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# WEST AFRICA ENVIRONMENTAL THREATS AND OPPORTUNITIES ASSESSMENT

FINAL REPORT



APRIL 2013

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## FINAL REPORT

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# ABBREVIATIONS/ACRONYMS

ABCG	Africa Biodiversity Collaborative Group
ACG	African Catalytic Growth
ADF	African Development Fund
AfDB	African Development Bank
AFD	<i>Agence Française de Développement</i>
AGRHYMET	<i>Centre Régional de Formation et d'Application en Agrométéorologie et Hydrologie Operationnelle/Agriculture, Hydrology, Meteorology</i>
AMESD	African Monitoring of the Environment for Sustainable Development
ASM	Artisanal and Small-scale Mining
AU	African Union
AWF	African Wildlife Foundation
CAADP	Comprehensive Africa Agriculture Development Program
CBD	Convention on Biological Diversity
CBNRM	Community-Based Natural Resources Management
CCAFS	Climate Change, Agriculture and Food Security
CEFP	Critical Ecosystem Partnership Funds
CGIAR	Consultative Group on International Agricultural Research
CI	Conservation International
CIFOR	Center for Forestry Research
CILSS	Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel
CIRDES	<i>Centre International de Recherche- Développement sur l'Elevage en Zone Sub-humide/International Research-Development Center on Livestock in Subhumid zones</i>
CITES	Convention on International Trade in Endangered Species
CORAF/WECARD	West and Central African Council for Agricultural Research and Development
CO <sub>2</sub>	Carbon Dioxide
CREMA	Community Resource Management Area
CSO	Civil Society Organizations
CSR	Corporate Social Responsibility
CSR/SRFC	<i>Commission Sous-Régionale des Pêches/Sub Regional Fisheries Commission</i>
DG	Democracy and Governance
ECA	Economic Commission of Africa

ECOWAP	Economic West Africa Agricultural Policy
ECOWAS	Economic Community of West African States
ECOWEP	Economic West Africa Environmental Policy
EIA	Environmental Impact Assessment
ELI	Environmental Law Institute
ELRI	Environmental Law Research Institute
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EROS	Earth Resources Observation Research Center
ETOA	Environmental Threats and Opportunities Assessment
FAA	Foreign Assistance Act
FAO	Food and Agriculture Organization
FEWS NET	Famine Early Warning Systems Network
FFI	Fauna and Flora International
FTF	Feed the Future
GEF	Global Environment Facility
GOL	Government of Liberia
GDP	Gross Domestic Product
G-FISH	Global FISH Alliance
GIZ	German Agency for Technical Co-operation
ICARRD	International Conference on Agrarian Reform and Rural Development
ICRISAT	International Crops Institute for Semi-Arid Tropics
IDMP	Integrated Diamond Development Project
IER	<i>Institut d'Economie Rurale</i>
IFPRI	International Food Policy Research Institute
IITA	International Institute for Tropical Agriculture
ILRI	International Livestock Research Institute
INSAH	<i>Institut du Sahel</i>
ISSG	Invasive Species Specialist Group
ITC	International Trypanotolerance Centre
IUCN	International Union for Conservation of Nature
IWMI	International Water Management Institute
JPC	Joint Planning Cell
LGAF	Land Governance Assessment Framework
LPI	Land Policy Initiative

MESA	Monitoring for Environmental Security in Africa
MRU	Mano River Union
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
NP	National Park
NR	National Reserve
NRM	Natural Resources Management
PA	Protected Area
PEPFAR	President's Emergency Plan for AIDS Relief
PES	Payments for Ecosystem Services
PMI	Presidential Malaria Initiative
PRADD	Property Rights and Artisanal Diamond Development
PROGEBE	<i>Projet Régional de Gestion Durable du Bétail ruminant Endémique/Regional Project for Sustainable Management of Endemic Ruminant Livestock in West Africa</i>
PROSPER	People, Rules and Organizations Supporting the Protection of Ecosystem Resources
RDCS	Regional Development Cooperation Strategy
REDD	Reduced Emissions from Deforestation and Forest Degradation
SAMFU	Save My Future Foundation
SARI	Savanna Area Research Institute
SCNL	Society for Conservation of Nature of Liberia
SEIA	Social and Environmental Impact Assessment
SRFC	Sub-Regional Fishery Commission
SOW	Scope of Work
TNC	The Nature Conservancy
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UNWTO	UN World Tourism Organization
US	United States
USAID	United States Agency for International Development
USFS-IP	United States Forest Service International Programs
USG	United States Government
USGS	United States Geological Survey
WAEMU	West Africa Economic Monetary Union

WALIC	West Africa Livestock Innovation Centre
WAIPRO	West Africa Irrigation Project
WARFP	West Africa Regional Fisheries Project
WASH	Water, Sanitation and Hygiene
WCMC	World Conservation Monitoring Centre
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

# EXECUTIVE SUMMARY

West Africa is vast, an area larger than the continental United States. It contains several broad bands of different ecosystems that stretch, roughly in parallel, across the region east to west and encompass extremes in temperature and rainfall. West Africa is bordered on the north by the Sahara Desert and in the south by the heavily urbanized southern coast interspersed with mangroves, tidal estuaries, and patches of dense, moist rainforests. Off the west and south coasts the Canary and Guinea Currents are critical elements of the marine ecosystems of the seas washing the coastline. The biological diversity is substantial with the highest gradients of richness in the Upper Guinean Forest of the south-central portion of West Africa and in the Canary Current off the western coast. The Sahel, the “margin” or “edge” in Arabic, is the transition grassland, shrub forest savanna zone between the rainforest and the desert. The lifeblood of transhumance in West Africa, it is home to many important wildlife species and responds, with the vegetation, in dynamic ways to the drought, seasonal flooding and pestilence for which it is famous.

Freshwater in the West Africa landscape is the most crucial resource and it is found mainly in six major river systems that drain the region. These and the smaller rivers, ponds, wetlands, seasonal waterbodies (especially the fossil riverbeds in the Sahel), Lake Chad and hundreds of estuaries in the coastal areas are critical for ensuring that the permanent and migratory biodiversity of the region is maintained. Groundwater is difficult to access in West Africa and accounts for only about one percent of the water used. The water that flows through the region is the single most important natural resource and seventeen countries in West Africa share 25 trans-boundary watercourses. What happens upstream and alongside these watercourses is extremely important to everyone. Adequate flows of freshwater and clean water are vital for maintaining public health and as inputs to all sectors of the region’s economy.

Farmers, pastoralists, fisherfolk, hunters, and others are directly dependent on the water, the soils, the forests, and the biodiversity of the region. With the exception of a small minority, most of West Africa’s 300 million people have livelihoods that are very fragile and without any safety nets. All but two of the 19 countries are at the very bottom of the Least Developed Countries list (based on GDP). West Africa is predicted to grow in population faster than anywhere else in the world for the next 15-20 years, 60 percent of its current population is under the age of 25 and the food security of the region is already tenuous. But investment, especially foreign direct investment, in the region is growing and will continue to grow putting increased pressure on the agriculture, natural resources, and fishing sectors to maintain and even improve food security through rational planning and via good governance practices.

It is against this backdrop that this Environmental Threats and Opportunities Assessment (ETOA) was conducted. Using individual country ETOAs and biodiversity/tropical forestry reports compiled by USAID as the main background documents, the five-person assessment team collected additional documentation and conducted interviews and discussions with key regional and national stakeholders to update and confirm findings from the literature. Brief field visits in early 2013 also helped to ground-truth findings about West Africa’s main ecosystems and the environmental issues that confront them. Scores of specialists, managers, entrepreneurs, administrators and decision-makers representing environmental interests in more than three dozen institutions were interviewed. This document, compiled through an iterative drafting and comment process, reports on the status of West Africa’s environment and its biological resources. It identifies the main threats to biodiversity and tropical forests, summarizes

necessary actions that are needed to address the threats, and within the context of what is planned/being done, discusses opportunities where USAID/WA may have a comparative advantage to assist with specific actions to address the gaps that still exist.

The state of the West Africa environment is not good. Each of its ecosystems is at serious risk, mainly from anthropogenic causes, but also from climatic changes that already affect livelihoods of the region's populations. The environment in the majority of West Africa is harsh and already fragile; the threats from economic and livelihood activities put it under even greater strain. The direct threats to terrestrial biodiversity and forests include conversion of forests (to other land uses), mining extraction and exploration, infrastructure development, climate change, illegal trafficking and trade of wildlife species, and unsustainable harvesting of woodstocks. Freshwater resources in the region are also subject to impacts of climate change as well as the pollution of water sources and water courses, improperly planned/constructed infrastructure, and watershed changes (from deforestation, development, and increases in impervious surfaces). Marine and coastal biodiversity in West Africa are most susceptible to overharvesting of marine resources as well as destructive fishing techniques, along with threats from oil/gas exploration and extraction, pollution. Other threats include the conversion of mangrove forests, infrastructure development and climate change elements of sea level rise, acidification and higher sea surface temperatures.

The assessment team learned of many local, national and regional efforts led by donors, governments, regional organizations, non-governmental institutions, and the private sector that are implementing activities to address many of these threats. The team confirmed that the most effective actions are those (a) that empower local populations to have the responsibility to help manage the biological riches of the region, (b) that allow land use rights, and (c) that can provide the users with at least some of the benefits from their stewardship. This report identifies and discusses many of these institutions and their efforts in the body of the report along with other examples that appear in an annex. But gaps remain in the actions necessary to slow the environmental degradation, to protect West Africa's marine and terrestrial biodiversity and to conserve its flora, fauna and freshwater resources.

The joint USAID-USFS STEWARD program, PAGE, BaFana, and PROSPER are good examples of current implementation efforts using best practices that USAID has learned from within West Africa and its experiences elsewhere. These and similar activities exemplified by other donor projects and the cooperation of regional institutions need to be part of the foundation for future programming.

Climate change, food security, and water and sanitation activities are also sectors where cross-over benefits can accrue from threat mitigation activities with respect to environmental and biodiversity elements. Adaptive strategies for dealing with the impacts of climatic events (such as the Sahel JPC actions) are gaining momentum and USAID's global climate change strategy is achieving results that can be promulgated and supported through wider coordination, awareness and training at the regional level in West Africa. This assessment identifies more than a dozen opportunities that USAID/WA can consider as it prepares its next Regional Development Cooperation Strategy. These recommendations are prioritized into three groups roughly defined as "must do," "should do" as soon as resources are available, and a third group that "merits serious consideration."

One example from the top priority group includes more aggressive attention on the region's freshwater river systems mainly due to declining availability of fresh, clean water in the face of planned increases in the region's economic development, especially the agriculture sector and its key role in food security. Water shortages in West Africa today promise to be even greater tomorrow; and these will occur even

without considering the impacts of climate-related changes. USAID needs to help lead the way in the coordination of strategies governing water use and conservation by regional bodies and river basin authorities, and in the harmonization of policies and the actions that impact the region as whole. Water use, in the face of estimated economic growth of 20 to 40 percent for the region in the next 25 years, needs a thorough and comprehensive plan. The region's security demands it.

Facts and evidence about West Africa's biological and natural resources are emerging at an accelerated pace and from many different (and often new) quarters. This is creating informational gaps in the regional regulatory framework and among regional bodies such as ECOWAS, CILSS, and international research groups. Policies, strategies and plans are being formulated and decisions made without full awareness of the new information. There is a substantial opportunity for USAID/WA to lead a knowledge management effort that can enhance the use of important natural resources information across the region. USAID can help to strengthen regional capacity to absorb and use emerging environmental evidence to make management more effective.

USAID can also help to develop a framework for transboundary land use/resources planning. The lack of an integrated model of land use at the transboundary level is creating conflicts between pastoralists and sedentary agricultural communities where pastureland is available. Other transboundary conflicts over land use, protection and management are occurring at other points in the region especially where biological and mineral resources overlap. Threats to the region's marine resources and biodiversity are also the result of inadequate, or an absence of integrated transboundary management systems. The goal is to develop a framework whereby transboundary issues are discussed and understood and the capacity of the regional bodies enhanced to develop cross-border planning and solutions that can be continually adapted and monitored. Climate change adaptation and climate smart agriculture in these transboundary areas can benefit from the integrated planning efforts conceived in this regional framework. The Sahel JPC, working in the northern part of the region, may also prove to be a valuable partner/resource in these situations.

A fourth high priority opportunity identified in the course of the assessment includes support for regional efforts targeting environmental monitoring for environmental sustainability and security. ECOWAS has some hands-on experience and needs more assistance, especially with its new MESA program that includes monitoring for coastal and marine elements.

Within the second tier of opportunities for the region, water still figures prominently in one of the recommendations. The threat of pollution and hazardous waste spills/accidents in the region's watersheds, fresh water courses and also along its heavily populated southern coastline looms large. Increases in economic activity only exacerbate the risk. Although the region is much better prepared for disasters linked to drought through its famine early warning systems, it is not well prepared for man-caused disasters. These are events that can have far-reaching and long-lasting effects on the environment and especially the water flowing in the region's rivers. It is assistance aimed at this type of environmental stewardship and private sector engagement that represents a considerable opportunity for USAID/WA. There is very little capacity in regional institutions like ECOWAS (or nationally across the region) for engaging, monitoring and managing environmental threats due to accidents or mismanagement in the private sector.

Five other opportunities in this second opportunity tier are identified in this report as being likely candidates for assistance where USAID/WA is seen as having a comparative advantage. This includes supporting mechanisms to increase the security of land and other natural resources tenure rights,

promoting (with sub-regional institutions) transboundary growth, supporting agro-biodiversity preservation, and the promotion and support for regional policy formulation regarding water use impacts by large-scale users. There are four additional recommendations for USAID's consideration that are grouped in the third "merits consideration" group. They include continued support to the region's communities to improve their adaptive capacity to climate change. This is an area where USAID has considerable experience and it continues to attack the issue from a variety of perspectives. Other recommendations are aimed at supporting formal educational efforts that provide for greater environmental awareness with more critical thinking to reduce communication and knowledge gaps and assistance (especially in non-presence countries) that promotes of community-based resource management initiatives.



# PART A

## INTRODUCTION

The natural environment is the basic building block for our survival. One of its major components, “... biodiversity, is the very foundation for all the Earth’s essential goods and services. The air we breathe, water we drink, and the food we eat all depend on the Earth’s rich biodiversity” (USAID, 2012).

### 1.0 PURPOSE OF THE ASSESSMENT AND METHODOLOGY

#### 1.1 PURPOSE OF THE ASSESSMENT

The United States Foreign Assistance Act (FAA), which authorizes bilateral foreign assistance programs, requires that tropical forestry and biodiversity assessments be conducted in conjunction with the development of new foreign assistance strategies and programs. The purposes of this legal requirement are 1) to assure that the United States foreign aid does not support activities that harm the tropical forests and biodiversity of host countries; and 2) to inform the United States Agency for International Development (USAID) strategic planning and find ways to support host countries to sustainably use and conserve their tropical forests and biodiversity. Regarding tropical forests and biodiversity, FAA Sections 118 and 119 (**Annex A**) state:

*Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of the actions necessary in that country to conserve tropical forests and biological diversity, and the extent to which the actions proposed for support by the Agency meet the needs thus identified.*

The intent of the US Congress in passing these amendments was not to support the conservation of biological diversity and tropical forests for their own sake, but rather to support their conservation because of the belief that they are the foundation for the long- term, sustainable, social and economic well-being of any country.

The USAID West Africa Regional Office (USAID/WA) is on the threshold of its next five-year planning period. It requested this assessment to help fulfill the legal requirements of the FAA and also to provide input to its new 2014-2018 Regional Development Cooperation Strategy (RDCCS) as it relates to biodiversity, tropical forest conservation and the broader environmental context. The Office seeks to strategically link and integrate environmental concerns and activities into all elements of its development program and fulfill its critical responsibility to promote environmentally sustainable development across the West Africa region. This role includes assisting and monitoring regional environmental compliance with Regulation 216, incorporating broader opportunities for building capacity in environmental assessment across the region and promoting the integration of environmental concerns into USAID approaches to both national and regional development in West Africa.

This Environmental Threats and Opportunities Assessment (ETOA) goes beyond, yet incorporates, a 118/119 analysis. It is not requirement that USAID regional offices conduct such an exercise, but USAID/WA recognizes that this is a USAID “best practice” that can add value to its strategic planning efforts. This first-time exercise for the WA Region looks to identify best environmental management practices and identify opportunities for regional cooperation among donors, non-governmental organizations (NGOs), private sector and government actors, and other stakeholders. More specifically it:

- Summarizes the current state of the West Africa Region’s biological diversity, forests and environment, including its water resources;
- Describes the direct biophysical threats to these resources and identifies the causes of those threats;
- Identifies the actions needed to reduce and/or mitigate the causes of those threats in the current political, economic and social context of the region;
- Identifies any current or proposed actions by USAID/WA that could threaten biodiversity, forests, or environmental integrity and resilience; and
- Identifies potential contributions (via recommendations) to the needed actions by USAID/WA for which it has a comparative advantage and/or is strategically placed to offer a comparative advantage via key activities.

In order to meet these objectives this report provides the information requested in the Scope of Work (**Annex B**). It should be noted that, although ETOAs are supposed to identify and recommend contributions that could be made by USAID, they are not intended as project or program design documents, and cannot provide the detailed information and analysis needed for sound project design. They can only identify opportunities for future programming and suggest where additional information may be needed or helpful for future design efforts.

## 1.2 METHODOLOGY

This assessment was conducted from mid-January through February 2012 by a five-person team of international specialists, each with extensive experience in the region. (Biographical sketches of the ETOA team members can be found in **Annex C**.) The assessment began in Washington, DC via discussions with stakeholders in USAID’s Africa Bureau, the US Forest Service International Programs and the US State Department. In the three-week field visit period, the team conducted face-to-face interviews with government technical specialists and leaders, representatives of NGOs, environment researchers and academicians, donor organizations, project and USAID sector specialists in environment, governance and health, and private sector representatives. Visits in the region were limited to Ghana and Liberia. Burkina Faso was also originally on the itinerary but conflict in the northern Sahel put a ban on all official US government travel to that country. With the concurrence of USAID/WA the ETOA team traveled instead to northern Ghana, an ecological zone similar to that of Burkina Faso. **Annex D** provides a list of persons met and interviewed in the course of the assessment. Given the limited field time for country visits in the region, this assessment relies heavily on the individual country ETOAs, 118/119 documents and other project and background literature reviewed by the team before, during and after the field visits in West Africa.

An oral debriefing and a written summary were given to USAID/WA at the close of the field visits. Then, using USAID's initial comments, the team completed a first draft report, and after comments and suggestions from USAID reviewers, this final report was submitted.

## 2.0 WEST AFRICA'S ECOSYSTEMS

The present report examines current status of the natural environment of the West Africa region, an area that encompasses 19 countries<sup>1</sup> and large enough to easily contain the 48 contiguous states of the United States. It is also a region that is very diverse ecologically. Its ecosystems range from deserts and savannahs to coastal estuaries and tropical rainforests. The area is drained by at least six major river systems that are extremely important ecologically and form the essential framework for the basic livelihoods and economy of the region. Just offshore, the marine ecosystems ebb and flow via two major African currents: the Guinea Current that flows along the underbelly of the West Africa region and the Canary Current, off the westernmost fringes of the region. The latter, which also washes the islands of Cape Verde, is an upwelling flow that sustains the fisheries and marine biodiversity in what is recognized as one of the richest large marine ecosystems (LME) in the world (UNEP, 2009).

The terrestrial ecosystems occur in broad belts, generally aligned on an east-west axis, across the region (see Figure 2.1 below). In general terms these systems change from extremely dry to extremely wet, moving north to south. Desert and xeric shrub lands dominate the northern-most countries of West Africa from Mauritania in the west stretching eastward across Mali, Niger and Chad. South from this band is the Sahel, home for large populations of transhumant herders and their livestock (camels, cattle, sheep and goats) that are dependent on the grasslands and shrub land savanna ecosystems. The Sahel stretches from Senegal across northern Guinea, southern Mali, Burkina Faso, Niger, northern Nigeria, southern Chad and northern Cameroun. Cape Verde, off the coast of Senegal, has mainly Sahelian characteristics but also xeric shrub lands in the mountain rain shadows.

Between the Sahel and the moist tropical broadleaf forest belt further south is the sub humid dry broadleaf forest ecosystem that occurs across vast portions of the midsection of West Africa (southern Senegal, central Guinea, southern Mali, Burkina Faso and northern Cote d'Ivoire, Ghana, Togo, Benin, Nigeria and Cameroun). The ecosystem is often present in a mosaic pattern and also occurs as fingers that stretch into the wetter areas along watercourses in the Sahel.

The band comprising the tropical moist broadleaf forest that stretches across the coastal tier of countries from The Gambia (as a riverine system) in the west through to Cameroun, Gabon and Sao Tome and Principe. This ecosystem is the one that is the most commercially exploited, but still contains substantial, contiguous tracts of what is known as the Upper Guinean Rainforest.

In narrow bands along the coast of the region, there are important bands of swamps, brackish ponds and estuaries that comprise the coastal ecosystem. From the Gambia and Guinea Bissau eastward to Cote d'Ivoire and Ghana, and then sporadically in pockets eastward to Gabon, is an important sliver of mangroves that help to anchor the coastal ecosystems of these regions.

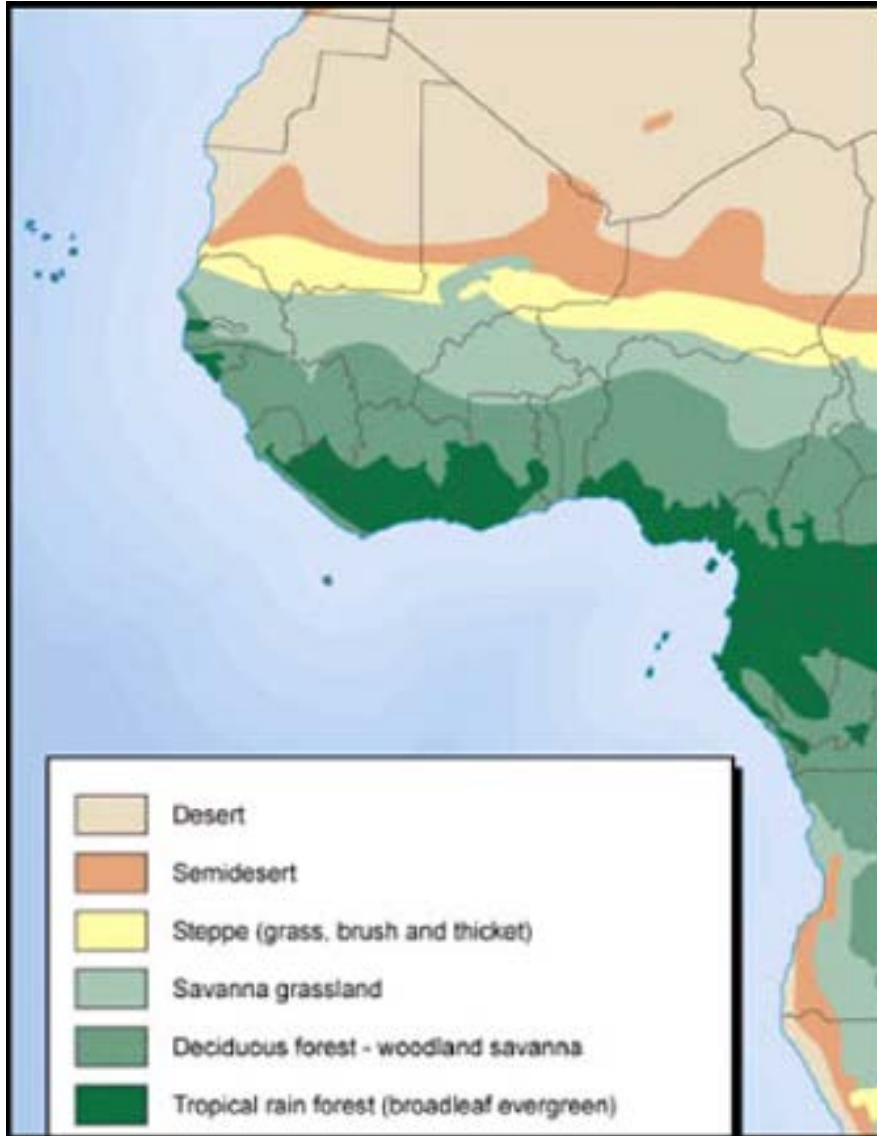
Finally, there are transitional zones that occur between each of these broad bands of terrestrial ecosystems. The rivers and watercourses that run across and through them make these transitional zones

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<sup>1</sup> These are named in the Scope of Work, Annex B, as: Cape Verde, Mauritania, Senegal, The Gambia, Mali, Burkina Faso, Niger, Chad, Guinea, Sierra Leone, Liberia, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, Gabon, and Sao Tome e Principe

more predominant. The most influential of these in the West African landscape is the Inland Delta area on the Niger River in south-central Mali (see map in Annex G). This is an area of dynamic flows of water, biodiversity, agriculture, transhumance and commerce. Overall, each of the fresh water river systems in West Africa has important impacts on the ecosystems of the region and is a critical component of the environmental fabric of the region. Microsites and water courses, especially in the drier savanna and shrub land ecosystems, play significant roles as niches for *refugia* of plant and animal diversity in transition areas, sites that are impacted easily by both periods of drought and seasonal flooding.

**FIGURE 2.1: TERRESTRIAL ECOSYSTEMS OF WEST AFRICA**



Source: Robison, R. and R. Brooks. 2010.

# PART B

## WEST AFRICA STATE OF THE ENVIRONMENT

This section of the ETOA presents a general “state of the environment” assessment for the region as a whole. It begins with a summary of the main threats as they relate to the broad ecosystems defined above in Section 2.0. The risks and impacts of climate change on the natural resources of the region, and overall hazards and environmental degradation are also addressed. A brief analysis of regional institutional policies’ impacts on West Africa’s environment is followed by examples of current interventions and approaches aimed at improving environmental stewardship. Part B is completed with a brief examination of additional opportunities for improving environmental management in West Africa along with some important and realistic constraints.

### 3.0 SUMMARY OF THREATS TO WEST AFRICA’S ECOSYSTEMS

Threats to West Africa’s environment, its ecosystems, and biodiversity stem from (a) the loss, destruction, or conversion of natural habitats/ecosystems, (b) the overharvesting or killing of species, (c) the introduction and proliferation of non-native species, and (d) pollution. The drivers, or root causes, of these threats are also fourfold in nature; they are political/institutional, economic, external/global, or social. The challenge of development practitioners in West Africa is to design, implement, monitor and adapt programs and actions that will mitigate the root causes of these threats to the region’s ecosystems. Table 3.1, below, outlines the major threats by broad ecosystem type. Further on in this report, in Part C, the discussion focuses more specifically on threats to biodiversity, tropical forests, freshwater and marine ecosystems and provides an analysis of the indirect threats and mitigating actions undertaken to address the threats. This section looks at some of the main threats to West Africa’s natural environment. There are opportunities for USAID/WA to help mitigate each of these threats and the most logical ones are discussed in Part D of this report.

