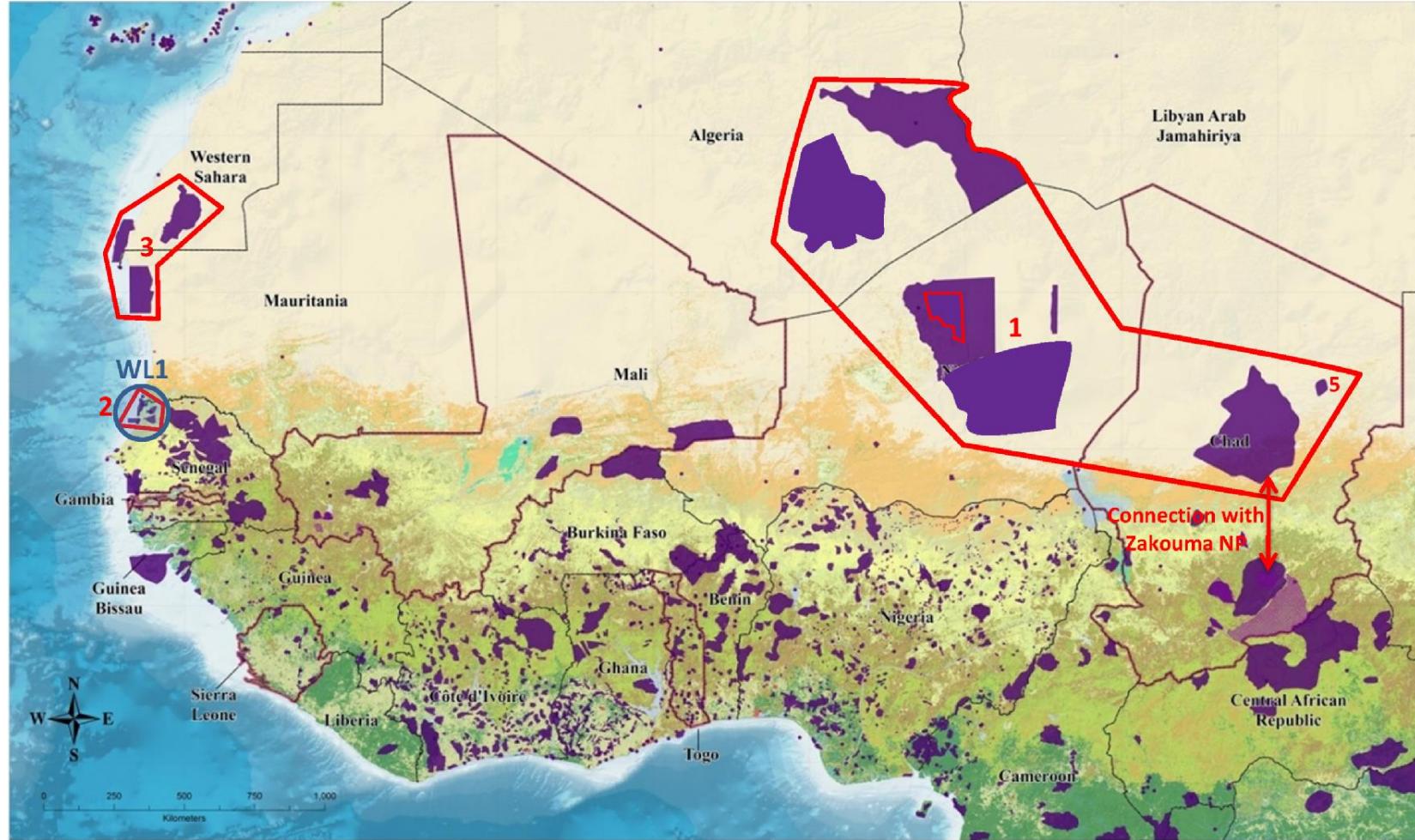
Table 8. A - West Africa Deserts – Key Landscape of Conservation and priorities

Protecting biodiversity	Countries	Biome / Ecotype / Key species	Main KLCs and KPAs and priorities	Analysis	Objectives and Proposed actions
<ul style="list-style-type: none"> - Under-representation of the desert and semi-desert habitats in PAs poses a threat to their long-term stability and conservation - Important Saharan large mammals but globally threatened - Immense importance for over two million wintering Western Palearctic waders, from fifteen different species (Atlantic coastal desert) - Extraordinarily rich floras despite the very low and variable rainfall - Diversity of reptiles is moderately high (around 100 species) - Small number of endemics, but local endemism may be quite pronounced in some regions - Many species track seasonally variable and patchy resources and require large natural landscapes to persist - Water sources and riparian habitats are critical for the persistence of many species 	WA <ul style="list-style-type: none"> - Mali - Mauritania - Niger - Senegal 	<p>Biome: Deserts and xeric shrubland</p> <p>Ecotype:</p> <ul style="list-style-type: none"> - Sahara desert - South Saharan steppe and woodlands - Atlantic coastal desert - West Saharan montane xeric woodlands <p>Other ecotypes of the biome:</p> <ul style="list-style-type: none"> - East Saharan montane xeric woodlands - Tibesti-Jebel Uweinat montane xeric woodlands <p>Key species and status:</p> <ul style="list-style-type: none"> Scimitar Oryx    Saharan cheetah    Dama Gazelle   Addax   Dorcas Gazelle  Afrotropical- Palaearctic an  piscivorous birds 	<p>Key Landscape of Conservation</p> <p>1. Niger-Chad-Algeria (NCA) Desert Landscape of Conservation (416,750 km² of PAs) <i>Termit & Tin Toumma – Air and Ténéré – Addax Sanctuary in Niger; Ouadi Rimé-Ouadi – Fada Archei in Chad and Tassili-n-Ajjer – Ahaggar NP in Algeria</i></p> <p>2. Senegal-Mauritania-WL1 (SMWL1) Atlantic Coastal Desert Landscape of Conservation and Wetlands (2,465 km² of PAs) <i>Diawling NP in Mauritania, Parc National des Oiseaux du Djoudj, Saint-Louis Marine protected area, Ndiaeal Wildlife Reserve and Forêt de Keur Momar Sarr in Senegal</i></p> <p>3. Mauritania – Western Sahara (MWS) Atlantic Coastal Desert Landscape of Conservation (33,850 km² of PAs) <i>Banc d'Arguin NP and Réserve Intégrale de Cap Blanc in Mauritania and Dakhla National Park in Western Sahara</i></p>	<p>Negative aspects</p> <ul style="list-style-type: none"> - Degraded habitat: overgrazing, cutting of trees, dry and intensive land use for agriculture - Motorized hunting - Local poaching - Political insecurity and civil unrest - Under-representation of the desert and semi-desert habitats of these ecotypes - Threat to long-term stability and conservation of PA - Genetic heritage of desert antelopes - Insufficient funds - Poverty - Disadvantaged population <p>Positive aspects</p> <ul style="list-style-type: none"> + Surface (about 25% of Africa) + Extraordinary ecosystem and fauna + Cultural heritage + Potential tourism 	<p>Objectives</p> <ol style="list-style-type: none"> 1. Protection of desert and semi-desert habitats and desert antelopes 2. Conservation, restoring and monitoring the sites and habitats 3. Protection for the wintering Western Palearctic waders and one of the world's most diversified communities of nesting piscivorous birds in the world <p>Actions</p> <ul style="list-style-type: none"> - Promote resilient ecological transborder networks - <i>In-situ</i> conservation for the entire biome (coordination / responsibility of one or more international organizations specializing in conservation in desert areas or a partnership between them) - Prevent extinctions (also for the birds) and preserve the genetic heritage (DNA) - Promote resilient ecological transborder networks - Monitor and strengthen national ex-situ conservation - Improving the genetics of desert antelopes in-situ and ex-situ conservation (responsibility of WAZA) - Constant support by the IUCN/SSC Antelope Specialist Group (ASG), Northeast African Subgroup IUCN and Birdlife International - ICDP on the principles of good governance (Legitimacy & voice, Direction, Performance, Accountability, Fairness) - Exploitation of every possibility in land surveys (military) for better protection (and knowledge) of wildlife. - Possible future reintroduction of the species back into its natural habitat (while ensuring that the natural habitat remains intact)

Note: Red arrows denote declines in status, green arrows denote species recoveries

Figure 10. A - West Africa Deserts – Key Landscape of Conservation and priorities

(1) Niger-Chad-Algeria Desert Landscape of Conservation (416,750 Km² of PAs); (2) Senegal-Mauritania Atlantic Coastal Desert Landscape of Conservation (2,465 Km² of PAs); (3) Mauritania – Western Sahara Atlantic Coastal Desert Landscape of Conservation (33,850 Km² of PAs). The WL Number (WL1) indicates the priority of intervention for wetland conservation. (map: Climate Change and Protected Areas in West Africa – CCPAWA, United Nations Environment Programme World Conservation Monitoring Centre, 2010; specific elaboration)



5.1.4 Specific strategies and actions for the major Savanna ecoregions

The original savannas of WA have been greatly reduced, degraded and fragmented by farming, grazing, cutting and burning trees and bushes for wood and charcoal. The degradation is exacerbated in areas of high human population density such as Nigeria (up to 300 persons/km²). Also the interlacing forests and savanna areas, with their critical habitat for a number of large charismatic mammals, are highly degraded and the PAs preserve only two percent of the forest-savanna mosaic. The periodic droughts are further threats, exacerbating human pressures on biodiversity. The remaining blocks of intact habitat are found mainly in the protected areas, but most are under-resourced and even within the better-managed protected areas poaching is still rife and predators are systematically poisoned by transhumant herders. Most of the populations of larger mammal species have been decimated by over-hunting. West African populations of elephant are small, but of great conservation interest and draw attention to the value of the protected areas. Roan antelope and West African savanna buffalo are relatively more numerous but restricted to protected areas. Species that are at risk of extinction include giant eland, waterbuck, west African giraffe, wild dog, lion, leopard and cheetah.

The lions of WA are a particular concern. Dr. Philipp Henschel of the NGO Pantera's explained:

"When we set out in 2006 to survey all the lions of West Africa, the best reports suggested they still survived in 21 protected areas. (In 2013) We surveyed all of them, representing the best remaining lion habitat in West Africa. Our results came as a complete shock; all but a few of the areas we surveyed were basically paper parks, having neither management budgets nor patrol staff, and had lost all their lions and other iconic large mammals."

Bird species are also declining. The annual passage in the area of the huge numbers of migrant birds (Afrotropical-Palaearctic and intra-African migration) is particularly threatened by drought, overgrazing in the Sahel, and by the drainage and pollution of WA wetlands (Box 4).

The most important PAs in the WA savannas include: the 'W' trans-border park between Benin, Burkina Faso and Niger, Pendjari NP in Benin, Arly NP in Burkina Faso, Comoe NP in Côte d'Ivoire, River Gambia in Gambia, Mole NP in Ghana, Boucle du Baoulé NP and Gourma Elephants in Mali, Kainji Lake and Yankari NP in Nigeria and Niokolo-Koba NP in Senegal.

Finally, threats to the conservation of biodiversity on WA savannas are: (i) the degraded and fragmented ecosystems; (ii) the high poaching levels and the high extinction risk for large mammals species; (iii) the highly vulnerability of the area to climate change exacerbating desertification and degradation of agricultural systems, with knock-on effects for PAs. The intervention strategic approach requires:

- (i) concentrating conservation actions on the WAP¹⁴ transborder area, the only functional ecological complex to maintain biodiversity in WA savannas;
- (ii) preserving the most important ecological blocks of PAs (even if faunal densities are low), and the corridors between them for possible future rehabilitation;
- (iii) determining the most appropriate conservation actions for threatened species (*in-situ* and *ex-situ* conservation, special conservation, translocation, etc.) by the establishment of PHVA¹⁵ analysis if necessary, and the preservation of specific habitats especially wetland areas for birds.

¹⁴ The strategy must prioritize the intervention in the WAP complex (W, Arly and Pendjari) and less in the Togo complex of Keran-Oti-Monduri in reason of the high level of degradation and the resources needed to restore the protected areas of Togo

¹⁵ Population and Habitat Viability Assessment

The West Africa Economic and Monetary Union (WAEMU), with the support of experts in West Africa savanna management, has proposed interventions which are summarized and integrated with other proposals in the following key points:

- Establish a convergence plan of interventions on conservation in the ecotypes;
- Save the WAP ecosystem (W - Arly - Pendjari), the only functional ecological complex to have a potential serve as a site for regeneration and reintroduction of species back into the other degraded AP in the savanna ecotype;
- Preserve the most important ecological blocks of protected areas: (1) W - Arly - Pendjari - Oti Monduri (Benin, Burkina Faso, Niger and Togo); (2) Comoé – Mole (Côte d'Ivoire and Ghana); (3) Niokolo - Badiar - Bafing – Faleme –Fouta Djalon (Guinea, Mali, Senegal) and (4) Gourma Elephant and Sahel Faunal Reserve (Mali and Burkina Faso), even though faunal densities may be low;
- Support transborder complexes of protected areas and special conservation measures (cross border activities) in the major Savanna ecotypes in West Africa such as the WAPOK;
- Implement new management initiatives such as the proposal to establish trans-border corridors between major ecological blocks, as for the Volta Trans-Border Ecosystem Wildlife Corridors between Burkina Faso and Ghana.

Summarized global data are presented in Table 15 and Figure 11.

Box 4. The decline of wetlands

THE DECLINE OF WETLANDS

(from Zwarts, L. et al (2009). *Summary of Living on the Edge: Wetlands and Birds in a Changing Sahel*. KNNV Publishing, Zeist, The Netherlands)

The Palearctic-African bird migration draws birds from the geographical range between 10° W (Ireland) and 164° E (Kolyma Basin, northeastern Siberia). Long distant migrants from this vast region pour into sub-Saharan Africa, amassing mainly in the northern savannas of the Sahel and Sudan-Guinea zone. Although the region is close to the Sahara it has four huge Sahelian Wetlands: the Senegal Delta, the Inner Niger Delta, the Lake Chad and the Hadejia-Nguru wetlands. These wetlands are of critical importance to the migrating waterbirds.

Senegal Delta (WL1 in the figure 10 and 14)

The Senegal Delta has a unique ecosystem because sea water can enter the floodplains, hence the gradient from marine to fresh. In the past in an area of 3400 km² the water level varied by 3.5 m. At present the floodplains were turned into irrigated farmland and the permanent water body have invasive plant species (Water Lettuce, Kariba Weed) and has reduced the level to 0.5 m. The bird life reduced dramatically. No wetland in West Africa has changed to the extent as the Senegal Delta. Some of the ecological disasters associated with the loss of the floodplains were offset by the creation of Djoudj NP (Senegal) and Diawling NP (Mauritania). Both sites are now important wetlands for migratory bird species. (For conservation measures, see chapter 5.1.3).

Inner Niger Delta (WL2 in the figure 11 and 14)

The Inner Niger Delta in Mali is huge. The area covered by water at any one time could amounts to 25,000 km² but in most years the areas of floodplains are smaller. The Inner Niger Delta stands out also for its hydrological dynamics. The water could rise by more than 6 m in wet years, but in extremely dry years the flood level rises only by 3 m. For waterbirds the large annual differences in flood extent are a matter of life and death (starvation or preying). Dams in the Niger upstream of the Delta and large irrigation works and breeding (as in the Senegal Delta) take so much water that the floodplains are now reducing up to an estimated 15-20% of the total. The drier the Inner Niger Delta the fewer migrants survive the northern winter. For few species, the population in the Inner Niger Delta constitute a substantial part of the entire population. The significance of this area for European and Asia migrants can hardly be overestimated. (For conservation measures, see chapter 5.1.4).

Lake Chad Basin (WL3 in the figures 11 and 14)

In the past Lake Chad was very large, varying in size between 15,000 and 25,000 km², at present the decline of the water level is important due to irrigation along the Logone and Chari Rivers and the climate change. All in all, birdlife in Lake Chad must have changed a lot, but hard data are lacking. So although Lake Chad was reduced in size, the floodplains increased in size, which spells good news for foraging birds. The complete bird counts reveal the Lake Chad significance for local species, but also for migrants. (This area has not covered by direct conservation measure, but it should be supported by the special fund for new or larger KLCs and KCAs in savanna areas).

Hadejia-Nguru wetlands (WL4 in the figures 11 and 14)

The Hadejia-Nguru wetlands lie on the southern edge of the Sahel savanna in north-eastern Nigeria. The area is a flood-plain complex, comprised of a mixture of seasonally flooded lands and dry uplands. There are 20 dams upstream of the Hadejia-Nguru and the size of the floodplains varies annually, depending on the river discharge, between 300 and 3600 km². Large parts of the wetland are under rice cultivation during the rainy season and, during the dry season, are usually utilized for growing other crops as water-levels drop. Uncultivated areas are grazed by livestock. The bird counts, performed between 1988 and 1998, show that numbers are related to the size of the floodplains: 300,000 waterbirds were counted in wet years, but only 50,000 in dry years. (This area has not covered by direct conservation measure, but it should be supported by the special fund for new or larger KLCs and KCAs in savanna areas).

It is recommended that the highest priority be given to the following key landscapes of conservation and key conservation areas.

WAPOK Savanna KLC (38,000 km² of PAs)

This large complex of contiguous conservation areas is located near to the international frontiers with Burkina Faso, Benin, Niger and Togo. The landscape encompasses (1) the 10,400 km² W transborder park between Benin, Burkina Faso and Niger; (2) the 1,823 km² Pendjari NP in Benin; (3) the 839 km² Arly Faunal Reserve (named Park) in Burkina Faso; (4) the 1,450 km² Oti Monduri Faunal Reserve and (5) the 1,196 km² Keran NP in Togo. The WAPOK complex includes one Giraffe area not classified in Niger, 10 hunting concessions and many adjacent village hunting zones.