#### 3.1 MINING

Due to the significant role that the mining of gold, diamonds and other minerals play in the economies of most West African countries, a great deal of support, both nationally and internationally, has been given to the sector to increase production. Unfortunately, mining by both registered large- and small-scale producers and illegal producers often results in severe degradation of vegetation and topsoils. Serious negative environmental impacts due to mining activities include among others: the destruction of large swaths of forest (some of which are in designated reserves), chemical spills and leaching of mining effluent that pollutes both surface and ground water supplies used by host and other downstream communities, large open pits that fill with water and become breeding grounds for mosquitos, and destruction and degradation of land and endemic biodiversity. Artisanal mining, usually done by hand with basic tools, can stretch for kilometers. And the cumulative effect of hundreds of thousands of such

sites can alter landscapes and ecosystem function (Anonymous, 2012, USAID, 2012f). Equally disturbing is the fact that, in many of the countries in the tropical moist forest zone, with its high biodiversity, there is a substantial overlap between mineral deposits and exploration permits and the protected area and forest reserve network (USAID, 2008b).

**TABLE 3.1: DIRECT THREATS TO WEST AFRICAN ECOSYSTEMS**

Natural Ecosystem	Threats
Desert and xeric shrub lands	<ul style="list-style-type: none"> <li>● Mining (e.g. exploration and extraction by both legal and illegal miners)</li> <li>● Climate change (e.g. alteration of rainfall patterns and temperatures, habitat modification)</li> </ul>
Grasslands, shrub land savannas	<ul style="list-style-type: none"> <li>● Over-exploitation of trees for fuel wood and charcoal</li> <li>● Annual bushfires</li> <li>● Mining of gold</li> <li>● Climate change</li> <li>● Invasive species (e.g. proliferation of <i>Acacia</i> spp., and <i>Chromolena odorata</i>, water hyacinth)</li> </ul>
Dry broadleaf forests	<ul style="list-style-type: none"> <li>● Land degradation</li> <li>● Over-exploitation of trees for fuel wood and charcoal</li> <li>● Mining of gold</li> <li>● Climate change</li> <li>● Invasive species (e.g. proliferation of water hyacinth - <i>Eichorniae crassipes</i> and <i>Chromolena odorata</i>)</li> </ul>
Tropical, moist broadleaf forests	<ul style="list-style-type: none"> <li>● Conversion of forests (e.g. deforestation for agriculture and plantation tree crops, development and encroachment of protected areas and forest reserves by communities living in the proximity of these forests)</li> <li>● Mining and explorations activities of both large-scale legal and small-scale illegal operations (e.g. toxic chemical spills and gold processing chemicals – mercury and cyanide)</li> <li>● Climate change</li> <li>● Wildlife poaching, trading and trafficking (e.g. bushmeat trade)</li> <li>● Unregulated removal of timber by both legal and illegal loggers</li> </ul>
Freshwater, rivers and wetlands	<ul style="list-style-type: none"> <li>● Pollution of water sources and courses (e.g. effluent from mining operations, agriculture, dumping of industrial and municipal solid and liquid waste in watersheds and in sources)</li> <li>● Conversion of wetlands/swamps for rice production</li> <li>● Over-exploitation of inland water resources</li> <li>● Climate change</li> <li>● Invasive species (e.g. water hyacinth proliferation)</li> </ul>
Coastal estuaries, ponds/lakes and mangroves	<ul style="list-style-type: none"> <li>● Infrastructure development (e.g. building of roads, houses and on-shore oil and gas infrastructure)</li> <li>● Pollution (dumping of untreated sewage and other liquid and solid waste)</li> <li>● Climate change (especially as it impacts flows and flushes of fresh water)</li> <li>● Over-exploitation of mangrove resources (e.g. harvesting of mangroves for firewood and over-fishing using fine mesh nets)</li> <li>● Beach sand mining (e.g. extraction of sand for the building industry)</li> </ul>
Marine	<ul style="list-style-type: none"> <li>● Over-capacity (of the fishing fleet)</li> <li>● Over-exploitation of fisheries (e.g. unmanaged and unregulated as well as illegal fishing by foreign vessels &amp; local fishermen)</li> <li>● Off-shore oil and gas exploration and extraction</li> <li>● Illegal fishing methods (e.g. use of chemicals, dynamite, fine mesh net and illegal fishing gear)</li> <li>● Pollution from fishing and other merchant vessels (e.g. broken parts, cargo garbage and sewage)</li> </ul>

### **3.2 OIL AND GAS EXPLORATION**

Several countries in West Africa are already producing oil and gas. It is the poor handling of environmental pollution problems resulting from the laying and leaking of pipelines to oil spills that has been a source of armed conflict such as in the case in Nigeria. The pollution and environmental degradation in the oil producing areas are massive and threaten the livelihoods of local communities. In recent years, some countries in West Africa, including Ghana, Liberia and Sierra Leone, have discovered large oil reserves and joined in oil production (Min Xuan, 2012). Regional institutions (see below) have been grappling with how to be better prepared to protect against, as well address environmental issues accompanying such development. But the pace to develop is often outstripping the governance being put in place to protect and mitigate the threats accompanying such development.

### **3.3 CONVERSION OF FORESTS**

Forest conversion involves the removal of natural forests to meet other land needs including mining of minerals, agriculture (including tree crops), and pastureland for cattle. It is a major force driving forest fragmentation and loss with associated negative impacts on biodiversity that often require large contiguous areas to maintain their function (Laurance, 2010). The development of tree crop plantations (e.g. rubber, cocoa and oil palm) and gold mining continue to rise in the moist forest areas of many West African countries due to the global prices of cocoa, oil palm and gold as well as the increasing demand for bio-fuels. (*Jatropha* plantations, for example, on small-holdings and in one instance in Liberia, a large scale operation that has resulted in land clearing.) Local and foreign companies are buying very large tracts of land in many countries of West Africa (Allan et.al., 2012; Kitzo et.al., 2012) to produce plantation and other crops. Unfortunately, forest conversion, which alters water retention and temperature regimes, is associated with a higher incidence of certain infectious and vector-borne diseases, including malaria and leishmaniasis. The clearings often create new habitats, such as depressions where water can collect and mosquitoes, ticks, and fleas can breed (Critchley et al., 1996). With the increasing acquisition of land by foreign countries and firms in many West African countries for agricultural purposes, the trend in the conversion of forests will continue unless practical steps are taken to implement land tenure security measures (especially for local residents) and environmental regulation and protection.

### **3.4 CLIMATE CHANGE**

Climate change, which continues to become more pronounced, is a major threat to the welfare of West Africans and the West African environment. The region is witnessing an increase in the frequency and intensity of damaging droughts and floods, resulting in significant hardship for people in many places. Moreover, rainfall and seasonal patterns are becoming highly variable. The effects of climate change on ecosystems, agriculture, food security, health, and freshwater supplies (in both urban and rural settings) are often compounded by weak socio-economic and security conditions in the region (Robison and Brooks, 2010). Clearly, without any mitigating and adaptive actions that build the resilience of people and ecosystems, the impact of climate change will be progressively destructive. There is an urgent need to strengthen the responsible government and regional institutions to develop strategies to build the adaptive capacity of countries and communities and speed up the development and promotion of mitigation strategies that would increase the resilience of the people and ecosystems. Section 4.0, below, highlights more climate change threats, and readers can find thorough studies of the region's vulnerability to climate change in two recently completed assessments (Anonymous, 2013; USAID, 2012e)

### 3.5 BUSHMEAT TRADE

Bushmeat is an important source of protein and livelihoods for rural communities in West Africa. Unfortunately, poaching, illegal and commercial hunting has been on the rise and fueled by the huge demand for bushmeat in urban areas and overseas ethnic markets where it is considered a delicacy. To make things worse, the logging industry continues to facilitate access to the forests, making it possible for hunters to enter and also enabling them to evacuate the meat (Juste et al., 1995). The prevalent commercial hunting has led to serious impacts on protected and threatened animal species and resulted in the banning of illegal bushmeat hunting and trade in many countries including Liberia (MoFA Press, Liberia, 2010). Monitoring and enforcement of the laws and proclamations against the practice have remained challenging and ineffective for many countries and has led to increased activities of various conservation organizations focused on implementation of strategies to reduce the trade in bushmeat. Actions that will regulate this illegal industry are needed to prevent the loss of the important source of protein and rural livelihoods while at the same time protecting threatened species.

### 3.6 POLLUTION

Poor handling of industrial, municipal and medical chemicals and wastes, agrochemicals used in agriculture, and untreated sewage are the main sources of pollution of soils, surface freshwater and groundwater, and coastal ecosystems and pose a serious threat to biodiversity and human health and welfare (Scheren PAGM et al., 2004). Due to the rapid increases in population, as well as mining, manufacturing and agricultural activities in the West Africa region, the situation risks becoming worse, jeopardizing the health and livelihoods of both urban and rural dwellers. A coordinated attempt to mitigate the effects of pollution needs to be made at the policy, legal and institutional levels to reduce the impacts that jeopardize health and livelihoods of both the rich and poor.

### 3.7 INVASIVE SPECIES

Invasive alien species (IAS) may be defined as species that are non-native (or alien) to the ecosystem under consideration, whose introduction causes or is likely to cause economic or environmental harm, or harm to human health, and does not provide an equivalent benefit to society (Wittenberg and Cock 2001). Invasive alien species are the second greatest cause of biodiversity loss (Struhsaku et.al., 2005) and only habitat destruction poses a greater threat. They pose a global threat to the conservation of biodiversity through their proliferation and spread, displacing or killing native flora and fauna. Two of the most important invasive species posing environmental problems in West Africa are *Chromolena odorata* and water hyacinth, (*Eichorniae crassipes*). Most countries in sub-Saharan Africa have a weak policy and institutional environment, lack critical information, have inadequate implementation of prevention and control, and also lack the necessary capacity to address the threat from invasives (Kull et.al., 2013). It is important to strengthen the capacities of countries to deal with these problems through coordination of country and regional efforts to control these species (Benoah, 2004).

### 3.8 OVERHARVESTING

Poverty and greed, corruption and lack of enforcement mechanisms drive the over-exploitation of natural resources. Most countries have policies and legislation that if enforced would provide for sound conservation and rational use of natural resources. But poor governance at national, regional and local levels allows illegal logging and indiscriminate cutting of trees for fuel wood and charcoal, overexploitation of marine fisheries resources and illegal fishing by both commercial and artisanal actors. There is a dire need to strengthen the monitoring, control and surveillance mechanisms of mandated



government and regional institutions, as well as, local communities in order to stave the tide of the resultant loss of biodiversity and livelihoods of the rural poor. Greater public participation in the management of resources with its inherent consultative decision-making would also encourage higher voluntary compliance with the existing laws and also illustrate which laws are not working as they intended, or that need adaptation.

#### **4.0 POTENTIAL IMPACTS OF CLIMATE CHANGE ON THE ENVIRONMENT, BIODIVERSITY AND NATURAL RESOURCES IN WEST AFRICA**

Scientists and farmers readily acknowledge threats to environmental resources in West Africa from climate change. USAID has long been involved with agro-climatic modeling and predictions (FEWS NET, 2013) about drought and food security in the region. The recent establishment of the Sahel Joint Planning Cell (USAID, 2012g) adds value to these and other donor efforts, providing a more direct focus with on-the-ground partners to mitigate climate change impacts with local community adaptation strategies. The West Africa Mission has also completed a very comprehensive assessment of climate change vulnerability (USAID, 2012e) that provides important background, insights and recommendations about the threat of climate change for the region. This section, which highlights climate change impacts to specific areas of the region, draws significantly on that document and readers are encouraged to examine the vulnerability assessment document carefully for the important details it provides

Although many of the meteorological, statistical and process-based models to project and predict future trends on climate and climate change indicators have not been able to provide repeatable or consistent results for the West Africa region (Biasutti et.al., 2008, Druyan et.al., 2010, USAID, 2012e). Some general trends have emerged as to what might be happening in West Africa's major ecosystems and the important transitional zones between them. Depending on the ecosystem, there is some agreement on the fact that some rise in temperature (both at sea surface and on land) has occurred or will occur to influence rainfall patterns and frequency of floods and droughts. For example, the average of several models project that by the end of the 21st century there will be a 2.5-3o C rise in temperature for West Africa (USAID, 2012e). In general, for biodiversity, it is widely acknowledged that a changing climate will have an impact on the phenology and distribution of species, along with community composition and ecosystem dynamics (Chambers, 2002).

The overall impacts of climate change on the major ecosystems of the Sahel, tropical inland zones and coastal zones are expected to change depending on variations from current precipitation, humidity and temperature regimes and type of vegetation. Similarly, the major productive sectors of agriculture (crops and pastoralism), fisheries, and forests will be impacted differently. Brief summaries of the potential changes on West African sub-regions and their production regimes are presented below.

**The Sahel:** Ambient temperatures in the Sahel region (xeric shrub lands and savanna grassland areas) are typically higher than found in the coastal and tropical inland zones. Under various climate change scenarios the Sahel is expected to experience a greater temperature rise than the coastal zone (USAID, 2012e); within the sub-region, there will be a slight temperature rise in the central Sahel and a decrease in the western Sahel. Agricultural modeling studies reviewed by the USAID assessment (2012e) all predict declines in yields perhaps as high as 18 percent for staple crops like millet and sorghum. Although the Sahel region contains a number of transboundary water basins, these rivers originate from tropical inland areas, where climate change related impacts could affect the Sahelian ecosystems including biodiversity.

Unplanned or uncontrolled freshwater withdrawals could further worsen freshwater availability and consequently impact other livelihood activities such as agriculture and pastoral livestock systems. Unsustainable pastoralism (see **Annex I**) will lead to a chain of responses, including transhumant migration to the southern-lying regions. Climate change adaptation in the Sahel zone would include strategic utilization of drought resistant crops in areas where dry land agriculture is possible, and waterlogging-tolerant varieties of crops in wetlands. Introduction of agro-forestry into farming systems in moisture-endowed areas will support livestock farming and fuel materials (USAID, 2012e). National and international agricultural research institutions (e.g. Institut d’Economie Rurale—IER of Mali, the Savanna Area Research Institute—SARI of Ghana, and the International Crops Institute for Semi-Arid Tropics—ICRISAT in Niger) charged with developing drought resistant varieties may be called upon to help in this effort. Promotion of on-farm and off-farm livelihood opportunities, such as increasing the number of hardier breeds in pastoral herds is an example of one climate change adaptation strategy.

**The Tropical Inland Zone:** The tropical inland zone characterized by forests and woodlands and occupied mainly by a mix of tree crops, annual crops, inland fisheries and livestock, is vulnerable to climate variability and change impacts through increased temperatures. This trend might actually lead to a greater level of greening (greater tree/vegetation density) in the zone. But greater tree harvesting levels and more widespread deforestation for tree and food crops to meet the livelihood and food security demands of the region’s increasing human population might cancel out any benefits from climate change (USAID, 2012e). Where increasing temperatures are accompanied by decreasing precipitation, open woodlands in the transition savannah zones may experience a reduction in tree density. Climate change adaptation in the tropical inland zone would include extension of agricultural production into the dry season where opportunities for small-scale infrastructure for water collection exist. National and international research and development institutions (e.g. the International Water Management Institute, IWMI) may assist in developing simple technologies for water collection.

**The Coastal Zone:** The coastal zone of West Africa is characterized by bi-modal rainfall and high human population density. Projected climate change impacts point to decreased coastal precipitation during the longer dry season (Dec. to Feb.). The extreme rainfall events and storm surges expected with climate changes and the increasing trend in rapid urbanization and burgeoning populations in all West African coastal areas are apt to have devastating consequences (Nkomo et al., 2006). Local livelihoods in this zone are heavily dependent on lagoon and estuary resources, mangroves and near-shore fisheries. The projected sea level rise, increased sea surface temperature and acidification of the ocean, plus the estimated irregularity of freshwater flushes will likely alter the marine and coastal ecosystems in ways that we do not understand. They will most certainly change migrating patterns of fisheries, inundate tidal habitats, affect reproduction of coastal organisms and severely threaten the very existence of the mangroves of the region (Doney et al., 2012) that provide a highly undervalued buffer function for the physical coastline and the biodiversity that it maintains.

In areas where climate change results in increased rainfall, there will be widespread, rising malaria, cholera and sleeping sickness risk due to increased areas suitable for their transmission (Thomson et al., 2006). Impacts of climate change on fisheries in this zone have not been determined. Climate change adaptation in this zone includes alternative income-generation activities.

**Water resources:** Water resources in West Africa have reported declines in recent times beyond what would be expected from a reduction in precipitation (Afouda et al., 2007; USAID, 2012e). At the same time the frequency and severity of flooding inland and in coastal zones has increased, although there is not yet enough evidence to state that these are a direct result of climate changes in the region. The

region's major rivers (Niger, Senegal, Gambia, and Volta) have experienced declines in discharge of between 40 and 60 percent (Nkomo et al., 2006) since the 1970s and the resultant decrease in water availability and quality creates tension, such as that between Ghana and Burkina Faso, and Nigeria and Niger. The increases in temperature in some areas reduces livestock pasture and drinking water, forcing pastoralists to move sometimes across countries to feed and water their livestock. This is known to cause serious conflicts and loss of property and lives as was observed recently between Fulani pastoralists from Burkina Faso and crop (sedentary?) farmers in Ghana.

## **5.0 URBAN, PERI-URBAN AND RURAL HAZARDS AND DEGRADATION**

There are many serious environmental hazards that affect people, whether they are living in urban, peri-urban, or rural areas. The characteristics of these areas, their economic activities, and the effects of these activities on the environment determine, to a large extent, the hazards and degradation that they face.

### **5.1 URBAN HAZARDS AND DEGRADATION**

An expanding population characterizes urban areas in West Africa. In the coastal countries of the region, these are the areas of highest human density and also areas where migrants come in search of jobs. The poor depend on fisheries and other natural resources available in the coastal areas for their livelihoods. Some people build along waterways and riverbanks either knowingly or otherwise. These structures alter or block the flow of creeks or rivers and lead to flooding or land sliding. The cities are often littered with small farms that use mostly untreated wastewater and excessive amounts of pesticides to produce high value crops, especially in the dry season. In addition, many keep livestock for household consumption and for sale and there are also many commercial livestock and poultry operations in the cities. According to FAO, the livestock sector generates more greenhouse gas emissions as measured in CO<sub>2</sub> equivalent – 18 percent – than transport (FAO, 2013).

There are various large and small-scale manufacturing industries and workshops that generate a lot of solid and liquid waste. Since the waste disposal capacity of the municipalities is limited, dumping of all forms of liquid and solid waste is done in inappropriate places leading to pollution of various ecosystems. Most of the urban slums do not have adequate water and sanitation facilities, thus creating health hazards, including conditions that allow mosquitos to breed.

There is pressure on coastal resources such as fuel wood and fishery products and sometimes fishermen use chemicals, dynamite, and under-sized nets. All these activities and situations in the urban areas lead to the following environmental hazards and degradation:

- Flooding and siltation of streams and rivers due to building of houses and other structures on waterways and riverbanks;
- Destruction of mangroves that provide essential ecosystem services, harbor biodiversity and fishery resources;
- Exposure to diseases such as malaria, cholera and typhoid due to poor water and sanitation facilities and lack of effective waste disposal systems;
- Pollution of soils, streams and groundwater by discharge of untreated effluent and sewage, agricultural chemicals and from dumping of municipal and medical waste at inappropriate places;

- Exposure to health hazards from consumption of contaminated food grown with untreated water and excessive and misapplied chemicals.

Finally, the lack of effective monitoring and enforcement of environmental and zoning by-laws by government and institutional actors is a major problem that municipal authorities are facing in urban areas.

## **5.2 PERI-URBAN HAZARDS AND DEGRADATION**

Most people who live in peri-urban areas are, generally, poor people who cannot afford the high rents and costly living standards in the urban areas. Being between the urban and rural areas, they are seldom recognized and included in mainstream planning. They have weak links and limited power in terms of access to services such as transport, water, solid waste management, energy and land use planning. The pressures from adjoining cities impose hazards and degradation on peri-urban dwellers and include the following:

- Cities create environmental hazards on peri-urban areas by depending on and depleting resources of the peri-urban areas to support their economic activities (e.g. the need for building materials in urban areas leads to proliferation of extractive activities such as sand, stone and gravel quarrying);
- Hazards due to depletion and degradation of renewable and non-renewable environmental resources (e.g. loss of land and natural areas used for hunting, sources of non-timber forest products, fuel wood, biodiversity);
- Environmental hazards due to disposal of pollution and waste from cities in or near peri-urban areas; and
- Low density, unplanned and underserviced sprawl spurred by mining, oil and gas development degrades fragile environments.

## **5.3 RURAL HAZARDS AND DEGRADATION**

Hazards and degradation in rural areas have been covered in the previous sections. To summarize, the following is a list of hazards and degradation resulting from the activities undertaken in rural areas:

- Soil and land degradation due to inappropriate farming practices;
- Health hazards resulting from mishandling/misapplication pesticides;
- Pollution of streams and ground water due to misapplication of fertilizers and pesticides that leach into the soil;
- Deforestation and loss of biodiversity due to over-exploitation of trees for fuel wood or charcoal or conversion of forest to other land uses;
- Biodiversity loss due to indiscriminate hunting, trapping and poaching in protected areas for bush meat;
- Deforestation and land degradation due to encroachment and establishment of farms in game and forest reserves; and

- Pollution of streams and groundwater and destruction of forests and hence biodiversity due to mining and logging activities.

## 6.0 INSTITUTIONAL AND POLICY IMPACTS ON THE NATURAL ENVIRONMENT

In the wider context of the assessment of threats to the environment, the “natural environment” may broadly be understood to consist of land and what subsists on the land (e.g. forests and wildlife), marine and coastal resources, water resources and air. West African institutions (CILSS, ECOWAS, African Union) continue to develop, refine and adapt their guidelines and strategies in these domains. These are often in response to global thinking and discussions on relevant topics at various Conferences of Parties (COP) linked to international conventions such as the Convention on Biodiversity. These institutions are made up of formal structures and regulations (rules, laws, constitutions) and informal aspects (norms of behavior, conventions, etc.) and enforcement characteristics (Colding et al., 2003; Ostrom, 1992). Policies related to the environment typically address issues related to pollution, waste management, biodiversity conservation, and the protection of natural resources, wildlife and endangered species (McCormick, 2001).

Working policies are often crafted as statements or pronouncements that define and articulate goals and desired outcomes related to endeavors in the natural environment domains. In both the formal and informal sectors, these environmental policies may be framed as instruments that can be applied in various sectors directly or indirectly connected with the natural environment. Since institutional structures are usually assigned duties of coordination of human activities, monitoring and rule enforcement, decision-making on management practices, and policy formulation, they play crucial roles in sustainable management of the environment and natural resources.

Given the extent to which government agencies, communities, community-based organizations, and, to a certain degree, the private sector, are involved in decision-making on these resources and their management in West Africa, a plethora of institutions and policies can be identified in the natural environment and resources domains. Furthermore, for a culturally diverse region such as West Africa, with historical and on-going ties with past colonial administrators (English, French, Portuguese), the number and types of institutions with oversight of the various elements of the natural environment are large. For the sake of simplicity and brevity, only a few of the many categories of institutions can be examined for their impact on selected elements of the natural environment in this report. The many categories include traditional institutions, community-based organizations, apex producer/user associations, district-level administrative authorities, national-level agencies, national ministries, continental/regional/sub-regional bodies and their specialized organs, and international organizations. Some of the active environment-linked institutions in West Africa are listed in **Annex E**.

### 6.1 NATIONAL, SUB-REGIONAL AND REGIONAL INSTITUTIONS/POLICIES

In general, governments in the sub-region, through policies and laws enacted by legislative bodies with an accent on executive branches of governments (presidents, heads of government, etc.), have sought to influence the course of development or protection of the environment and natural resources. The creation of protected areas, national parks (by colonial and post-independence administrations), and in concert with other countries, trans-boundary conservation areas managed by public agencies (e.g. ministries, agencies, authorities, parastatals) have been the most notable result of institutional policies with perhaps

the largest and longest impact on the environment. Many post-implementation assessments have however shown that not all state-implemented environmental policies were successful. In response to the unacceptable high levels of failures of government policies, mainly due to policy incoherence and lack of implementation capacity or resources, many governments in the region have in recent years established other policies that allow communities to participate in environmental and natural resources management and protection. The creation of the hundreds of community-based natural resource management (CBNRM) programs, has perhaps been, the single most policy-driven intervention with the greatest potential positive environmental impact in the region (Mara et.al., 2012; USAID and CILSS, 2002). Examples of CBNRM programs established by policies are the community resource management areas (CREMAs) in Ghana for wildlife conservation (see text Box 6.1), in Liberia, Community Forestry Management groups enabled by the Community Rights Law, the Nialama forest in Guinea and in The Gambia, the Fisheries Co-management Plans enabled by the Fisheries Act of 2007.

The CBNRM approaches have been successful and widely replicated due to their local empowerment function with local communities where individuals can realize the gains from their investment, see the results of their decision-making, and contribute the overall conservation and NRM improvement that tenure rights bring to the landscape. Local administrative decision-makers also reap the benefits from shared or co-management with fewer conflicts and more effective use of budgets within their control. The assessment team confirmed this over and over again in its field visits. The disconnect with national efforts (and policies) perhaps rests with lack of communication, awareness and political will to not only monitor and learn from these experiences, but also to bring in the lessons constructively and provide for a regular dialogue that allows and encourages adaptation of policies to fit both what works and what does not work. There also seems to be a lack of a trained cadre at the national level that can engage in these types of exercises. Even though the enabling framework for CBNRM is usually present the institutional grounding is not sufficient for any national leadership or sustainability.

Other institutional policies that have great potential to impact the natural environment are those ratified by individual national governments to accept, abide by and be bound by policies and strategies crafted and promoted by regional and sub-regional institutions as part of the regional and sub-regional integration processes. Member states of the regional institutions conform to the consensus that actions having the potential for greater harmonization will attract more political and funding support, and consequently, generate greater impacts (see, for example, the background justification in the Economic Community of West African States – ECOWAS (20013a, 2008) Agriculture and Environmental Policies).

#### **Box 6.1 Community Resource Management Areas (CREMAs)**

Communities are capable of playing a very important role in securing their natural resources through the adoption of sustainable natural resource management systems. There is ample evidence to show that when local communities are empowered to become responsible stewards in the management of their natural resources, especially when these resources are the major sources of their livelihood, enforcement of conservation laws becomes almost redundant. The Wildlife Division of the Forestry Commission of Ghana developed a Collaborative Wildlife Management Policy in 2000 to address the challenges of wildlife management. A primary mechanism of this policy is the Community Resource Management Area (CREMA) approach. It ensures a win-win situation by creating “a financial incentive for farmers to use and manage natural resources on a sustainable basis by developing management rights and responsibilities.” This approach has led to livelihoods improvement, better conservation efforts, more democracy, and a strengthening of local economies in areas where it has been adopted. The Nature Conservation Research Center (NCRC), Calgary Zoo and Earthwatch have been implementing successful programs in 20 Community Resource Management Areas covering about 1 million hectares and this is being done through the application of policy and not through laws and enforcement.

The most successful CREMA to date is thought to be the Wechiau Community Hippo Sanctuary, which protects and preserves wildlife and the environment along a 40 km stretch of the Black Volta in the Upper West Region of Ghana. Scaling-up of the CREMA model (such as its adoption by a World Bank-funded activity), the reinforcement of traditional protection and conservation systems, and the introduction of complementary livelihood activities through collaborative mechanisms with communities that live in these fragile and protected areas, are all positive developments in resource protection and conservation efforts.

Hence, there is a general willingness of countries to participate in interventions at trans-boundary scales initiated or led by sub-regional or regional bodies.

Fourteen countries in the region, for example, are signed parties to ECOWAS' Environment and Agricultural Policies; nine, six and four countries, respectively, accept the Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS), the West Africa Economic Monetary Union (WAEMU/UEMOA) and the Mano River Union- (MRU) led policies in agriculture, forestry, fisheries, and mining, and are participating in multi-country programs in these environmental sectors. Another example is the ECOWAS policy-driven protocol on Transhumance (see **Annex I**) which is widely believed to be the intervention that will likely bring a more lasting solution to the trans-national problem associated with the trans-boundary transhumance practices which individual countries have so far have not been able to resolve, and which continue to lead to environmental and security threats. It is common practice for organizations or their governments to implement the existing ECOWAS protocols on transhumance in resolving conflicts. For example, in reaction to the ongoing crises in central Ghana the Animal Science Association made such a call to Government to apply the transhumance protocol (VibeGhana, 2011).

## **6.2 TRADITIONAL AND COMMUNITY INSTITUTIONAL POLICIES**

In addition to national policies and laws enacted by governments and implemented by public officials with respect to the environment and natural resources, traditional institutions, community organizations and associations develop local policies, laws, constitutions and customs that impact natural resources and common property. Examples include:

**Traditional institutions derived from succession, bloodlines or inheritance:** Various forms of these institutions exist in West Africa. Examples include kingdoms, chiefdoms, and imam-headships. They generally have considerable influence on land ownership and use, as well as exploitation of forest and water resources. Their cultural legitimacy commands respect among large number of groups of people in their domains, and they can thus enforce rules and norms. For example, the Akan chiefs in central Ghana and their counterparts in Cote d'Ivoire have significant influence on deciding which lands are leased, sold or freely given for farming and for how long. Chiefs in mining areas can, and often do, stop illegal artisanal miners from destroying forests. Similarly, coastal tribal chiefs in Ghana, Togo, Benin and Nigeria enforce customary laws on fishing in the sea on certain days in the week. Recognition of "taboos" generally reduces the degree and extent of over-exploitation of resources. In coastal areas of Ghana traditional institutions such as chief fishermen and fisherwomen are highly respected as influential leaders in their communities and it is they who often enforce and sanction individuals who engage in destructive fishing practices.

**Community-based institutions:** These are often formed by members in communities where community resources, such as forests, need to be protected from exploitation by outsiders and where members need to gain access to resources for livelihoods. The existence of scores of CBNRM groups and their enforcement is widely accepted as having slowed destruction of forests in countries such as Liberia, Sierra Leone and Guinea (Wilson, 2013), and have prevented encroachment on protected areas by illegal and private companies (sometimes with tacit government support). The existence of CBNRM groups has helped mitigate both local and external threats. Experiences elsewhere have shown that when compared to central government institutions, local institutional arrangements are considered more effective regarding provision of access rules, and harvesting and management of natural resources (Becker and Gibson, 1998).

### 6.3 INTERNATIONAL INSTITUTIONS AND CONVENTIONS

Whereas international institutions may not enact policies, many play major roles in policy advocacy, research, institutional support and capacity building (Keohane et al., 1993). These institutions also affect the political processes of environmental policy making and policy implementation by contributing to more appropriate agendas and to national policy responses that directly impact sources of environmental degradation. Among international actors with major influence in West Africa with respect to specific environmental (and climate change) policies are the African Development Bank and the World Bank (often with policies framed within a wider development agenda). Their funded projects at country and regional levels, derived from their policies, have made significant impacts in the ECOWAS, CILSS and MRU arenas in the mining, forestry, agriculture and fisheries sectors. Some of their strategic interventions addressing major environmental threats are found below in Section 13. A list of international environmental treaties and conventions that individual West African countries are a party to can be viewed in **Annex H**.

## 7.0 APPROACHES AND INTERVENTIONS ADDRESSING ENVIRONMENTAL ISSUES

The multiplicity of institutions involved in environmental and natural resource issues and the various policies pursued to achieve stated goals in the natural environment arenas result in the employment of diverse strategies and approaches. Given that most policies relating to the environment originate from national governments, regional bodies and institutions usually provide added value by playing major roles in policy advocacy, research, institutional support and capacity building. Other institutions that are not considered organs of inter-governmental regional bodies but also intervene in environmental issues (e.g. international organizations such as UN agencies, investment banks, multilateral and bilateral development partners, local and international non-governmental organizations) do so mainly through programs and projects but may influence policies at regional, sub-regional and national levels (see section 6 above). Private Sector commercial concerns also intervene in environmentally related enterprises. Some approaches and interventions being used by regional bodies, international institutions, private sector entities, and NGOs represented in West Africa are presented briefly below.

### 7.1 APPROACHES AND INTERVENTIONS OF REGIONAL BODIES AND INSTITUTIONS

Among the approaches used by regional or sub-regional (inter-governmental) bodies are:

**The Council of Heads of State's Decisions and Protocols:** In urgent or regionally important issues, the highest organs in the governance of regional bodies, such as Council of Heads of States, make decisions and sign protocols that bind member states to take actions to address the issues at stake. Examples related to the environmental sector include: a) the decision by ECOWAS Heads of State to use the African Union (AU) New Partnership for Africa's Development (NEPAD)'s Comprehensive Africa Agriculture Development Program (CAADP) process to guide many West Africa-wide initiatives, and 2) the legal authorization of transhumance movement across national borders in West Africa. This latter was a decision by Heads of State at an ECOWAS Summit in 1998 and included the adoption of the ECOWAS Transhumance Certificate to regulate movement of animals.

**Ministerial Councils and Technical Task Forces:** Ministers for relevant sectors and technical task forces often intervene at policy and technical levels in the implementation of Presidential declarations,



and in regional or sub-regional programs or projects as a means of underscoring the importance of such policies and programs. The 66th Session of the ECOWAS Council of Ministers 2011 adoption of a draft of the sub-regional legal framework on biosafety that arose from a larger continent-wide initiative, is one example of a Ministerial intervention. The participation of Ministers from nine West African countries in the governance of the World Bank-funded West Africa Regional Fisheries Project (WARFP) is another example of such an intervention.

**Strategic Objectives (Pillars, Themes, Thrusts) in high-level Strategic Plans:** Regional and sub-regional bodies often intervene in the environment, natural resource and related sectors by providing visions for such sectors and providing broad strategies to support high-level objectives. For example, the Mano River Union (MRU) Strategic Action Plan (2010-2020) identifies three pillars and components relevant to the environment: mineral resources, trans-boundary forest management and trans-boundary water basin management. Each of the major river basins in the region have river basin authorities, and most, like the Senegal River Development Organization (OMVS) have strategic plans (Niasse et.al. 2008) that prioritize environmental issues and looks to establish actions needed, whether or not funds are available to implement the plans. Other examples are themes on regional resource development (environment/NRM, minerals, land, human), peace and security and private sector identified in the ECOWAS Vision 2020 as areas of focus, all of which are relevant for environmental sustainability and conservation.

**Regional Body Departmental Policies:** Specific departments within regional bodies often develop sector policies with visions and objectives to pursue identified goals. The ECOWAS Environmental Policy (ECOWEP), the ECOWAS Agricultural Policy (ECOWAP), the West Africa Economic and Monetary Union (WAEMU) Mineral Policy, and the CILSS Harmonized Sub-Regional Policies are examples of instruments addressing environmental issues. Implementation or enforcement of such policies in member states often helps to minimize the rate of environmental degradation. The USAID West Africa Regional Office has very positive engagement with the environmental arm of ECOWAS and there is regular engagement in workshops and policy discussions.) Some of the ECOWAS environmental initiatives policies are also addressed later (Section 8) in this report.

**Strategic Programs/Action Plans:** Regional bodies or their technical arms often employ the use of agreed action plans as routes to member state institutions that implement environmental programs and projects. For example the ECOWEP Strategic Program for Reduction of Vulnerability and Adaptation to Climate Change in West Africa requires implementation by the 14 member states when funded. Similarly, the NEPAD Action Plan for the Development of African Fisheries and Aquaculture enjoins participation of countries within the ECOWAS block.

## 7.2 NATIONAL/NON-REGIONAL BODIES

**International Research and Development Institutions:** The Consultative Group on International Agricultural Research (CGIAR) intervenes through its consortium of research centers, in collaboration with regional and national research systems, on many commodities and NRM issues. Those active in the West Africa region include: the International Water Management Institute (IWMI), the Center for International Forestry Research (CIFOR), the International Agroforestry Center (ICRAF), the International Crops Institute for Semi-Arid Tropics (ICRISAT), the International Institute for Tropical Agriculture (IITA), the International Livestock Research Institute (ILRI), the International Food Policy Research Institute (IFPRI), and AfricaRice, all of which work on NRM and environmental issues. Two international livestock-based research institutes with a regional mandate that work on animal genetic

resources biodiversity and their endemic habitats to promote in-situ conservation are the West Africa Livestock Innovation Centre (WALIC) (ex-ITC – International Trypanotolerance Centre) and the Centre for the Research on Livestock in the Sub-humid Zone (CIRDES).

**International and Local NGOs:** There are literally hundreds of NGOs active in West Africa and intervening in the environment and NRM sectors. These NGOs are often funded in part by multi- and bi-lateral institutions working at the grassroots level and are credited with promoting community-based management projects. Examples of environmental NGOs encountered during this assessment are Birdlife International, Fauna and Flora International, (FFI) World Wildlife Fund (WWF), International Union of Conservation Naturalists (IUCN) and the Society of Conservation of Nature of Liberia (SCNL).

### 7.3 INTERNATIONAL ACTORS

**Investment Institutions:** The World Bank (WB) and the African Development Bank (AfDB), guided by their own environmental policies, intervene in the West Africa region through funding of country and regional/sub-regional programs and projects. The World Bank and the United Nations also fund a number of Global Environment Facility (GEF) programs in the region. A sample of these can be found in **Annex E**. Examples of WB-funded regional projects are the WARFP (see Section 13 below for more information), the West Africa Agricultural Productivity Program (WAAPP) and the Fouta Djallon Regional NRM Program.

**Multi-lateral and Bi-lateral Development Partners:** These development partners usually intervene at the program and project levels but may exert some influence on policy and strategies at country, sub-regional and regional levels. Multi-lateral donors funding environment-related programs in the region include the European Union (EU), United Nations Environmental Program (UNEP) and its World Conservation Monitoring Center (WCMC) in particular, the UN Development Program (UNDP, and the Food and Agriculture Organization (FAO). Bi-lateral institutions include USAID, the US Forest Service (USFS), the British Department for International Development (DfID) and the German GIZ. Some specific programs funded by bi-lateral donors are discussed in Section 13 and also listed in **Annex E**.

### 7.4 PRIVATE SECTOR INNOVATIONS

The history of the private sector, both foreign and local, in the environment and NRM sectors of West Africa has been that of organizations or companies operating with profit-making motives, without regard for the environment. The mining, timber, energy, oil exploration and plantation crop companies from Europe, North America and (more recently) Asia, have operated for decades in West Africa. They are mostly associated, more often than not, with exerting negative impacts on the environment (deforestation, water pollution, destruction of landscapes, etc.) rather than positive impacts. Due to public outcry, mostly from local communities and local and international NGOs, some private companies are facing up to their corporate responsibilities through support to local communities, investment in social and environmental impact assessments (SEIA) as well as conservation off-sets (see section 13 below for specific examples).

## 8.0 SIGNIFICANT OPPORTUNITIES AND IMPORTANT CONSTRAINTS LINKED TO RESOLVING ENVIRONMENTAL CHALLENGES IN THE WEST AFRICA REGION

Numerous opportunities for enhanced environmental stewardship, including better management of natural resources, attention to critical ecosystems linked to economic opportunities, climate change research, and

corporate social responsibility are increasing across the region. Some of these include sustainable conservation of forests and biodiversity, increased knowledge of species and habitats, improved compliance and monitoring techniques by mining companies and better awareness of climate mitigation and adaptation measures. Several of these are discussed later in Part D of this report.

The regional institutions have made significant strides in designing policies and strategies to address many regional issues. Less attention appears to be paid to environmental issues relative to other priorities such as conflicts within the region. ECOWAS for example, with various partners, has developed two programs (the African Monitoring of the Environment for Sustainable Development—AMESD for the period 2007-13, and the Monitoring of the Environment for Security in Africa—MESA for 2013-18) to improve the decision making process in the fields of environmental resources and environmental risk management in Africa. In West Africa, AMESD is focused on water management for cropland and rangeland management. MESA will build upon the result of this previous program to develop and provide operational information services on environmental security. ECOWAS needs additional support to effectively implement this program.

Governments of the West Africa region have also established institutions and programs to respond to environmental challenges. The CREMAs, being implemented in Northern Ghana (see Box 6.1 above) highlight community-based conservation efforts outside two wildlife reserves in northern Ghana to improve wildlife protection and enhance corridors that link Ghana to wildlife PAs in Togo and Burkina Faso. Another example (see Box 8.1 below) summarizes improved mining techniques and complementary livelihood activities for artisanal miners of gold and diamonds in Liberia and Sierra Leone.

Some of the governmental institutions (like the Forestry Division in Sierra Leone, the EPA and the Forestry Development Authority in Liberia, and the Forestry Commission of Ghana) are saddled with structural and operational difficulties that hinder their provision of sound environmental stewardship. Liberia, for example, contains 42% of the remaining Upper Guinean Forest, which covers five countries of the region. The integrity of this rainforest is jeopardized due to the inability of weak and corrupt institutions to regulate, conserve and monitor these reserves. Educational capacity in areas of environmental conservation is lacking. This contributes to significant weaknesses in environmental institutions within the region. The academic training, where it exists, is usually not complemented by practical, hands-on experience.

Some efforts by regional and international bodies, such as the Mano River Union, are underway to assist national institutions to overcome some of these weaknesses. For example the MRU, in its current 10-year implementation strategy, is planning to implement selected ECOWAS programs in Sierra Leone, Guinea, Liberia, and Côte d'Ivoire. Similarly, the West Africa Regional Fisheries Project, supported by the World Bank/GEF, and the African Catalytic Growth initiative, is building sub-regional cooperation through a series of community-based fisheries management activities in nine countries.

The collaboration and coordination activities mentioned above have not been applied in other important environmental areas such as in addressing transhumance issues that are extremely important across the northern reaches of the region. (**Annex I** provides background details on some of the challenges linked to transhumance issues that stretch across the heartland of West Africa).

For trans-boundary management of protected areas, it is obvious that “one size doesn’t fit all.” The most practical transboundary management strategy may actually be less than ideal compared to realistic successes occurring on the ground in the individual countries. For example, the Mount Nimba Reserve,

which traverses Liberia, Guinea and Côte d'Ivoire, has a different conservation status depending on the country (UNESCO World Heritage in Guinea and Côte d'Ivoire, forest reserve in Liberia). The harmonization of policies and management practices simply may not work in one of the countries due to differences in political, social and economic factors (see Chapter 6 above for more information). A willingness or flexibility to accept differences in regimes for the trans-boundary management of the Reserve may prove to be the most realistic option.

West African natural resources, especially land, timber, minerals, and oil, are the *raison d'être* for multi-national agro-industry, mining and oil companies in to the region. These investors are corporately bound to high standards of social and environmental requirements via their Corporate Social Responsibility (CSR) policies. Mining and oil companies such as Rio Tinto, Arcelormittal, and Chevron are investing significant resources in research (including on biological diversity and SEIA) and actions for tropical forest conservation and marine resource protection (see Chapter 13 below for more information).

#### **Box 8.1 Promoting Improved Mining Techniques and Complementary Livelihood Activities**

From the Sahel to the coast of West Africa, gold and diamond deposits are present and mined either on the same sites or on separate sites, sometimes in riverbeds. About 2 million people (up to 600,000 people in Liberia and more than 300,000 people in Sierra Leone for example) (PRADD Liberia, 2012) depend directly on gold and diamond mining for their livelihood. Forest reserves and protected area conservation (such as the Gola forest in Sierra Leone and Liberia) are highly impacted by ASM operations.

The pitting method is the most common technique practiced by miners whereby the forest cover is slashed, holes are randomly dug, and the overburden and gravel are placed in scattered piles around mining claims. Pitting results in an array of negative economic, environmental, and public health impacts including deforestation, biodiversity loss, ecosystem disruption, soil degradation and erosion, and water siltation and contamination. Inefficient and incomplete gravel extraction leaves 40 - 50% of gravel un-mined. In almost all of the cases, the pits are not backfilled, which makes the land unusable for any other activities, and serves as a breeding ground for mosquitos and other diseases. Gravel and the overburden, dumped into nearby waterways, impacts downstream water quality, fish habitat, and communities.

To mitigate this issue, the USAID Mission in Freetown (through the former Integrated Diamond Mining project in Sierra Leone) and USAID Washington, DC (through the Property Rights and Artisanal Diamond Development—PRADD—project in Liberia) supported the promotion of sustainable mining techniques for artisanal miners known as the SMARTER mining technique in both Sierra Leone and in Liberia. The SMARTER mining method uses the trenching technique, which avoids or significantly reduces these environmental impacts and increases mining benefits for miners and their communities. SMARTER mining involves basic exploration work, systematic trenching (90% of gravel recovered), and backfilling with overburden during the digging process. Mined-out lands regain a more natural contour and can accommodate other uses including community fisheries, seasonal vegetable farming, rice cultivation, or other uses.

To support the communities to diversify their livelihood activities and rehabilitate the environment, land reclamation of mined sites, as a complement to ASM, were piloted in both Sierra Leone and Liberia. In Sierra Leone, a local NGO supported the communities in the Kono District to rehabilitate more than 60 ha of land to grow rice, cassava and vegetables. In Liberia, the PRADD project supported the rehabilitation of 44 acres of land for fish farming, rice and vegetable farming, and banana plantations. Miners and their communities set up community-based organizations to implement, manage and monitor these activities for sustainability.

# PART C

## **BIODIVERSITY, TROPICAL FOREST CONSERVATION, WATER AND MARINE RESOURCES IN THE WEST AFRICA REGION**

This part of the assessment report focuses more tightly on marine and terrestrial biodiversity resources as opposed to the broader environment reported on above in Part B. There is overlap, but the discussions presented here are aimed more closely at satisfying the US Foreign Assistance Act requirements linked to US government actions that may impact forests and biodiversity. The section begins with an overall status report of these resources in West Africa, including highlights of important natural areas, their protection and conservation, and then reviews again the critical threats to their well-being. A short section discusses what general prescriptions are needed to conserve these important resources and their service functions. This is followed by a review, with some examples, of what regional donors and others are engaged in that help to address the necessary conservation actions. The assessment culminates in Part D with a broad list of recommendations to the USAID West Africa Regional Office that can be considered as it prepares its RDCS. These are recommendations that seek to address the gaps between environmental actions that are necessary and what is currently being done. They focus on areas that the Regional Office has a mandate to cover, and/or are actions for which the RO has a comparative advantage based on previous USAID experiences or lessons from within the region or from around the world.

### **9.0 SUMMARY OF THE STATUS OF BIODIVERSITY, TROPICAL FORESTS, WATER AND MARINE RESOURCES**

The State of the Environment review of West Africa provided in the previous section of this report leaves little doubt that the biological resources, and water and marine ecosystems are under considerable threat.

The regions that harbor the greatest biodiversity, the Upper Guinean Forest, the coastal estuaries and mangroves, and the marine ecosystems off the coast are most in jeopardy. In the terrestrial ecosystems, rainforest habitats necessary for flora and fauna protection and reproduction are being drastically reduced in size. Economic activities that convert the land cover (agriculture and tree crops), destroy it (mining) or sever and degrade it into a mosaic of so many smaller pieces (roads, pipelines, transmission lines, human settlements and fire) that its protection function is useless, or put it in a greatly weakened state. Five nations house the core of the Upper Guinean Forest, each with differing rules and policies governing the forest estate. One, Liberia, was estimated to harbor 42 percent of this forest type within its borders. In the

15 years since that claim, unplanned development, smallholder farmers, and most notably, palm oil and rubber tree crop investors have made significant inroads (Allan et.al., 2012) in converting that biologically rich habitat to monocultures. Similar events have occurred in the rainforest in the Niger Delta of Nigeria with the crisscrossing of oil pipelines and new human settlements in their midst. The easternmost reaches of the West Africa region have also been significantly compromised by unregulated tree harvesting practices that have reduced their biological diversity, often with little in terms of compensation or restoration.

Chemical pollution follows economic activities and in most West African states there is often little regard for the environmental impacts associated with them, or there is a severe lack of capacity to enforce the monitoring and management guidelines that do exist. Point pollution linked to maintenance centers for mining companies, or toxic chemicals used in artisanal mining, each have impacts on groundwater, and rivers and stream biodiversity, not to mention downstream impacts on human populations. The petroleum riches in Nigeria are infamous for the human strife that accompanies the extraction and transport activities. But the ubiquitous leaks are also creating enormous stress and doing untold damage to the Delta's natural systems and to the marine resources offshore. Oil and gas exploration off the coasts of Ghana and Cote d'Ivoire place heavy risk on the rich fishing grounds linked to the Guinea Current that parallels the southern West African coast. This current and the Canary Current have recently been noted for their biological richness (UNEP-WCMC, 2013). The region's pollution, overfishing, and underreported and unregulated catches put these riches further at risk.

Other biological resources that contribute to the region's dynamic coastal ecosystems are also in serious danger. The majority of West Africa's populations live in the large cities on its coast (Douala, Port Harcourt, Lagos, Cotonou, Accra, Abidjan, Conakry, Dakar). These population centers, and others in between, compromise the beneficial characteristics of the estuaries and rivers with inadequate solid waste disposal, inadequate sewerage systems and unplanned/unregulated development of the coastlines. Habitat for wildlife, fisheries and marine flora and fauna are being decimated.

Most at risk are the mangrove systems, which are largely still intact along the coasts of Senegal, The Gambia, Guinea Bissau, Guinea, Sierra Leone and Liberia. These systems play important roles in bird flyways to/from Europe, they are breeding grounds for near-shore fisheries, they store important quantities of carbon, and they are the basis for local livelihoods, especially women (USAID, 2012f). They also provide an important environmental service by buffering the coastline from storm surges and erosion. Without their protection a significant portion of the region's coastal population and their economic activities will be in jeopardy. As a resource, they are severely threatened by incursions from urban areas, unplanned development, overharvesting for poles and fuel wood, and port development required to provide transport facilities for extractive industries (mining, oil, gas); they are also at risk from sea level rise and freshwater inflows linked to climate change. From this assessment, as well as others, it is evident that the attention to mangroves is limited. Overall, conservation and protection efforts are insufficient, especially given the important environmental services that this regional resource and ecosystem provides.

The coastal ecosystems and the rainforests of West Africa are rich and diverse in flora and fauna, but it is the edge of the rainforest, the semi-arid shrub forest, and the savannas of the southern Sahel that are home to most of the larger mammal species. Antelopes, elephants, giraffe, hyenas, and dozens of others (93 mammals, including 5 primates, in one northern Ghana site for example) have important populations in these habitats that cover vast areas of the region. They are threatened by constriction of important migratory corridors in numerous areas through land conversion due to agricultural practices, mainly sedentary agriculture. Besides habitat loss, their populations are mostly at risk from poaching and wildlife

trade. This is commerce promulgated by the richer and elite populations in the southern reaches of the region who buy from local shrub land forest and savanna region hunters and trappers.

The most fragile of all West Africa's natural resources is freshwater. A key observation of this exercise is the precarious state of the quality and quantity of fresh water supply from streams, rivers and groundwater sources in many of the West African countries. There are 17 large river systems on which the populations in West Africa depend for domestic, industrial and agricultural uses. The freshwater systems in the region are already under serious threat from various human activities including largely unregulated deforestation and logging, as well as destruction of watersheds, unplanned agricultural development and pollution from mining, municipal and industrial waste and effluent that affect both the quality and flow. Diminishing supplies will also seriously affect irrigated agriculture, fisheries, energy production and biodiversity (Niasse et al., 2004). In countries of West Africa where climate change is expected to result in drought, the current situation would lead to shortages and, consequently, conflicts among nations. Seventeen West African countries share twenty-five trans-boundary watercourses, and, with the exception of Cape Verde, each of the countries shares at least one international watercourse showing the interdependence of countries for water and hence the potential for conflicts over control and use (Niasse, 2005).

## 10.0 NATURAL AREAS OF CRITICAL IMPORTANCE

### 10.1 OVERVIEW

Within the vast region that is West Africa there are numerous natural areas that stand out as critical for the functioning of the natural processes of its terrestrial and marine ecosystems. Each have habitat functions and they also provide (sometimes extensive) environmental services, initially for local populations that live in and around them, but also for others in downstream locations, or even in other regions or sub-regions (as in the case of migratory birds to Europe or elephants within the Sahel). A very general summary list includes:

- The *Canary Current* – off the region's west coast, it provides extensive benefits and is the pulse of the coastline's biodiversity,
- *Coastal wetlands, estuaries and mangroves* – in addition to being Important Bird Areas (IBAs), they also mitigate erosion and flooding;
- *Fouta Djallon highlands* (in Guinea) – source of five of the region's major rivers;
- *Upper Guinean Rainforest* – a once largely intact broadleaf rainforest, now fragmented and highly threatened but which still contains the region's greatest density of terrestrial flora and fauna;
- *Inland Delta of the Niger River* – a critical area for fisherfolk, agriculturalists and transhumance populations and a natural flood control region;
- *Niger River Delta* – a rich biological landscape at serious risk from high population densities and oil extraction and transport;
- *Mount Cameroun* – an area with a very steep transitional gradient of biodiversity due to its location and geography topography;
- *Lake Chad Basin* – a unique transitional zone with extensive dune formation, a high water table and seasonal flooding

- *Air Mountains* – home to rare mammal populations in an extreme desert environment

## 10.2 PROVIDERS OF ENVIRONMENTAL SERVICES

West Africa's terrestrial and marine natural areas play critical roles as providers of environmental services. For the Canary and Guinea Currents, these large marine ecosystems (LMEs) are some of the richest in the world (UNEP-WCMC, 2013a) in terms of biodiversity, and they are the livelihood basis for fisherfolk in the coastal areas. These LMEs also exert a strong influence on the coasts, and the flora and fauna that are found there – important resources on which local livelihoods are dependent (UNEP, 2009).

The rainforests and the shrub forests of the region provide woodstocks for construction and fuel, protection from erosion, help to ensure clean water, and are a source of numerous kinds of foodstock, medicines, and other non-timber forest products used locally or in trade.

The provision of water, in flow quantities and with quality standards that do not engender a health risk to local populations, is an extremely important protective service of the region's forest cover and soils. The watershed service function is vital, especially in the Sahel region that requires a steady flow of water that would not exist if the upstream forest regions in Guinea and Mali were to be seriously degraded or lost.

Similarly, forests, grasslands, swamps, estuaries and mangroves also provide a natural disaster prevention function against extreme climatic events, but also in their capacity to help regulate and modulate population surges of harmful insects and viruses simply due to the diversity that exists in the biologically-rich areas.