The WAPOK complex is a large area about 38,000 km² of intact habitat (with the exclusion of Togo's PAs) with great importance for the survival of large mammals including lion and other species that are at high risk of extinction in WA. These different blocks constitute the largest remaining wilderness and the only functional ecological complex in WA. The complex has the potential to serve as a site for regeneration and reintroduction of species back into other degraded PAs in the savanna ecotype. The survival of the WAP complex is the highest priority in WA.

This strategic approach prioritises and stresses the intervention in the WAP complex (W, Arly and Pendjari and their faunal reserves). It also emphasizes the Togo complex of Keran- Oti-Monduri but recognizes the high level of degradation of the PAs of Togo and the greater resources needed for their restoration (Table 9).

Table 9. Key elements of the WAPOK Savanna KLC

Approach	Priority elements
KLC	Priority savanna KLC located near to the frontiers between Burkina Faso, Benin, Niger and Togo
Conservation objectives	<ol style="list-style-type: none"> 1. Preserving the only functional savanna ecological complex in WA 2. Saving the potential for regeneration and reintroduction of species back into the other degraded PAs in the savanna ecotype 3. Determining the most appropriate conservation actions for threatened species 4. Preservation of specific habitats especially wetland areas for birds.
Key Species	<ul style="list-style-type: none"> – Lion, Cheetah, Elephant, Giraffe, Leopard, Manatee, Roan antelope, Buffalo, and Defassa Waterbuck – Fishes in refuge area of the Niger and Volta Basins
Key habitats	<ul style="list-style-type: none"> – Savanna and dry forest areas – Extensive network of rivers, drainage lines and flood-plains (the rivers and many of the smaller rivers and ponds dry completely by the end of the dry season) – Floodplains and gallery forest – The geological formation of La Falaise de Gobnangou and also a number of isolated inselbergs.

Comoé – Mole (CM) Savanna KLC (16,571 km² of PAs)

This large ecosystem is located on the frontier between the Côte d'Ivoire and Ghana. The two PAs are situated near the borders between the two countries, but they are not contiguous.

The landscape encompasses (1) the 11,671 km² Comoé NP (the largest PA in the savannas of WA) and (2) the 4,900 km² Mole NP in Ghana.

The CM savanna KLC is characterised by savanna woodlands, which cover almost the totality of the parks, and the riparian forests that fringe the rivers. Isolated forest patches of varying size occur throughout the savanna. Other habitat-types include alluvial plains and flat seasonal marsh.

The Comoé NP is high degraded, but it must be preserved, even though faunal densities are low, in the expectation and hope of a better future for conservation in Côte d'Ivoire after the recent civil wars and violence. The initiative will also serve to support cross-border activities and establish trans-border corridors between major ecological blocks in order to save the large populations of mammal and the threatened species in WA (Table 10).

Table 10. Key elements of the Comoé – Mole (CM) Savanna KLC

Approach	Priority elements
KLC	Savanna KLC located close to the frontiers between Côte d'Ivoire and Ghana
Conservation objectives	<ol style="list-style-type: none"> 1. Preserve the savanna ecological blocks and the corridors between them for possible future rehabilitation 2. Adopt the most appropriate conservation actions for threatened species 3. Preservation of specific habitats especially wetland areas for birds.
Key Species	<ul style="list-style-type: none"> – Elephant, Leopard, Roan antelope, Buffalo
Key habitats	<ul style="list-style-type: none"> – Extensive network of rivers – Savanna woodlands – Forest patches and gallery forest – Alluvial plains and flat seasonal marsh

Niokolo - Badiar - Bafing - Baoulé - Falémé - Fouta (NBBBFF) Savanna KLC (about 25,000 km² of PAs)

This large complex of noncontiguous conservation areas is located between Guinea, Senegal, and Mali.

The landscape encompasses (1) the 8,423 km² Niokolo NP in Senegal; (2) the contiguous 278 km² Badiar NP in Guinea; (3) the 1,600 km² Bafing NP and (4) the 3,935 km² Boucle du Baoulé NP in Mali. The complex includes the Faleme area (Mali and Guinea) and two Chimpanzee areas, one in Mali (Bafing) and the other in Guinea (Fouta Djalon,) and more than 9 hunting zones.

The complex is largely flat with large areas of floodplain and marsh, inundated during the seasonal rains (June to October). The area includes low hills and rugged and broken terrains, especially in the west where there are spectacular escarpments. The area is crossed by large rivers that dried during the dry season, but the waters of the artificial lake form the eastern boundary of the Bafing NP for much of its length. The vegetation includes herbaceous savanna dominated by *Andropogon gayanus* in the valleys and plains, dry forest and gallery forest and more luxuriant vegetation along watercourses.

There is a proposal for the creation of a 38,000 km² Bafing-Falémé Trans-border Protected Area (BFTP), which will be very important both in terms of biodiversity and regional water security. With a mean population density of just 10 people/km², one of the lowest in the region south of the Sahel, the BFTP is considered one of West Africa's last wild places. The stability of its unique ecosystems is now threatened by roads construction, mining, and a growing demand for arable land, energy, wildlife products, and other scarce resources (Table 11).

Table 11. Key elements of the Niokolo - Badiar - Bafing – Baoulé - Falémé – Fouta (NBBFF) Savanna KLC

Approach	Priority elements
KLC	Savanna KLC located to the frontiers between Guinea, Mali, and Senegal
Conservation objectives	1. Preserve the savannas ecological blocks and the corridors between them for possible future rehabilitation 2. Adopt the most appropriate conservation actions for threatened species 3. Preservation of specific habitats especially wetland areas for birds
Key Species	– Lion, Wild dog (Niokolo Koba), Eland (the last population in WA), Chimpanzee (the furthermost north population in Africa), Leopard, Roan antelope, Buffalo
Key habitats	– Largely flat with large areas of floodplain and marsh, inundated during the seasonal rains – Low hills and spectacular escarpments in the west – Large rivers and an artificial lake form the eastern boundary of the Bafing NP

Gourma Elephant, Sahel Faunal Reserve and Inner Niger Delta (WL2) Savanna KLC (26,500 km² of PAs)

This large complex of conservation areas is located between the frontier of Mali - Burkina Faso and the Inner Niger Delta, but there are not contiguous PAs. The landscape encompasses (1) the 5,715 km² Gourma Elephant in Mali, (2) the 18,150 km² Sahel Faunal Reserve in Burkina Faso and the 2,560 km² of five Important Bird Areas (IBAs) in the Inner Niger Delta (see figure 16). Tombouctou is the biggest IBA, immediately north of the town.

The savanna ecosystem, that include also the seasonal lakes and wetlands of the Sahel Faunal Reserve in Burkina Faso, is home of the furthermost northerly Elephant population in Africa. The complex houses a large numbers of birds including hundreds of thousands of wintering birds and breeding colonies of cormorant, heron, spoonbill, ibis and other waterbirds (Table 12).

The habitats are characterized by wetlands, sand dunes, semi-desert grasslands, open eroded shields, drainage lines, inselbergs rising out of the plains and a series of hills. On the seasonal floodplain there is a rich plant community providing important dry season grazing. The IBAs in the Inner Niger Delta consist of permanent and semi-permanent wetlands sometimes connected between them. Depending entirely upon the annual run-off from the rains of July to September, the lake levels vary considerably from year to year. Some lakes are ringed by important stands of trees. Under natural conditions, the wetlands retain flood water from the Niger throughout the dry season in years of good rainfall, but otherwise have dried out completely by April. The sites include cultivation and scrub woodland along the course of the Niger and its tributaries, fixed dunes and ephemeral interdunal slacks. The most important areas for waterbirds are thought to be the clusters of dry season shallow ponds.

Table 12. Key elements of the Gourma Elephant, Sahel Faunal Reserve and Inner Niger Delta Savanna KLC

Approach	Priority elements
KLC	KLC with savanna and wetland areas for birds located at the frontiers between Mali and Burkina Faso
Conservation objectives	1. Preserve the savanna ecological blocks and the corridors between them for possible future rehabilitation 2. Preserve other specific habitats especially wetland areas for birds 3. Adopt the most appropriate conservation actions for threatened species (Elephant, Manatee, wetland birds)
Key Species	– Elephant (furthest north population in Africa), Manatee, wetland birds (Afrotropical resident species and migrants)
Key habitats	– Extensive network of rivers, seasonal lakes and wetlands – Seasonal floodplains – Clusters of dry season shallow ponds

Lion Key Conservation Areas (8,200 km² of PAs)

Recent surveys (8th January 2014) have suggested that the African lion population is facing extinction across the entire West African region¹⁶.

The team discovered that West African lions now survive only in the trans-border WAP complex (fewer than 200 lions) and in 3 national parks: Niokolo Koba NP in Senegal (fewer than 10 lions), Kainii Lake NP (fewer than 20 lions) and Yankari NP (fewer than 5 lions) in Nigeria (see chapter 6.1.4 in annexes). Counting lions is extremely difficult, and we may never know precisely how many lions there are in West Africa, especially if few specialists suppose that we can find lions outside the PAs.

The strategic approach for the protection of savanna fauna of WA includes: (1) the 5,824 km² Kainii Lake NP (and the Wari -Maro - Mont Kouffe - Agoua Forest in central Benin, to explore) and (2) the 2,387 km² Yankari NP with the main objective of contribution to save the last lions and wild dogs (in Kainii Lake NP) of WA (Table 13).

Table 13. Key elements of the Lion Key Conservation Areas

Approach	Priority elements
KCAs	Protected areas with the last lions of WA
Conservation objectives	1. Adopt the most appropriate conservation actions for lion and the others threatened species 2. Preservation of wetland areas for birds
Key Species	– Lion, wild dog (Kainii Lake NP) and populations of IBA trigger species
Key habitats	– Dry savanna woodlands – Riparian vegetation – The only place in Nigeria with Monodominant stands of <i>Pteleopsis habensis</i>

Volta Trans-Border Ecosystem Wildlife Corridors KLC (3,700 km² of PAs)

The Volta Trans-Border Ecosystem Wildlife Corridors is a new management initiative for the boundary ecosystem between Burkina Faso and Ghana.

The complex is centred on the “Forêt classée and Ranch de Gibier de Nazinga”. The Volta Trans-Border Wildlife Ecosystem could represent a continuum between the WAPOK complex and the Comoé-Mole complex. The corridor encompasses (1) the 913 km² Ranch Nazinga and the 2,760 km² of other PAs and hunting zones surrounding Nazinga for a total of about 3,700 km². All the most important PAs and the Ranch Nazinga are classified as Important Bird Areas (see table 14).

¹⁶ The lion in West Africa is critically endangered, Panthera's Lion Program Survey, Dr. Philipp Henschel, PLOS ONE, 2014

Table 14. Key elements of the Volta Trans-Border Ecosystem Wildlife Corridors KLC

Approach	Priority elements
KLC	Savanna KLC located close to the frontiers between Burkina Faso and Ghana
Conservation objectives	1. Preserving the most important corridors between ecological blocks of the savanna of WA 2. Determining the most appropriate conservation actions for threatened species and particularly for Elephant 3. Preservation of specific habitats especially wetland areas for birds
Key Species	– Elephant and populations of IBA trigger species
Key habitats	– Typical southern Sudan/Guinea savanna with shrub savanna, tree-savanna and gallery forests

New or larger national protected areas should be created also to stop the decline of Wetlands

Evaluate about 1,000 – 3,000 km² of savanna wetlands for new or larger PAs that can serve to avoid the decline of wetlands (addition of +1-2% of new or larger national PAs than existing KLCs and KCAs as considered by the strategic approach for the specific Savanna ecotype) (Figure 11).

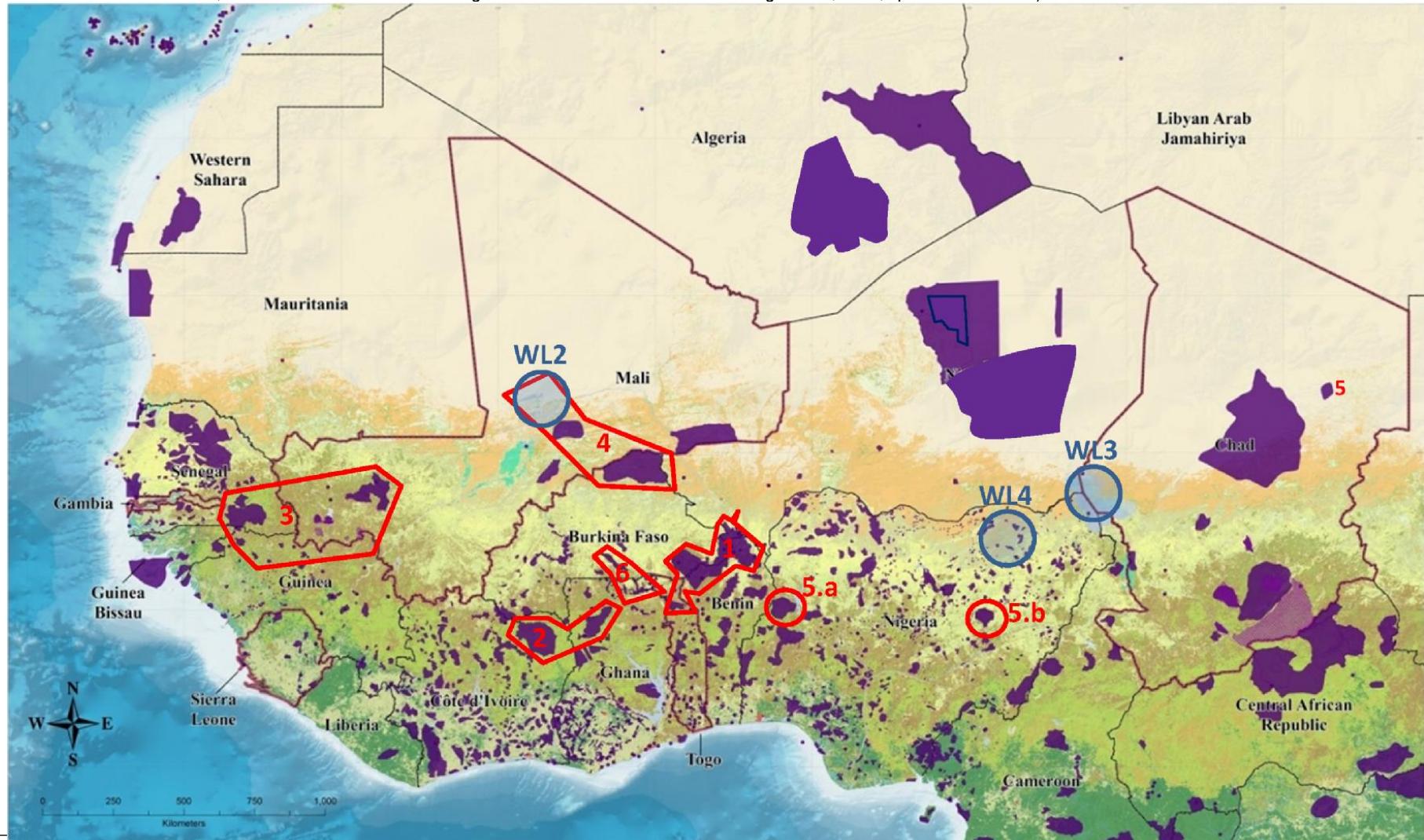
Table 15. B - West African Savannas - Main Key Landscapes of Conservation and Key Conservation Areas and priorities