West Africa's moist broadleaf forest, and to a lesser extent, its semi-arid shrub forests and subhumid woodlands, are also important areas of carbon storage and sequestration. This environmental service is at risk in the region due to large areas being converted to monocultures (mainly oil palm and rubber), and to a lesser extent by forest fires.

A final environmental service function, recreation services, is relatively minor when compared to many other regions of the world, and in other parts of Africa. But it does exist in West Africa, and as the standard of living increases in countries like Nigeria, Ghana and Cote d'Ivoire the demand will also increase. Presently, most of this is confined to important wildlife habitats in the dry shrub forest ecosystems and at specific sites in the Upper Guinean Forest. Related to the recreation services function is the site specific role of traditional heritage sites revered from one generation to the next as important areas for human healing and the belief that these sites contain supra-natural spiritual powers.

## 10.3 PROTECTED AREAS

Most West African protected areas (PAs) are recognized internationally as important sites that merit protection and, in most instances, national governments have complied with at least some type of official protection designation, but not always meeting the more rigorous definitions of the IUCN's protection

### Box 10.1 West Africa's Coastal & Marine Resources

From rocky cliffs and broad sandy beaches to extensive sea grass prairies and dense mangrove forests, West Africa's coastline is as diverse as it is extensive. The beaches of Cape Verde, Gambia, Guinea, Guinea-Bissau, Mauritania and Senegal are important nesting sites for marine turtle species. And millions of migrating birds from Europe feed along the coast before beginning their homeward trek in the northern spring. Offshore, in the cold waters of the Atlantic Ocean, over 1,000 species of fish are found as well as dolphins, whales and seals. Extensive cold water coral reefs encompass the archipelago of Cape Verde.

Source: WWF 2013

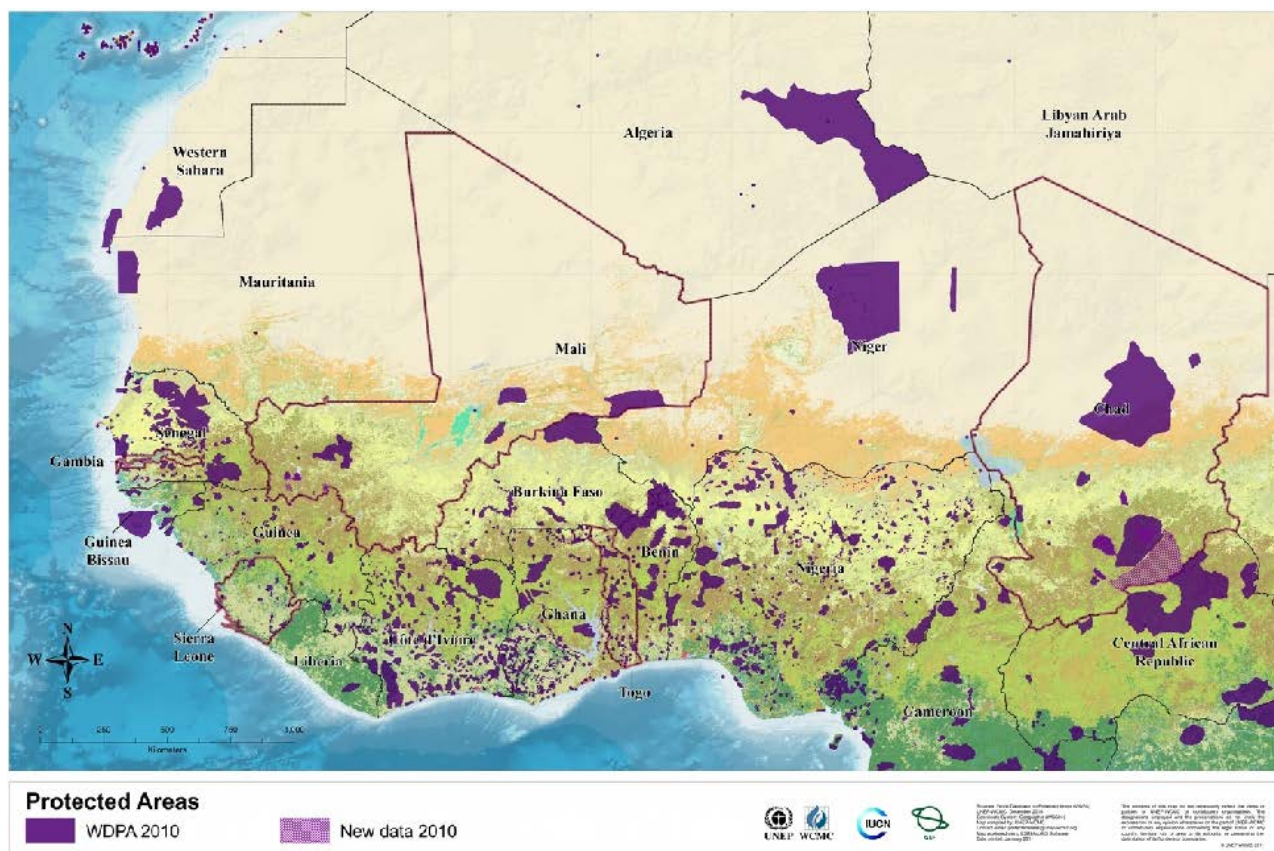


categories. As of ten years ago (Chape et al., 2003) the region accounted for almost ten percent of the world's protected areas and today the Protected Planet Database (UNEP-WCMC, 2013a) catalogues about 2,300 areas having some sort of protective designation in West Africa. Those meeting the six IUCN categories of protected areas are considerably less, about 167, according to the same database (see also **Annex F** for more information). Only ten areas (five of which are in Nigeria) meet the IUCN's strict nature reserve classification, but every West Africa country except Sao Tome and Cape Verde has at least one national park in IUCN's Category II definition. Most common after national parks are habitat/species management areas; there are 73 in the region. The map shown below (Figure 10.1) depicts protected areas in West Africa in a large regional scale. Finer details about individual protected areas can be found on smaller scale maps that appear in many of the 118/119 country reports commissioned by USAID (e.g., the recent ones for Ghana, Guinea and Nigeria completed in 2012). Unfortunately the majority of the region's protected areas are still without management plans, and they lack the budgetary resources and necessary staff for monitoring and working with local populations. Too many show their presence on maps but do not have recognizable boundaries on the ground.

Every nation in the region is party to the Ramsar Convention on Wetlands (2013) and has at least one area listed on the Wetlands of International Importance. Guinea, Burkina Faso and Niger each have more than a dozen areas under the Ramsar rubric. Mali, until 2013 only had one – the Inland Delta (of the Niger River) – the largest Ramsar site in West Africa covering more than 4 million hectares. Since January 2013 it has added three additional sites (IISD, 2013a). As noted previously, these areas play a very important environmental services role even though they may not always meet the requirements of the IUCN protected areas categories. The fact that they are nationally and internationally recognized usually means that their conservation value is recognized for groundwater recharge, flood control, water retention, water supply and as critical habitat areas for important aquatic and terrestrial species. They also play important supporting roles for local livelihoods.

With increasing risk from climate change the conservation importance of protected areas is heightened. Mitigation strategies are routinely discussed whenever management planning or capacity building training takes place. A UNEP-WCMC (2013b) study collaborating with the IUCN West Africa office (in Burkina Faso) and Birdlife International is working with five core countries (Mali, Chad, Gambia, Sierra Leone, Togo) and three countries involved with trans-boundary activities (Burkina Faso, Cote d'Ivoire, Ghana) on a climate resiliency project for protected areas in the region. It is not only collecting information about climate change impacts on PAs, but also developing tools to increase the PAs' resiliency to climate change.

**FIGURE 10.1: PROTECTED AREAS IN WEST AFRICA**



Source: UNEP-WCMC, 2013b

## 11.0 THREATS TO BIODIVERSITY, TROPICAL FORESTS, FRESHWATER AND MARINE ECOSYSTEMS

Part B above summarized the State of the Environment of West Africa and also provided a synopsis of the main threats to ecosystems in the region. This section reviews these threats again within a conceptual framework that is recognized as a “threats-based approach” and helps to guide USAID’s biodiversity programming (USAID, 2005a). From the direct threats, the indirect threats or long-term root causes or drivers are categorized. Once these are identified, the actions needed to address, reduce and/or remove them can be determined (USAID, 2005b).

### 11.1 SUMMARY OF DIRECT THREATS

Based on past and current trends and looking to the future, the most significant, direct threats to biodiversity and tropical forests are conversion of natural ecosystems for commercial agriculture/tree crops; extractive mining and exploration (including oil/gas), pollution of freshwater sources and watercourses, overfishing and illegal, unreported and unregulated fishing. These are facts also presented in Section 3 above. Climate change is considered a direct threat because it will not only be a multiplier of existing environmental pressures, but will also give rise to new pressures for all ecosystems throughout West Africa. Table 11.1 shows the most important threats for terrestrial, freshwater and marine ecosystems.

**TABLE 11.1: DIRECT THREATS TO BIODIVERSITY, FORESTS, WATER AND MARINE RESOURCES IN WEST AFRICA**

<b>Terrestrial</b>
<b>Conversion of forests</b> into agriculture and tree crops (e.g., oil palm, rubber, cocoa, and small-holder encroachment) & resulting loss/fragmentation of habitats
<b>Mining extraction and exploration</b> , both commercial and artisanal scale
<b>Infrastructure development</b> (e.g., roads, dams, pipelines, power line rights-of-way)
<b>Climate change</b> (e.g., habitat modification, alteration of rainfall patterns/events and temperatures, forest fires, outbreaks of pests)
<b>Wildlife poaching/trade/trafficking</b>
<b>Unsustainable cutting of woodstocks</b> , for fuel wood, charcoal and illegal tree harvesting
<b>Freshwater</b>
<b>Pollution of water sources and water courses</b> from mining, agriculture, & poor urban/peri-urban solid waste practices
<b>Climate change</b> with greater incidences of extreme rainfall & drought events
<b>Infrastructure development</b> (dams, roads)
<b>Watershed changes</b> from deforestation and development; increases in impervious surfaces
<b>Marine and Coastal</b>
<b>Overharvesting and destructive fishing</b> , including illegal, unreported, and unregulated (IUU) fishing
<b>Climate change</b> (e.g., sea level rise, tropical storms, increasing sea surface temperatures, ocean acidification)
<b>Oil and gas exploration and extraction</b>
<b>Infrastructure development</b> (e.g., harbors, transport)
<b>Pollution</b> (e.g., municipal and ship ballast waste, oil spills, chemical and thermal pollution from industry, agricultural runoff, urban/peri-urban solid waste practices)
<b>Conversion of mangrove forests</b> (unsustainable cutting for fuel wood, construction materials, removal for land use conversion)

## 11.2 INDIRECT THREATS/DRIVERS

Although direct threats focus on changes to ecosystem processes (e.g., habitat change, fragmentation, or loss; overexploitation; and climate change), indirect threats comprise the underlying factors — social, economic, political, institutional, or cultural — that enable or compound the occurrence or persistence of direct threats and have a negative effect on biodiversity and forest conservation. Addressing these indirect threats or drivers can influence the impact of direct threats.

Aside from the “population elephant” in the room, the most significant indirect threat to West Africa’s environmental resources is poor and/or weak governance, e.g., inadequate coordination, conflicting policies and regulations, and the corruption and lack of resources that prevents enforcement. The impacts are felt most severely at the local level, but governance issues are also persistent at provincial and national levels of environmental management. Strengthening governance through actions such as local-level empowerment, improving coordination and enforcement of laws and regulations, or simply raising awareness of their existence, can mitigate the impact of direct threats such as land conversion and infrastructure development.

Population growth, which currently approaches almost three percent per annum for most countries in the region, is a threat of over-riding proportions. Its impacts on the environment are acute and will continue

to grow, as will its impacts on every other sector, especially food security, health and peaceful governance. Every action taken to mitigate threats from other root causes needs to consider the region's population growth on each specific natural resource.

Efforts to achieve better governance are compounded across the region by the inadequate capacity of a trained, technical cadre of specialists needed for making sound resource management decisions at the local level and for communicating effectively what works and what does not work to national decision-makers and policy setters. Similarly, environmental resource specialists are needed to provide sound policy advice at the national and local levels for comprehensive planning. In many instances, there is a lack of basic tools and training, some of which is due to lack of funding, but in most instances it is the sheer lack of numbers of technical specialists needed to perform the required actions – a manpower gap, and the resources to support the mitigating action.

There are pockets of technical expertise in the region and within the national public services. The sub-regional Mano River Union (MRU), established by governments in the region without outside assistance, has technical know-how and respected clout. Technical expertise is also present with creative energy and dynamic ideas in the regional bodies such as CILSS, ECOWAS and others. But as we learned earlier, the financial resources needed for these regional and sub-regional entities to properly address sound environmental management planning and practices get siphoned off to other regional priorities. Public investment in, and the protection of environmental resources – the foundation of the majority of economic activity in West Africa – is not viewed as a high priority by either the individual countries of the region, nor by its regional coordinating and planning bodies.

Most of the countries in the region have at least basic legislation and policies aimed at governing natural resource use in place. One hundred percent (see Annex H) actively participate in the Ramsar Convention, and the majority update their National Biodiversity Action Plans periodically. Regional bodies such as ECOWAS, CILSS and other environmental research and management institutions like CIFOR and ICRAF have developed specific strategies aimed at facilitating conservation and protection of ecosystems and critical sites in the region.

But by and large, most West African states are ill-equipped to implement, monitor, and enforce the established rules and guidelines and follow through on environment and biodiversity planning. These elements of poor governance and planning are also elements of the disharmony between national level policies and what is understood and practiced at the province and/or local level (see Section 6.1). Much is perhaps due to communication gaps and the lack of trained professionals who can focus on bridging these gaps. These issues can be compounded by the inability to monitor environment policies locally, and often nationally. Without proper and periodic monitoring there are information gaps that inhibit a dynamic understanding of laws/policies that exist, how they actually function, and how they are interpreted on the ground. These are prime areas for guidance and harmonization leadership from regional institutions.

In its investigation and discussions with stakeholders, the ETOA team noted that there is a profound lack of awareness, knowledge, and expertise on how and where to plan and what the sequencing needs to be to make the most efficient and productive use of very scarce funds. Technical experience is lacking, and few, if any, guidelines exist to provide norms and standards that help illustrate the logical limits for wise and sustainable use of resources, especially at local levels in West African States.

These are examples of important drivers and indirect threats to conservation and sound environmental stewardship in West Africa. In the process of preparing this assessment, and in the ETOA team's

consultations, eight indirect threats were identified, as summarized in Table 11.2 below, with links to the direct threats noted in Table 11.1.

**TABLE 11.2: INDIRECT THREATS TO BIODIVERSITY, FORESTS, WATER RESOURCES AND MARINE ECOSYSTEMS IN WEST AFRICA AND LINKS TO DIRECT THREATS**

	<b>Indirect Threats/Drivers</b>	<b>Links to Direct Threats</b>
1	<b>Corruption and weak enforcement</b> of laws, policies, and agreements related to natural resources	Overharvesting Unsustainable cutting practices Conversion, degradation, loss
2	<b>Inadequate capacity</b> at national & local levels for development planning and management of natural resources	Conversion, degradation, loss Overharvesting Mining Infrastructure development
3	<b>Insufficient resources</b> for natural resource and biodiversity conservation	Poaching Overharvesting Pollution
4	<b>Weak/non-existent data coupled with poor monitoring practices, uncoordinated analyses and research systems</b> needed for understanding resources, priority setting and effective policy/decision-making	Overharvesting Mining Unsustainable cutting practices Pollution Conversion, degradation, loss
5	<b>Inadequate coordination</b> to protect high-conservation-value habitats	Conversion, degradation, loss
6	<b>Development plans and priorities</b> (medium and long term) <b>do not adequately consider ecosystem services</b> (forests/mangroves, watersheds, estuaries and biodiversity)	Conversion, degradation, loss Infrastructure development Mining Climate change
7	<b>Business practices are skewed or do not adequately consider</b> the full range of social and environmental impacts	Pollution Conversion, degradation, loss Mining Unsustainable cutting practices
8	<b>“Misguided” incentives and an undervaluation</b> of goods and services provided by healthy ecosystems	Conversion, degradation, loss Pollution Overharvesting Mining Infrastructure development

### 11.3 LAND AND OTHER RESOURCES TENURE ISSUES

Throughout this report, issues related to access, utilization and management of lands and other natural resources across the region are highlighted as consequences of poor governance, weak and corrupted institutions, and the impacts of climate change. Land grabbing by large foreign investors (see Section 3.3 and Bräutigam, 2012), the recurring regional conflicts between sedentary farmers and transhumant pastoralists about the access and the usage of transhumance corridors in Northern Ghana and the conflicts between horticulturalists and herders in the Sahel (Burkina Faso) concerning the access and usage of the lowland (*bas-fond*) areas during the dry season are all land tenure issues. The inability of West African countries to develop and implement strong and integrated sustainable land use planning mechanisms

pervades all of the efforts to improve natural resources use and conservation throughout the region. Gains are made locally with CBNRM efforts, especially those that have co-management components, but the broader and more geographically encompassing questions and conflicts remain. These are complicated and difficult issues to address. Their resolution demands a wide array of stakeholders on the regional stage because the issues are both national and transboundary. Section 13.3 below outlines some actions that are being implemented in West Africa. Part D also discusses where USAID/WA can contribute.

## **12.0 ACTIONS NECESSARY TO CONSERVE BIODIVERSITY, FORESTS, WATER RESOURCES AND MARINE ECOSYSTEMS IN WEST AFRICA**

The previous sections outlined direct threats and summarized some of the indirect threats to West Africa's environmental resources. In this section, the actions necessary to conserve biodiversity are identified, keeping in mind the underlying causes (drivers) of forest and biodiversity loss. As mentioned above, direct threats focus on changes to ecosystem processes, indirect threats focus on the factors or drivers – usually social, economic, political, and institutional – that enable or add to the occurrence or persistence of direct threats. Indirect threats provide the clearest access for initiatives at economic, policy, and social levels. Efforts addressing these indirect threats (and the direct threats) can have a positive impact on mitigating the direct threats and help conserve biodiversity and provide for more sustainable management of West Africa's forests, savannas, water and marine resources. Table 12.1 summarizes the links among drivers, direct threats, and the actions necessary. These are general suggestions to address the threats identified in this report that come in part from the ETOA team's consultation with stakeholders and also from an analysis of documents and individual country ETOAs and 118/119 reports. The actions are general suggestions for a wide range of stakeholders, rather than actions specifically recommended for USAID/WA.

Actions that address the causes of biodiversity loss and harm to water resources and the environment are most effective at the local level, in or around the sites where degradation and loss is occurring. Local populations are the ones most affected by this harm and are the most likely to invest in their protection and conservation. Actions that empower them with management responsibilities in return for NRM benefits have been proven to work well in many areas of the world. USAID's West Africa initiatives like the People, Rules and Organizations Supporting the Protection of Ecosystem Resources (PROSPER), the Promoting Agriculture, Governance and the Environment (PAGE) and the Sustainable and Thriving Environment for West Africa Regional Development (STEWARD) projects, and the CREMA approach (see Box 6.1) of other donors each operate on this framework. Local authorities can help to raise awareness of national policies and laws that support these actions. National bodies need to provide the support, and often the resources, to engender these actions, and ensure national coordination and transparency. The points mentioned in Sections 6.1 and 11.2 underscore the necessity for greater institutional grounding at national and regional levels on the dynamics of CBNRM. These are also discussed further in the opportunities listed in Part D of this report.

Regional entities with environmental mandates, strategies to fulfill those mandates and action plans and resources to carry them forward can provide significant support to these efforts. The promotion and leadership actions for adopting standards and norms across the region and sub-regions can be extremely important. Raising awareness via convocations, workshops and conferences helps to infuse new knowledge, fertilizes lessons learned and challenges discussions among stakeholders with common interests across the region. West Africa is getting better at this, especially at overcoming the economic,

language, and cultural differences that have been the traditional barriers in the region to cooperation among the individual states. Actions necessary (in addition to working with obvious trans-boundary issues), from West Africa’s regional perspective, can be appropriately applied to several indirect threats named in Table 12.1. These include those that address monitoring practices and coordinated analyses, insufficient resources, skewed business practices, and capturing/promoting regional and global successes in spatial planning, development planning and PES.

**TABLE 12.1: INDIRECT THREATS, DIRECT THREATS, AND ACTIONS NECESSARY**

<b>Indirect Threats</b>	<b>Links to Direct Threats</b>	<b>Actions Necessary</b>
<b>Corruption and weak enforcement</b> of laws, policies, and agreements related to natural resources	<ul style="list-style-type: none"> <li>• Overharvesting</li> <li>• Unsustainable cutting practices</li> <li>• Conversion</li> </ul>	Strengthen commitment to enforcement at national and local levels and strengthen capacity for monitoring, compliance, and enforcement of natural resource laws and policies (incl. rule of law and justice); actively pursue co-management opportunities at local levels; in fisheries improve policies/laws that will foster co-management approaches
<b>Inadequate capacity</b> at national & local levels for development planning and management of natural resources.	<ul style="list-style-type: none"> <li>• Conversion, degradation, loss</li> <li>• Overharvesting</li> <li>• Mining</li> <li>• Infrastructure development</li> </ul>	Enhance capacity by including local managers in trainings for environmental management planning, support for monitoring, and the access and use of information (especially geospatial where available)
<b>Insufficient resources</b> for natural resource and biodiversity conservation	<ul style="list-style-type: none"> <li>• Poaching</li> <li>• Overharvesting</li> <li>• Pollution</li> <li>• Invasive species</li> </ul>	Enhance sustainable financing for conservation from public (through increased revenue and support) and private sectors (e.g., transparent fees, licensing and PES)
<b>Weak/non-existent data coupled with poor monitoring practices, uncoordinated analyses and research systems</b> needed for understanding resources, priority setting and effective policy/decision-making	<ul style="list-style-type: none"> <li>• Overharvesting</li> <li>• Mining</li> <li>• Unsustainable cutting practices</li> <li>• Pollution</li> <li>• Conversion, degradation, loss</li> </ul>	Promote applied research to inform policy & management practices; establish pilot (and then permanent) norms and standards for monitoring and support decision-making and enhance dissemination of existing information
<b>Inadequate coordination</b> to protect high-conservation-value habitats	<ul style="list-style-type: none"> <li>• Conversion, degradation, loss</li> </ul>	Strengthen coordination and clarify/simplify jurisdictions (national, local, other); Establish local level integrated planning and environmental safeguards and build awareness of these
<b>Development plans and priorities</b> (medium and long term) <b>do not adequately consider ecosystem services</b> (forests/ mangroves, watersheds, estuaries and biodiversity)	<ul style="list-style-type: none"> <li>• Conversion, degradation, loss</li> <li>• Infrastructure development</li> <li>• Mining</li> <li>• Climate change</li> </ul>	Build capacity and promote integrated spatial planning, especially at local level & include sustainable resources management, climate change, energy & food security; Establish incentive system to encourage stakeholders (local level and provincial) to conserve/protect natural resources
<b>Business practices are skewed</b> or do not adequately consider the full range of social and environmental impacts	<ul style="list-style-type: none"> <li>• Pollution</li> <li>• Conversion, degradation, loss</li> <li>• Mining</li> <li>• Unsustainable cutting practices</li> </ul>	Encourage private sector to adopt best NRM practices and use strong social & environmental safeguards (based on CSR standards and market demand for certification/best practices management)
<b>“Misguided” incentives and an undervaluation</b> of goods and services	<ul style="list-style-type: none"> <li>• Conversion, degradation, loss</li> <li>• Pollution</li> <li>• Overharvesting</li> </ul>	Valuation of ecosystem services incorporated into development planning & business practices at national and local levels;

Indirect Threats	Links to Direct Threats	Actions Necessary
provided by healthy ecosystems	<ul style="list-style-type: none"> <li>• Mining</li> <li>• Infrastructure development</li> </ul>	Public advocacy & awareness campaigns to all stakeholders on value of ecosystem services and importance of environmental governance

A discussion of the extent to which the actions are being addressed can be found in Section 13; specific recommendations for USAID/WA are presented in Part D, Section 14 below.

## 13.0 EXTENT TO WHICH WEST AFRICA REGIONAL EFFORTS ARE ADDRESSING NECESSARY ACTIONS

The examples below highlight selected efforts that various groups and institutions are undertaking to address, to a certain extent, the necessary actions for biodiversity, forest, freshwater and marine conservation. These initiatives are samples that help to illustrate current trends in addressing the issues related to forestry, watershed and marine conservation and biodiversity protection. Further research and time spent with knowledge-sharing platforms can provide more information on these and on numerous other types of initiatives promoted by various actors. **Annex E** provides the reader with a more extensive (although by no means exhaustive) list of both regional initiatives and activities being undertaken in West African countries.

### 13.1 REGIONAL INSTITUTIONS

**ECOWAS:** In December 2008, ECOWAS Heads of States adopted the ECOWAS Environmental Policy. The objective of the policy was “to curb the depletion of natural resources, improve the quality of environment and neighborhood, to preserve biological diversity in order to ensure a healthy, productive environment, while improving balance of ecosystems, and the people’s wellbeing” (Medu, 2013). Specific programs of the policy include desertification, climate change, forestry, biosafety/biotechnology, and chemical and hazardous waste management. This environmental policy is young, and thus has little implementation on the ground yet. In line with this policy, ECOWAS is implementing two programs (the African Monitoring of the Environment for Sustainable Development—AMESD, and the Monitoring for the Environmental Security in Africa – MESA) for monitoring terrestrial and marines resources. A major constraint highlighted to the ETOA team by the ECOWAS Director of Environment was that, so far, there hasn’t been enough attention paid to environmental issues compared to other issues such as conflicts in the region.

**Mano River Union (MRU):** In 2010, the MRU countries (Sierra Leone, Guinea, Liberia, and Cote d’Ivoire) developed and adopted a ten-year (2010—2020) strategic action plan in line with their vision of ensuring the establishment of a peaceful, stable and prosperous sub-region. The overriding principle in the implementation of the plan is the adoption of the ‘growth triangles/growth areas’ concept by which all activities (economic, peace and security, and social development) implemented through the secretariat will cover more than one of the MRU member states. In particular, activities within border regions— areas often most disadvantaged due to lack of development and prone to illegal activities that act as a major source of conflict – will receive prominence in plan implementation. These regions are often far from the ‘centers of power’—receiving less attention, but remain significant and strategic in ensuring economic integration and maintaining peace and security within the sub-region” (MRU, 2010). The MRU is in negotiation with the African Development Bank to provide a grant to fund a water resources management project in the Mano River basin (Prefecture of Faranah—Guinea). This is expected to come through in July 2013. In addition, the two Heads of States (Guinea and Liberia) are planning to declare a



transboundary site (in Yanga) between the two countries as Peace Park, a site that was used as a rocket launching point during the war in Liberia.

**CILSS:** In 2008 CILSS member States approved a four-year work plan (2009—2013) in line with the mandate of the institution. Five strategic objectives formed the basis of this work plan including: i) ensuring sustainable food and nutritional security at both the national and regional level; ii) ensuring sustainable management of natural resources in the context of climate change; iii) contributing to a sustainable supply of water in West Africa and Chad; iv) increasing the trade of agricultural and food products in the Sahel and in West Africa; and v) strengthening the management and leadership of the CILSS Secretariat (CILSS, 2008). Two important projects to mention here are the Mapping Land Use/Land Cover and Sahel Studies and the Land Use Dynamics and Adapting to Climate Change in West Africa implemented by CILSS and the USGS/EROS. These two programs are making spatial data and expertise available to strengthen the management of environmental information as tools for decision-making and monitoring (Buzzard, 2013).