Protecting biodiversity	Countries	Biome / Ecotypes / Key species	Main KLCs and KPAs and priorities	Analysis	Objectives and Proposed actions																								
<ul style="list-style-type: none"> - Under-representation of the savanna areas and particularly of interlacing forests and savanna areas in PAs - Large mammal species threatened with extinction: giant eland, wild dog, lion, cheetah and leopard - West Africa lion population estimated at only 250 adults restricted to four isolated PAs. The WAP alone has fewer than 200 lions. - Highly fragmented elephant population with the only large group being in the WAP complex. - Last population of western giraffe (340 animals). - Huge numbers of migrant birds: Afro-tropical-Palaearctic and intra-African migration. - Roan antelope and West African savanna buffalo occur in relatively large numbers. - High level of plant endemism. - Large mammals are amongst the most beautiful in Africa, such as the giant eland, roan antelope and major hartebeest - West African lions have unique genetic sequences not found in any other lions, including in zoos or other captivity. 	<ul style="list-style-type: none"> - Benin - Burkina - Côte d'Ivoire - Gambia - Ghana - Guinea - Guinea Bissau - Liberia - Mali - Mauritania - Niger - Nigeria - Senegal - Sierra Leone - Togo 	<p>Biome:</p> <ul style="list-style-type: none"> - Tropical and subtropical grasslands, savanna and shrublands - Montane Grasslands and Shrublands <p>Ecotype:</p> <ul style="list-style-type: none"> - Sahelian Acacia savanna - West Sudanian savanna - Guinean forest-savanna mosaic - Jos Plateau forest-grassland mosaic (without PAs) <p>Key species and status:</p> <table border="0"> <tr> <td>Lion</td> <td>▼▼▼</td> </tr> <tr> <td>Wild dog</td> <td>▼▼▼</td> </tr> <tr> <td>Cheetah</td> <td>▼▼▼</td> </tr> <tr> <td>Leopard</td> <td>▼▼▼</td> </tr> <tr> <td>Giant eland</td> <td>▼▼▼</td> </tr> <tr> <td>Manatee</td> <td>▼▼</td> </tr> <tr> <td>Elephant</td> <td>▼</td> </tr> <tr> <td>Afrotropical-Palaearctic and intra-African migratory birds</td> <td>▼</td> </tr> <tr> <td>Chimpanzee</td> <td>=</td> </tr> <tr> <td>Giraffe</td> <td>▲</td> </tr> <tr> <td>Roan antelope</td> <td>▲</td> </tr> <tr> <td>Buffalo</td> <td>▲▲</td> </tr> </table>	Lion	▼▼▼	Wild dog	▼▼▼	Cheetah	▼▼▼	Leopard	▼▼▼	Giant eland	▼▼▼	Manatee	▼▼	Elephant	▼	Afrotropical-Palaearctic and intra-African migratory birds	▼	Chimpanzee	=	Giraffe	▲	Roan antelope	▲	Buffalo	▲▲	<p>Key Landscape of Conservation</p> <p>1. <u>WAPOK Savannas Landscape of Conservation (38,000 km² of PAs) W transborder park, Pendjari NP, Arly FR, Oti Monduri FR and Keran NP</u></p> <p>2. <u>Comoé – Mole (CM) Savannas Landscape of Conservation (16,571 km² of PAs) Comoé NP and Mole NP</u></p> <p>3. <u>Niokolo - Badiar - Bafing - Baoulé - Falémé - Fouta (NBBFF) Savannas Landscape of Conservation (25,000 km² of PAs) Niokolo NP, Badiar NP, Bafing NP, Boucle du Baoulé NP, complex Faleme and Chimpanzee areas Bafing and Fouta Djalon</u></p> <p>4. <u>Gourma Elephant, Sahel Faunal Reserve and Inner Niger Delta Savannas Landscape of Conservation (26,500 km² of PAs) Gourma Elephant FR, Sahel FR and 5 IBAs in the Inner Niger Delta</u></p> <p>Key Conservation Areas</p> <p>5. <u>Lion Key Conservation Areas (8,200 km² of PAs) Kainji Lake NP and Yankari NP</u></p> <p>Key Landscape of Conservation</p> <p>6. <u>Volta Trans-Border Ecosystem Wildlife Corridors (VC) (3,700 km² of PAs) Ranch Nazinga and other PAs and hunting zones surrounding Nazinga</u></p> <p>New or larger KLC and KCA</p> <p>7. <u>KLC and KCA to stop the decline of Wetlands (1,000 – 3,000 km² of potential wetlands) see WL2 and WL3</u></p>	<p>Negative aspects</p> <ul style="list-style-type: none"> - Habitats degraded and fragmented, exacerbated by high human population density and the new conflicts, civil/ religious fundamentalism unrest and refugee movements (Côte d'Ivoire/Nigeria). - Periodic droughts - Over-hunting - Strong illegal grazing in PAs (fire, hunting, poisoning predators). - PAs under-resourced and low effectiveness of management - Many "paper parks" - not active on the ground. - Threat to short-term stability and conservation of PAs. - Poverty & disadvantaged populations - Climate change <p>Positive aspects</p> <ul style="list-style-type: none"> - Biodiversity potential (elephant, western giraffes, lion, cheetah, leopard, wild dog) and high restoration potential - Cultural heritage in water conservation techniques - Potential ecotourism from private funds through international tenders. 	<p>Objectives</p> <ol style="list-style-type: none"> 1. Preserving the only functional savanna ecological complex in WA 2. Save the potential for regeneration and reintroduction of species back into the other degraded PAs. 3. Determining the most appropriate conservation actions for threatened species 4. Preservation of specific habitats especially wetland areas for birds 5. Preserve the savanna ecological blocks and the corridors between them for possible future rehabilitation. <p>Actions</p> <ul style="list-style-type: none"> - Highest priority for major support to save the WAPOK ecosystem - Ecosystem-landscape interventions together with corridors between major ecological blocks - Continuous support by the IUCN/SSC Cat Specialist Group to preserve predators through the implementation of PHVA strategies (also for game hunting). - Preserve the genetic heritage (DNA) of the West African lions by <i>in-situ</i> and <i>ex-situ</i> conservation (responsibility of WAZA). - Control and manage pastoralism to reduce the human-lion conflict (which leads to killing of lions). - Continuous support by the IUCN/SSC Antelope Specialist Group (ASG) for the Giant eland and Western giraffe and implementation of the PHVA strategic approach. - Specific protection for threatened species in PAs such as Yankari and Kainji Lake for lions - ICDP on the principles of good governance (Legitimacy & voice, Direction, Performance, Accountability, Fairness) in the buffer zones - Strong inter-sectorial policy coordination and action between agriculture, pastoralism and conservation. - Strengthen the management of human-elephant conflict caused by habitat fragmentation in order to save/ translocate small isolated groups of elephants.
Lion	▼▼▼																												
Wild dog	▼▼▼																												
Cheetah	▼▼▼																												
Leopard	▼▼▼																												
Giant eland	▼▼▼																												
Manatee	▼▼																												
Elephant	▼																												
Afrotropical-Palaearctic and intra-African migratory birds	▼																												
Chimpanzee	=																												
Giraffe	▲																												
Roan antelope	▲																												
Buffalo	▲▲																												

Note: Red arrows denote declines in status, green arrows denote species recoveries

Figure 11. B - West Africa Savannas - Main Key Landscapes of Conservation and Key Conservation Areas and priorities

(1) WAPOK Savanna KLC (38,000 Km² of PAs); (2) Comoé – Mole Savanna KLC (16,571 Km² of PAs); (3) Niokolo - Badiar - Bafing – Baoulé - Falémé – Fouta Savannas Landscape of Conservation (ca. 25,000 Km² of PAs) ; (4) Gourma Elephant and Sahel Faunal Reserve Savanna KLC (ca. 26,500 Km² of PAs); (5) Lion Key Conservation Areas (8,200 Km² of PAs); (6) Volta Trans-Border Ecosystem Wildlife Corridors (ca. 3,700 Km² of PAs); WL Number (e.g. WL1 or WL2) indicates priority of intervention in Wetlands conservation. (map: Climate Change and Protected Areas in West Africa – CCPAWA, United Nations Environment Programme World Conservation Monitoring Centre, 2010; specific elaboration)



5.1.5 Specific strategies and actions for major Forest ecotypes

The forest ecotype of Western Africa consist of scattered mountains, high plateau areas, gently undulating landscape but also lowland and coastal forests. These forests contain some of the highest levels of faunal species richness of any African forest, especially in terms of forest-restricted mammals, birds and butterflies, but many areas are essentially unstudied. The diversity of life inhabiting these forests is astonishing (Mt. Nimba has more than 2,000 species of vascular plants recorded, more than 500 are new species and many of them are endemic; Taï Forest, the largest area of protected lowland forest in the region has 1,300 vascular plant species recorded). Discoveries of new species of plants and insects are frequent. The global demand for valuable hardwoods continues to spur logging in this region so most of the high forest areas that remain are late secondary stands and isolated from each other by slash-and-burn farming. Some of the mountain zones remain largely untouched (Loma Mountains), while others have been severely degraded and fragmented (Mount Nimba, Fouta Djalon, etc.). Only in a few areas are there sufficiently large and interconnected forests to allow migrations of animals to continue occurring. The forest blocks of Cross-Sanaga-Bioko Coastal Forests between Nigeria and Cameroon are still connected.

The forests in WA have been degraded by high human population density resulting from natural population growth, immigration from the northern countries and the refugees from civil war in the coastal countries (Liberia, Sierra Leone and Ivory Coast). High anthropogenic pressures for farmland, bushmeat hunting for local consumption, large rubber and oil-palm plantations (including “land grabs” that involve foreign companies), timber, fuelwood and mineral resources have all contributed to reduce the size and biotic potential of the WA forest habitats, especially the lowland forests. Outside the few rainforest national parks and some of the forests reserves, the rate of forest loss accelerated recently. The loss of forests has been severe in Nigeria (3.7%, in 2000-2010, the highest in the world, FAO, 2010), Guinea and Côte d'Ivoire. Subsistence agriculture in the wake of commercial logging together with hevea and palm oil plantations have reduced the area of primary forest to just fragments. Siltation from mining for diamonds and gold is threatening freshwater fish populations, while hunters have increased poaching to supply bushmeat to the mining settlements. Organized crime networks involved in cannabis cultivation (which means forest clearance) and cross-border wildlife trade also contribute to the disappearance of forests. Habitat loss for farming and plantations, coupled with an intensive bushmeat trade, are pushing some mammal species, particularly rain-forest primates, towards extinction.

The largest stands of forest in WA are found within protected areas and forest reserves. The management of protected areas and reserves is currently poor or non-existent, especially in Guinea, Sierra Leone and Liberia. The total area of protected forest in WA is just under 3 percent for all national parks and other reserves. However there are still important forests blocks that could complement the overall biodiversity of this ecotype, but these have not been elevated to the status of conservation areas. A recent study on the pattern of mammal extinctions in the PAs of west and central Africa shows that there is no significant correlation between the size of PA, the high demographic pressure and the size and the number of functional mammal extinctions¹⁷. However, the extinction of mammals increases following a south-north gradient: it is lower for the PAs of rain forests and higher for the PAs of the sahelio-saharan savanna and steppes. So despite the small size of the forest PAs, and the high anthropogenic pressures, biodiversity values in WA rain forests could be maintained if habitats are preserved and poaching curbed.

¹⁷ David BRUGIERE, Bertrand CHARDONNET, Paul SCHOLTE, 2014: Pattern and correlates of mammal extinction as a measurement of conservation effectiveness of protected areas in west and central Africa, Preliminary results V1.2

The threats to biodiversity are habitat degradation by farming and wood cutting, and high levels of poaching. Endemic plants, insect, birds, amphibians and small and large mammals are all at risk of extinction. Furthermore the low representativity of PAs across the whole forest area means that there is a danger of losing hitherto unknown biodiversity. For example there are no protected areas in the Niger delta swamp forests. Deforestation and degrading agricultural systems also makes the area more vulnerable to climate change (which will lead to further pressure on PAs).

Selecting key sites in the West African forest zone on which to concentrate resources should be an important part of any conservation strategic approach. Choosing appropriate sites in West Africa is not difficult, because so few protected areas of reasonable size exist in the forest zone. **Among the most important sites are Gola Forest and (newly-created) Loma Mountains in Sierra Leone, Sapo in Liberia, Taï in Côte d'Ivoire, and Cross River in Nigeria, along with the Ankasa and Bia Conservation Areas in Ghana.** These protected areas contain some of the most important populations of forest elephants, pygmy hippopotamuses, and great apes in the region.

The intervention strategic approach requires:

- (i) concentrating actions in principal KLCs and KCAs (see below). They are all equally important in terms of species richness and diversity;
- (ii) reducing threats on PAs by adopting a holistic approach to ensure inter-sectorial policy development, analysis of environmental impacts, the valuing of ecosystem services and the respect of conservation principles;
- (iii) determining the most appropriate conservation actions for threatened species, by the establishment of PHVA analysis if necessary, the preservation of specific habitats inside or outside the PAs and the combination of *in-situ* and *ex-situ* conservation if necessary.

For summarised global data: see Table 22 and Figure 12.

It is recommended that the highest priority be given to trans-border KLCs and key conservation areas.

Cross River – Korup – Mont Cameroon - Tamakanda – Gashaka – Tchabel – Faro (CKMCTGTF) Forests KLC (19,110 km² of PAs)

This complex encompasses: (1) the 3,643 km² Cross River NP in Nigeria, (2) the 1,295 km² Korup National Park in Cameroun, (3) the 620 km² Tamakanda NP in Cameroon, (4) the 581 km² Mont Cameroon, (5) 6,670 km² Gashaka-Gumti NP, (6) the 3,000 km² Tchabel Mbabo Wildlife Reserve and (7) the 3,300 km² Faro NP. The landscape is located along the Cameroon-Nigeria border (Figure 20).

The forest blocks of Cross-Korup are still connected. The Cross River NP is divided into two sections separated by about 50 km of disturbed forest. The (1.a) Oban Division (IBA - NG007) the largest sector of the park is contiguous with Korup National Park in Cameroon (IBA - CM019). The (1.b) Okwangwo Division (IBA - NG010) the smaller part of the park is connected with the (3) Tamakanda NP. The complex is a large area of lowland and submontane rainforest. In the less accessible areas the forest has had little interference, but elsewhere the exploitation has resulted in secondary regrowth and the establishment of plantations of oil-palm and rubber. The terrain is rough and elevation rises from the river valleys to over 1,000 m in mountainous areas but the terrain is generally flat, with hills and escarpments.

The Mont Cameroon NP (4) is one of Africa's largest volcanoes, rising to 4,040 metres. It has a wide range of habitats including lowland, evergreen rainforest, mangrove, coastal vegetation, swamp forest, submontane forest, montane forest and grassland. Mont Cameroon is home to 49 strictly endemic and 50 near endemic plant species, 20 of the 28 restricted-range bird species of the EBA, including the 2 strictly endemic species, 3 endemic species of butterfly and large mammals including the Forest Elephant. The (5) Gashaka-Gumti NP (IBA - NG001), the largest of Nigeria's National Parks, is contiguous with (6) Tchabel Mbabo in Cameroon (IBA - CM009), both far from the isolated Faro NP (IBA - CM009). The area is situated on the mountains rising up to 2,400 m but there are also extensive lowland areas. The area is a heterogeneous mix of habitats comprising montane forests and grasslands, derived savanna with relict lowland forests, riparian forest and Sudan-Guinea Savanna woodlands. The Faro NP (7) is a large block of Sudanian savanna on gently undulating terrain at 250–500 m (Table 16).

Box 5. Importance of Cameroon-Nigeria border and trans-border conservation measures

THE CAMEROON-NIGERIA BORDER

The Cameroon-Nigeria border region, where the Cross River Gorilla occurs, is a biodiversity hotspot of global significance that supports a high diversity of animal and plant species that can occur in large numbers in restricted ranges. Many of them are threatened. These forests contain some of the highest rates of animal species richness of any African forest, especially in terms of forest-restricted mammals, birds and butterflies. Many of these animals are endemic. The ecotype is heavily impacted by human use, including logging and plantation agriculture. Threatened primates share parts of the same habitat including the Cross River Gorilla, the Nigeria-Cameroon chimpanzee, the Roloway monkey and the Drill (*Mandrillus leucophaeus*).

Given the small and highly fragmented populations of the Cross River Gorillas, it is important to protect the corridors connecting the sub-populations and to increase the effectiveness of existing and proposed protected areas within their range. Taken together, these findings serve to emphasize the need to expand our knowledge of the gorilla's range.

Trans-border conservation measures have already been developed or proposed for a number of other protected areas that lie on either side of the Nigeria-Cameroon border. These are: the Oban Division of Cross River NP in Nigeria and the connected Korup NP and Tamakanda NP and the block Gashaka Gumti NP in Nigeria and Faro NP and a proposed protected area at Tchabel Mbabo in Cameroon.

Table 16. Key elements of the Cross River - Korup - Mont Cameroon - Tamakanda - Gashaka - Tchabel - Faro (CKTGF) Forests KLC

Elements	Priority elements
KLC	Forests with some of the highest rates of animal species richness of any African forest, especially in terms of forest-restricted mammals, birds and butterflies.
Conservation Objectives	1. Preserving one of the forest biodiversity hotspots of global significance 2. Protection of forest fauna and habitats with priority given to a landscape approach with corridor protection. 3. Establish ecosystem – landscape governance and save corridors between the major ecological blocks. 4. Adopt the most appropriate conservation actions for threatened species (primates).
Key Species	– Threatened primates: Cross River Gorilla, the Nigeria-Cameroon chimpanzee, the Roloway monkey, the Drill – Elephant, Pygmy Hippo Jentink's Duiker, Water chevrotain, Leopard – Forest dependent birds; more than 25 are threatened or restricted-range species
Key habitats	– Lowland, submontane and montane rainforest – Savannas with relict lowland forests, riparian forest and Sudan-Guinea savanna woodlands – Sudanian savanna (Faro NP)

Taï – Grebo - Sopo (TGS) Forest KLC (7,700 km² of PAs)

The complex encompasses (1) the 3,300 km² of the Taï NP (IBA - CI011) and its buffer area (960 km²) and Nzo Faunal Reserve (930 km²) in Côte d'Ivoire, (2) the 971 km² Grebo National Forest (IBA - LR009) and (3) the 1,550 km² Sapo NP (IBA - LR008) in Liberia.

Taï NP is the largest and best-preserved remnant of Upper Guinea rainforest in West Africa. This humid tropical forest has a high level of endemism. The park contains some 1,300 species of higher plants. Much of the forest in the park is unlogged, mature, old-growth with emergents rising to 60 m. The fauna is fairly typical of West African forests and the park contains 47 of the 54 species of large mammal known to occur in Guinean rainforest including five threatened species. Mammals include the mona monkey, white-nosed monkey and diana monkey, black and white colobus, red colobus and green colobus, sooty mangabey, chimpanzee, giant pangolin, tree pangolin and long-tailed pangolin, golden cat, leopard, elephant, bushpig, giant forest hog, pygmy hippopotamus, water chevrotain, bongo, buffalo and an exceptional variety of forest duikers. Over 230 bird species have been recorded, 143 typical of primary forest.

The (2) Grebo National Forest is an area of evergreen lowland rainforest enclosed on three sides by a large, easterly projecting meander of the Cavalla River, on the international frontier with Côte d'Ivoire, in the extreme east of the country.

The (3) Sapo NP contains the second-largest area of primary tropical rainforest in WA after Taï National Park in neighbouring Côte d'Ivoire. The park is a biodiversity hotspot that has "the highest mammal species diversity of any region in the world and one of the richest amounts of floral species in the country, with many endemic species. The Sapo NP is hosting around 125 mammal species and 590 types of bird, including a number of threatened species. The park is home to the pygmy hippopotamus. Note that IUCN Species Survival Commission reports: "Sapo NP is the only realistic choice of a suitable conservation area for the Pygmy Hippopotamus". Other important species are forest elephant, seven species of monkey (including Chimpanzee and the endangered Diana monkey), crocodiles, leopards, three species of pangolin, seven species of duiker antelopes (including the vulnerable Jentink's duiker and zebra duiker). Sapo National Park remains relatively inaccessible and this significant and environmentally rich area remains somewhat undeveloped for management, research and tourism (Table 17).

Table 17. Key elements of the Taï – Grebo - Sapo (TGS) Forest KLC

Elements	Priority elements
KLC	The largest and best-preserved remnant of Upper Guinea rainforest between Côte d'Ivoire and Liberia
Conservation Objectives	<ol style="list-style-type: none"> 1. Preserves the last remnant of Upper Guinea rainforest with priority for landscape conservation with protected corridors. 2. Establish ecosystem–landscape governance system. 3. Adopt the most appropriate conservation actions for threatened species (mammals and birds).
Key Species	<ul style="list-style-type: none"> – Endemic species: pygmy hippo, chimpanzee, Jentink's and zebra duikers, – 12 endemic birds and bird species of primary forest
Key habitats	<ul style="list-style-type: none"> – Tropical and subtropical moist broadleaf forests

Mount Nimba (MN) Forest KLC (415 km² of PAs)

The complex covers the 175 km² of the Nimba Mountains Strict Nature Reserve (1944), (1) in Guinea (85 km²) and (2) in Côte d'Ivoire (65 km²) and (3) in 240 km² of the East and West Nimba Nature Reserve in Liberia. This area was designated as a Biosphere Reserve in 1980 and a World Heritage Site in 1981.

Rising above the surrounding savannas and covered in dense forests, Mount Nimba (and its surrounding mountains) is an area with some of the highest biodiversity in the West African region due to its unique geographical and climatic location. The complex is home to a large number of plant species, more than 317 vertebrate species (107 of which are mammals including a significant population of West African chimpanzees) and more than 2,500 invertebrate species, many of which are only found in this region. More than 2,000 species of vascular plants, including several endemic or quasi-endemic plants, have been recorded. This site has been

identified as an Alliance for Zero Extinction (AZE) species/site profile due to its containing a Critically Endangered or Endangered species with a limited range.

Mount Nimba has received legal protection from both Guinea and the Ivory Coast, but the habitat is still threatened by activities occurring adjacent to the site boundaries and spreading into the protected area. While a large portion of the forests are still present inside the Biosphere's reserve core, much of the fauna have suffered because of human practices such as poaching, agriculture, bush fires, and mining.

The project "Steward" of the USAID's regional program for conserving the biodiversity of the Upper Guinean Forest of West Africa is the promoter of the Nimba transborder initiative and it is still working in the area. STEWARD was conceptualized in 2005-2006 and is currently (2011-2015) in its implementation phase (see table 18).

Table 18. Key elements of the Mount Nimba (MN) Forest KLC

Elements	Priority elements
KLC	<ul style="list-style-type: none"> – Conservation of unique forest and mountains landscape and important birdlife areas between Guinea, Côte d'Ivoire and Liberia – Protection of the World Heritage Site
Conservation Objectives	<ol style="list-style-type: none"> 1. Preserving the unique ecological blocks of the Mount Nimba World Heritage Site 2. Establish ecosystem governance 3. Adopt the most appropriate conservation actions for threatened species
Key Species	<ul style="list-style-type: none"> – Unique and endemic species – West African chimpanzees – Endemic or quasi-endemic plants – Forest dependent birds; three species of global conservation concern
Key habitats	<ul style="list-style-type: none"> – Dense montane forests

Gola-Lofa-Foya (Sierra Leone-Liberia Trans-border Peace Park) and Mano-Wologizi-Wonegizi-Ziama (GLF-MWWZ) Forests KLC (2,550 + 914 km² of PAs)

This large complex hosting only partially contiguous conservation areas is located between Sierra Leone, Liberia and Guinea. The complex encompasses a first block with (1) the 750 km² Gola Forest Reserve in Sierra Leone, (2) the 800 km² Lofa and (3) 1,000 km² Foya Forest Reserves in Liberia and a second block with (4) the c. 550 km² Mano, (5) the 995 km² Wologizi, (6) the 380 km² Wonegizi and (7) the 914 km² Ziama (Figure 24).

The complex encompasses the Gola-Lofa-Foya Trans-border Peace Park between Sierra Leone and Liberia and the forest and mountains complex of Mano-Wologizi-Wonegizi-Ziama between Liberia and Guinea. The Trans-border Peace Park unites the Gola Forest Reserve in Sierra Leone and the Lofa and Foya Forest Reserves in Liberia.

The proposed Sierra Leone-Liberia Trans-border Peace Park (Figure 23) covers a large area of rainforest, evergreen in the south, becoming progressively more semi-deciduous to the north. The rivers in the parks are characterized by spectacular rapids and waterfalls and are usually unfordable. The human population within the parks is very low and the vegetation remains largely unmodified. Both the areas in Sierra Leone and Liberia are IBAs.

The (5) Wologizi Mountains are an isolated area of upland located in north-west of the Liberia. The area includes Liberia's highest mountain (Mount Wuteve at 1,447 m) and other peaks. Lower parts are covered with relatively open forest. The foothills and lower valleys are surrounded by large areas of savanna woodland.

The (6) Wonegizi Mountains (IBA LR002) is contiguous with the Massif du Ziama Biosphere Reserve (IBA GN016) in Guinea. The vegetation consists mainly of semi-deciduous forest, similar in composition to that found on the Wologizi Mountains (IBA LR001). The site spans a still largely intact transition from lowland rainforest to semi-montane Parinari-dominated forest at altitude.

The (7) Massif du Ziama Biosphere Reserve forms part of the Guinea Highlands. Part of the western boundary is contiguous with the Wonegizi Mountains in Liberia. Much of the terrain is extremely rugged. The whole area was forested originally, but primary forest now remains only in the remote upland parts of the south-west, next to the Liberian border. There are also areas of swamp and of wooded savanna on lateritic outcrops of the high plateaux. The core zone of the reserve covers 600 km² (Table 19).

Table 19. Key elements of the Gola-Lofa-Foya (Sierra Leone-Liberia Trans-border Peace Park) and Mano-Wologizi-Wonegizi-Ziama (GLF-MWWZ) Forests KLC

Elements	Priority elements
KLC	The forests and mountains landscapes and important birdlife areas between Sierra Leone, Liberia and Guinea
Conservation Objectives	1. Preserving the most important ecological blocks of PAs in the forests of WA 2. Protection of forest fauna and habitats 3. Establish ecosystem – landscape governance and save corridors between the major ecological blocks 4. Adopt the most appropriate conservation actions for threatened species
Key Species	– 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 (Loma Mountains) – More than 300 forest dependent birds; more than 25 are threatened or restricted-range species
Key habitats	– Rainforest, evergreen and semi-deciduous – Lowland forest - mixed moist evergreen and semi-evergreen – Mountain forests with spectacular rapids and waterfalls – High plateaux – River valleys

Outamba/Kilimi - Kuru – Pinselli – Soya (OKKPS) Forest KLC (1,110 km² of PAs)

This complex is in the transborder area between Sierra Leone and Guinea. The complex encompasses (1) the 1,110 km² Outamba-Kilimi NP and Forest Reserves in Sierra Leone (Kuru Hill) and in Guinea (Pinselli and Soya). The park is split into two areas, Outamba and Kilimi, between which lies an unprotected strip of land. The Guinea's protected forests are in the Madina Oula, Soya & Oure Kaba sub-prefectures. The complex has varying landscapes of savanna and forest. With a diverse landscape, the areas are home to large numbers of fauna and flora. Some 256 bird species have been recorded from the park including three species of global conservation concern. For mammals, the site is an important refuge for at least nine species of primate and also several large mammals such as the leopard, pygmy hippopotamus and forest elephant.

The project "Steward" of the USAID's regional program for conserving the biodiversity of the Upper Guinean Forest of West Africa is the promoter of the transborder initiative and it is still working in the area. STEWARD was conceptualized in 2005-2006 and it is currently (2011-2015) in its implementation phase (Table 20).

Table 20. Key elements of the Outamba/Kilimi - Kuru – Pinselli – Soya (OKKPS) Forest KLC

Elements	Priority elements
KLC	The forests and mountains landscapes and important birdlife areas between Sierra Leone and Guinea
Conservation Objectives	1. Protection of mountains landscapes and important birdlife areas 2. Establish ecosystem – landscape governance and save corridors between the major ecological blocks 3. Adopt the most appropriate conservation actions for threatened species (primates) 4. Preservation of specific habitats for birds
Key Species	– West African chimpanzee, forest elephant, pygmy hippo Jentink's duiker, water chevrotain, leopard – Forest dependent birds (three species of global conservation concern)
Key habitats	– Landscape of savanna and forests

National level: WA Forest Key Conservation Areas requiring high priority direct support (680 km² of PAs)

(1) Ankasa NP in Ghana

The park is a virgin evergreen rain forest having exceptional botanical species and extending to 490 km² in area. The forest has the most biological diversity of any other PA in Ghana, with over 300 different plant species having been recorded in a single hectare of forest. Animal life includes the elephant, bongo, 10 types of primates including chimpanzee (although these have not been seen for some time) and Diana monkey, leopard, more than 260 species of birds (IBA - GH001) and hundreds of varieties of butterflies. The park incorporates the former Nini-Suhien National Park. It has benefited from recent EU conservation funding.

(2) Bia NP in Ghana

The 190 km² park and the 563 km² of the connected Resource Reserve are characterized by a transitional forest between moist evergreen and moist semi-deciduous. The core area is untouched rain forest with the distinction of having some of the tallest trees in West Africa, but the site is isolated being surrounded by mixed farms and secondary forest. Bia NP has forest elephants, chimpanzee, Colobus monkeys, Diana monkey, leopard, buffalo, the giant hog, and a variety of antelopes. The park is the only known natural home of the newly discovered lizard, Agama Sylvanus, and the variety of the animal life is outstanding. Bird species number about 200 including few endangered birds (BIA - GH003) (Figure 12 and Table 21). This park also has benefited from recent EU conservation funding.

Table 21. Key elements of Forest KCAs

Elements	Priority elements
KCAs	– Untouched rain forests having exceptional biodiversity
Conservation objectives	1. Protection of untouched rain forests and habitats 2. Establish ecosystem – landscape governance 3. Adopt the most appropriate conservation actions for threatened species 4. Further develop eco-tourism potential 5. Further develop community conservation and livelihood initiatives
Key Species	– Elephants, chimpanzee, Colobus monkeys, Diana monkey, leopard, – Endemic and endangered birds – Endemic lizard, Agama Sylvanus
Key habitats	– Evergreen rain forest – Transitional forest between moist evergreen and moist semi-deciduous

New or larger national protected areas should be created (Liberia, Ghana and Nigeria)

Evaluate about 3,000 – 5,000 km² of forests for new or larger PAs (addition of +7-11% of new or larger national PAs than existing KLCs and KCAs as considered by the strategic approach for the specific Forests ecotype) (Figure 12).

Table 22. C - West Africa Forests - Main KLCs and KCAs and priorities

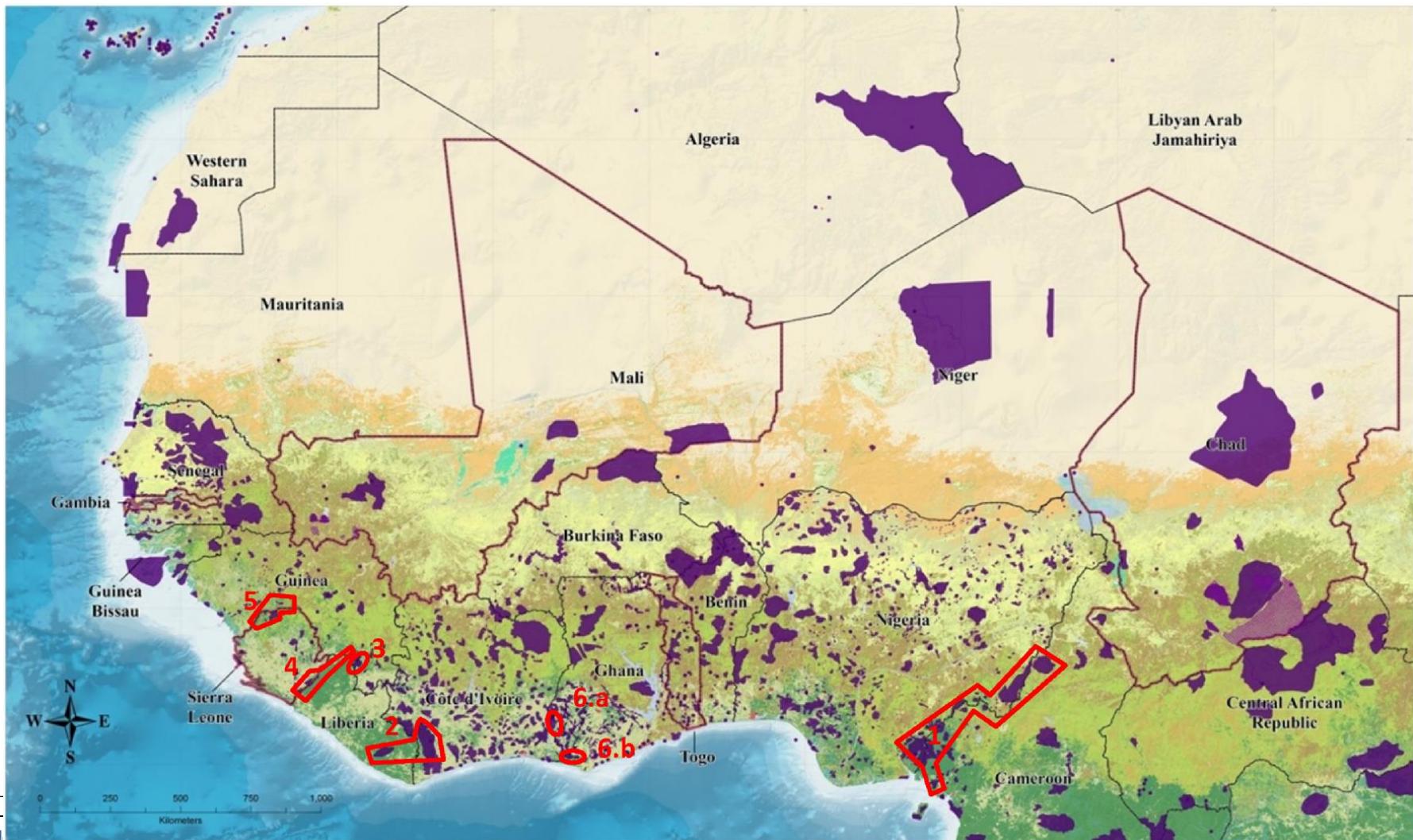
Protecting biodiversity	Countries	Biome / Ecotypes / Key species	Main KLCs - KPAs and priorities	Analysis	Proposed actions																						
<ul style="list-style-type: none"> Highest rates of plant and animal species richness of any African forest Large mammals, especially primates, in the forest zone are threatened by both hunting and habitat destruction Relatively poor knowledge of the biology and threats to WA forest wildlife (e.g. to understand the possible distinctiveness of the rare and threatened WA elephant as a third species) Highly fragmented populations of elephants with only small groups in the forest ecotypes Outside PAs and Forest Reserves, the loss of forest is severe Special habitats are extremely degraded Very high numbers of endemics in plants, mammals, birds, amphibians, insects but also high extinction risk of endemic species of plants, insect, birds, amphibians and small and large mammals. Deforestation for cannabis cultivation with poaching and trans-border illegal wildlife trade Important forest blocks that could be elevated to the status of conservation areas Low correlation between the size of PA, the high demographic pressure and the functional extinction of mammals (see footnote 15) Protection of threatened trees: Afromosia or African Teak Meliaceae family (Khaya species), the Vène 	<ul style="list-style-type: none"> Benin Côte d'Ivoire Gambia Ghana Guinea Guinea Bissau Liberia Mauritania Nigeria Senegal Sierra Leone Togo 	<p>Biome:</p> <ul style="list-style-type: none"> Tropical and subtropical moist broadleaf Forests <p>Ecotype:</p> <ul style="list-style-type: none"> Guinean Montane Forests Western Guinean lowland forests Eastern Guinean forests Nigerian lowland forests Cameroonian Highlands forests Cross-Sanaga-Bioko coastal forests Niger Delta swamp forests Cross-Niger transition forests. <p>Key species and status:</p> <table> <tbody> <tr> <td>Niger Delta red colobus</td> <td>▼▼▼</td> </tr> <tr> <td>Preuss's red colobus</td> <td>▼▼▼</td> </tr> <tr> <td>Cross River gorilla</td> <td>▼▼▼</td> </tr> <tr> <td>Roloway monkey</td> <td>▼▼▼</td> </tr> <tr> <td>Drill</td> <td>▼▼▼</td> </tr> <tr> <td>Nigeria-Cameroon chimpanzee</td> <td>▼▼▼</td> </tr> <tr> <td>Pygmy hippopotamus</td> <td>▼▼▼</td> </tr> <tr> <td>Jentink's duiker</td> <td>▼▼▼</td> </tr> <tr> <td>Forests Elephant</td> <td>▼▼▼</td> </tr> <tr> <td>Procolobus badius</td> <td>▼▼▼</td> </tr> <tr> <td>Leopard</td> <td>▼</td> </tr> </tbody> </table>	Niger Delta red colobus	▼▼▼	Preuss's red colobus	▼▼▼	Cross River gorilla	▼▼▼	Roloway monkey	▼▼▼	Drill	▼▼▼	Nigeria-Cameroon chimpanzee	▼▼▼	Pygmy hippopotamus	▼▼▼	Jentink's duiker	▼▼▼	Forests Elephant	▼▼▼	Procolobus badius	▼▼▼	Leopard	▼	<p>Key Landscape of Conservation</p> <p>1. <u>Cross River – Korup – Tamakanda – Gashaka – Tchabel – Faro (CKTGTF) Forests Landscape of Conservation</u> (19,100 km² of PAs)</p> <p>2. <u>Taï – Grebo - Sopo (TGS) Forest Landscape of Conservation</u> (7,700 km² of PAs)</p> <p>3. <u>Mount Nimba (MN) Forest Landscape of Conservation</u> (415 km² of PAs)</p> <p>4. <u>Gola-Lofa-Foya and Mano-Wologizi-Wonegizi-Ziama (GLF-MWWZ) Forests Landscape of Conservation</u> (3,500 + 1,900 km² of PAs)</p> <p>5. <u>Outamba/Kilimi - Kuru – Pinselli – Soya (OKKPS) Forest Landscape of Conservation</u> (1,110 km² of PAs)</p> <p>Key Conservation Areas</p> <p>6. <u>National level: WA Forest Key Conservation Areas requiring high priority direct support</u> (680 km² of PAs)</p> <p>7. <u>New or larger KLCs and KCAs should be created</u> (Liberia, Ghana, Nigeria)</p>	<p>Negative aspects</p> <ul style="list-style-type: none"> Highly degraded and fragmented habitats Over-hunting PAs as a refuge for illegal activities (organized crime for drugs cultivation, illegal trade, etc.) PAs: low number, small size and under-representation of forests ecotypes Valuable hardwoods continues to spur logging in the high canopy forests Migrations of animals severely reduced Acceleration of forest loss (civil wars) Effects of mining on sustainable natural resource management PAs under-resourced and poorly managed Some countries with non-existent PA management, others with very poor management (paper parks) High density of poor and disadvantaged populations Danger from loss of unknown biodiversity CC and degradation of agricultural systems and more threats on PAs Relatively superficial knowledge about the <p>Actions</p> <ul style="list-style-type: none"> Provide greater control of hunting by anti-poaching activities and law enforcement Adopting a holistic approach that ensures mainstreaming of PAs in the development context and respects the principles of conservation at local, national and international level Promote strong inter-sectorial policy development and action between agriculture, mining, infrastructures, etc. and conservation Strengthen the oversight of the environmental impact of mining, agro-industry, hydroelectric and other infrastructure projects Raise awareness by populations of sustainable natural resource conservation techniques and restore and legalize their traditional resource use rules where appropriate Focus on in-situ conservation but do not exclude the contribution of the ex-situ conservation, if necessary to preserve the genetic heritage (responsibility of WAZA) Ensure continuous support by the IUCN/SSC Specialist Group, and 	<p>1. Preserving the forest biodiversity hotspots of global significance</p> <p>2. Establish ecosystem – landscape governance and save corridors between the major ecological blocks</p> <p>3. Adopt the most appropriate conservation actions for threatened species</p>
Niger Delta red colobus	▼▼▼																										
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Leopard	▼																										