**International Water Management Institute (IWMI):** In West Africa, IWMI focuses on efforts to reduce poverty and improve food security through the promotion of sustainable and efficient agricultural water use. Its supported projects are: analyzing the adoption factors for different farming technologies; conducting modeling at the basin-scale; developing irrigation policies; analyzing the relationship between malaria and irrigation; and identifying and implementing health risk reduction measures for safer wastewater reuse. The Institute also develops decision-making tools to look at protecting ecosystem services, as well as policy guidelines to advise policy makers. In Burkina Faso and in Niger, IWMI, in partnership with CILSS, is implementing the West Africa Irrigation Project (WAIPRO), funded by USAID, to enhance the capacity to utilize existing irrigation systems, increase irrigated crop yields and income, reduce farmers' vulnerability to droughts and consumers' vulnerability to current food price hikes, and enhance national revenues (Cour, 2010).

**Commission Sous-Régional des Pêches/Sub Regional Fisheries Commission (CSR/SRFC):** The main objectives of the CSR/SRFC are to harmonize the long-term policies of member States in the preservation, conservation and exploitation of the fisheries resources for the benefit of the respective populations and to strengthen cooperation among member States. Established in 1985, the members are Cape Verde, The Gambia, Guinea-Bissau, Mauritania, Senegal, and Guinea (and Sierra Leone as of 2004). Headquartered in Dakar, it currently works with WWF on the West Africa Marine Protected Areas Project and also helps to coordinate several Large Marine Ecosystem (LME) projects/programs being implemented with World Bank and UNDP funding.

## 13.2 USAID'S PROGRAMS

**PAGE:** The Promoting Agriculture, Governance and the Environment (PAGE) project's interventions in Sierra Leone (2008—2013) seek to improve rural livelihoods, create farm and non-farm jobs, and increase agribusiness competitiveness while preserving the natural resource base for future generations. The value chain approach to support farmers, and participatory natural resources management principles to promote forest co-management in and around two forest reserves are the main components of the project.

**PROSPER:** A five-year (2012-2017) project to support the expansion of sustainable forest management in Liberia through education and improvements to human, legal, regulatory and institutional capacities. The project is working with various stakeholders to promote community participation in forest

management (in Nimba County, partially occupied by the Nimba mountain PA complex that straddles the border between Liberia, Guinea, and Cote d'Ivoire) and mangrove management in coastal Liberia. The project is also encouraging communities to invest in permanent cropping (of cocoa, palm, rice, etc.) as opposed to shifting cultivation. To build capacity of the GOL staff, the project is working with the Forestry Training Institute to train FDA forest technicians at the district level to work with the project.

**PEGG:** The Program in Environmental Governance in Guinea (PEGG) has a very strong environmental governance focus and clearly complements the USAID Mission's overarching governance goal in Guinea. As one of its component, the Environmental Law Institute (ELI) is working with the Guinean Ministries of Justice and Environment, Guinean NGOs, and academia to develop a training course for judges and magistrates on application of environmental laws. The course focuses on wildlife conservation and management, forestry, and extractive industries, as well as application of multilateral environmental agreements (email exchange with S. Nichols, 2013). PEGG is scheduled to end in August of this year.

**STEWARDS:** The three main objectives of the program include conserving biodiversity and improving rural livelihoods in critical transboundary landscapes in the Upper Guinean Forest Ecosystem; producing harmonized policies and legal frameworks for natural resource management in a regional context; and contributing to sub-regional and national strategic plans on climate change in the Mano River Union states (STEWARDS, 2013). The program's priority zones include the Outamba-Kilimi National Park in Sierra Leone, the Soya and Pencely forest reserves in Guinea; the Mount Nimba biosphere in Guinea and Côte d'Ivoire and the Nimba Nature Reserve in Liberia.

**BaNafaa:** The Gambia-Senegal Sustainable Fisheries Project promotes sustainable fisheries management including the shared marine and coastal resources between The Gambia and Senegal. It has helped to design and promote two participatory ecosystem-based fisheries co-management plans (one for the sole fishery along the entire Gambian Atlantic coast and one for the oyster and cockle fishery in the Tanbi Wetlands National Park) in areas of national, regional and global biodiversity significance. Each plan delegates exclusive use rights and co-management responsibilities to a civil society organization. In the case of oysters and cockles it is a women's organization (TRY Oyster Women's Association) that was subsequently awarded the UNDP Equator Prize in 2012 for its work. Other factors for sustainable fisheries management addressed by the project include water, sanitation and hygiene (WASH) and Climate Change Vulnerability and Adaptation.

Other programs/projects are mentioned in **Annex E**.

### **13.3 MULTI-LATERAL AND BI-LATERAL DONOR PROGRAMS**

**World Bank, Global Environmental Facility (GEF) and the African Catalytic Growth (ACG):** In 2010, the World Bank, GEF and ACG funded the West Africa Regional Fisheries Project (WARFP) in nine countries (from Mauritania to Ghana) to promote good governance, sustainable management of the marine resources and economic opportunities in these countries. The Regional Program Management Unit is based in Dakar. A total budget of US\$200 million was approved in 2010 for the nine countries through an Adaptive Program Loan for a ten-year period (WARFP, 2013). Each of the countries benefits from the funds. (Liberia was granted \$12 million of that budget to implement the WARFP for the first five years. ACG provided an additional \$2 million to Liberia to support a marine infrastructure rehabilitation project.) In Liberia, WARFP is strengthening the capacity to govern and manage targeted fisheries, reduce illegal fishing, increase local value added to fish products and coordinate, monitor, and evaluate the program. Currently, the project is setting up community-based fisheries management on a pilot basis

at Robertsport (Cape Mount County) around Lake Piso. Plans are underway to expand this activity to Buchanan.

On another front, the World Bank is supporting efforts for REDD preparedness in Liberia. Two areas (Wonegizi Forest Reserve stretching to the border of Guinea and Lake Piso, a multiple use reserve) are targeted as demonstration sites. According to our informants (World Bank, SCNL, and FFI) in Liberia, the discussion about this has just started, therefore, under conception.

The World Bank is working on a voluntary basis in Senegal, Cameroun, Mauritania, The Gambia, and Mali with the Land Governance Assessment Framework (LGAF). Using a series of consultative national workshops with experts, government, civil society, and the private sector a land tenure assessment is conducted based on a specific construct of LGAF tools (World Bank, 2013). Using a \$50,000 start-up grant for the 2-year process, the LGAF focuses on five thematic areas identified as major areas for policy intervention in the land sector (land tenure rights recognition [rural], land tenure right recognition [urban], rural group rights recognition, urban group rights recognition in informal areas and opportunities for tenure individualization). A range of indicators is then ranked on a scorecard as a performance measure relevant to a specific theme. The idea is to help stakeholders define what steps should be taken to strengthen tenure security in the country.

**UN Food and Agriculture Organization (FAO):** Through an extensive consultative process, the FAO has led the development and adoption of voluntary guidelines on the governance of tenure of land, fisheries and forests in the context of national food security (FAO, 2012). Many West African countries (e.g., Burkina Faso and Mali) participated in the consultative process. These guidelines, known as Responsible Governance of Tenure, are intended to contribute to the global and national efforts towards the eradication of hunger and poverty through secured land tenure rights and sustainable development approaches. The initiative builds on and supports the Voluntary Guidelines on the Right to Food, which were adopted by the FAO Council in 2004 and the 2006 International Conference on Agrarian Reform and Rural Development (ICARRD).

**Global Environmental Facilities (GEF):** Many West African countries have been receiving funding from GEF, UNDP and the World Bank since 2007-2009 for capacity development and mainstreaming of sustainable land management into national development strategies and policies. In some countries like Senegal, the project contributed to the reduction of land degradation and the improvement of ecosystem functions and services (World Bank, 2012). In the Upper West Region of Ghana, EPA is implementing a GEF/World Bank-funded project (2011—2014) on sustainable land, wildlife and water management in collaboration with the Wildlife Division. One of the components of the project is focused on the conservation of biodiversity in the Western corridor. The project is promoting the establishment of community-based wildlife conservation activities or CREMAs to encourage wildlife conservation on community lands while transferring management authority to these communities for ecotourism purposes.

**European Union (EU):** With funding from the EU and a contract with the Netherlands Society for the Conservation of Birds (VBN), the Royal Society for the Protection of Birds (RSPB), BirdLife International, and forestry departments and local NGOs in Sierra Leone and Liberia have been implementing a Transboundary Peace Park project (Across the River) in and around the Gola Forest. The Presidents of the two countries approved the peace park initiative in 2009 to mitigate war and climate change as well as provide carbon sequestration benefits. The current phase of the project is expected to end in March 2013. RSPB has written a proposal to the EU to provide 1.8 million Euros to continue the activities in and around the Liberian portion of the forest.

**African Union:** During their Thirteen Ordinary Session in Sirte, Libya, from 1 to 3 July 2009, the Heads of States and Government of the African Union made a Declaration on land issues and challenges in Africa. The Declaration recognizes the centrality of land to sustainable socio-economic growth, development and security of social, economic and cultural livelihood of the African people. The heads of states committed themselves to ensure that land laws provide for equitable access to land and related resources among all land users including the youth and other landless and vulnerable groups such as displaced persons; and strengthen the security of land tenure for women who merit special attention. To develop the African Union vision, regional consultative workshops were held by the EU in collaboration with the Economic Commission of Africa (ECA) and the AfDB in 2007—2009, which resulted in the drafting of the continental framework (in 2009) and the development of a five year (2012—2016) strategic plan and roadmap known as Land Policy Initiative (LPI). Tenure activities are also being coordinated between East and West Africa. (UN Economic Commission for Africa, 2013).

**African Development Bank:** The African Development Bank is co-funding the in-situ conservation of indigenous cattle and small ruminants with GEF in four countries in West Africa, namely, The Gambia, Mali, Guinea and Senegal (Dibba, 2013; ILRI, 2013). The 6-10 year, US \$30 million project, PROGEBE, aims at conserving the N'Dama cattle breed, the Djallonke sheep and West African Dwarf goats considered being under threat from the introgression from other livestock breeds (e.g. Zebu cattle and Sahelian breeds of sheep and goats). The International Trypanotolerance Centre (ITC) based in The Gambia hosts the project. The endemic habitats and their biodiversity are also being conserved.

#### 13.4 NGO EFFORTS

**Conservation International (CI):** Currently, CI is only present in Liberia where they work mainly with local NGOs (SCNL, and Save My Future Foundation—SAMFU), the private sector (Arcelormittal and Chevron), the USG funded PROSPER project, and the GOL agencies to promote biodiversity protection through conservation agreements and alternative livelihood activities.

On the other hand, the Critical Ecosystem Partnership Funds (CEPF), a joint program of *l'Agence Française de Développement (AFD)*, CI, the EU, the GEF, the Government of Japan, the John MacArthur Foundation, and the World Bank, is developing an Ecosystem Profile to begin in mid-2013 that will include an investment strategy for the Upper Guinean Forests of West Africa as a guide to future grant making to civil society groups working in the region. The results will be titled the *Guinean Forests of West Africa Ecosystem Profile*, and will include a situational analysis based upon a review of biodiversity priorities, threats, policy environment, civil society context, and patterns of conservation investment by other funders, as well as presenting a stakeholder agreed-upon geographic and thematic investment strategy.

**Fauna and Flora International (FFI):** This NGO has supporting the Forestry Development authority of Liberia to restart the conservation of the Sapo national Park. Following the political crisis and due to arrival of the mining companies, the surrounding areas of the park are under major threats from mining and logging. In addition, FFI is also supporting the University of Liberia by building a Center of Excellence for Ecological Research and Learning (with a 3 year program). Funding has just ended. The organization is looking for funding to continue activities at Sapo.

**World Conservation Union (IUCN):** An IUCN feasibility study of wildlife migration corridors in the Volta Region and Sissili basin under its ecosystem management project in Northern Ghana recommended the implementation of natural resources production options under the effective supervision of

communities in association with the other stakeholders and the private sector. It involved the creation of game ranches and village small hunting zones in which organised communities will participate in carrying out activities and will have an important place in the distribution of the profits generated (IUCN, 2007). This recommendation corresponds to the CREMA approach (funded by the WB/GEF) that is being promoted in Ghana's the Northern Regions. The success of this approach will mainly depend on whether the profits generated by the communities are enough to offset the associated costs.

IUCN (as noted elsewhere in this report) is also working with the WCMC on a transboundary effort to improve climate change adaptation activities in protected areas. Elsewhere they are working with DfID to improve co-management in transboundary area (Niger, Burkina Faso, Benin) of Parc W and also in the Gourma Reserve transboundary area between Burkina Faso and Mali that is well known for the migratory herd of elephants that frequent this protected area.

Other international NGOs (e.g., CARE, WWF) also have multiple projects in the region funded by a number of donors and grants. CARE is world –renowned for its expertise with helping local communities adapt to climate change through climate smart agriculture, water harvesting, and farmer-managed natural regeneration. WWF is working in a successful program linked to the Canary Current Large Marine Ecosystem and assistance to local communities dependent on the resources of that system for their livelihoods. Additional programs and projects can be found in **Annex E**.

### **13.5 PRIVATE SECTOR INITIATIVES**

**Oil and Mining Companies:** Through their Corporate Social Responsibility policies, private sector companies are supporting conservation efforts to protect forests, biodiversity and marine resources. In Liberia, for example, Chevron has signed a contract with CI to establish conservation agreements with the communities whereby the communities will protect critical biological resources (such as the sea turtles) in exchange for supporting alternative livelihood activities for the communities. Arcelormittal has also carried out a large-scale yearlong ecological study with the help from government agencies and international conservation NGOs in the Nimba nature reserve. The results of this study are being used to design and implement the biodiversity and conservation program of the company. Similarly, in Guinea, Rio Tinto, through the Simandou Iron Or, project has been conducting extensive work to improve the conservation and the management of the Pic de Fon national forest reserve, adjacent to the mining concession.



# PART D

## OPPORTUNITIES

### 14.0 RECOMMENDATIONS FOR THE USAID WEST AFRICA REGIONAL OFFICE

#### 14.1 THE CONTEXT

The USAID West Africa Regional Office frames its objective of reducing poverty in the region within a group of support and assistance approaches. These are aimed at fostering stability through better governance, improving the status of health in vulnerable populations, promoting regional economic growth, increasing food security, strengthening the resilience in the natural resource base to climate change, and improving international private sector competitiveness in targeted sectors. The Mission sees its comparative advantage as a regional USAID office (as opposed to a bilateral mission) through several unique roles. These include its ability to help strengthen regional institutions, to support the harmonization of policies across West Africa, to facilitate the implementation of U.S. Presidential Initiatives, and to help address transboundary issues. It also lends support services to the bilateral missions in the region and provides both technical assistance on targeted issues and lends management support for U.S. government-funded activities in West African countries that do not have bilateral missions (the so-called non-presence countries, or NPCs).

It is within this context, especially regarding the roles just mentioned, that the recommendations associated with this West Africa ETOA exercise have been formulated. The State of the West Africa Environment discussed in Part B and the threats, on-going mitigating activities and critical action gaps enumerated in Part C highlighted the important issues and challenges of the region. This section presents the recommendations in three priority groupings: Critical (must do), Should Do when/if funds are available, and finally, those that Merit Serious Consideration. There is no priority order within these groups. Based on the specific guidance of the USAID West Africa Regional Office, the recommendations stem from transnational issues and are addressed through the regional lens. A matrix at the end of the section provides a brief summary of the recommendations.

#### 14.2 CRITICAL ACTIONS

Fresh water is the essential ingredient for healthy populations; it is also a most basic element of local livelihoods, of regional (and national) economic growth, and it is critical for maintaining biodiversity and vegetative cover in West Africa. It is the environmental resource that needs the most significant attention now. The fact that almost all fresh water used in the region comes from surface water sources that flow across national boundaries (and will likely remain so well into the future [USAID 2012e]), make this an important regional and transboundary issue. Several of the ETOA team's recommendations are based on the extreme threats to the availability of fresh water across the entire region.

- Guide, assist and promote regional policy and management interventions for river basins with international fresh water flows.** A recent study on climate change vulnerability for West Africa (USAID 2012e) pointed out three significant facts: (a) there is an overall decline in water resource availability across the region and that the decline is also greater than the reduction in the precipitation falling in the region; (b) addition to existing fresh water from major aquifers is prohibitively expensive because of the deep drilling that would be necessary; and (c) the region's physical and economic water scarcity is further exacerbated by human demographic pressures and the increasing pollution of water bodies in the region. Overlay this with everyone's projections for increasing economic growth by 20 to 40 percent in the next 25 years and the world's highest projected population growth during the same period. Water demands linked to this growth simply for food production/irrigation needs in the region will be enormous and it is evident that present day demands and climate perturbations are already pushing water scarcity to its limits. This is potentially a major source of conflict and insecurity for the whole region and is an area that USAID/WA and other regional institutions and donors need to address urgently. The Regional Office can guide, support and assist ECOWAS/CCRE, UEMOA, CILSS, the river basin institutions, and other regional bodies to develop policy and management interventions for river basins with international flows. Water use and its management in the region will soon reach crisis proportions. In a potential second tier of interventions, institutions in the water research and development domains, regulatory bodies, quality assurance laboratories and policy-making organs in vulnerable countries should be particularly targeted.
- Strengthen regional capacity to absorb and use emerging environmental evidence.** Facts and evidence about West Africa's biological and natural resources are emerging at an accelerated pace and from many different (and often new) quarters. This is creating informational gaps in the regional regulatory framework and among regional bodies such as ECOWAS, CILSS, and international research groups (e.g., IWMI, ICRISAT, World Agroforestry Centre (ICRAF) and others active in West Africa). Policies, strategies and plans are being formulated and decisions made without full awareness of the new information. There is a substantial opportunity for USAID/WA to lead a knowledge management effort that can enhance the use of important natural resource information across the region. An initial activity would be the compilation of an inventory to understand the sources of knowledge, as well as collection and reporting modes and frequencies related to water, biodiversity, forest management, climate change, and marine and coastal resources across the region. USAID/WA in follow-on actions would work with key regional institutions such as ECOWAS, CILSS, the Mano River Union and regional river basin authorities to improve their capacities at capturing and making use of the science-based evidence that is emerging so that new (and old) policies are in line with and/or adapted to the most current information. The urgency of important regional environmental issues (e.g., flooding of the Niger River; excessive pollution loads in marine estuaries), as well as gains from new knowledge, is at risk if they cannot be captured and shared. Tools for this knowledge management process can range from the simple, such as subscriptions to accredited blog sites, to the more complex, such as AGRHYMET-generated real-time risk maps of river flows and pollution accidents. USAID/WA can draw on FEWS NET, AGRHYMET and the development of the Sahel and Horn JPCs and other experiences to help initiate and build this regional capacity strengthening exercise.
- Support regional efforts targeting environmental monitoring for environmental sustainability and security.** During the ETOA team's discussions with various actors representing regional institutions, the team was alerted to the data and monitoring gaps linked to environmental threats. As



discussed in previous sections of this report, the MESA program implemented by ECOWAS in West Africa, if supported appropriately, has the potential to fill some of these gaps. This program includes both terrestrial and marine/coastal elements that are transboundary in nature. This represents a very good opportunity for USAID/WA support, especially in the Sahel where environmental threats and reduced livelihood opportunities could lead to insecurity, including migration and conflict or even an increase in extremism. Coordination efforts, especially linked to a knowledge management platform and with the Sahel JPC, could also be beneficial to the MESA program.

- **Develop a framework for transboundary land use/resources planning.** The lack of an integrated model of land use at the transboundary level is creating conflicts between pastoralists and sedentary agricultural communities where pastureland is available. (**Appendix I** summarizes some of the transhumance related issues that are occurring between herders from the Sahelian countries and their neighboring communities in the northern parts of Ghana, Cote d'Ivoire, Benin, Togo, Nigeria and Cameroon.) Other transboundary conflicts over land use, protection and management are occurring at other points in the region. Threats to the region's marine resources and biodiversity are also the result of inadequate, or an absence of integrated transboundary management systems. As evidenced in numerous places in this report, individual countries will often develop policies and regulations for management of their resources within their borders, but usually with disregard for what is occurring across the political border even though the resources are the same and the use of them similar. The USFS- and USAID-supported STEWARD program is working (with positive results) on some of these transboundary issues. There is an opportunity for USAID/WA to assist with the development of a regional framework for improving land use planning efforts in important transboundary zones. Working initially with the Mano River Union, ECOWAS's Environment Division, WWF (Senegal office) and IUCN (Ouagadougou office), USAID/WA can be effective by using awareness and knowledge-building activities in a collective setting that focus on land use issues, experiences and lessons in the Mount Nimba region, the Sahelian transhumance corridors, and the buffer zone areas of transboundary PAs like Parc W and the Gourma Reserve. Similarly, the common property issues linked to the Canary Current Large Marine Ecosystem (LME) and what is being developed to address them have a relevance that WWF (and its partners) can bring to the table. The goal is to develop a framework whereby transboundary issues are discussed and understood and the capacity of the regional bodies enhanced to develop cross-border planning and solutions that can be continually adapted and monitored. Climate change adaptation and climate smart agriculture in these transboundary areas can benefit from the integrated planning efforts conceived in this regional framework. The Sahel JPC, working in the northern part of the region, may also prove to be a valuable partner/resource in these situations.

### 14.3 SHOULD DO ACTIONS

- **Promote and strengthen regional management of man-caused environmental disasters.** As discussed elsewhere in this report, most of the world's leading mining companies present in West Africa are increasing efforts to improve their environmental and social stewardship and engaging in strategic activities that highlight their corporate social responsibility (CSR). More private sector involvement in sound, progressive environmental management is good; but it is easier and more likely to happen at the national level where countries market their economic attributes and policies to court the private sector. Regional institutions hold little sway in influencing private sector CSR. But they are well placed to monitor and help manage information related to common property resources that span national borders such as marine fisheries and freshwater flows. Regional bodies are also the

logical points of contact for monitoring activities that present potential transboundary (or multiple boundary) threats such as oil spills from offshore drilling that will impact the valuable West African marine fishery and scores of other coastal resources and populations. Hazardous waste spills and accidents that pollute international waterways, or even activities that disrupt the flows of international waterways also need the oversight, monitoring and coordination of a regional body or bodies. It is assistance aimed at this type of environmental stewardship and private sector engagement that represents a considerable opportunity for USAID/WA. There is very little capacity in regional institutions like ECOWAS (or nationally across the regional) for engaging, monitoring and managing environmental threats due to accidents or mismanagement in the private sector. Drawing on its own environmental compliance resources and the large US domestic industry that focuses on preparedness and disasters, USAID/WA could help develop a regional training and management platform designed to address such issues. One can be certain with the economic and population growth projected for the next 20 years that such environmentally threatening events will be more common in the region. There is substantial regional experience in confronting natural, climate-related disasters. With the assistance of long-running programs like FEWS NET, donors and ECOWAS are more prepared for climate-related crises. These experiences and resources, such as the FAO's Emergency and Rehabilitation Office for West Africa/Sahel, can be tapped in developing regional (and national) prevention and mitigation responses for environmental threats stemming from hazardous and solid waste mismanagement. It is also in the private sector's best interest to be engaged in the monitoring and training aspects of such a development model, most likely to be led by ECOWAS. As the institution becomes adept with its own knowledge and expertise the lessons learned could be applied to help train sub-regional and national teams, working with key private sector entities in each locale in disaster responses that can help protect and conserve the region's environment.

- **Support agro-biodiversity preservation.** The micro ecosystems and habitats mentioned in another recommendation (see section 14.4) are also connected to West Africa agro-biodiversity through several agricultural crops and domestic animal varieties that are being lost due to inappropriate policies, and in some cases, bad, agricultural practices. The continued loss or dilution of environmentally adapted varieties of crops and livestock breeds may have dire consequences on the livelihoods and food security of West Africans. (The AfDB and the UN-GEF have provided emergency funding to conserve the adaptive genes embedded in ruminant livestock found only in West and Central Africa.) USAID/WA has the opportunity to work with ECOWAS, which has already committed to the ruminant cause by agreeing to adopt the newly created West Africa Livestock Innovation Centre (WALIC) in The Gambia (the successor institution to the International Trypanptolerance Centre). ECOWAS is also assisting with food crops considered as important for food security, most notably those in the area of "orphan crops" such as yams and cocoyam and some cereals. This diversity preservation effort would develop ex-situ facilities to preserve germplasm of these species as well as in-situ conservation efforts. Other institutions operating regionally (e.g., ICRISAT, ICRAF, WALIC, CIRDES, ILRI) are logical partners for this effort.
- **Promote and support regional policy formulation regarding water use impacts by large-scale users.** Large-scale land acquisitions by foreign investors across the region (and especially those engaged in biofuel and food crop production) are jeopardizing the livelihoods of smallholder users and riverine ecosystems. USAID/WA should be engaged in the mitigation process along with ECOWAS because of the impacts on transboundary water flows and the regional conflict and food security implications. Water use impact assessments of large companies acquiring large tracts of land are divorced from land acquisitions procedures. This often results in the poor monitoring and

evaluation of the impact of their production activities on the ecological functions of freshwater systems. USAID/WA can work with regional bodies and international institutions such as IWMI to foster new institutional arrangements that can close the gap between impact assessment policy and reality so that the large land buyers adequately consider crop water requirements, discharges, and other likely impacts on the livelihoods of smallholder users and the ecosystem.

- **Promote, with sub-regional institutions, transboundary growth.** The Mano River Union (MRU) Secretariat has a plan to support the implementation of important cross-border programs such as peace parks, livelihood diversification, and infrastructure development at places that link the four countries of the Union in order to strengthen the ties between the countries, promote economic growth of these areas, and improve free and easy movement of goods and people between the countries. This is an excellent opportunity for USAID/WA to promote transboundary cooperation and growth – actions that directly focus on its core objectives – and help to strengthen peace and security, and reduce human migration and human pressure on critical ecosystems. USAID still needs to undertake its due diligence and determine what areas of the MRU plan are most appropriate to its mission. Lessons from the recently completed West Africa Trade Hub program and the regional institutions (Global Shea Alliance, Borderless Alliance) born from that effort can also provide insights. Given the scope of such promotion and support, USAID sectors apart from just trade and development need to be involved. Environment, health (especially for water issues), and peace/security all need to be actively aware of, and participate in the process.
- **Support mechanisms to increase the security of land and other natural resources tenure rights.** Multiple initiatives are being promoted by multilateral (World Bank LGAF initiative, FAO Responsible Governance of Tenure strategy), bi-lateral (US Government Millennium Challenge Corporation (MCC) experience on local conventions and land charters), continental (AU land policy initiative and NEPAD’s commitment to integrate tenure issues through the CAADP), regional (the UEMOA *Observatoire Foncière* initiative) and non- governmental organizations to clarify and secure land and natural resources tenure rights in the region. With constructive agreements to support these regional efforts USAID/WA could complement and leverage its other endeavors (e.g., Sahel JPC, Support to CILSS, STEWARD) and enhance progress with land tenure issues. Over the past 30 years, USAID has provided support in conducting legal and policy reforms in the land, forestry and mining sectors throughout West Africa. An impact assessment of tenure reforms on the society and the ecology at the regional level would also be timely. If there is causality, then this should be celebrated. Finally, there is a need to invest in training a new generation of West African land tenure specialists at a time when the land and tenure issues are becoming of the utmost importance in the region. Investing USAID funds in helping African universities develop new tenure specialists is essential. The LPI has developed a plan for this, but there are few resources regionally to implement it.
- **Promote and support/enhance a regional environmental knowledge management platform.** The data collection and research of this assessment have only scratched the surface of information available on West Africa’s best management practices, lessons learned, current experiences and science-based evidence on important topics linked to terrestrial and marine biodiversity, CBNRM, and climate change adaptation. It is evident that there are many widely scattered repositories of these data, both within the region and outside of it. And, linked to another recommendation made in the report, the evidence-based experiences are emerging more rapidly and from more sources than ever before. Locating and accessing these data are difficult; similarly, locating the sites is challenging and then querying with the “right” questions can be cumbersome and time consuming. Some platforms

are very specific (e.g., the WCMC probably has the most up-to-date inventories about protected areas, but information on their management has to be found elsewhere); other sites are outdated. There is an opportunity for USAID/WA to work with the environment division of ECOWAS (as the logical focal point) to construct a regional network (with other regional/sub-regional institutions) dedicated to knowledge management of environmental issues/information in West Africa. USAID already has experience in the region (e.g., working with AGRHYMET) to improve accessibility to specific knowledge bases. This experience and others operating in the region, such as the networks used by the CGIAR institutes, as well as the USAID-funded CK2C/FAME-web network could also be engaged in this effort.

#### 14.4 ACTIONS THAT MERIT SERIOUS CONSIDERATION

- **Continue to support measures and activities that improve the adaptive capacity of West African communities (to climate change).** The USAID/WA Regional Office is engaged on numerous fronts in activities that enhance resilience in the face of climate change events. Support to these opportunities, especially where they engage multiple regional players, needs to continue and be scaled up. Conscious efforts across sectors such as environment, health and governance, and again with regional partners, need to be made. Environment and biodiversity linkages can be highlighted in conjunction with health and WASH activities as well as with climate smart agriculture. The Regional Office logically needs to coordinate and work with the Sahel JPC for adaptive activities in the six northern tier countries of the region. Planning and coordination with ECOWAS and CILSS/INSAH is needed with respect to capacity building and training lines; in some instances, the Niger and Volta River Basin Authorities would also be partners.
- **Enhance educational capacity in the region for greater environmental awareness, conservation and protection.** National and regional institutions both suffer from the lack of a sufficient cadre of critical environmental decision makers and thinkers. This was very much in evidence to the ETOA team during country visits and in discussions with staff from regional institutions. Bilateral programs are best placed to support environment-related educational programs in individual country universities and through targeted scholarships and/or project related trainings abroad or in the region. USAID/WA opportunities can include assistance to regional centers of excellence (e.g., the Regional Maritime University in Accra, Ghana). But strategic and targeted assistance for graduate-level students or internships for professionals should also be explored linked to West Africa's ECOWAS, CILSS, UEMOA or other regional institutions. These would represent very modest budget outlays, but could prove to be very strategic in terms of liaisons and increasing the decision-making capacity within the environmental departments of these important regional bodies.
- **Promote community-based natural resource management initiatives.** There are a number of community-based natural resource management (CBNRM) initiatives that merit wider regional support and promotion. Examples discussed in this document include: the USAID-funded PROSPER project in Liberia, the USAID-PAGE project in Sierra Leone, and the GEF/World Bank Sustainable Land and Water Management Project in Ghana, which uses the CREMA approach. Each of these programs, or at least parts of them, merit scaling up and clearly defining donor exit strategies to ensure their sustainability. These are actions that USAID/WA could most directly support in non-presence countries. It could also work with ECOWAS, CILSS/INSAH, the Sahel JPC and with international NGOs working in the region (most logically, IUCN, CARE, WWF, FFI, BirdLife) to

enhance knowledge management and promote cross-training exercises that would help to both scale up and tailor the CBNRM attributes to appropriate sites across the region.

- **Support efforts to expand the US government’s biodiversity classification.** Important and critical areas of biological significance in the Sahel are not eligible for biodiversity funding under U.S. government guidelines, essentially due to the manner in which biodiversity is classified. These areas are rich micro ecosystems that are important refuges for other species in times of extreme climate events and are often the basis for repopulating surrounding areas once the event has passed. Their importance to local livelihoods and farm family survival is without parallel. These are flora and fauna that are extremely hardy, heritage species or varieties that can exist under very harsh environmental conditions. At this point, funding to protect their critical habitats, or explore their unknown symbiosis with indigenous farming communities is not possible. USAID/WA should take every opportunity to support and lead efforts to change the biodiversity classification so that funding can become available for wider-reaching biodiversity conservation in the Sahelian zone of West Africa. There are opportunities here to draw upon/link to the Sahel JPC efforts, especially in the area of Farmer Managed Natural Regeneration (FMNR) and to climate change adaptation efforts.

**TABLE 14.1: SUMMARY OF RECOMMENDATIONS**

Recommendation	Possible Key Actions	Potential Partners	Possible Countries	Sectors and Lead*	Comments
<b>Critical Actions</b>					
Guide, assist, and promote regional policy and management interventions for river basins with international fresh water flows	Information gap assessment; knowledge exchange Capacity development in establishment and management of river basins	ECOWAS/CCRE, UEMOA, CILSS, AGRHYMET, IWMI, GeoCenter	Countries with international freshwater flows Countries hosting river basing authorities	<u>ENVIR</u> , HEALTH, TRADE, AGRIC	Mapping out all locations where major bi-, or multi-country river basins can benefit from further development and analyzing them for needs will be a good starting point for capacity development
Strengthen regional capacity to absorb and use emerging environmental evidence	Inventory of knowledge banks & policies; knowledge exchange workshops Capacity building in data collation and strategic application	ECOWAS, MRU, CGIAR institutions, River basin authorities	All	<u>ENVIR</u> , AGRIC, HEALTH	Wider, more transparent stakeholder analyses that capture both indigenous and scientific-based knowledge should be aimed so that decisions and policies are not only fact-based, but also relevant for the areas and lead to sustainable impacts
Support regional efforts targeting environmental monitoring for environmental sustainability and security	Needs assessment and action plan for strengthening MESA program; identification of environmental insecurity hotspots	ECOWAS/MESA, AGRHYMET, GeoCenter	Sahelian and costal countries	<u>ENVIR</u>	Ensure that marine and coastal elements are included
Develop a framework for transboundary land use/resources planning	Support the design of integrated system of land use planning; contribute to the	IUCN, ECOWAS/ENV, WWF, STEWARD	All	<u>ENVIR</u> , AGRIC	Should not be just limited to land, but also include experiences with LMEs Identification of national land and other resources'

Recommendation	Possible Key Actions	Potential Partners	Possible Countries	Sectors and Lead*	Comments
	establishment of mechanisms for prioritizing competing land use options and; developing conflict resolution mechanisms				institutions and user apex associations and facilitating linkages with counterpart agencies/associations in bordering countries will be first steps establishing platforms for discussions/negotiations at transboundary areas.
<b>Should Do Actions</b>					
Promote and strengthen regional management of man-caused environmental disasters	Identification of private sector initiatives with high potential for transboundary environmental disasters; develop blueprint for regional, environmental disaster management institution	ECOWAS, River basin authorities, US FEMA	Countries with international freshwater flows and offshore oil extraction	ENVIR, AGRIC, TRADE	A starting point of regional institutions and bilaterals including USAID encouraging voluntary conduct codes for Responsible operations among private sector companies in mining, oil exploration and forestry sectors will go a long way to create conducive environment for discussing and enforcing transboundary regulations.
Support agro-biodiversity management and preservation	Develop action plan for preservation of threatened, locally adapted crop and livestock varieties	ILRI, WALIC, CIRDES, ICRISAT, ECOWAS, Sahel JPC	All	ENVIR, AGRIC, TRADE	Include regional and national research centers and promote linkages among them through support to regional and multi-country projects
Promote and support regional policy formulation regarding water use impacts by large-scale users	Knowledge exchange; inventory of large-scale users of water; establish M&E norms; support	ECOWAS. CILSS, AGRHYMET, River basin authorities	All	ENVIR, HEALTH, TRADE, AGRIC	Entry points for national agencies, regional organizations and USAID will be to mapping out large and medium scale users of water, modes of

Recommendation	Possible Key Actions	Potential Partners	Possible Countries	Sectors and Lead*	Comments
	development of regulatory and policy frameworks				acquisition of land and water, current and future use as a basis for developing guidelines and regulations by appropriate government and regional institutions
Promote, with sub-regional institutions, transboundary growth	Develop action plan, in collaboration with appropriate institutions, for transboundary cooperation and trade in diverse products; Support actions that remove trade barriers	Mano River Union, collaborating, sub-regional institutions of West Africa Trade Hub program	Members of Mano River Union Countries with membership in more than one sub-regional organizations	ENVIR, TRADE, HEALTH	Initiatives to link smaller sub-regional institutions such as MRU to larger economic trade blocks such UEMOA, CILSS and ECOWAS will stimulate greater transboundary growth
Support mechanisms to increase the security of land and other natural resources tenure rights	Support the development of land use planning mechanisms; Support the development of tenure agreements (local conventions, land charters) to promote sustainable access and management land and other resources (transhumance corridors, bas-fond lands); invest in training new	World Bank, FAO, AU, UEMOA, African Universities, MCC, NEPAD	All	ENVIR AGRIC	For some or most of these activities, USAID/WA could coordinate with the USAID Land Tenure Division in Washington, DC.



Recommendation	Possible Key Actions	Potential Partners	Possible Countries	Sectors and Lead*	Comments
	generation of land tenure specialists.				
Promote and support/enhance a regional environmental knowledge management platform	Support existing institutions to establish community of practice of E&NRM practitioners to share knowledge on best practices and lessons learned; Promote national and regional professional bodies in developing guidelines and frameworks for knowledge management platforms	ECOWAS/ENV, CK2C/FRAMEweb	All	<u>ENVIR</u>	Entry point should include capacity building in information technology and management personnel in relevant institutions
<b><i>Actions that Merit Serious Consideration</i></b>					
Continue to support measures and activities that improve the adaptive capacity of West African communities (to climate change)	Inventory of climate change adaptation initiatives; information exchange workshops; development of action plan for scaling up best practices	CILSS/INSAH, ECOWAS	All	<u>ENVIR</u> , <u>HEALTH</u> , <u>AGRIC</u>	Support the mapping of various climate change scenarios painted by different models to narrow down bigger pictures to assist the development of concrete adaptation plans relevant for transboundary landscapes
Enhance educational capacity in the region for greater	Develop scholarship and/or	ECOWAS, CILSS, UEMOA	All	<u>ENVIR</u>	Introduction of regional programs/courses in

Recommendation	Possible Key Actions	Potential Partners	Possible Countries	Sectors and Lead*	Comments
environmental awareness, conservation and protection	internship program for graduate students and/or environmental professionals; Introduce and support regional programs in selected institutions				selected institutions designated to run such programs on critical areas in environment, conservation and M&E will be a starting point in reaching critical masses for the region
Promote community-based natural resource management initiatives	Workshop to identify best CBNRM practices and explore opportunities for scaling up; support transboundary NRM activities that utilize the Nature, Wealth and Power framework	PAGE, STEWARD, PROSPER, WB/GEF, CARE, Sahel JPC, ECOWAS, INSAH, IUCN, BirdLife	All	<u>ENVIR</u> , HEALTH	Make certain that there is a strong WASH linkage Supporting initiative at national and regional levels that promote conducive environment for the creation and nurturing of community actions will enable CBNRM organizations to flourish
Support efforts to expand the US government's biodiversity classification	Support Workshops highlighting value and status of Sahelian biodiversity hotspots	IUCN, CILSS, Biodiversity International (CGIAR)	All	<u>ENVIR</u>	A study commissioned to establish the connectedness of Sahelian biodiversity with other biodiversities in West Africa, and documentation of the Sahelian biodiversity is one possible starting point.

\*USAID/WA Sectors: ENVIR, AGRIC, HEALTH, TRADE, ENER; implicated sectors are indicated in this column; the recommended lead sector is underscored

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# ANNEX A

## U.S. FOREIGN ASSISTANCE ACT, SECTIONS 118 AND 119

- Part I, Section 118\73\ - Tropical Forests
- (a) Importance of Forests and Tree Cover.--In enacting section 103(b)(3) of this Act the Congress recognized the importance of forests and tree cover to the developing countries. The Congress is particularly concerned about the continuing and accelerating alteration, destruction, and loss of tropical forests in developing countries, which pose a serious threat to development and the environment. Tropical forest destruction and loss--
  - (1) result in shortages of wood, especially wood for fuel; loss of biologically productive wetlands; siltation of lakes, reservoirs, and irrigation systems; floods; destruction of indigenous peoples; extinction of plant and animal species; reduced capacity for food production; and loss of genetic resources; and
  - (2) can result in desertification and destabilization of the earth's climate. Properly managed tropical forests provide a sustained flow of resources essential to the economic growth of developing countries, as well as genetic resources of value to developed and developing countries alike.
- (b) Priorities.--The concerns expressed in subsection (a) and the recommendations of the United States Interagency Task Force on Tropical Forests shall be given high priority by the President--
  - (1) in formulating and carrying out programs and policies with respect to developing countries, including those relating to bilateral and multilateral assistance and those relating to private sector activities; and
  - (2) in seeking opportunities to coordinate public and private development and investment activities which affect forests in developing countries.
- (c) Assistance to Developing Countries.--In providing assistance to developing countries, the President shall do the following:
  - (1) Place a high priority on conservation and sustainable management of tropical forests.
  - (2) To the fullest extent feasible, engage in dialogues and exchanges of information with recipient countries--
    - (A) which stress the importance of conserving and sustainably managing forest resources for the long-term economic benefit of those countries, as well as the irreversible losses associated with forest destruction, and
    - (B) which identify and focus on policies of those countries which directly or indirectly contribute to deforestation.

- (3) To the fullest extent feasible, support projects and activities--
- (A) which offer employment and income alternatives to those who otherwise would cause destruction and loss of forests, and
- (B) which help developing countries identify and implement alternatives to colonizing forested areas.
- (4) To the fullest extent feasible, support training programs, educational efforts, and the establishment or strengthening of institutions which increase the capacity of developing countries to formulate forest policies, engage in relevant land-use planning, and otherwise improve the management of their forests.
- (5) To the fullest extent feasible, help end destructive slash-and-burn agriculture by supporting stable and productive farming practices in areas already cleared or degraded and on lands which inevitably will be settled, with special emphasis on demonstrating the feasibility of agroforestry and other techniques which use technologies and methods suited to the local environment and traditional agricultural techniques and feature close consultation with and involvement of local people.
- (6) To the fullest extent feasible, help conserve forests which have not yet been degraded, by helping to increase production on lands already cleared or degraded through support of reforestation, fuelwood, and other sustainable forestry projects and practices, making sure that local people are involved at all stages of project design and implementation.
- (7) To the fullest extent feasible, support projects and other activities to conserve forested watersheds and rehabilitate those which have been deforested, making sure that local people are involved at all stages of project design and implementation.
- (8) To the fullest extent feasible, support training, research, and other actions which lead to sustainable and more environmentally sound practices for timber harvesting, removal, and processing, including reforestation, soil conservation, and other activities to rehabilitate degraded forest lands.
- (9) To the fullest extent feasible, support research to expand knowledge of tropical forests and identify alternatives which will prevent forest destruction, loss, or degradation, including research in agroforestry, sustainable management of natural forests, small-scale farms and gardens, small-scale animal husbandry, wider application of adopted traditional practices, and suitable crops and crop combinations.
- (10) To the fullest extent feasible, conserve biological diversity in forest areas by--
- (A) supporting and cooperating with United States Government agencies, other donors (both bilateral and multilateral), and other appropriate governmental, intergovernmental, and nongovernmental organizations in efforts to identify, establish, and maintain a representative network of protected tropical forest ecosystems on a worldwide basis;
- (B) whenever appropriate, making the establishment of protected areas a condition of support for activities involving forest clearance or degradation; and
- (C) helping developing countries identify tropical forest ecosystems and species in need of protection and establish and maintain appropriate protected areas.

- (11) To the fullest extent feasible, engage in efforts to increase the awareness of United States Government agencies and other donors, both bilateral and multilateral, of the immediate and long-term value of tropical forests.
- (12) To the fullest extent feasible, utilize the resources and abilities of all relevant United States Government agencies.
- (13) Require that any program or project under this chapter significantly affecting tropical forests (including projects involving the planting of exotic plant species)--
  - (A) be based upon careful analysis of the alternatives available to achieve the best sustainable use of the land, and
  - (B) take full account of the environmental impacts of the proposed activities on biological diversity, as provided for in the environmental procedures of the Agency for International Development.
- (14) Deny assistance under this chapter for--
  - (A) the procurement or use of logging equipment, unless an environmental assessment indicates that all timber harvesting operations involved will be conducted in an environmentally sound manner which minimizes forest destruction and that the proposed activity will produce positive economic benefits and sustainable forest management systems; and
  - (B) actions which significantly degrade national parks or similar protected areas which contain tropical forests or introduce exotic plants or animals into such areas.
- (15) Deny assistance under this chapter for the following activities unless an environmental assessment indicates that the proposed activity will contribute significantly and directly to improving the livelihood of the rural poor and will be conducted in an environmentally sound manner which supports sustainable development:
  - (A) Activities which would result in the conversion of forest lands to the rearing of livestock.
  - (B) The construction, upgrading, or maintenance of roads (including temporary haul roads for logging or other extractive industries) which pass through relatively undegraded forest lands.
  - (C) The colonization of forest lands.
  - (D) The construction of dams or other water control structures which flood relatively undegraded forest lands.
  - (d) PVOs and Other Nongovernmental Organizations.--Whenever feasible, the President shall accomplish the objectives of this section through projects managed by private and voluntary organizations or international, regional, or national nongovernmental organizations which are active in the region or country where the project is located.
  - (e) Country Analysis Requirements.--Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of-
    - (1) the actions necessary in that country to achieve conservation and sustainable management of tropical forests, and
    - (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.

- (f) Annual Report.--Each annual report required by section 634(a) of this Act shall include a report on the implementation of this section.

- Part I, Section 119\75\ - Endangered Species

- (a) The Congress finds the survival of many animal and plant species is endangered by overhunting, by the presence of toxic chemicals in water, air and soil, and by the destruction of habitats. The Congress further finds that the extinction of animal and plant species is an irreparable loss with potentially serious environmental and economic consequences for developing and developed countries alike. Accordingly, the preservation of animal and plant species through the regulation of the hunting and trade in endangered species, through limitations on the pollution of natural ecosystems, and through the protection of wildlife habitats should be an important objective of the United States development assistance.

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- \75\ 22 U.S.C. 2151q. Sec. 119, pars. (a) and (b) were added by sec. 702 of the International Environment Protection Act of 1983 (title VII of the Department of State Authorization Act, Fiscal Years 1984 and 1985, Public Law 98-164; 97 Stat. 1045).

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- (b) \75\ In order to preserve biological diversity, the President is authorized to furnish assistance under this part, notwithstanding section 660,\76\ to assist countries in protecting and maintaining wildlife habitats and in developing sound wildlife management and plant conservation programs. Special efforts should be made to establish and maintain wildlife sanctuaries, reserves, and parks; to enact and enforce anti-poaching measures; and to identify, study, and catalog animal and plant species, especially in tropical environments.

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- \76\ Section 533(d)(4)(A) of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1990 (Public Law 101-167; 103 Stat. 1227), added ``notwithstanding section 660'' at this point.

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- (c) \77\ Funding Level.--For fiscal year 1987, not less than \$2,500,000 of the funds available to carry out this part (excluding funds made available to carry out section 104(c)(2), relating to the Child Survival Fund) shall be allocated for assistance pursuant to subsection (b) for activities which were not funded prior to fiscal year 1987. In addition, the Agency for International Development shall, to the fullest extent possible, continue and increase assistance pursuant to subsection (b) for activities for which assistance was provided in fiscal years prior to fiscal year 1987.

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- \77\ Pars. (c) through (h) were added by sec. 302 of Public Law 99- 529 (100 Stat. 3017).

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- (d) \77\ Country Analysis Requirements.--Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of-

- (1) the actions necessary in that country to conserve biological diversity, and
- (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.
- (e) \77\ Local Involvement.--To the fullest extent possible, projects supported under this section shall include close consultation with and involvement of local people at all stages of design and implementation.
- (f) \77\ PVOs and Other Nongovernmental Organizations.-- Whenever feasible, the objectives of this section shall be accomplished through projects managed by appropriate private and voluntary organizations, or international, regional, or national nongovernmental organizations, which are active in the region or country where the project is located.
- (g) \77\ Actions by AID.--The Administrator of the Agency for International Development shall--(1) cooperate with appropriate international organizations, both governmental and nongovernmental;
- (2) look to the World Conservation Strategy as an overall guide for actions to conserve biological diversity;
- (3) engage in dialogues and exchanges of information with recipient countries which stress the importance of conserving biological diversity for the long-term economic benefit of those countries and which identify and focus on policies of those countries which directly or indirectly contribute to loss of biological diversity;
- (4) support training and education efforts which improve the capacity of recipient countries to prevent loss of biological diversity;
- (5) whenever possible, enter into long-term agreements in which the recipient country agrees to protect ecosystems or other wildlife habitats recommended for protection by relevant governmental or nongovernmental organizations or as a result of activities undertaken pursuant to paragraph
- (6), and the United States agrees to provide, subject to obtaining the necessary appropriations, additional assistance necessary for the establishment and maintenance of such protected areas;
- (6) support, as necessary and in cooperation with the appropriate governmental and nongovernmental organizations, efforts to identify and survey ecosystems in recipient countries worthy of protection;
- (7) cooperate with and support the relevant efforts of other agencies of the United States Government, including the United States Fish and Wildlife Service, the National Park Service, the Forest Service, and the Peace Corps;
- (8) review the Agency's environmental regulations and revise them as necessary to ensure that ongoing and proposed actions by the Agency do not inadvertently endanger wildlife species or their critical habitats, harm protected areas, or have other adverse impacts on biological diversity (and shall report to the Congress within a year after the date of enactment of this paragraph on the actions taken pursuant to this paragraph);
- (9) ensure that environmental profiles sponsored by the Agency include information needed for conservation of biological diversity; and
- (10) deny any direct or indirect assistance under this chapter for actions which significantly degrade national parks or similar protected areas or introduce exotic plants or animals into such areas.

- (h) \77\ Annual Reports.--Each annual report required by section 634(a) of this Act shall include, in a separate volume, a report on the implementation of this section.

# ANNEX B

## SCOPE OF WORK

### ENVIRONMENTAL THREATS AND OPPORTUNITIES ASSESSMENT FOR THE USAID WEST AFRICA MISSION

#### I. OBJECTIVE

To conduct a West Africa (WA) wide assessment on environmental conditions in the region in the form of an Environmental Threats and Opportunities Assessment (ETOA) that will target opportunities for the Mission's current and planned development projects to enhance environmentally sound development practices across the portfolio of security, democracy, governance, health, agriculture, trade, natural resource management, water and sanitation, and clean energy programs. The assessment also will focus on the unique regional aspects of the Mission's developmental mandate and the role of regional institutions and partners in environmental protection and natural resource management. An additional component in the ETOA report will be an analysis of the current status and threats to biodiversity and tropical forestry conservation for the purposes of complying with section 117, 118, and 119 of the Foreign Assistance Act (FAA) of 1961, as amended, and Agency guidance on country strategy development, under ADS 201.3.4.11 and ADS 204.5. While this assessment should incorporate the potential impacts on and threats to biodiversity and tropical forests owing to climate change, a separate climate change assessment will follow afterwards that will incorporate broader adaptation and mitigation concerns for the Mission in all sectorial areas.

#### II. POLICIES GOVERNING ENVIRONMENTAL PROCEDURES

##### FAA SECTIONS 118 AND 119

The intent of Sections 118 and 119 is that USAID give priority consideration to tropical forestry and biodiversity in its development programs. It is felt that an appropriate level of analysis would serve to inform and strengthen the RDCS for WA. The analysis must consider USAID/WA's regional role, and the geographic overlap with USAID bilateral country programs. If both the regional and bilateral operating units equally apply the analysis requirements, the geographic overlap means that there will be duplication of efforts. Therefore, as part of its regional perspective, USAID/WA must consider the response of individual bilateral mission strategies and programs to national and regional environmental threats, and the collective regional USAID response to those threats as well as the impact of USAID programs on biodiversity and forests.

##### FAA SECTION 117 AND THE ADS (INCLUDING REG. 216)

Section 117 and Reg. 216 were put in place to ensure that USAID considers environment concerns in the planning of activities. In terms of USAID/WA's own programs (i.e., regional activities managed by USAID/WA), this means considering the environmental implications of planned activities in terms of both potential impacts and perhaps more strategically important, opportunities for linking and integrating

environmental concerns and activities into all elements of the RDCS's development program. USAID/WA also has the critical responsibility and is strategically well-placed to promote environmentally sustainable development across the WA region in its role of assisting and monitoring regional environmental compliance with Reg. 216 and associated guidance. This role applies to USAID/WA's own regional portfolio and can incorporate broader opportunities for building capacity in environmental assessment across the region. Therefore, this Assessment will also consider this USAID/WA "Core Support Service" in terms of an opportunity to promote integration of environmental concerns into USAID approaches to both national and regional development in West Africa.

### III. BACKGROUND

#### OVERVIEW

USAID Operating Units are responsible for ensuring that country-level analyses are current. This includes the mandated tropical forestry and biodiversity (FAA118-119) reports. Historically, Regional Missions had not been required to perform these analyses, but in the development of the new RDCS for USAID/WA it was determined that it would be a best practice to perform them. Pressures on forests, biodiversity, natural resources and ecosystems in the West Africa region are increasing. At the same time there are growing opportunities for USAID to collaborate regionally with other donors, non-governmental organizations (NGOs), government actors, the private sector, and other stakeholders. These factors led the Mission to determine that an Environmental Threats and Opportunities Assessment (ETOA) was warranted.

An ETOA goes beyond, yet incorporates, a 118-119 analysis. An ETOA describes the range of environmental impacts from human activities across the spectrum of sectors: green (forests, agricultural systems), brown (urban, industrial systems) and blue (marine and freshwater systems). Ecosystems such as coastal and wetlands intersect with more than one sector. Rural processing and other transformation of agricultural products can involve both green and brown sectors, even blue sector if water is involved in processing. USAID/WA's ETOA will focus on gaining a better regional understanding of the environmental threats and opportunities in these areas, the additional impacts of climate change, and how the Mission's programs can best respond to them.

The ETOA should point to priorities for environmental impact analyses of both existing and planned USAID-funded programs, but it should also serve as vehicle for cooperation with and capacity building of regional institutions, such as ECOWAS, CILSS, WSA, WAHO, and others in the area of better environmental management and stewardship. Maps and other information generated by the ETOA can help both USAID and the regional institutions plan activities, set priorities and discover overlaps and synergies.