Protecting biodiversity	Countries	Biome / Ecotypes / Key species	Main KLCs - KPAs and priorities	Analysis	Proposed actions
<p>(<i>Pterocarpus erinaceus</i>), and African Blackwood (<i>Dalbergia melanoxylon</i>); etc.</p> <ul style="list-style-type: none"> - The first-ever forest elephant translocation in West Africa of 6 elephants from small patches of forest outside the town of Daloa to Azagny National Park, although with some mortalities. 				<p>biology and threats of WA rain forest wildlife (e.g.. elephant)</p> <p>Positive aspects</p> <ul style="list-style-type: none"> - Existing forests blocks to complement the overall biodiversity could still be integrated into PA system - Astonishing diversity of life inhabiting the rain forests of WA - Rain forest PAs of small size can ensure the conservation of biodiversity (see footnote 15) - First trans-border parks (peace parks and systemic management) - Cultural heritage in sustainable management of natural resources - Potential discoveries of new species 	<p>implementation of the PHVA strategic approach for threatened species</p> <ul style="list-style-type: none"> - Establish a regional strategic approach that focuses on conservation principles, integrate conservation in development processes (i.e. the valuation of sustainable ecosystem services) and promotes ICDP and good governance in the buffer zones - Support and sustain the political will to tackle conservation problems, to fulfil the gaps in scientific knowledge and to establish objectives, indicators and benchmarks for conservation - Support civil society on issues of wildlife management and protection and support the growth of a network of local non-governmental organizations in West Africa - Operate at the national level and not just locally in raising awareness for nature conservation.

Note: Red arrows denote declines in status, green arrows denote species recoveries

Figure 12. C - West Africa Forests - Main KLCs and KCAs and priorities

(1) Cross River – Korup – Mont Cameroon – Tamakanda – Gashaka – Tchabel – Faro Forests Landscape of Conservation (19,100 Km² of PAs); (2) Taï – Grebo - Sopo Forest Landscape of Conservation (7,700 Km² of PAs); (3) Mount Nimba Forest Landscape of Conservation (415 Km² of PAs); (4) Gola-Lofa-Foya (Sierra Leone-Liberia Trans-border Peace Park) and Mano-Wologizi-(Wonegizi-Ziama (GLF-MWWZ) Forests Landscape of Conservation (2,550 + 914 Km² of PAs); (5) Outamba/Kilimi - Kuru – Pinselli – Soya Forest Landscape of Conservation (1,110 Km² of PAs); (6) National level: WA Forest Key Conservation Areas requiring high priority direct support (map: Climate Change and Protected Areas in West Africa – CCPAWA, United Nations Environment Programme World Conservation Monitoring Centre, 2010; specific elaboration)



5.1.6 Specific strategies and actions for major Mangroves/Coastal ecotypes

In WA, mangroves are found discontinuously from Senegal to the Niger delta. Some 14% of identified mangrove areas in West Africa fall within nationally and internationally designated protected areas. However, there are strong concerns about the management coordination and effectiveness of the coastal and marine protected areas that encompass the mangroves, predominantly due to financial and administrative constraints in the region.

West African mangroves are in moderate decline, with an estimated average decline of 25% between 1980 and 2006. The Atlantic coast of Africa has some of the highest human population densities on the continent. The majority of industry of West Africa is located in the coastal zone (Nigeria and Côte d'Ivoire). In west and central Africa some 20-30% of mangroves have been lost in the past 25 years (Côte d'Ivoire shows a particularly severe decline in mangrove habitat). This, together with rapid growth, high poverty, low development indices, poor governance in rural regions and open access of coastal resources has depleted the mangroves forests. Threats include urbanisation, industrialisation (such as the oil refineries of the Niger Delta), agriculture, timber and petroleum exploitation, fishing with dynamite and poison, canalisation, discharge of sewage and other pollutants and siltation.

The WA mangroves are allocated into different ecotypes. The Guinean Mangroves, influenced by a large tidal range and high inputs of freshwater, contain the best developed mangroves in western Africa. This ecotype provides important habitat for migratory birds and endangered species such as the West African manatee. However, the mangrove habitat has been affected by poor rainfall over the entire region during the past three decades. The most extensive blocks of Central African mangroves are found in the Niger River Delta, which supports the single most extensive mangrove system in Africa, and the third most extensive worldwide after India and Indonesia. Despite its size, it is extremely threatened because none of it falls within a PA. These mangroves occur in suitable low energy marine environments and they trap large amounts of sediment. The mangroves of this region have no endemic species but support some endangered species, such as manatees and, it seems also the pygmy hippopotamus, in the Niger Delta. Mangroves here, as elsewhere, are important as nursery and feeding areas for marine fishes.

The mangroves depend for their conservation on coastal and marine protected areas and both are highly dependent on their environment and in particular on the context and dynamics of development, including development taking place far from the mangrove sites. The extension of coastal and marine protected areas to new sites and the prioritizing of mangrove areas for conservation intervention requires accurate forecasting about human developments as the latter are moving much faster than conservation efforts. Careful examination of different development scenarios is essential in order to guarantee the viability of conservation investments in coastal and marine protected areas.

Recent data identified by the Master Plan for Coastal West Africa (Schéma Directeur du Littoral Ouest Africain – SDLAO), produced by IUCN between 2009 and 2011, confirm the importance of the dynamics of human developments that occupy the coastal strip at the expense of mangroves. This is often overlooked by conservation organisations.

Table 23. Mangrove areas falling within protected areas

Country	Mangrove area falling within protected areas [%]
Benin	0
Burkina Faso	0
Gambia	3,5
Ghana	1,5
Guinea	0,2
Guinea-Bissau	35,5
Ivory Coast	26,9
Liberia	26,1
Mali	0
Mauritania	62,5
Niger	0
Nigeria	3,4
Senegal	42,5
Sierra Leone	14,5
Togo	0

Source: Regional Action Plan for the Conservation of Chimpanzees in West Africa, Rebecca Kormos and Christophe Boesch, 2003

A further problem is that some coastal and marine protected areas do benefit from long-term funding whereas others are almost forgotten.

The need to improve the consistency and effectiveness of the ecotypes network of coastal and marine areas, led us to consider the following conservation measures as a priority:

- Implementation of conservation actions in some key areas which have not benefited from conservation (e.g. Sherbro - Sierra Leone);
- Conservation of the river-sea connections (a complex of small estuaries) in the Gulf of Guinea;
- Strengthening inter-sectorial management of some border areas of high biological value and heritage;
- Address strategies and practices of the fishing and processing industry and enterprises that have significant impacts on mangroves;
- Integrate conservation with extractive activities especially those related to oil and oil storage device by strengthening marine spatial planning;
- Search for synergies between mangrove conservation activities and the need for reducing coastal risks of flooding, especially in areas where the coastline is particularly dynamic.

At present, the Abidjan Convention is implementing a strategic plan for marine protected areas on the Atlantic coast of Africa from Mauritania to South Africa. The implementation phase works in detail on three connected geographical areas: (1) from Mauritania to Sierra Leone, (2) from Liberia to Nigeria, and (3) from Cameroon to DRC.

Threats to the conservation of biodiversity of mangroves forests are as follows: clearing, overharvesting mangrove trees, mining, river changes, poaching, pollution and exotic/invasive plants. Climate change is another major threat because mangrove forests require stable sea levels for long-term survival. The interventions of this strategic approach require:

- (i) Adopt the legislations and the international conventions relating to mangroves and develop adequate policies and inter-sectorial approaches for implementation of actions;
- (ii) Concentrate actions in the priority PAs (see below) and the community mangrove forests;
- (iii) Collaborate with national and international NGOs and empower local communities to maintain and monitor the community mangrove areas;
- (iv) Develop an integrated PA and Reserve network of coastal and marine areas encompassing mangrove and other coastal habitats;
- (v) Establish a fund to maintain a sustainable economy and management of mangroves and coastal habitats;
- (vi) Determine the most appropriate conservation actions and studies to ensure management effectiveness of PAs and mangrove forests, and related threatened species.

Summarised, global data are provided in Table 26 and Figure 13.

Guinea Bissau

Rio Cacheu - Cufada - Cantanhez - Rio Buba - Iles Tristao (CCCBT) Mangrove KLC (4,780 km² of PAs)

The complex encompasses in Guinea Bissau (1) 886 km² the Rio Cacheu Mangroves (IBA - GW001), (2) the 723 km² Lagoas de Cufada (IBA - GW004), (3) the 1148 km² Rio Grande de Buba (IBA - GW005), (4) the 1209 km² Cantanhez Forest (IBA - GW008); and in Guinea (5) the 814 km² Iles Tristao (IBA - GN004). The complex of mangrove forests is contiguous to 10,279 km² Bijagos Archipelago Biosphere Reserve with 3 MPA: (i) Ilhas Formosa, Nago & Tchediā (Urok); (ii) Orango and (iii) João Vieira and Poilão Marine National Park.

This complex includes the ocean coasts and the lands on both banks of the rivers or lakes. Much of the area is covered in mangrove as well as fresh and brackish water marshes. The complex encompasses primary forests and sacred forests, palm forest, semi-dry woodland, savanna areas and agricultural land. The area includes mudflats and sandbanks, rivers, freshwater lagoons and lakes (Table 24).

Table 24. Key elements of the Rio Cacheu - Cufada - Cantanhez - Rio Buba - Iles Tristao (CCCBT) Mangrove KLC

Elements	Priority elements
KLC	The best developed mangroves in WA with migratory and water birds, endangered species (Manatee) and a success story of forests governance
Conservation objectives	1. Preserving the best developed mangroves in WA 2. Establish an ecosystem-landscape governance system and save corridors between the major ecological blocks 3. Adopt the most appropriate conservation actions for threatened species (manatee and birds)
Key Species	– West African manatee – Migratory birds
Key habitats	– Mangroves as nursery and feeding areas for marine fishes, – Ocean coasts and the lands on both banks of the rivers or lakes, mudflats and sandbanks – Forests, palm forest, semi-dry woodland, savannas – Rivers, freshwater lagoons and lakes

National level: WA Mangroves KCAs requiring high priority direct support (3,062 km² of PAs) (Note: the number in brackets corresponds to the number on figure 13)

Sierra Leone

(2) Sherbro and Turtles Islands

The ca. 450 km² of the area encompasses more than two-thirds of the country's mangroves. The site should be classified as a Marine Protected Area (MPA), one of the largest in the region. The Sherbro Island and the Turtle Bank Is a mosaic of rivers and marine areas unique in the region and a breeding ground for green sea turtles as well as leatherback sea turtles (Figure 13).

Senegal

(3) Saloum Delta National Park

The 1,800 km² of this site is an IBA (SN013), but only 760 km² are designated as a National Park and Ramsar Site. The site consists of deltas of the seasonal rivers. There is a network of inter-linking channels and additional, seasonal freshwater streams that flow into the delta. The site consists of sea, sandy coast and islands and islets with mangroves, savannas and forests. The National Park and part of the buffer zone of the Biosphere Reserve are managed by the central authorities, but the remainder is managed through liaison between a rural council and National Park and forest service authorities (Figure 13).

(4) Basse Casamance National Park

The 50 km² of the National Park (IBA - SN014) is in the delta of the Casamance River. The habitat consists of low-lying lands with mangroves fringing tidal channels, seasonally bare saline mudflats, some wooded savanna and terrestrial forest, including the only remaining small area of Guinea-Congo forest in the country (Figure 13).

Ghana

(5) Keta Lagoon Ramsar site (Ghana) GH033

The 530 km² Keta Lagoon (IBA - GH033) is an extensive, brackish water-body situated to the east of the Volta river estuary. The site comprises the open water of the lagoon and the surrounding flood-plains and mangrove swamps. The lagoon is bordered by numerous settlements and the surrounding flood-plain consists of marsh, scrub, farmland and substantial mangrove stands, which are heavily exploited for fuelwood (Figure 13).

(6) Songor Lagoon

The 232 km² Songor Lagoon (IBA - GH036) is, with Keta Lagoon, one of the two major lagoon systems associated with the Volta river estuary. The site comprises a brackish water lagoon with extensive mudflats and islands, saltpans, a broad sandy beach and flood-plains of a number of small streams. It is separated from the sea by a narrow sand-dune on which small villages are situated. The lagoon has no direct access to the sea and seawater replenishment is from seepage through the sand-dunes. The main wetland vegetation-type is saline marsh with degraded mangroves (Figure 13 and Table 25).

Table 25. Key elements of the Mangroves/Coastal Key Conservation Areas

Elements	Priority elements
KCA	– The mangrove forest blocks that could be elevated to the status of conservation areas are already listed as UNESCO Biosphere Reserves, Ramsar sites, Important and Endemic Bird Areas.
Conservation Objectives	1. Preserving the best developed mangroves in WA 2. Establish ecosystem – landscape governance and save corridors between the major ecological blocks 3. Adopt the most appropriate conservation actions for threatened species (manatee and birds)
Key Species	– West African manatee – Migratory birds
Key habitats	– Mangroves as nursery and feeding areas for marine fishes, – Ocean coasts and the lands on both banks of the rivers or lakes, mudflats and sandbanks – Forests, palm forest, semi-dry woodland, savannas – Rivers, freshwater lagoons and lakes

New or larger KLCs and KCAs should be created (Nigeria, Ivory Coast, Liberia, Sierra Leone, Senegal, and Guinea)

New or larger national protected areas should be created in Nigeria, Ivory Coast, Liberia, Sierra Leone, Senegal, and Guinea.

Evaluate about 1,300 – 2,000 km² of mangrove for new or larger PAs (addition of +15-25% of new or larger national PAs than existing KLCs and KCAs as considered by the strategic approach for the specific Mangroves/Coastal ecotype) (Figure 13).

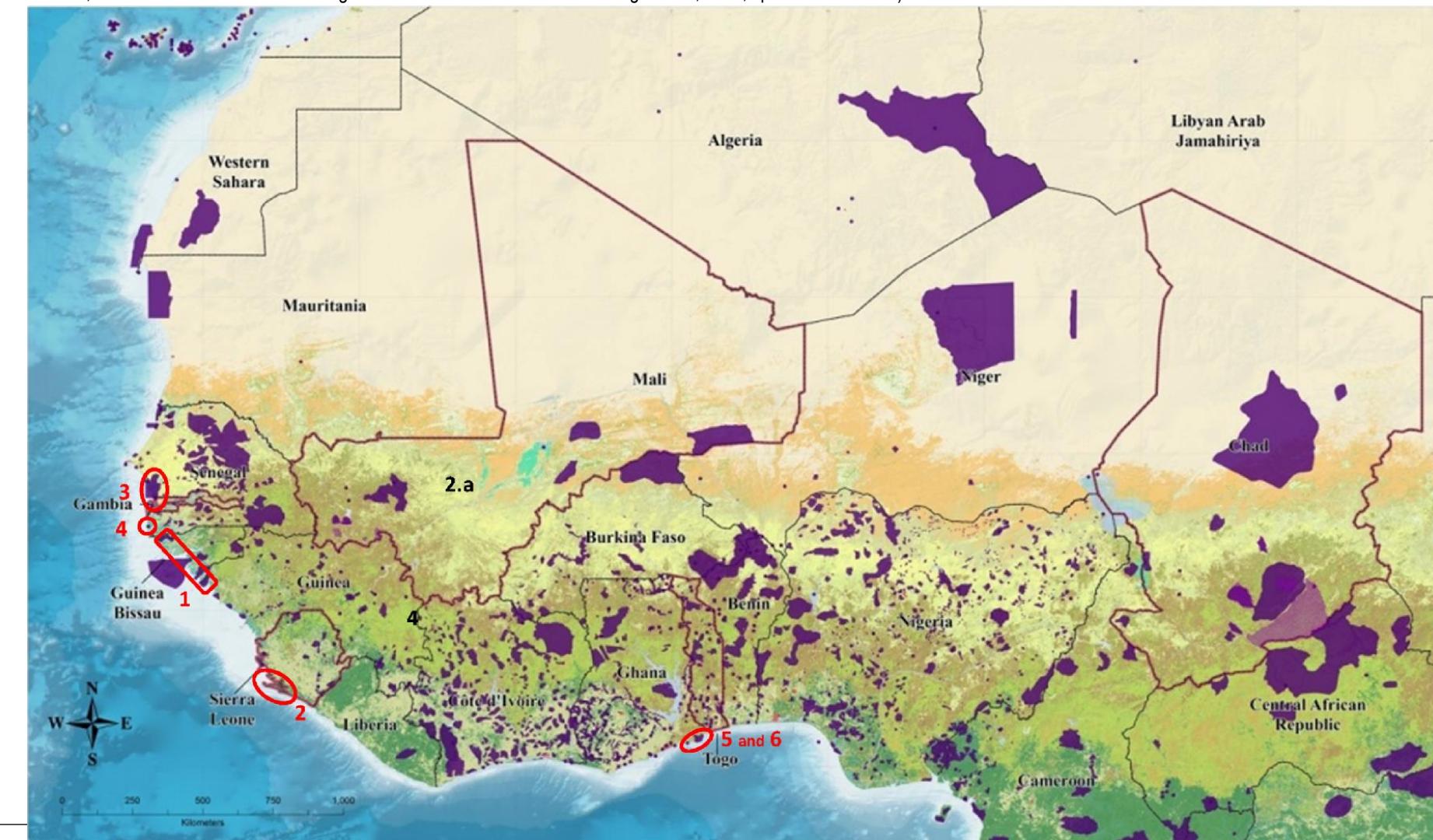
Table 26. D - West Africa Mangroves/Coastal - Main KLCs and KCAs and priorities

Protecting biodiversity	Countries	Biome / Ecotypes / Key species	KLCs - KCAs and priorities	Analysis	Objectives and Proposed actions
<ul style="list-style-type: none"> Mangroves are very rich in biodiversity with a variety of specialist fishes (they harbour widespread pelagic fishes), marine turtles, invertebrates, various unique species such as the West African manatee, and a large number of Palearctic and Afro-tropical bird species Low number and under-representation of this habitat/ecotype in Protected Areas or no-representation in some instances (e.g. in Nigeria) Many mangrove forest blocks are designated as UNESCO Biosphere Reserves, Ramsar sites, Important and Endemic Bird Areas. Fragmentation does not greatly affect mangrove biodiversity, as mangroves are naturally fragmented, and are able to disperse over long distances Important mangrove forest blocks that could be elevated to the status of conservation areas 	<ul style="list-style-type: none"> Gambia Ghana Guinea Guinea-Bissau Ivory Coast Liberia Mauritania Nigeria Senegal Sierra Leone 	<p>Biome:</p> <ul style="list-style-type: none"> Mangroves <p>Ecotype:</p> <ul style="list-style-type: none"> Guinean Mangroves Central African mangroves <p>Key species and status:</p> <ul style="list-style-type: none"> Niger Delta red colobus  West African manatee  	<p>Key Landscapes for Conservation</p> <p>1. Rio Cacheu - Cufada - Cantanhez - Rio Buba - Iles Tristao (CCCBT) Mangroves Landscape of Conservation (4,780 km² of PAs)</p> <p>Key Conservation Areas (3,062 km² of PAs)</p> <p><i>Note: the number in brackets corresponds to the number on the figure 13)</i></p> <p>Sierra Leone</p> <p>2. Sherbro and Turtles Islands Senegal</p> <p>3. Saloum Delta National Park</p> <p>4. Basse Casamance National Park Ghana</p> <p>5. Keta Lagoon Ramsar site (Ghana) GH033</p> <p>6. Songor Lagoon</p> <p>7. New or larger KLCs and KCAs should be created (Nigeria, Ivory Coast, Liberia, Sierra Leone, Senegal, Guinea)</p>	<p>Negative aspects</p> <ul style="list-style-type: none"> Clearing for agricultural, human settlements and infrastructure Overharvesting of mangrove trees for firewood, and wood, wood chip and pulp Mining exploitation and oil spillage River changes resulting from dams and irrigation which kill the trees Excessive hunting of species Pollution by fertilizers, pesticides, and other toxic man-made chemicals Exotic/invasive plant species colonization (water hyacinth) Climate change Civil and political unrest (Nigeria) <p>Positive aspects</p> <ul style="list-style-type: none"> Important ecological and economic potential for mangroves when utilised to (a) stabilise the shoreline, (b) provide protection against tsunamis, and (c) to provide critical nursery areas for fish and shrimps. Positive example of Guinea Bissau where communities were empowered to maintain and monitor their mangrove areas; today the PA network covers 15% of the country and provides 70,000 people with food, jobs and livelihoods Successful previous efforts to replant the mangroves trees 	<p>Objectives:</p> <ol style="list-style-type: none"> Preserving the best developed mangroves in WA Establish ecosystem – landscape governance and save corridors between the major ecological blocks Adopt the most appropriate conservation actions for threatened species (manatee and birds) <p>Actions:</p> <ul style="list-style-type: none"> Signature by the WA Governments of mangrove related legislations and international conventions (i.e. Convention on CC, Convention on Biodiversity, CITES, and Ramsar Convention). Adopt an holistic approach for policy development, legislation and institutions that integrates PAs and mangrove forests in the development context and promotes conservation principles at the local, national and international levels. Elaborate adequate policy, law and institutional provisions for mangrove forests for implementation of international conventions and National Action Plans including mangroves in protected areas. Adopt an inter-sectorial approach in order to give greater importance to mangrove forest conservation. Collaborate with national and international NGOs (e.g. African Mangrove Network and its national focal offices) and local communities on various projects and programmes for the conservation of mangroves and sustainable management of natural resources and poverty reduction. Maintain a balance between the needs of the local coastal communities and the ecological services of the remaining mangrove ecosystems. Continue searching for strategies geared towards sustainable management of mangrove forests. Increase the role of private sector participation. Orientate research towards providing more quantitative data for management effectiveness. Collaborate for a strong inter-sectorial coordination on policies and actions between agriculture, infrastructures and other developments, and conservation. Raise awareness in local communities of opportunities for sustainable natural resource conservation.

Note: Red arrows denote declines in status, green arrows denote species recoveries

Figure 13. D - West Africa Mangroves/Coastal - Main Key Landscape of Conservation - Key Conservation Areas and priorities

(1) Rio Cacheu - Cufada - Cantanhez - Rio Buba - Iles Tristao (CCCBT) Mangroves KLC (4,780 Km2 of PAs) ; National levelWA Mangrove KCAs requiring high priority direct support (3,062 Km2 of PAs); (2) Sherbro and Turtles Islands, (3), Saloum Delta NP (4) Basse Casamance NP (5) Keta Lagoon (6) Songor Lagoon (map: Climate Change and Protected Areas in West Africa – CCPAWA, United Nations Environment Programme World Conservation Monitoring Centre, 2010; specific elaboration)



5.1.7 Dismantling Wildlife traffic network

West Africa is already considering the establishment of a strategic plan for dismantling the illegal wildlife traffic networks. At present priority is being given to the establishment of agreements between countries¹⁸ and the strengthening of border control actions for the WAPOK complex. The proposal for dismantling wildlife trafficking networks in WA is structured by areas of intervention. The analysis below concerns the international illegal wildlife trade (elephant poaching and ivory trade, and live animal trade). Further details of the efforts throughout Africa to tackle wildlife trafficking are presented in Volume 6 of this strategy.

Political and diplomatic

- Build awareness of the serious threats that poaching and smuggling pose to economic, regional and social security at the national and international¹⁹ levels;
- Build awareness of the current limitations in the effort to combat poaching and wildlife smuggling;
- Strengthen the outreach to WA countries on the illegal wildlife trade;
- Adopt a regional approach to fighting the illegal wildlife trade and dismantle international criminal networks;
- Strengthen national wildlife legislation, and establish the principle of international crime for illegal wildlife activities in WA countries;
- Designate / establish a high authority for this task within regional institutions (WAEMU under ECOWAS).

Intelligence and security

- Develop and implement national and international intelligence gathering systems;
- Increase investigations especially at key transit points or borders, and in local markets;
- Establish effective lines of communication with the different concerned services (wildlife, police, defence, security) intra and inter-state;
- Strengthen the capacities of anti-poaching operations in PAs (human resources, training, equipment, facilities, resources and incentives);
- Strengthen the capacities of the teams responsible for investigating and arresting poachers and wildlife traders (human resources, training, equipment, facilities, resources and incentives);
- Establish effective collaboration between NGOs and government and intergovernmental agencies to support the establishment and operation of intelligence and security networks. It would be worthwhile to **support the growth of a network of non-governmental organizations in West Africa that support government law-enforcement efforts** under the auspices of, or closely linked, with LAGA (already initiated by WAEMU) (see also Volume 4 - Central Africa). The NGOs intervention should be supported but not coordinated by the regional institutions to preserve their specific approach.

Judiciary and Conviction of illegal activities on PAs

- Establish effective cooperation and collaboration between the supervisory authorities and judicial authorities involved in the enforcement of laws against illegal wildlife networks in WA;
- Establish effective coordination and communication with law enforcement agencies (in order to ensure better conviction rates of poachers and illegal traffickers);
- Monitor and support legal proceedings against poachers and illegal wildlife traffickers in order to ensure convictions.

¹⁸ Signature 12 July 1984 an agreement to fight against poaching between Benin and Burkina Faso, on which joined the Niger in 1986. The agreement was implemented from January 1986

¹⁹ WA provides less information on the populations of elephants, source MIKE

Security communications

- Provide regular information on the evolution of intelligence, security and legal proceedings;
- Define indicators and benchmarks for actions to dismantle wildlife trafficking networks;
- Monitor and communicate operations by the designated authority within regional institutions (WAEMU - ECOWAS);
- Provide full press coverage.

The interventions should be carried-out under the coordination of a special task force headquarters in the WAEMU (proposition) and the implementation by a competent body or the association of competent bodies.

5.1.8 Special analysis

Monitoring and planning of highly threatened species and habitats

This is a priority action that must establish: (1) the status of the most endangered species and habitats and (2) a bailout plan at the regional and interregional level (i.e. a plan for an emergency package in support of threatened key species such as desert antelope and gorilla, and habitats such as the Inner Niger Delta and mangroves of the Niger Delta). The actions must be entrusted to the IUCN specialist groups or to specialized NGOs. The actions must be associated with PHVA analysis (see below) and could lead to joint actions in-situ and ex-situ conservation between national conservation agencies, NGOs and international institutions specialized and the World Association of Zoos and Aquariums (WAZA).

Population and Habitat Viability Assessment (PHVA)

The PHVA is a key planning tool to develop targets and recommendations for the conservation of endangered species and habitats, or for the analysis and support for the introduction or reintroduction of individuals into a new habitat. The PHVA is based on knowledge of stakeholder groups and uses stochastic and social measures (threats and opportunities), each of them with a degree of sustainability and uncertainty, leading to concrete proposals. The core element of the PHVA is a quantitative assessment of the risk of species and habitat extinctions, a process known as population viability analysis, or PVA. Population viability analysis evaluates the risk of wildlife population decline or extinction under current conditions, or under future conditions by using computer simulation models. The model can project the demographic behaviour of a simulated population for a specified period of time into the future, under a specific set of assumed conditions. These underlying conditions can then be altered to determine the primary drivers of population growth or decline, as well as the best options for population management to minimize the risk of extinction.

The PHVA has successfully contributed to preserving the last population of *Giraffe peralta* in West Africa. Considering the high extinction risk of species and habitats in WA, this strategic approach proposes using this key tool in a programme of direct action to better target interventions to safeguard endangered species and habitats.

New or larger KLCs and KCAs

In West Africa, the high level of degradation of wildlife, the inadequate representation of ecosystems and habitats, the fragmentation and reduced connections between the PAs, all contribute to the need for a special contingency plan to better amalgamate protected areas, forming new key landscapes for conservation to recover significant wildlife ecosystems and endangered species and habitats.

The action is critical but will not succeed unless some emergency actions are first taken. Direct interventions for saving the PAs identified in this document are urgently required, alongside a brief initial presentation phase to national and regional institutions in WA to confirm and win support for the strategic approach. The process of creating new PAs is very important, but it is a long and difficult step that requires the emergency interventions on existing sites of conservation if it is to succeed.

The intervention in support of KLCs should be carried-out under the coordination of a special unit with headquarters in WAEMU (proposition) and the implementation by a competent body or an association of competent bodies. The WAEMU specially-tasked unit should propose the KLC-formation studies in the following prioritised ecosystems:

- Wetland ecosystems in the Savanna ecotype (e.g. Hadejia-Nguru wetlands and Lake Chad Basin) so as to prevent the further decline of wetlands and to preserve the Afro-tropical-Palaearctic and intra-African bird migrations;
- New and/or larger KLCs and KCAs to protect wildlife ecosystems in the Forest and Mangroves/Coastal ecotypes. In the case of marine-coastal PAs the planning should take place in collaboration with the strategic plan for marine protected areas on the Atlantic coast (as an implementation of the Abidjan Convention).

Further information on the resources required to implement the proposed studies on formation of new KLCs and KCAs, and on wetlands, is presented in Section 5.1 under the 'Specific strategies and actions' given for each major ecotype.

5.1.9 Wildlife protection training

One of the principal threats to the survival of wildlife in WA is the unsustainable hunting and poaching of wild animals. This is related in significant part to the comparatively high human population density and long-established trade networks. On the other hand, given the decline of salaries and the increased incomes from illegal wildlife trade, corruption has also spread amongst the rangers and other staff of the parks. Illegal activities, such as poaching, fishing and logging, have converted some PAs into empty forests or empty savannas that can only be classified as paper-parks.

To reverse this trend, it will be necessary to return to the fundamentals of conservation: first and foremost full control of the parks must be gained by re-establishing the park-management tradition and esprit de corps. To achieve this, it is necessary to build capacity for the protection of wildlife.

For ranger training the following steps are required: (1) identify conservation sites with the capacity to deliver basic training for new rangers; (2) prepare and implement training programmes targeting the specific needs of each specific PA; and (3) support implementation of the appropriate anti-poaching programmes for each PA. Finally, attractive career opportunities for rangers must be assured to enable staff turnover and the welfare of rangers after their period of anti-poaching activities.

These interventions should be carried-out under the coordination of a special task force with its headquarters in WAEMU (proposition) and with their implementation by a competent body or an association of competent bodies.

5.2 PROACTIVE PROCESS

5.2.1 Institutional support and coordination

A strong process of coordination of the wildlife interventions recommended in the strategic approach for Western Africa will be essential to ensure the following synergies: (i) the availability and proper use of resources; (ii) a shared and harmonized implementation between the countries including the necessary agreements for Transfrontier Protected Areas; (iii) the identification and implementation of wildlife protection and law-enforcement agreements across borders and between the Western African and Central African regions; (iv) a stronger balance of conservation initiatives in the major ecoregions of West Africa; and (v) attention to the specificities of conservation at national, regional and interregional levels (e.g. specific plans for highly threatened species, decline in wetlands and mangrove ecosystems).

At present, there is no single organisation in WA that can provide all the services needed for the interventions of conservation in the region. Coordinating the actions for wildlife conservation must therefore also assure the establishment of (i) Institutional, (ii) technical and scientific and (iii) organisational capacities. It is recommended that the institutional reform involves the combination of existing institutions: (1) the West Africa Economy and Monetary Union (WAEMU), (2) the West Africa Protected Areas Network (WAPAN) and (3) a Task-force unit to provide support.

WAEMU is more operational on conservation than ECOWAS. It has the capacity to coordinate the active and proactive processes described above during implementation by Agencies, NGOs, Institutions and Universities, as demonstrated by their expertise in other sectors (agriculture, biosecurity). Furthermore, a conservation unit of WAEMU currently supports a programme of interventions in the WAPOK complex. This strategic approach proposes that this conservation unit is maintained and extended to undertake the coordination of the governance and implementation of the wildlife strategic approach in WA. To achieve these goals, WAEMU must follow the following institutional aspects: (i) promote and coordinate conservation activities in the countries of WA by complying with the regional strategic approach; (ii) support and harmonize policies and laws; (iii) boost the convergence plan (strategic plans) for achieving specific and inter-sectorial interventions in favour of conservation; and (iv) ensure institutional support in the fight against the illegal wildlife trade.

The technical part of the coordination unit must: (i) support technically WAEMU and ECOWAS to fully adopt the principles of the wildlife strategic approach; (ii) upgrade the strategic approach over time; (iii) coordinate with the regional BIOPAMA observatory on making informed decisions about directing funds towards key management priorities and institutions.

It is recommended that WAPAN operate on the technical aspects of conservation: (i) promoting, monitoring and developing the regional strategies; (ii) detecting the needs for planning and managing conservation with regard to landscapes, species and habitats; (iii) identifying and setting up conservation actions on the ground; (iv) monitoring indicators of the key aspects of PA conservation and management effectiveness in collaboration with the BIOPAMA project.

The task force, as a support unit of WAEMU and the WAPAN, must ensure:

- high levels of technical support in collaboration with IUCN Protected Areas Programme for Central and West Africa;
- organisational and financial / administrative support.