West Africa is very diverse in term of ecosystem types ranging from deserts to savannahs to tropical rain forests to large riverine systems to coastal and marine environments. Of particular interest are the following economically important ecosystem groups:

1. The savannahs and dry forests of the Sahelian zone extending from Senegal eastward to Chad and the riverine ecosystems that they contain;
2. The Upper Guinean Rainforests, spanning the coast from Guinea to Gabon and the riverine systems contained within them; and



3. The coastal and marine ecosystems found along the West African coast from Mauritania to Gabon and including the island nations of Cape Verde and Sao Tome e Principe.\
4. And, the interconnection within these ecosystems namely the “transitional zones”

Threats to these ecosystems will vary both by ecosystem and by country, but in general include but are not limited to the following:

- Deforestation, forest fragmentation, and habitat conversion;
- Soil, wind, and water erosion due to extreme weather events;
- Pollution, degradation and overharvesting of natural resources;
- Poor natural resource management and governance systems;
- Unclear land tenure regimes and persistent social inequality; and
- Long-term, and short-term climate change impacts (including current impact where possible)

### **KEY ROLES OF USAID/WA**

The USAID West Africa Mission operates in 19 countries (Cape Verde, Mauritania, Senegal, The Gambia, Mali, Burkina Faso, Niger, Chad, Guinea, Sierra Leone, Liberia, Cote d’Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, Gabon, and Sao Tome e Principe). Overall, USAID/West Africa provides three different types of services: implementation of regional programs; provision of support services to bilateral missions in the region (such as the Regional Environment Advisor function among others); and implementation of programs in non-presence countries. Important considerations for the Mission in developing an assistance program in the West Africa region include the following underlying conditions:

- WA is a diverse region made up of countries of varying size, colonial background, economic output and potential and political stability. The Region itself covers an area equivalent to the Continental United States
- It is one of the poorest regions in the world with half of the population living on less than \$1.25 a day;
- WA overall has experienced low economic growth rates and suffers from weak transportation and infrastructure systems;
- The region has a population of 290 million, which is expected to more than double by 2050. Within this growing population, over 60 percent is 25 years old or younger, creating a large “youth bulge” with limited economic and educational opportunities;
- Agriculture represents only about 35% of the region’s GDP despite the fact that it represents 60% of the active labor force. This is in part due to inefficient agricultural practices, which produce some of the lowest yields in the world and undermine food security for rural households;
- Governance remains weak throughout the region and national governments are unable to extend services and provide protection to their citizens, which creates greater vulnerability to extremist groups such as those operating in the Sahel and Nigeria; increases the number of refugees seeking asylum in neighboring countries during times of civil unrest; and decreases their ability to respond to more frequent floods, droughts, and other effects of climate change;

- The region has serious health challenges such as extremely high maternal mortality (40 times higher than in the developed world), high child mortality in the world, and very low (10%) contraceptive prevalence rates that have an impact on long-term economic growth potential;
- Climate change is expected to affect key sectors and populations in the region, especially the Sahel and along the coastline, as projected changes in rainfall, increases in temperatures, and sea level rise challenge development gains. However, owing to the size of the region and the large variations in ecosystems, the actual impacts from climate change may vary significantly across West Africa.

To respond to these challenges the USAID/WA Mission’s portfolio is currently focused in the following areas:

- a) Countering Violent Extremism and Conflict Mitigation;
- b) Sustainable Economic Growth (Trade and Investment, Food Security, Natural Resource Management, and Water and Sanitation);
- c) Health; and
- d) Cross-cutting concerns (Governance, Gender, Institutional Capacity Building, Climate Change)

Positive attributes of/opportunities in the region include:

- Tree crop economies
- Mineral resources (also a potential threat if unmanaged)
- Increasing stability in many countries (Liberia, Sierra Leone, Cote d’Ivoire, Guinea) after war and conflict
- Economic hub (Nigeria and increasingly Ghana) with increasing investment and exports
- Build on decades of anti-desertification work in Sahel and considerable success
- Mano River Union, a platform for good governance in its state members in the region

#### **IV. STATEMENT OF WORK**

The ETOA, including the 118/119 report, is first and foremost a tool to facilitate WA Regional as well as Mission planning and decision making. With this in mind, the report document should frame specific Regional and Mission program options which can address the environmental issues identified by the Mission for each of the environment subsectors (e.g., natural resource management, water resources) while also pursuing opportunities to integrate environmental issues into existing or planned Mission activities in agriculture, trade, health, security, and governance and minimize negative impacts of those programs on existing biodiversity and forests. The report should also serve as an educational tool, seeking to inform Regional and Mission staff, regional partners, and others on present trends and recent data on West Africa’s tropical forests, biodiversity and environmental issues.

To achieve these objectives the Contractor shall perform the following activities:

**A) Pre-travel informational meetings and information gathering. Prior to traveling to the field, the contractor is expected to:**

1. Hold meetings with the Bureau Environmental Officer (BEO) and other key stakeholders in the Africa and E3 Bureaus to ensure full understanding of USAID environmental procedures, the role of the regional bureaus in environmental compliance, and purpose of this assignment. This would include policy decisions and approaches that the agency is taking as per emerging agency guidance in environmental considerations, particularly as it impacts on tropical forests and biodiversity, but also as it concerns environmental compliance considerations per Reg. 216.
2. Gather and review existing background information on WA countries, such as the country's National Biodiversity Strategy and Action Plan, data on location and management of key natural resources, National Adaptation Plan of Action (NAPA), protected areas systems, forest management, current status of trends in, and future projections of environment conditions and biodiversity, institutional organization at the entity and state level, key stakeholders and donors in environment and biodiversity, legislation related to the environment and biodiversity, and other relevant information required for the countries' assessment. Much of this information has been collected in country-specific 118/119 reports and ETOAs where possible
3. Meet or speak with key stakeholders or partners at State Department, USDA Forest Service, other multi-lateral and bilateral donors, U.S.-based NGOs, or other organizations involved in regionally-focused tropical forestry and biodiversity conservation in WA or relevant regional efforts in improved environmental management.
4. Understand WA portfolio and begin consideration of likely impacts of the activities on biodiversity and tropical forests as well as key entry points and opportunities for improved management.
5. Understand the role of earmarks and targeted funds in Mission portfolio in terms of location of activities and integration of portfolio.

**B) Field a team to conduct an overview and general analysis of the region's tropical forests, biodiversity and environmental issues. Upon arriving in Accra the team will:**

1. Meet with USAID regional staff in the Program Office and all technical offices to get a solid understanding of Mission program goals and objectives under its proposed updated RDCS; perspectives of this assignment and specific interests for the team, including advice and protocol on approaching USAID partners and WA host countries' organizations with respect to this assignment. The team shall be aware of sensitivities related to an assessment exercise (i.e., the potential for raising expectations, and the need to be clear about the purpose of the assessment) and respect Mission guidance. The team will discuss organizations to be contacted and any planned site visits with the Mission and coordinate as required. USAID/WA will facilitate meetings with other USAID bilateral missions as needed.
2. Hold meetings with donor organizations, NGOs, relevant government agencies, and other organizations that are knowledgeable about biodiversity and tropical forestry conservation or other environmental issues and that are implementing noteworthy projects and gather information locally.
3. Conduct priority site visits as required by the mission to supplement understanding of USAID's programs, or of tropical forestry, biodiversity, or other environmental issues that arise in interviews and literature or would confirm information in previous assessments.

**C) Assess and summarize the needs for biodiversity and tropical forestry conservation in the West Africa Region** based on key threats and analysis of each country, regional and cross-border considerations, as well as governmental, donor, and NGO responses to meet these needs. Prepare a regional report on the status of biodiversity, tropical forestry and conservation efforts in the West Africa Region and potential implications for USAID/WA or other donor programming and environmental monitoring which shall define the actions necessary for conservation. The report shall include:

1. The current status of biodiversity, tropical forests, and water resources in West Africa based on current and available information (consult bilateral mission ETOAs and 118/119 reports).
2. Address major ecosystem types, highlighting where they occur and important aspects of their biodiversity, including important endemic species and their habitats.
3. Descriptions of natural areas of critical importance to biodiversity conservation, such as forests, wetlands, and coastal areas critical for species reproduction, feeding or migration, if relevant. Particular attention should be given to critical environmental services as well as the commercial and noncommercial services they provide (watershed protection, erosion control, tourism, water conservation, soil, fuel wood, food, timber, bush meat, and others). It will also summarize how current land tenure arrangements in each country affect conservation efforts and the existence and efficacy of any regional platforms or institutions to analyze and address them.
4. An overview table and map of the status and management of protected area systems in West Africa including: an inventory of all declared and proposed areas (national parks, wildlife reserves and refuges, forest reserves, marine reserves, sanctuaries, hunting preserves and other protected areas) including marine and coastal areas. The inventory will identify the institution responsible for the protection and management of each decreed area, its date of establishment, area, and the protection status of each (i.e., staff in place, management plan published, etc.). In addition to this summary of the current protection and management status of protected areas, an overview of the major threats and challenges facing protected areas in each country of WA, including vulnerability of areas to predicted changes in climate, and a brief summary of any recognized economic potential of these areas (including productive assets, environmental services and recreation and tourism opportunities) should be provided. The role and effectiveness of regional institutions involved in protected area management will be assessed and documented.
5. Descriptions of plant and animal species that are endangered or threatened with extinction. Endangered species of particular social, economic or environmental importance should be highlighted and described, as should their habitats. Technical information resources such as the IUCN red list and their websites should be referenced for future USAID/WA Mission access as required. This section should not emphasize species counts, but look at the relation of endangered species and important habitat conservation areas and issues, and evaluate the pressures on those areas, including vulnerability to predicted changes in climate, and current efforts to mitigate pressures, including the participation and compliance with CITES and other international and/or regional efforts.
6. Recent, current, and potential *primary* threats to biodiversity, whether they are ecological (i.e., fire, pests, climate change), related to human use (i.e., agriculture, contamination), or institutional (i.e., failed or inadequate legislation, policies, regulations) or trans-boundary issues, as

appropriate. These should emerge from a general assessment of national policies and strategies in each country and their effectiveness, issues related to institutional capacity, trade, private sector growth, participation in international treaties, and the role of civil society.

7. Conservation efforts, their scope and effectiveness. This section also should include recent, current, and planned activities by donor organizations that support biodiversity and tropical forestry conservation, identification of multilateral organizations, NGOs, universities, and other local organizations involved in conservation, and a general description of responsible government agencies. A general assessment of the effectiveness of these policies, institutions, and activities to achieve biodiversity conservation should be included. Priority conservation needs that lack donor or local support should be highlighted in each country.
8. Analysis of the current legislation related to the environment and biodiversity in each WA's country. This section should include identification of laws related to protection and management of biological resources and endangered species. It should also point out any differences in laws that require further harmonization. This section should also review international treaties signed and ratified, as well as those that each WA country needs to sign in order to conserve and manage its biological resources more effectively.
9. An overview of the major biodiversity and tropical forest conservation activities of the commercial private sector, to identify ways to better foster private sector alliances. Consideration of policies promoted by the any key relevant governmental ministries should also be included.
10. An assessment of how USAID's bilateral and regional programs and proposed RDCS could best meet the needs for biodiversity and tropical forestry conservation. This could include potential opportunities for USAID regional and bilateral to contribute to biodiversity and tropical forestry conservation, consistent with Mission program goals and objectives, through strategic objectives other than environment. The assessment shall include recommendations on where U.S. comparative advantages and capabilities are likely to have the greatest impact. These issues and recommendations should be prioritized to identify those requiring the most immediate attention. If any perceived areas of concern related to USAID's WA program and its contribution or impact arise during this assessment, the contractor shall provide views and suggestions directly to the Regional Environmental Officer in a separate briefing.

**D) Assess and summarize the critical environmental issues facing the West Africa Region** based on existing information and analyses from each country as well as governmental, donor, and NGO responses to meet these needs. Prepare a regional State of the Environment that shall describe underlying root cause issues of specific environmental problems. Key elements of the report include the following:

1. Identification of the underlying causes of environmental degradation and possible strategic options to address them.
2. Identification and description of approaches and interventions by all institutions (e.g., regional governments, regional institutions, NGOs, private sector) and results (if any) under given enabling conditions.
3. Analysis of opportunities and constraints associated with all environmental elements (e.g., coastal management, forestry resources).

The contractor will provide information on each of the following environmental elements:

- Threats to ecosystems, including terrestrial, coastal, wetlands and marine areas
- Potential effects of climate change on WA ecosystems
- Environmental and natural resource hazards and degradation (urban and rural)
- Environmental and other policies impacting natural resources and ecosystems
- Underlying causes of environmental degradation
- Approaches and interventions used by all institutions (e.g., NGOs, governments, regional institutions, private sector, etc) and results obtained under what enabling conditions.
- Opportunities and constraints associated with all environmental elements (e.g., coastal management, forestry resources).

## **V. TIMING**

The Biodiversity and Tropical Forest Background Assessment Study will be carried out to inform the USAID/WA RDCS. The expected completion date will be determined in discussion with the USAID/WA Mission COR or designated point of contact.

## **VI. ILLUSTRATIVE LEVEL OF EFFORT**

USAID/WA anticipates that the assessment can be completed in approximately 38 days by a team of at least two full-time members, one of whom is the team leader. The team leader shall have USAID experience, with hands-on experience conducting assessments and be familiar with USAID environmental regulations and strategic planning processes. The team members should have a combination of skills and knowledge in biodiversity, natural resources management, institutional development, policy, and economics, in order to address issues affecting USAID/WA. At least one team member shall be either from WA countries or TCN who is knowledgeable about WA countries. Experience from Ghana, Burkina Faso, or Liberia is preferred.

## **VII. RELATIONSHIPS AND RESPONSIBILITIES**

The Contractor shall report to the USAID/WA Regional Environmental Office or his/her designee. The Contractor will be responsible for identifying and obtaining the majority of the reference materials needed for this study with only minimal interventions on the part of USAID/WA.

## **VIII. DELIVERABLES**

There shall be four deliverables under this contract:

1. Preliminary Work Plan and Schedule: The Contractor shall provide USAID/WA with a work plan and schedule within 7 days of contract inception. The work plan and schedule shall also contain a list of those individuals and agencies that are to be interviewed, and a list of reports, evaluations, environmental laws etc., to be reviewed. This first deliverable should be completed before the

contractor team departs Washington DC for the field and after the first series of contacts with USAID and other partners based in Washington DC.

2. Draft Report: The Contractor shall submit a draft report to the COR in USAID/WA or point of contact no later than four working days before the exit briefing. The report shall not exceed thirty pages, in English, excluding suitable annexes and pertinent figures (maps, institutional charts, tables) and references. Among the expected appendices is a briefly annotated bibliography of the most important current reference materials in each country related to the topic and a contact list for each of the organizations discussed in the report.
3. Final Report: The final report is due no later than two weeks after receiving USAID/WA's written comments on the draft report.
4. Exit Briefings: The team shall meet with USAID/WA to provide them with a brief of the report findings. The exit brief shall be accompanied by a two-page written summary of key findings and recommendations. The Contractor will furnish both electronic file versions of all submissions (first draft and final report) and five copies in English, including one photocopy ready version of the final report.

## **IX. SUPPORTING DOCUMENTATION**

Tropical forestry and biodiversity (FAA 118 and 119) analyses: lessons learned and best practices from recent USAID experience. (655 KB) Associates in Rural Development, Inc. (ARD); USAID. EGAT. Office of Environment and Natural Resources. Sep 2005. 74 p. PN-ADE-195

Best practices for biodiversity and tropical forest assessments (508 KB) Chemonics International Inc.; USAID. EGAT. Office of Agriculture. Apr 2005. 28 p. PN-ADE-673

Recent ETOAs and 118/119 reports for all USG presence countries in the region





# ANNEX C

## BIOGRAPHICAL SKETCHES OF THE ASSESSMENT TEAM

### *Kwaku Agyemang, Institutional/Policy Development Specialist*

Dr. Kwaku Agyemang is an expert in Animal Agriculture with special skills in the interphase of crop-livestock-agroforestry and their interactions. He has extensive knowledge of natural resource management and of climate change adaptation and mitigation issues. Dr. Agyemang has worked for the FAO in Harare, Zimbabwe and served as Director General of the International Trypanotolerance Centre, an autonomous, not-for-profit livestock-based agricultural research institute located in The Gambia with a regional mandate for West Africa. He has also worked extensively as a scientist and team leader in both research and development with Consultative Group on International Agriculture (CGIAR). Dr. Agyemang has solid managerial, financial and cultural expertise and broad inter-personal skills that help him to be a very competent team leader and team member.

### *John Azu, Environmental Compliance Specialist*

Dr. John Azu is an agronomist with 34 years of post-doctoral specialization in program design and management, export development for fresh horticultural produce, and value chain analysis and development. He has also worked with gender mainstreaming, institutional capacity assessment/strengthening, curriculum and training materials development, and the development of monitoring and evaluation systems. Dr. Azu, a commercial farmer, has been engaged in the establishment and management of commercial farms and provided a range of consultancy services to local and international organizations, gold mining companies and NGOs. He has helped to conduct USAID-funded environmental assessments and provided training in environmental sound design including USAID's Reg. 16 compliance Ghana, Ethiopia, Niger, Burkina Faso and Sierra Leone.

### *Steve Dennison, Team Leader/Biodiversity Specialist*

Dr. Steve Dennison is a natural resource and biodiversity specialist with excellent leadership and communication skills who has extensive experience leading teams in the design, management, and evaluation of natural resources and environmental activities. Dr. Dennison's professional career spans 35 years and includes long-term and short-term assignments in Central and Eastern Europe, Asia, Africa, the US, the Caribbean, and North America. He has served as Team Leader or member for numerous Environmental Threats and Opportunities Analyses / FAA Sections 118 and 119 Assessments. Dr. Dennison has also successfully led teams in conducting large program/project evaluations and assessments and has worked on a variety of USAID-funded biodiversity conservation, natural resource management, and economic growth activities.

***Ahmed Satti, Logistician/Researcher***

Mr. Ahmed Satti is a coordinator with over 7 years experience coordinating and managing economic growth and agriculture projects in East and West Africa. Previously, he has worked on USAID-funded regional programs; Africa Leadership and Capacity Building project (Africa Lead) and Stamping Out Pandemic and Avian Influenza (STOP-AI). Mr. Satti was also the coordinator for the Sudan Microfinance Development Facility (SMDF), a joint World Bank and Central Bank of Sudan Project. A graduate of Ashesi University in Ghana, he is fluent in English and proficient in Arabic and French.

***Bocar Thiam, Community-Based Natural Resources Management Specialist***

Mr. Bocar Thiam, a Social Scientist with 20 years of experience, has specialized in Natural Resources Management (NRM). He was the Chief of Party on the US Government funded Liberia Property Rights and Artisanal Diamond Development (PRADD) project that worked to strengthen the implementation of the Kimberley Process Certification Scheme. Mr. Thiam has worked with other UN and USG-funded Sub-Saharan Africa projects to improve the policy, legal and regulatory framework of the forestry, agriculture, and mining sectors. He has also conducted forestry, environment, and social impact assessments. Working with NRM practitioners, Mr. Thiam has promoted public participation in planning and management, carried out research and facilitated dialogue for policy reforms in land tenure and property rights.

# ANNEX D

## PERSONS CONSULTED

Name	Title	Organization	Email	Phone	Location
<b>GHANA</b>					
ANNE DIX	Regional Environmental Director	ACCRA/WA/ROECCR	<a href="mailto:adix@usaid.gov">adix@usaid.gov</a>	233 244 313 252	ACCRA
NICODEME TCHAMOU	Regional NRM & Climate Change Advisor	ACCRA/WA/ROECCR	<a href="mailto:ntchamou@usaid.gov">ntchamou@usaid.gov</a>	233 244 313 549	ACCRA
CERLEENE DEI			<a href="mailto:cdei@usaid.gov">cdei@usaid.gov</a>		ACCRA
GEORGETTE YARBOI-QUAYSON	Deputy Regional Environmental Coordinator	ACCRA/WA/ROECCR	<a href="mailto:gyarboi-Quayson@usaid.gov">gyarboi-Quayson@usaid.gov</a>	233 302 741 489	ACCRA
BENJAMIN OPUKU	Environmental Compliance Specialist	ACCRA/WA/ROECCR	<a href="mailto:bopoku@usaid.gov">bopoku@usaid.gov</a>	233 302 741 073	ACCRA
ELIZABETH BROWN	Agriculture Advisor		<a href="mailto:ebrown@usid.gov">ebrown@usid.gov</a>		ACCRA
MARYLIN COICOU			<a href="mailto:mcoicou@usaid.gov">mcoicou@usaid.gov</a>		ACCRA
ROB KEVLITHAN	Senior Governance Advisor		<a href="mailto:rkevlithan@usaid.gov">rkevlithan@usaid.gov</a>	233 244 317 240	ACCRA
BRAD WALLACH			<a href="mailto:bwallach@usaid.gov">bwallach@usaid.gov</a>		ACCRA
PETER KELLER			<a href="mailto:pckeller@fs.fed.us">pckeller@fs.fed.us</a>		ACCRA
CANDACE BUZZARD	Regional Agricultural Office Director	ACCR/WA/RO	<a href="mailto:cbuzzard@usaid.gov">cbuzzard@usaid.gov</a>	233 302 741 991	ACCRA
ROBERT BUZZARD	Senior NRM Officer, Economic Growth Office	USAID/Ghana	<a href="mailto:robuzzard@usaid.gov">robuzzard@usaid.gov</a>	233 302 741 311	ACCRA
PETER TRENCHARD	Office Director, Economic Growth Office	USAID/Ghana	<a href="mailto:ptrenchard@usaid.gov">ptrenchard@usaid.gov</a>	233 244 313 530	ACCRA
JUSTICE ODOI	Environmental Specialist	USAID/Ghana	<a href="mailto:jodoi@usaid.gov">jodoi@usaid.gov</a>	233 201 756 349	ACCRA
CHIAMBENG NGEH PAULINUS	Sub-Regional Coordinator	Birdlife International	<a href="mailto:paulinus.ngeh@birdlife.org">paulinus.ngeh@birdlife.org</a>	233 24 606 878	ACCRA
THANDIWE CHIKOMO	Programmes Coordinator	Birdlife International	<a href="mailto:thandiwe.chikomo@birdlife.org">thandiwe.chikomo@birdlife.org</a>		ACCRA

Name	Title	Organization	Email	Phone	Location
ATSU TITIATI	Project Director, TREES Program	Rainforest Alliance	<a href="mailto:atitiati@ra.org">atitiati@ra.org</a>	233 244 759435	ACCRA
CARLA DENIZARD	Deputy CoP, West Africa	DAI/Africa LEAD	<a href="mailto:carla-denizard@dai.com">carla-denizard@dai.com</a>	233 244 954 784	ACCRA
T.OLALEKAN WILLIAMS	Director, Africa	International Water Management Institute (IWMI)	<a href="mailto:t.o.williams@cgiar.org">t.o.williams@cgiar.org</a>	233 544 320 313	ACCRA
JONATHAN ALLOTEY	Ex-Director, Ghana EPA	Private consultant	<a href="mailto:jan_allotey@yahoo.com">jan_allotey@yahoo.com</a>	233 208 112 686	ACCRA
OUSMAN ZAKARY	Programme Officer	EPA, Northern Region	<a href="mailto:osman.zakari@epa.gov.gh">osman.zakari@epa.gov.gh</a>	233 243 924 039	TAMALE
JIMAH LOURY	Programme Officer	EPA, Northern Region	<a href="mailto:jimah.loury@epa.gov.gh">jimah.loury@epa.gov.gh</a>	233 543 315 665	TAMALE
MUSAH A. JAFARY	Programme Officer	EPA, Northern Region	<a href="mailto:musa.jafaru@epa.gov.gh">musa.jafaru@epa.gov.gh</a>	233 244 445 831	TAMALE
HURIATU ALIDE	Programme Staff	EPA, Northern Region	<a href="mailto:huriatu.alidu@epa.gov.gh">huriatu.alidu@epa.gov.gh</a>	233 208 913 957	TAMALE
S.K. NUTSUGAH	Director & Senior Scientist	Savanna Agricultural Research Institute	<a href="mailto:sknutsugah@hotmail.com">sknutsugah@hotmail.com</a>	233 243 265 430	TAMALE
JAMES KOMBIOK	Deputy Director & Systems Agronomist	SARI	<a href="mailto:kombiokjm@yahoo.com">kombiokjm@yahoo.com</a>	233 244 882 731	TAMALE
D. UMARU FAROUK	Park Manager	Mole National Park	<a href="mailto:molewd@yahoo.com">molewd@yahoo.com</a>	233 244 779 389	DAMONGO
OLIVER CHELEWINA	Tourism Officer	Mole National Park	<a href="mailto:chelwa@yahoo.com">chelwa@yahoo.com</a>	233 242 976 751	DAMONGO
JOHN NAADA MAJAM	Regional Manager, Wildlife Division	Forestry Commission	<a href="mailto:inaadamajam@hotmail.com">inaadamajam@hotmail.com</a>	233 244 167 419	BOLGAKANDA
CATHARINE PHIRI	Director, Northern Ghana	ACDI/VOCA	<a href="mailto:cphiri@acdivocaghana.org">cphiri@acdivocaghana.org</a>	233 372 027 570	TAMALE
MARK BRUCE	Grants Specialist	ACDI/VOCA	<a href="mailto:mbruce@acdivocaghana.org">mbruce@acdivocaghana.org</a>	233 244 989 302	TAMALE
EMMANUEL ABEERE INGA		SADA	<a href="mailto:abeereinga@hotmail.com">abeereinga@hotmail.com</a>	233 548 314 461	TAMALE
AYO ABASS KARIM		SADA	<a href="mailto:nyokabass@yahoo.com">nyokabass@yahoo.com</a>	233 244 210 420	TAMALE

Name	Title	Organization	Email	Phone	Location
PETER TURKSON	Acting Rector	REGIONAL MARITIME UNIVERSITY	<a href="mailto:pitokwab@yahoo.com">pitokwab@yahoo.com</a>	233 244 313 106	TEMA
SHASHIDHARA KOLAVALLI	Senior Research Fellow	IFPRI	<a href="mailto:s.kolavalli@cgiar.org">s.kolavalli@cgiar.org</a>	233 302 780 716	ACCRA
ERICH SCHAITZA	Coordinator - EMBRAPA-Africa	EMBRAPA	<a href="mailto:erich.schaitza@embrapa.br">erich.schaitza@embrapa.br</a>	233 302 780 714	
KEHINDE MAKINDE	Country Director- Ghana	AGRA	<a href="mailto:Kmakinde@agra.org">Kmakinde@agra.org</a>		ACCRA
KWADWO ASENSO-OKYERE	EX-Director	ISNAR-IFPRI	<a href="mailto:k.aenso-okyere@cgiar.org">k.aenso-okyere@cgiar.org</a>		ACCRA
<b>LIBERIA</b>					
JENNIFER TALBOT	USDA Forest Technical Advisor	USDA Forest Service/USAID Liberia	<a href="mailto:Jtalbot@usaid.gov">Jtalbot@usaid.gov</a>	231 776 734677	MONROVIA
JOE HIRSCH	Economic Growth Office Director	USAID/Liberia	<a href="mailto:jhirsch@usaid.gov">jhirsch@usaid.gov</a>	231 777 708 551	MONROVIA
LAURA ARNTSON	Performance Mgmt & Environmental Compliance Advisor	USAID/Liberia	<a href="mailto:larntson@usaid.gov">larntson@usaid.gov</a>	231 776 734 676	MONROVIA
DARLINGTON TUAGBEN	Natural Resources Management Specialist	USAID/Liberia	<a href="mailto:dtuagben@usaid.gov">dtuagben@usaid.gov</a>	231 776 777 000	MONROVIA
CYRILL ALLEN	Resident Coordinator	Mano River Union	<a href="mailto:afamefuna14@yahoo.com">afamefuna14@yahoo.com</a>	231 886 448 523	MONROVIA
NATHANIEL BLAMA	Technical Advisor	Environmental Protection Agency of Liberia	<a href="mailto:natpolo2000@yahoo.com">natpolo2000@yahoo.com</a>	231 775 186 35	MONROVIA
JESSICA DONOVAN	Country Director	Conservation International	<a href="mailto:jdonovan@conservation.org">jdonovan@conservation.org</a>	231 886646778	MONROVIA
MICHAEL GARBO	Director	Society for Conservation of Nature in Liberia (SCNL)	<a href="mailto:scnlliberia@yahoo.com">scnlliberia@yahoo.com</a>	231 886 573 612	MONROVIA
MICHAEL TAIRE	Program Officer	SCNL	<a href="mailto:scnlliberia@yahoo.com">scnlliberia@yahoo.com</a>	231 886 520 110	MONROVIA
STEVE REID	Chief of Party	People, Rules, and Organizations Supporting the Protection of	<a href="mailto:Steve.Reid@tetrattech.com">Steve.Reid@tetrattech.com</a>	231 777 459 034	MONROVIA