The proposed structure composed by WAEMU, WAPAN and the Task-force does not exist and requires a strong investment of one or two years at the beginning of the implementation phase to organise the unit, followed by several years to establish its capacity to intervene in all aspects of conservation in WA. Specifically, WAEMU must evolve from managing priorities for transborder parks to the promotion and the support of transborder and national landscape interventions and to improving the status of key and threatened species and habitats. WAPAN (with the West Africa Marine Protected Areas Network - WAMPAN) must evolve from its role as a representative body of the directors of PAs to a regional technical support body coordinating the institutional parties represented by WAEMU and the international technical and financial institutions. The Task Force must provide technical support and facilitate the mobilization of funds for the conservation initiatives in WA. The task force should be closely advised by the IUCN Programme on African Protected Areas & Conservation (IUCN-PAPACO). The IUCN-PAPACO could offer technical support, experience with capacity building with cross-regional initiatives amongst neighbouring countries of West Africa, with the mobilization of specialist groups for analysis in decision support systems, and as a partner in the BIOPAMA project. The expertise from the EU and other international partners could ensure a consistent evolution of the strategic approach and help in the mobilization of resources.

The special unit on this strategic approach to conservation in WA (composed by WAEMU – WAPAN – Task force) could assure the promotion and the coordination of the following tasks: (1) Dismantling the wildlife traffic networks; (2) Special analysis; (3) Wildlife protection training; (4) Monitoring and planning; (5) Communication; (6) Biological research; and (7) Management – Governance Training.

5.2.2 Monitoring and planning

The poor performance of wildlife conservation in WA arises from (i) insufficient availability of information on biodiversity, and (ii) a lack of coordination and inter-sectorial approach in the interventions.

Data on conservation in WA are insufficient, and they are not available, structured and oriented as a decision support system. This large deficit in WA conservation capacity can be improved by the use of resources and tools made available by two EU initiatives: (1) the Biodiversity and Protected Areas Management Program (BIOPAMA) (see Box 2) and (2) the Digital Observatory for Protected Areas (DOPA) (see Box 3). The two initiatives are complementary: (i) BIOPAMA strengthens the process of collecting, organizing and structuring information as a decision support system at the local, national and regional levels; (ii) DOPA operates at higher level on informatics infrastructures combined with inter-operable web services connected with the Regional Reference Information System (RRIS) of BIOPAMA. The two initiatives form a Bottom - Up (BIOPAMA) and Top-Down (DOPA) integrated information system as a decision support system at all levels of the interventions on conservation.

BIOPAMA forecasts the establishment of Regional Observatories and the RRIS to improve the access and the availability of data on biodiversity in the four regions of Africa. The BIOPAMA regional observatory for West and Central Africa should: (1) collect and organise existing information; (2) boost the collection of information through the use of a form organized for collecting vital information on the state of conservation, management effectiveness and quality of governance (this last element is scheduled as a future action).

The periodic update of data scheduled by the BIOPAMA observatory could enable West and Central African regions to have baselines and trends of the key aspects of their wildlife and its conservation. The objective will be to base the management effectiveness of wildlife conservation on an information baseline and related benchmarks.

5.2.3 Communication

A major effort in the communication of wildlife and environmental issues is needed in Africa which can be usefully informed by a successful series of awareness campaigns on the illegal wildlife trade in Asia. Awareness raising is particularly needed in WA where there is very little environmental awareness amongst all age groups. Building conservation constituencies to change attitudes and mobilise political support for conservation will require action at many levels:

- Undertake environmental education at both the local level (where the direct threats are occurring) and in the urban areas (where many of the drivers of threats originate and political decisions are made);
- Make greater use of broadcast media and use well known charismatic personalities to deliver conservation messages;
- Implicate international NGOs specialized in environmental education to strengthen and stimulate national NGO environmental education activities;
- Stimulate nature clubs in schools to inspire tomorrow's conservation leaders;
- Create small scale urban natural parks to allow urban community members, who may not have the means to visit or to participate regularly in nature based recreation, to interact with nature and learn about conservation.

The interventions should be carried-out under the coordination of a special task force with headquarters in WAEMU (proposition) and the implementation by a competent body or an association of competent bodies.

5.2.4 Biological research

Knowledge on the biology and threats to West African wildlife remains relatively superficial (for instance, a survey is underway in Togo as we are writing this chapter to ascertain whether or not any chimpanzees still survive in that country). Although sponsoring scientific research may be outside this document's immediate ambit in this instance, the need for more research must not be ignored. **Apart from further surveys on the distribution of and threats to the most endangered species, better genetic data is vital for some conservation priority-setting and decision-making.**

To take one example, it remains a matter of debate how many species of elephant should be recognized in Africa. The IUCN Red List (2013) states:

- Preliminary genetic evidence suggests that there may be at least two species of African elephants, namely the Savanna Elephant (*Loxodonta africana*) and the Forest Elephant (*Loxodonta cyclotis*). A third species, the West African Elephant, has also been postulated. The African Elephant Specialist Group believes that more extensive research is required to support the proposed re-classification. Premature allocation into more than one species may leave hybrids in an uncertain conservation status (IUCN SSC African Elephant Specialist Group 2003).

The African Elephant Specialist Group's statement of 2003 (AfESG 2003) does not appear to have been updated. It recommends that:

- Further analysis of the existing West African samples should be carried out.
- Additional genetic samples from a wider range of sites should be collected and analysed.
- There should be a consensus on the significance of the genetic and morphological data between the scientists working on this issue.

This scientific issue needs urgent resolution, both for conservation priority-setting and for the design of legislation affecting protection and trade. It is especially important to understand the distinctiveness of West African elephants, which are now so rare. The Conference of the Parties (CoP) to CITES agreed in their meeting in Bangkok in March 2013 that the DNA testing of large ivory seizures should be mandatory. For such testing to be of full value **the evolutionary genetics of all African elephants (at the DNA level) needs to be well understood as a matter of urgency.**

The interventions should be carried-out under the coordination of a special task force with headquarters in WAEMU (proposition) and the implementation by a competent body or an association of competent bodies.

5.2.5 Management – Governance Training

In the WA region, biodiversity conservation activities are mainly in IUCN category II sites (National Parks). Other categories of protected area and governance systems are largely overlooked for biodiversity conservation. In WA the focus has traditionally been on highly centralized management with a strong accent on law enforcement which requires substantial resources. Less than a hundred PAs have permanent staff and resources, and these are generally insufficient. Given the current difficulties and constraints in terms of resources, policymakers are looking towards a more decentralized and diversified approach to PA management, including greater community involvement. The new approach requires new skills, particularly for planning and implementation of cross-sectorial and participatory management for conservation and for managing sustainable use of natural resources (hunting, fishing, forestry, Non Timber Forest Products). The new approach enables livelihood issues and poverty reduction to be addressed both in categories IV to VI PAs (where sustainable resource-use is already allowed) and in category II PAs (national parks, where development activities are conducted in the buffer zone). This change in the conservation strategic approach represents a major challenge for biodiversity conservation in WA. The new scenarios require a variety of new management competencies for ensuring the conservation of biodiversity and at the same time to boost the development process of local populations.

Capacity building in the community model of conservation must be organised for the mid-level (senior site officers) and high-level officers (senior government officers and other wildlife professionals working in conservation, education and environmental sectors). The most important capacity-building institutions are: (1) the “École Régionale d’Aménagement intégré des Forêts et Territoires tropicaux (ERAIFT) in Kinshasa – DRC and (2) the “École de Faune of Garoua” (EFG) in Cameroon. Neither institution is able to provide direct and specific support for implementation of the wildlife strategic approach in WA. This strategic approach recommends an intervention to strengthen these institutions for the creation of specific conservation courses for mid-level and high-level officers from WA.

Finally attractive career opportunities in conservation must be created if PAs are to attract and retain quality staff. If capacity building of staff is not accompanied by attractive career conditions the brightest managers will continue to seek employment elsewhere.

The interventions recommended here should be carried-out under the coordination of a special unit with headquarters in WAEMU (proposition) and the implementation by a competent body or an association of competent bodies.

5.3 CONCLUDING RECOMMENDATIONS

Halting or reducing biodiversity loss requires tackling both indirect and direct drivers of biodiversity loss. The direct drivers can be divided into general and specific. General direct drivers apply across the region of WA and in some cases to all of Africa. Specific direct drivers are formulated for each of the four major ecotypes: (1) Deserts; (2) Savannas; (3) Forests and (4) Mangroves (and coastal areas).

5.3.1 Recommendations for tackling key indirect threats to conservation

There are several factors in West Africa that mitigate against effective conservation actions: (1) high political and security instability; (2) rapid population growth; (3) slow growing economy; (4) permanent food insecurity; (5) significant environmental fragility; (6) high risks from climate change; and (7) insufficient awareness of civil society on wildlife matters. These issues generate an increasing demand for natural resources in the ecosystems, consequently and all the protected areas in WA face pressure from grazing, cultivation, wood harvesting, hunting, fishing, use of water, and extraction of natural medicines. This results in fragmentation, reduction and isolation of PAs in the landscape with habitat loss, intrusion of human infrastructures and overhunting.

The government generally does not invest in PAs: the latter are considered as unproductive areas that are reserved (hence the term “reserves”) for later exploitation. Generally PAs are not viewed as economic and spatial elements of the landscape. Finally PA management is inadequately supported. As a result PAs are exploited for illegal grazing, cutting, agriculture, fishing, and poaching, sometimes with the complicity of PA rangers. In the case of breakdowns in law and order, the PAs easily become targets for refugees and rebel groups or are used as sources of funding and illegal trading by rebel groups and religious fundamentalist movements.

Possible global solutions to indirect drivers must be linked to issues of livelihoods, including the sustainable use of natural resources and the exploitation of non-use values of biodiversity and ecosystems. Focusing exclusively on responses and values at one level (e.g. provisioning economic services) often hinders responses that could promote wider values (e.g. livelihood-supporting services and cultural values).

In conclusion, the following actions are recommended for tackling indirect drivers of biodiversity loss:

- Managing protected areas and their surroundings for a wide range of sustainable uses. This is extremely important where, as in West Africa, biodiversity loss is sensitive to changes in key drivers.
- Mainstreaming biodiversity conservation and ecosystem services into all the primary sectors such as agriculture, pastoralism, forestry, fisheries, mining and energy, through an inter-sectorial approach.
- Build the capacity of African governmental and nongovernmental institutions to adopt the new specific and inter-sectorial approaches to conservation (e.g. ERAIFT – Regional postgraduate school for integrated management of natural resources in Sub-Saharan Africa for students and governmental officials from 23 African countries).
- Strengthen the institutions with oversight over the environmental and biodiversity impacts of mining, agro-industry, hydroelectric and other infrastructure projects.
- Support government institutions on questions of internal security (police, forestry, wildlife and/or National Parks departments, and justice) with respect to wildlife law enforcement as part of national programmes and projects financed by donors.
- Capture benefits and reduce costs for local communities, especially the local opportunity costs based on the principle of equitable sharing.

- Increase transparency and accountability of the government and private-sector through the involvement of concerned stakeholders and rights-holders in decision-making on biodiversity issues.
- Public awareness, communication and education.
- Promote and facilitate awareness-building in civil society for wildlife management and protection; support the growth of a network of local non-governmental wildlife organizations in West Africa.

5.3.2 Recommendations for tackling general direct threats to conservation

The wide range of ecosystems in West Africa is what gives it such biological richness and diversity. From the African continental perspective, WA has an enviable natural heritage: (i) largest system of deserts; (ii) most extensive mangrove system; (iii) highest levels of plant and animal species richness of any forest in Africa; (iv) some of the largest and most beautiful antelopes; (v) high levels of endemism; (vi) immense importance for over two million migrant birds (Afrotropical - Palearctic and intra-African migrations). Yet these natural resources and biodiversity are being degraded rapidly due to the complex political and socio-economic situation. In particular, WA governments generally do not give enough importance to PA management for two raisons: (i) inadequate prioritisation of funds; (ii) poor Institutional governance. The results are: (i) a weak planning, management effectiveness and monitoring of PAs and (ii) illegal wildlife trade and corruption.

Recommendations to tackle general direct drivers of biodiversity decline are as follows:

Availability of funds for PAs

- Increase the opportunity for more private sector investment and sponsorship in management, eco-tourism activities and in valuing ecosystems services (Payments for Ecosystem Services – PES).
- Plan for long-term financial sustainability for each PA by extending the time frame of interventions and strengthening the inter-sectorial approach for community support (to reduce threats and, indirectly, surveillance costs).

Institutional governance of PAs

- Seek more efficient structures that avoid duplication in natural resource management. This will require creating inter-sectorial guidelines on natural resource management and biodiversity conservation at national and regional levels (convergence in legislation, strategies and planning).
- Create parastatal bodies, and link the wildlife skills of national and international NGOs, natural resource rights-holders and the private sector.
- Integrate aspects of wildlife and habitat management in national forestry policies for logging concessions.

Illegal wildlife trade and corruption

- Seek greater support for law enforcement with better equipped and trained anti-poaching units, and greater integrity of wildlife officers, police, army and justice.

Specific measures for West Africa Elephant:

- Highlight the importance of the WAP complex to ensure the survival of WA's most important elephant population.
- Evaluate viable populations, and provide special protection for them (such as for the elephants at national level and for Zakouma NP in Chad).
- Create and strengthen intelligence gathering services, with monetary incentives for useful information leading to successful anti-poaching results.

Bushmeat

- Develop partnerships involving the private sector, communities, and government agencies for forest and wildlife management in logging concessions. This must include economic alternatives, alternative sources of protein, and wildlife monitoring.

Illegal live wild animal trade (See common solutions above)

Weak planning, management effectiveness and monitoring of PAs

- Improve data collection to build a more effective monitoring and decision support system (objectives – indicators – benchmarkers) that facilitates adaptive management and proactivity;
- Emphasize the role of stakeholders and natural resource rights-holders, national and international NGOs, private sector operators and other non-traditional partners with a view to enhancing management effectiveness at the ecosystem/landscape scale (PAs and buffer zones);
- Strengthen institutional capacities, particularly through greater training opportunities, for protected area management at the local, national and regional levels.

5.3.3 Recommendations for tackling specific direct threats to conservation

The major recommendation to overcome both general and specific threat to conservation in Western Africa in the medium term is to invest in a comparatively small number of Key Landscapes for Conservation (KLCs) that have the capacity to conserve viable populations of the large and charismatic wildlife species within intact and self-sustaining ecosystems. This will greatly assist in reversing the decline of threatened species and the loss of biodiversity in the region. Our proposals for conserving 14 KLCs are summarised in Table 27 and Figure 14.

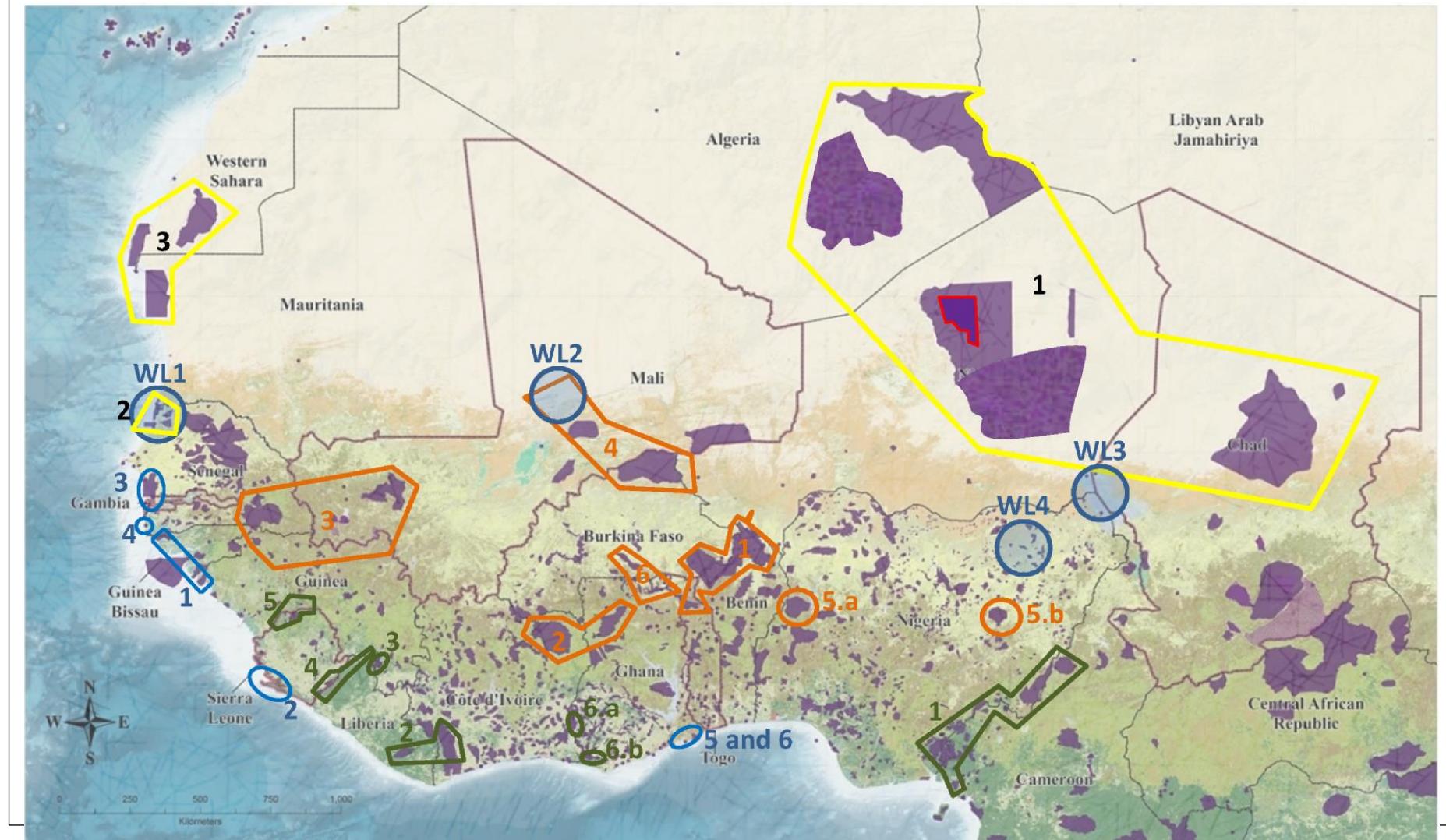
On a short-term basis, we further recommend that conservation efforts are focussed on Key Conservation Areas to stem the wildlife emergency which threatens to bring about the extinction of WA lions and other key wildlife species (Table 27).

Table 27. Summary table of Key Landscapes for Conservation (KLCs) and Key Conservation Areas (KCAs), and priorities for WA

N. KLC	N. KCA	KLCs and KPAs and priorities	N. PAs	Surface km ²
		Deserts Major Ecotypes	Totals Deserts	453,065
1		1. NCA - Termit & Tin Toumma NNR; Aïr and Ténéré NP; Addax Sanctuary NNR; Ouadi Rimé-Ouad NP; Fada Archei NP; Tassili-n-Ajjer NP and Ahaggar NP	7	416,750
2		2. SMWL1 - Diawling NP -Djoudj NP-WL1; Saint-Louis MPA; Ndiae Wildlife Reserve and Keur Momar Sarr Forest Reserve	4	2,465
3		3. MWS - Banc d'Arguin NP; Réserve Intégrale de Cap Blanc NNR and Dakhla NP	3	33,850
		Savannas Major Ecotypes	Totals Savannas	119,971
4		1. WAPOK: W transborder park; Pendjari NP; Arly Faunal Reserve; Oti Monduri Faunal Reserve and Keran NP	7	38,000
5		2. CM: Comoé NP – Mole NP	2	16,571
6		3. NBBBFF: Niokolo Koba NP - Badiar NP- Bafing NP – Boucle du Baoulé NP – Falémé area NC – Fouta Djalon area NC	4	25,000
7		4. GS: Gourma Elephant NP, Sahel Faunal Reserve and Inner Niger IBA	2	26,500
1		5. LION KCAs: Kainii Lake NP and Yankari NP	2	8,200
8		6. VC: Volta Trans-Border Ecosystem Wildlife	1	3,700
		Avoid the decline of wetlands	?	(1-3,000)
		Forests Major Ecotypes	Totals Forests	37,395
9		1. CKTGT: Cross River NP; Korup NP; Mont Cameroon; Tamakanda NP; Gashaka-Gumti NP; Tchabel Mbabo Wildlife Reserve and Faro NP	6	19,100
10		2. TGS: Taï NP; Nzo Faunal Reserve; Grebo National Forest; Sapo NP	3	7,700
11		3. MN: Nimba Mountains Strict Nature Reserve and East and West Nimba Nature Reserve in Liberia	3	415
12		4. GLF-MWWZ: Gola- Lofa - Foya Forest Reserves Trans-border Park; Mano NF, Wologizi NF; Wonegizi NF and Ziama MAB	3	4,400
13		5. OKKPS: Outamba-Kilimi NP and Forest Reserves Kuru Hill (in Sierra Leone) and Pinselli and Soya (in Guinea)	1	1,100
2		6. Forest KCAs: Ankasa NP; Bia NP	2	680
		New or larger KLC and KCA (Liberia, Ghana, Nigeria)	?	(3-5,000)
		Mangroves/Coastal Major Ecotypes	Totals Mangroves	9,592
14		1. CCCBT: Rio Cacheu Mangroves NC; Lagoas de Cufada NC; Rio Grande de Buba NC; Cantanhez Forest NC and Iles Tristao NC	0	4,780
3		2. Mangroves KCAs: Sherbro et Turtles Islands NC; Saloum Delta NP; Basse Casamance NP; Keta Lagoon Ramsar site; Songor Lagoon NC	3	3,062
		New or larger KLC and KCA (Nigeria, Ivory Coast, Liberia, Sierra Leone, Senegal, Guinea)	?	(1,5-2,000)
			Totals West Africa	620,000

Figure 14. Summary figure of West Africa - Main KLCs and KCAs, Wetlands and conservation priorities by Ecotypes

A) Deserts, yellow color; (B) Savannas, orange color; (C) Forests green color and (D) Mangroves/Coastal, blue color; WL Number - priority of intervention in Wetlands (map sources: Climate Change and Protected Areas in West Africa – CCPAWA, UNEP - World Conservation Monitoring Centre, 2010; specific elaboration)



The KLC and KCA protected area approach must be integrated with recommendations for specific direct drivers formulated for each of the four major ecotypes: (1) Deserts; (2) Savannas; (3) Forests and (4) Mangroves (and coastal areas).

5.3.3.1 Deserts

- Apply a species approach for Scimitar Oryx, Saharan cheetah, Dama Gazelle, Addax
- Adopt synergistically in situ and ex-situ conservation techniques in order to have the greatest probability of effective conservation.
- Be flexible enough to intervene in areas and countries as soon as security conditions allow.
- Save the habitat in which the species can live and reproduce (with PAs and KLCs).
- Preserve and improve the genetic heritage (DNA), under the responsibility of WAZA, with a view to future reintroduction of the species in their natural habitats. It is essential that these habitats remain occupied by the conservation services until such time as the reintroductions can take place.
- Exploit every possibility in land surveys (including information from the military) for better protection (and knowledge) of wildlife.

5.3.3.2 Savannas

- Establish a convergence plan of conservation interventions in this ecotype.
- Save the WAP(OK) ecosystem, the only functional ecological complex to have a potential for regeneration and reintroduction of species in the savanna ecotype.
- Preserve the most important ecological blocks of protected areas: (i) Comoé – Mole (Côte d'Ivoire and Ghana); (ii) Niokolo - Badiar - Bafing – Faleme –Fouta Djalon (Guinea, Mali, Senegal) and (iii) Gourma Elephant and Sahel Faunal Reserve (Mali and Burkina Faso) even if wildlife densities are low.
- Establish transborder corridors between major ecological blocks such the Volta Trans-Border Ecosystem Wildlife Corridors between Burkina Faso and Ghana.
- Support cross-border activities such as in WAPO complex (or WAPOK with the inclusion of Park Keran) or new management initiatives such as the Volta Trans-Border Ecosystem Wildlife Corridors between Burkina Faso and Ghana.

5.3.3.3 Forests

- Concentrate actions in the principal PAs, with equal priority for all the sites given their biological diversity and richness.
- Create new or enlarged national protected areas (Liberia, Ghana and Nigeria) in the important forest blocks to complement the overall biodiversity protection of this ecotype. Fill in information gaps (and scientific knowledge) and establish priorities, objectives, indicators and benchmarks for conservation actions.
- Reduce threats to PAs by adopting a systems approach to ensure inter-sectorial policy and development activities, analysis of environmental impacts, the valuing of ecosystem services and the respect of conservation principles.
- Determine the most appropriate conservation actions for threatened species (by the establishment of PHVA analysis if necessary), the preservation of specific habitats inside or outside PAs, and the combination of in-situ and ex-situ conservation.
- Create the political will to tackle conservation problems.

5.3.3.4 *Mangroves*

- Apply legislations and international conventions related to mangroves, and adopt adequate policies and inter-sectorial approaches for implementation of actions.
- Concentrate actions in priority PAs and community mangrove forests.
- Create new or enlarged national protected areas (Nigeria, Ivory Coast, Liberia, Senegal, and Guinea) and develop an integrated PA and Reserve network of coastal and marine areas encompassing mangrove and other coastal habitats. Collaborate with national and international NGOs and empowered local communities to maintain and monitor the community mangrove areas.
- Develop an integrated PAs and Reserves network of coastal and marine areas encompassing mangrove and other coastal habitats.
- Establish a fund to maintain sustainable economies that are based on the ecologically sustainable management of mangroves and coastal habitats.
- Determine the most appropriate research and conservation actions for improving management effectiveness of PAs and mangrove forests and related threatened species.

6. ANNEXES

6.1 ANNEX 1. WEST AFRICA DATA MISCELLANEOUS

Table 28. Population, Annual Growth (%) and Estimated doubling time of population of WA

Country	July 1, 2013 projection	Average relative annual growth (%)	Estimated doubling time (Years)
Benin	9 742 000	3,24	22
Burkina Faso	17 323 000	3,28	21
Gambia	1 794 000	2,75	26
Ghana	26 441 000	2,56	27
Guinea	11 861 000	3,09	23
Guinea-Bissau	1 699 000	2,60	27
Ivory Coast	23 919 000	3,09	23
Liberia	3 881 000	2,10	33
Mali	16 678 000	3,29	21
Mauritania	3 461 000	2,58	27
Niger	17 493 000	3,85	18
Nigeria	177 096 000	3,24	22
Senegal	13 567 000	3,06	23
Sierra Leone	5 823 000	1,84	38
Togo	6 675 000	2,88	24
Total	337 453 000	2,90	25

Table 29. CITES, Countries currently subject to a recommendation to suspend trade (09/09/2013)

Country	Notification	Basis	Common name	Scope	Valid from
Benin	No. 2013/013 (02/05/2013)	Significant trade	Emperor Scorpion	<i>Pandinus imperator</i>	2 May 2013
Cameroon	No. 2013/013 (02/05/2013)	Significant trade	hippopotamus	<i>Hippopotamus amphibius</i>	7 September 2012
Côte d'Ivoire	No. 2013/013 (02/05/2013)	Significant trade		<i>Pericopsis elata</i>	7 September 2012
Guinea	No. 2013/013 (02/05/2013)	Significant trade	Black crowned-crane	<i>Balearica pavonina</i>	2 May 2013
	No. 2013/017 (16/05/2013)	Compliance and enforcement		All commercial trade	16 May 2013
Mali	No. 2013/013 (02/05/2013)	Significant trade	Cape Parrots	<i>Poicephalus robustus</i>	9 July 2001
			Mali Spiny-tailed Lizard	<i>Uromastyx dispar</i>	22 August 2008
Mauritania	No. 2004/055 (30/07/2004)	National legislation		All commercial trade	30 July 2004
Niger	No. 2013/013 (02/05/2013)	Significant trade	African chameleon	<i>Chamaeleo africanus</i>	30 July 2004
Togo	No. 2013/013 (02/05/2013)	Significant trade	Cape Parrots	<i>Poicephalus robustus</i>	9 July 2001
	No. 2013/013 (02/05/2013)	Significant trade	Emperor Scorpion	<i>Pandinus imperator</i>	2 May 2013

Table 30. The biodiversity features of West Africa

		Biodiversity						Threat % of land transformed	Response % of land protected
		Mammals		Birds		Plants			
Country	Area km ²	Endemic	Total	Endemic	Total	Endemic	Total		
Benin	11 2620	0	188	0	503	0	2 500	9	6
Burkina Faso	2 740 00	0	147	0	447	-	1 100	48	12
Cape Verde	4 030	0	5	5	87	86	774	-	-
Gambia	11 303	0	117	0	666	Not known	974	42	0
Ghana	238 540	1	222	0	447	43	3 725	17	5
Guinea	245 860	1	190	0	676	88	3 000	14	0
Guinea-Bissau	36 120	0	108	0	628	12	1 000	7	-
Côte d'Ivoire	322 460	0	230	0	454	62	3 660	25	6
Liberia	111 370	0	193	1	536	103	2 200	30	1
Mali	1 240 190	0	137	0	561	11	1 741	15	4
Mauritania	1 025 520	1	61	0	459	Not known	1 100	3	0
Niger	1 267 000	0	131	0	433	Not known	1 460	2	8
Nigeria	923 770	4	274	3	848	205	4 715	34	4
Senegal	196 720	0	192	0	546	26	2 086	47	11
Sierra Leone	71 740	0	147	0	581	74	2 090	38	2
Togo	56 790	0	196	0	551	Not known	3 085	7	8
All countries	6 138 030	7	9			710		16%	4%

Note: Sources: Biodiversity information taken from Groombridge and Jenkins (2002). Calculation of the proportion of transformed land was based on the reclassification by Hoekstra and others (2005) of the GLC3 Global Landcover Classification (Mayaux and others 2004). Hoekstra and others (2005) defined four classes of transformed land: 1) Artificial surfaces and associated areas, 2) Cultivated and managed areas, 3) Mosaic: cropland/treecover, and 4) Mosaic: cropland/ other natural vegetation. In this chapter, all four classes have been integrated into the calculation of the proportion of transformed land. The area covered by classes 3 and 4 was divided by two, assuming that this reflects their mosaic character with a certain proportion of land remaining untransformed. Note that this method does not account for the degree of fragmentation within the mosaic landcover classes. Data on protected areas (IUCN class I-V) were obtained from WRI 2005

Table 31. International protected areas in West Africa

Country	Biosphere reserve		World heritage sites		RAMSAR sites		Important Bird Areas		Endemic Bird Areas
	Number	Area Km ²	Number	Area Km ²	Number	Area Km ²	Number	Area Km ²	Number
Benin	1	6 230	0	0	2	1 390	6	14 901	0
Burkina Faso	1	1 860	0	0	3	2 990	10	16 279	0
Cape Verde	-	-	-	-	-	-	15	4 685	1
Côte d'Ivoire	2	14 800	3	15 040	1	190	14	23 221	1
Gambia	0	0	0	0	1	200	13	585	0
Ghana	1	80	0	0	6	1 780	40	16 076	1
Guinea	2	1 330	1	13	6	2 250	18	7 078	1
Guinea-Bissau	1	1 100	0	0	1	390	8	7 578	0
Liberia	0	0	0	0	0	0	9	6 302	1
Mali	1	23 490	1	4 000	3	1 620	17	28 692	1
Mauritania	0	-	1	12 000	2	12 310	24	17 906	0
Niger	2	251 280	2	79 687	4	7 150	15	83 431	0
Nigeria	1	<1	0	0	1	580	27	32 468	4
Senegal	3	10 940	2	9 290	4	1 030	17	25 799	1
Sierra Leone	0	-	0	0	1	2 950	10	6 149	1
Togo	0	0	0	0	2	1 940	4	5 085	0
Total	15	311 110	10	120 030	37	36 740		296 235	12

Note: Source: Data from Wetlands International undated, UNESCO 2006a, UNESCO 2006b

Table 32. Biome and ecotype of the WA countries

	Biome	Ecotypes	Benin	Burkina Faso	Côte d'Ivoire	Gambia	Ghana	Guinea	Guinea-Bissau	Liberia	Mali	Mauritania	Niger	Nigeria	Senegal	Sierra Leone	Togo
Realms: Palearctic	Deserts and xeric shrubland	A. Deserts															
		Sahara Desert															
		Atlantic coast															
		South Saharan steppe and woodlands															
Realms: Afrotopics	Tropical and subtropical grasslands, savannas, shrublands and	B. Savannas															
		Sahelian Acacia savanna															
		West Sudanian savanna															
		Guinean forest-savanna mosaic															
	Montane Grasslands and Shrublands	Jos Plateau forest-grassland mosaic															
	Tropical and subtropical moist broadleaf Forests	C. Forests															
		Guinean Montane Forests															
		Western Guinean lowland forests															
		Eastern Guinean forests															
		Nigerian lowland forests															
		Cameroonian Highlands forests															
		Cross-Sanaga-Bioko coastal forests															
		Niger Delta swamp forests															
	Mangroves	D. Mangroves															
		Guinean Mangroves															
		Central African mangroves															

Table 33. WA, Countries data, Source: Africa Development Indicators

WB Indicators	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TREND	
Population growth (annual %)	3.1	3.3	3.5	3.5	3.4	3.2	3.0	2.8	2.7	2.8	2.9	3.1	3.2	3.2	3.2	3.1	3.1	3.0	3.0	2.9	2.8	2.8		=	
Population in the largest city (% of urban population)	30.6	30.4	30.0	29.2	28.4	27.8	27.3	26.9	26.5	26.1	25.7	25.1	24.5	24.0	23.4	23.0	22.6	22.2	21.9	21.7	21.6	21.4		↓	
GDP growth (annual %)	9.0	4.2	3.0	5.8	2.0	6.0	4.3	5.7	4.0	5.3	4.9	6.2	4.4	3.9	3.1	2.9	3.8	4.6	5.0	2.7	2.6	3.5		=↗	
GDP per capita growth (annual %)	5.6	0.8	-0.6	2.2	-1.4	2.7	1.3	2.8	1.1	2.4	1.8	3.0	1.2	0.6	-0.1	-0.3	0.6	1.5	2.0	-0.3	-0.3	0.7		=↓	
GNI growth (annual %)	2.9	4.2	5.2	2.6	4.7	4.6	5.4	5.4	3.7	4.8	5.7	5.4	4.5	4.2	2.9	2.5								↖	
Corruption Perceptions Index (score)																3.2	2.9	2.5	2.7	3.1	2.9	2.8	3.0	36.0	↑
International tourism, expenditures (% of total imports)																5.1	5.1	5.1	4.3	3.9	4.0			↓	
3rd pillar: Macroeconomic stability																4.0	4.7	4.6	4.8	4.5	4.9			=	
Terrestrial protected areas (% of total surface area)	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8			=	
Forest area (% of land area)	51.1	50.5	49.8	49.2	48.6	48.0	47.4	46.7	46.1	45.5	44.9	44.4	44.0	43.6	43.1	42.7	42.2	41.8	41.3	40.9	40.4	40.0		↓	
Agricultural land (% of land area)	20.1	20.2	20.4	20.6	21.3	22.3	24.0	25.6	27.0	27.6	28.3	29.0	29.8	30.7	31.6	31.2	29.6	29.6	30.6	29.3	30.1	30.4		↑	
Population density (people per km ² of land area)	42.3	43.8	45.3	46.9	48.5	50.1	51.6	53.1	54.6	56.1	57.8	59.6	61.5	63.5	65.6	67.7	69.8	71.9	74.1	76.3	78.5	80.7		↑	

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