Name	Title	Organization	Email	Phone	Location
		Ecosystem Resources (PROSPER) program			
PETER DE WAARD	Leader, Livelihood & Enterprise Development	PROSPER	<a href="mailto:pdewaard@acdivoca-lib.org">pdewaard@acdivoca-lib.org</a>	231 886 546 357	MONROVIA
VANESKA LITZ	DCoP/Technical Lead, Community Forestry & Land Tenure	PROSPER	<a href="mailto:vaneska.litz@tetrattech.com">vaneska.litz@tetrattech.com</a>	231 886 497 022	MONROVIA
Dr. SAM KOFFA	Senior Community Forestry Advisor	PROSPER	<a href="mailto:snkoffa@yahoo.com">snkoffa@yahoo.com</a>		MONROVIA
THEO FREEMAN	Technical Manager, Dept of Conservation	Forestry Development Authority	<a href="mailto:theo.freeman10@yahoo.com">theo.freeman10@yahoo.com</a>	233 886 511 776	MONROVIA
JERRY YONMAH	Awareness/Education Officer	Forestry Development Authority (FDA)	<a href="mailto:yonmah1968@yahoo.com">yonmah1968@yahoo.com</a>	231 886 462 564	MONROVIA
EVANGELINE NYANTEE	Wildlife License & Permits Officer	FDA	<a href="mailto:evglinswope@yahoo.com">evglinswope@yahoo.com</a>	231 886 647 6839	MONROVIA
MIAWAY LUO, I	Manager/ Awareness & Ecotourism	FDA	<a href="mailto:pluo95@yahoo.com">pluo95@yahoo.com</a>	231 886 552 392	MONROVIA
TINA VOGT	Technical Advisor, Biomonitoring & Research	Fauna & Flora International (FFI)	<a href="mailto:martina.vogt@fauna-flora.org">martina.vogt@fauna-flora.org</a>	231 880 708 776	MONROVIA
YEVEWUO SUBAH	Deputy Project Coordinator	West Africa Regional Fisheries Project	<a href="mailto:yevewuoz.subah@gmail.com">yevewuoz.subah@gmail.com</a>	231 777 823 890	MONROVIA
WILLIAM BOEH	Head	Bureau of Fisheries	<a href="mailto:williamyboeh@gmail.com">williamyboeh@gmail.com</a>		MONROVIA
JOHN WOODS	Ex-Executive Director	FDA	-	231 886 564 070	MONROVIA
SACHIKO KONDO	Jr. Professional Officer, Rural Development Specialist	World Bank	<a href="mailto:skono@worldbank.org">skono@worldbank.org</a>	231 880 570 948	MONROVIA
JONATHAN GREENHAM	Chief of Party- FED	DAI-USAID	<a href="mailto:jonathan_greenham@dai.com">jonathan_greenham@dai.com</a>	231 880 350 500	MONROVIA
<b>OTHER WEST AFRICA</b>					
JOHNSON BOANUH	Director of Environment, ECOWAS	ECOWAS Commission	<a href="mailto:j.boanuh@hotmail.com">j.boanuh@hotmail.com</a>	234 703 409 7043	ABUJA
MARC ATOUGA	Commissioner, Agriculture, Environment	ECOWAS Commission	-	234 803 330 2233	ABUJA

Name	Title	Organization	Email	Phone	Location
	and Water				
HENRI JOSSERAND	Economic & Food Security Specialist	Private Consultant	<a href="mailto:hjosserand@gmail.com">hjosserand@gmail.com</a>	39 333 778 9646	ROME, ITALY
FODAY BOJANG	Senior Forestry Officer	FAO Regional Office, Accra	<a href="mailto:Foday.Bojang@fao.org">Foday.Bojang@fao.org</a>	233 302 675000	ACCRA
BERHANU BENDANE	Animal Health and Production Officer	FAO Regional Office, Accra	<a href="mailto:Berhanu.Bendane@fao.org">Berhanu.Bendane@fao.org</a>	233 302 610930	ACCRA
LIONEL AWITY	Consultant	FAO Regional Office, Accra	<a href="mailto:Lionel.Awity@fao.org">Lionel.Awity@fao.org</a>	233 302 610930	ACCRA
HUBERT OUEDRAOGO	Land Policy Specialist	Africa Union	<a href="mailto:huberto@uneca.org">huberto@uneca.org</a>	251 11 544 3518	ADDIS ABABA
<b>UNITED STATES</b>					
TIM RESCH	Environment Advisor, Africa Bureau	USAID AFR/SD/EGEA	<a href="mailto:tresch@usaid.gov">tresch@usaid.gov</a>	202 712 4453	WASHINGTON, DC
TEGAN BLAINE	Climate Change Advisor, Africa Bureau	USAID	<a href="mailto:tblaine@usaid.gov">tblaine@usaid.gov</a>	202 712 0943	WASHINGTON, DC
CHAD WEINBERG	West Africa Development Officer	USAID	<a href="mailto:cweinberg@usaid.gov">cweinberg@usaid.gov</a>	202 712 0511	WASHINGTON, DC
DIANE RUSSELL	Biodiversity & Social Science Specialist	USAID/EGEA/NRM/B	<a href="mailto:dirussell@usaid.gov">dirussell@usaid.gov</a>	202 712 1129	WASHINGTON, DC
ALEX APOTSOS	AAAS Fellow: Climate Change Analyst	USAID AFR/SD/AAAS	<a href="mailto:aapostos@usaid.gov">aapostos@usaid.gov</a>	650 815 5915	WASHINGTON, DC
JAMI MONTGOMERY		USAID DCHA/PPM			WASHINGTON, DC
ELLEN SHAW	Conservation and Forestry Specialist	OES, Dept of State	<a href="mailto:shawEM@state.gov">shawEM@state.gov</a>	202 647 3078	WASHINGTON, DC
CHRISTINE DRAGISIC	REDD+ Focal Point	OES/EGC, Dept of State	<a href="mailto:dragisicCD@state.gov">dragisicCD@state.gov</a>	202 736 7444	WASHINGTON, DC
STEPHANIE OTIS	Africa Program Specialist	USFS International Programs	<a href="mailto:srotis@fs.fed.us">srotis@fs.fed.us</a>	202 644 4567	WASHINGTON, DC
ANNE NAGY	Africa Program Specialist; STEWARD Focal Point	USFS International Programs	<a href="mailto:amnagy@fs.fed.us">amnagy@fs.fed.us</a>	202 219 0877	WASHINGTON, DC
ADAM WELTI	Africa Program Specialist	USFS International Programs	<a href="mailto:ajwelti@fs.fed.us">ajwelti@fs.fed.us</a>		WASHINGTON, DC
MARK FREUDENBERGER	Land Tenure Specialist	TetraTech ARD	<a href="mailto:mark.freudenberger@tetrattech.com">mark.freudenberger@tetrattech.com</a>	802 658 3890	BURLINGTON,

Name	Title	Organization	Email	Phone	Location
GRAY TAPPAN	US Geological Survey	USGS	<a href="mailto:tappan@usgs.gov">tappan@usgs.gov</a>		VT SIOUX FALLS, SD



# ANNEX E

# ILLUSTRATIVE LIST OF WEST AFRICA ENVIRONMENT INITIATIVES

## REGIONAL ACTIVITIES

### AFRICAN DEVELOPMENT BANK (AFDB)

- Integrated Fight Against Aquatic Plant Proliferation in West Africa - The project, which started in 2007, aims to contribute to the fight against the proliferation of aquatic plants and minimise the residual impact of these weeds in four shared water bodies in West Africa. The scope of the project covers eight countries - Benin, Niger, Mali, Senegal, Mauritania, Gambia, Ghana and Nigeria. The project consists of three components,(i) Integrated management of invasive aquatic weeds,(ii) capacity building, and( iii) project coordination.
- Climate Investment Funds (CIF) - Backed by the African Development Bank (AfDB), Niger has received approval from the Climate Investment Funds (CIF) for US \$22 million to support its Water Resources Mobilization and Development Project. It seeks to boost food production in 10 rural districts in Niger, and ultimately improve the livelihoods of some 700,000 people, by implementing mini dams, wells and boreholes, irrigation schemes, erosion control and other water management measures along with the social infrastructure and training needed at the local level to ensure sustainability. Moreover, climate resilient seeds and farming techniques will be introduced to increase agricultural production.
- Lake Chad Basin Regional Program - At its 41st Council Meeting held in Washington, D.C. on 9 and 10 November 2011, the Global Environment Facility (GEF) approved a grant of USD 20.5 million for the Lake Chad Basin Regional Program for the Conservation and Sustainable Use of Natural Resources and Energy Efficiency. The African Development Bank (AfDB), which plans to contribute USD 146 million from its own resources to the program, has worked closely with the five implementing countries (Central African Republic, Cameroon, Niger, Nigeria and Chad) on the program design. It calls for conserving the water and agro-sylvo ecosystems of the Lake Chad Basin and ensuring sustainable use of resources while meeting the needs of energy efficiency and food security.
- Water Resources Mobilization and Development Project (PROMOVARE) – USD22m. Approved on July 19, 2012
- Climate Information Development and Forecasting Project (PDIPC) – USD13m. Approved on May 18, 2012

- Project Management and Valuation of Natural Resources in the Sudanian zone (PGRN) - The Board of Directors of the African Development Fund (ADF), the concessional window of the African Development Bank Group (AfDB) approved on 1 February 2011 a loan amount of U.S. \$ 14,730,000 in Government of the Republic of Chad. This decision is part of an additional loan for the financing of the Project Management and Valuation of Natural Resources in the Sudanian zone (PGRN).
- Addax Bioenergy Project – 25m Euros. The project will generate roughly 960,000 tons of sugarcane per year that will be used to produce 83,000 cubic meters (83 million liters) of anhydrous ethanol for export and possibly domestic consumption; and 165 Giga-Watt hour (GWh) of electricity of which roughly 100 GWh will be delivered to the domestic market. In addition, the project will result in several positive environmental benefits. These environmental benefits include the creation of ecological corridors and buffer zones for conservation purposes, and a decline in greenhouse gas emissions by an estimated 200,000 tons per year.

### **COMITÉ PERMANENT INTER-ETATS DE LUTTE CONTRE LA SÉCHERESSE DANS LE SAHEL (CILSS)**

- The AGRHYMET Regional Centre (ARC), created in 1974, is a specialized interstate institute of CILSS with an international status based in Niamey, Niger. Its primary objectives are to contribute to achieving food security and increased agricultural production in the CILSS member States and to improve natural resource management in the Sahelian region. It accomplishes this via training and information to development stakeholders and partners in agroecology. It is a regional institute specialized in the science and techniques applied to agricultural development, rural development and natural resource management.
- INSAH, formed in 1976, and based in Bamako, has been coordinating research in food security and the fight against desertification. Another specialized CILSS institute, it provides the West Africa community and the rest of the world with internet access to key databases and publications related to agricultural development, environment and resource management and demographic and health. All of INSAH's publications and databases are now available electronically and reorganized for easy search and access using key words

### **UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)**

- Assistance for Emergency Locust/Grasshopper Abatement, formerly known as Africa Emergency Locust/Grasshopper Assistance (AELGA)
- Sustainable and Thriving Environments for West Africa Regional Development (STEWARD) – A forest conservation and sustainable livelihoods program focusing on transboundary Priority Zones (PZs) in the Upper Guinean Forest ecosystem. STEWARD is funded by the USAID/West Africa (WA) Regional Office of Environment and Climate Change Response (ROECCR) and is implemented by the U.S. Forest Service Office of International Programs. It operates predominantly in Guinea, Sierra Leone, Liberia and Côte d'Ivoire. It is currently in its third phase (2011-15).
- Sahel Joint Planning Cell (JPC) based in Dakar is a new initiative with a focus on six Sahelian countries (Mauritania, Senegal, Burkina Faso, Mali, Niger and Chad). It aims to combat food

insecurity and build resilience among vulnerable populations in partnership with regional institutions, international development partners and host governments.

- Famine Early Warning Systems Network (FEWS NET) uses a suite of communications and decision support products to help decision-makers act to mitigate food insecurity. These products include monthly food security updates for 25 countries, regular food security outlooks, and alerts, as well as briefings and support to contingency and response planning efforts. More in-depth studies in areas such as livelihoods and markets provide additional information to support analysis as well as program and policy development. FEWS NET also focuses its efforts on strengthening early warning and food security networks.
- BaNafaa Project (Gambia-Senegal Sustainable Fisheries Project): Promotes sustainable fisheries management including the shared marine and coastal resources between The Gambia and Senegal. It has helped to initiate two participatory ecosystem-based fisheries co-management plans (one for the sole fishery along the entire Gambian Atlantic coast and one for the oyster and cockle fishery in the Tanbi Wetlands National Park) in areas of national, regional and global biodiversity significance. Each plan delegates exclusive use rights and co-management responsibilities to a civil society organization. In the case of oysters and cockles it is a women's organization (TRY Oyster Women's Association) that was subsequently awarded the UNDP Equator Prize in 2012 for its work. Other factors for sustainable fisheries management addressed by the project include Water, Sanitation and Hygiene (WASH) and Climate Change Vulnerability and Adaptation.
- USAID/WA Climate Program: is being implemented in 20 other African countries and it seeks to promote sustainable agricultural practices and minimize harmful environmental impacts as the countries increase their economic and agricultural production. The focal areas are: energy efficiency, renewable energy and forestry and agriculture.
- Biodiversity Analysis and Technical Support (BATS): is an initiative funded by the USAID Africa Bureau to provide analytics and short-term technical assistance to USAID Missions in Africa, with the objective of supporting the design and implementation of USAID's development and humanitarian assistance activities in Africa in a manner that conserves biodiversity and protects tropical forests and other critical habitats. This program provides technical assistance in biodiversity conservation experience, lessons learned and policy considerations, coordination of extractive industry activities with conservation initiatives, biodiversity conservation programs for conflict and crisis states, and biodiversity and tropical forestry country-level assessments

#### **DANIDA**

- West African Network for Studies of Environmental Change (WANSEC) – January 2008 to December 2012. Project value is DDK 5,225,836. It is proposed to create a West African network, including the University of Dakar, Senegal, Technical University of Bamako, Mali, University of Ghana, Legon, and the University of Ouagadougou, Burkina Faso; collaborating on research-based development of capacity within studies of environmental change, using Earth Observation and GIS techniques.

## **GLOBAL ENVIRONMENTAL FACILITY (GEF)**

- Addressing Transboundary Concerns in the Volta River Basin and its Downstream Coastal Area. In association with UNEP. USD15.7m. Executing Agency:
- Enhancing the Effectiveness and Catalyzing the Sustainability of the W-Arly-Pendjari (WAP) Protected Area System – In association with UNDP. USD23.7m. Executing Agency:
- West African Regional Biosafety Program (completed June 2012) – In association with IBRD. USD21m. The global environment objective of the project is to protect regional biodiversity against the potential risks associated with introduction of LMOs into the environment. This will be achieved through the development of common science-based methods for risk assessment and management in the approval or rejection of LMOs' applications, in compliance with the Cartagena Protocol on Biosafety (CPB) and other international standards. Executing Agency: West African Economic and Monetary Union (WAEMU)
- AFLDC: Capacity Strengthening and Technical Assistance for the Implementation of Stockholm Convention National Implementation Plans (NIPs) in African Least Developed Countries (LDCs) of the ECOWAS Subregion – In association with UNEP. USD16.4m. The Objective of the project is to strengthen and build the capacity required in LDCs and SIDS in the ECOWAS sub region to implement their Stockholm Convention NIPs in a sustainable, effective and comprehensive manner, while building upon and contributing to strengthening a country's foundational capacities for the sound management of chemicals. Executing Agency: Institutions responsible for environment in the LDCs/ECOWAS member states
- Disposal Of Obsolete Pesticides Including POPs And Strengthening Pesticide Management In The Permanent Interstate Committee For Drought Control In The Sahel (CILSS) Member States – In association with FAO. USD47.5m. To eliminate existing obsolete pesticides, including POPs and associated wastes, and to strengthen the capacity for sound pesticides management in order to prevent future accumulation in CILSS member states. Executing Agency: CILSS Executive Secretariat
- Sahel and West Africa Program in Support of the Great Green Wall Initiative – In association with IBRD. USD1,069m. To contribute to improved and more climate resilient natural resource based livelihoods and ecosystem function in West African and Sahelian countries. Executing Agency: Governments of participant countries, Regional Centers of Excellence
- Water Pollution Control and Biodiversity Conservation in the Gulf of Guinea Large Marine Ecosystem (LME) – In association with UNDP. USD6.5m. Executing Agency:
- Conservation of Transboundary Biodiversity in the Minkebe-Odzala-Dja Interzone in Gabon, Congo, and Cameroon – In association with UNDP. USD44.7m
- Renewable Energy Enterprise Development - Seed Capital Access Facility – In association with UNEP. USD49m
- Demonstrating and Capturing Best Practices and Technologies for the Reduction of Land-sourced Impacts Resulting from Coastal Tourism – In association with UNEP. USD29m
- CBSP Enhancing Institutional Capacities on REDD issues for Sustainable Forest Management in the Congo Basin – In association with IBRD. USD26m

- CBSP Sustainable Financing of Protected Area Systems in the Congo Basin – In association with UNDP. USD58.7m
- Combating Living Resource Depletion and Coastal Area Degradation in the Guinea Current LME through Ecosystem-based Regional Actions – In association with UNDP. USD54m
- Protection of the Canary Current Large Marine Ecosystem (LME) - In association with FAO. USD25.7m To enable the countries of the Canary Current Large Marine Ecosystem to address priority transboundary concerns on declining fisheries, associated biodiversity and water quality through governance reforms, investments and management programs. The long-term environmental goal of the CCLME program is to reverse the degradation of the Canary Current Large Marine Ecosystem caused by over-fishing, habitat modification and changes in water quality by adoption of an ecosystem-based management approach.
- Demonstration of a Regional Approach to Environmentally Sound Management of PCB Liquid Wastes and Transformers and Capacitors Containing PCBs – USD15m. To reduce environmental and human health risks from PCBs releases through the introduction of cost-effective environmentally sound management (ESM) to PCB oils, equipment and wastes held by electrical utilities in participating countries of the region. Executing Agency: The Basel Convention Regional Centre in Dakar and UNOPS.
- Biological Diversity Conservation through Participatory Rehabilitation of the Degraded Lands of the Arid and Semi-Arid Transboundary Areas of Mauritania and Senegal

## **WORLD BANK**

- The West Africa Community-Based Natural Resource and Wildlife Management Project operates in the drylands outside of the Guinean Forest Hotspot mainly in the northern areas of Côte d'Ivoire, Ghana and into Burkina Faso. It is an ambitious transboundary initiative that promotes connectivity by working with communities on compatible land uses bordering national parks and promotes sustainable use by building capacity for conservation-based enterprise.
- Senegal River Basin Multi-Purpose Water Resources Development Project (MWRD) has assisted Guinea, Mali, Mauritania and Senegal in jointly managing shared water resources, as well as reduce poverty, diseases and hunger. Built on the Senegal River Basin Organization (OMVS), created in 1972 by Mali, Mauritania and Senegal to assist the management of transboundary water resources it has invested in irrigation, health, water resources management, low carbon growth and regional trade. The WB estimates Investments in that the project has improved fish stocks by 13% since 2000 and recovered around 4,400 acres of land for agriculture use (including the improvement of cultivation opportunities benefits women, who rely on subsistence agriculture).

## **COUNTRY SPECIFIC INITIATIVES**

### **BENIN**

- Community-based Coastal and Marine Biodiversity Management Project – In association with IBRD. USD14.1m. The main objective of the project is to contribute to a sustainable

management of the coastal zone and biological diversity of national and global interest) with the view to a sustainable development of the country. Project activities consist of four inter-related component aimed at creating the technical, institutional, organizational, socio-economic, and governance conditions to ensure conservation and sustainable use of biodiversity and its resources. These component are: (a) institution and capacity-building in integrated coastal zone management, (b) community-based biodiversity conservation, (c) monitoring and evaluation of coastal wetlands and marine environment, and project management and coordination. Executing Agency: Benin Environmental Agency.

- Forests and Adjacent Lands Management Project – USD52m. The original Project Development Objective: “to assist the Recipient in its effort to lay down the foundation for a collective integrated ecosystem management system of its forests and adjacent lands” remain unchanged. The expected outcomes of the AF would be: (i) an increase in land area with Sustainable Land and Water Management in targeted areas measured by the number of additional hectares of forests or degraded forests brought under sustainable management; (ii) the number of forests reserves with management plans effectively implemented; (iii) an increase in the capacity of the National Forests institutions to implement forests management plans; and (iv) an increase in the initial capital of the CTF. Executing Agency: Government of Benin Ministry of Environment Habitat and Urban.
- Disposal of POPs and Obsolete Pesticides and Strengthening Life-cycle Management of Pesticides – USD12m. To reduce risks to human health and the environment from POPs including endosulfan and other obsolete pesticides through: (i) safe disposal of existing stockpiles; and (ii) strengthening the capacity for the sound management of pesticides throughout their life-cycle. Executing Agency: Ministries of Agriculture, Environment and Public Health
- National Capacity Needs Self-Assessment (NCSA) for Global Environmental Management – In association with UNDP. USD275,000
- Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants (POPs): National Implementation Plan for Benin – In association with UNEP. USD534,000
- Integrated Adaptation Programme to Combat the Effects of Climate Change on Agricultural Production and Food Security – USD11.3m. To strengthen capacities of agricultural demonstration communities in selected Communes to adapt to extreme event and climate change in four vulnerable agro-ecological zones in Benin. Executing Agency: UNDP
- Benin Energy Efficiency Program – In association with IBRD. USD78.4m

## **BURKINA FASO**

- Optimizing Biological Diversity within Wildlife Ranching systems; A Pilot Demonstration in A Semi-arid Zone – In association with UNDP. USD3.5m
- Sahel Integrated Lowland Ecosystem Management (SILEM), Phase I. In association with IBRD. USD25m
- CPP Burkina Faso: Sub-programme of the Northern Region-under Partnership Programme for Sustainable Land Management – In association with IFAD. USD29.8m. The goal of the

SLM/North pilot sub programme is to contribute to the fight against desertification through unleashing a process of integrated natural resource management involving the empowerment of all stakeholders to combat desertification and its negative effects. Executing Agency: Ministry of Agriculture and Ministry of Environment

- National Subprogram for Coordination and Institutional Development on Sustainable Land Management – In association with UNDP. USD9.6m
- Strengthening Adaptation Capacities and Reducing the Vulnerability to Climate Change in Burkina Faso. USD23m. To enhance Burkina Faso's resilience and adaptation capacity to climate change risks in the agro-sylvo-pastoral sector.
- Strengthening Climate Information and Early Warning Systems in Western and Central Africa for Climate Resilient Development and Adaptation to Climate Change - Burkina Faso. In association with UNDP. USD28m. To strengthen the climate monitoring capabilities, early warning systems and available information for responding to climate shocks and planning adaptation to climate change in Burkina Faso. Executing Agency: Division of Environment Information and Monitoring; National Council for Sustainable Development.
- Reducing Vulnerability of Natural Resource Dependent livelihoods in two landscapes at Risk of the Effects of Climate Change in Burkina Faso: Boucles du Mouhoun Forest Corridor and Mare d'Oursi Wetlands Basin – In association with UNDP. USD28.5m. To reduce local communities' vulnerability to the additional risks posed by climate change and build their resilience with focus on the natural resource management sectors in the Boucles du Mouhoun Forest Corridor and the Mare d'Oursi Wetlands Basin. Executing Agency: National Council for Environment and Sustainable Development (CONEDD).

## **CAMEROON**

- Forest and Environment Development Policy Grant (FEDPG) (Completed Dec 2011) – In association with IBRD. USD126.5m. The project development objective is to strengthen public and private efforts to achieve socio-economically and ecologically sustainable use of national forest and wildlife resources. Executing Agency: Ministry of Environment and Forests
- Sustainable Agro-Pastoral and Land Management Promotion under the National Community Development Program Support Program (PNDP) (Completed March 2011) – In association with IBRD. USD98m. Executing Agency: Ministry of Economic Affairs, Programming and Regional Development (GoC)

## **CAPE VERDE**

- Integrated Participatory Ecosystem Management In and Around Protected Areas, Phase I – In association with UNDP. USD9.3m. The overall objective of the full project is to conserve globally significant biodiversity and ensure sustainable use of natural resources through an integrated approach whereby protected areas and community-based sustainable use activities are woven into a "win-win" package. Through this integrated community biodiversity conservation project and the implementation of the provisions of the National Biodiversity

Strategy, long term solutions will be sought for better management of water, natural resources, land use, and invasive species.

## **CHAD**

- GGW - Agriculture Production Support Project (with Sustainable Land and Water Management) – In association with IBRD. USD111m. To support rural communities and producer organizations in increasing production of selected food crops and livestock in targeted zones while increasing the use of sustainable land and water management practices in climate vulnerable ecosystems.

## **COTE D'IVOIRE**

- National Protected Areas Management Program (PCGAP): Côte d'Ivoire's 12-year National PCGAP has been launched at a projected cost of US\$68 million to enhance the country's protected-area management capacity, both by broadening the array of partners and improving the relationship between people and protected areas. Groundwork has been laid for PCGAP with resources from government, GEF Block C, EU STABEX funds and contributions by the World Wildlife Fund and Conservation International. Simultaneous work has focused on establishment of a new national institution for protected area management and the stabilization of three protected areas (Marahoué, Comoe and Mt. Peko) under the "Programme Transitoire." The project financing plan includes US\$15 million from the International Development Association, US\$12 million from the Government of Côte d'Ivoire and US\$41 million in co-financing from the European Development Fund (EDF), Fonds d'Aide et de Cooperation, Agence Francaise de Développement, GEF, Kreditanstalt Fur Wiederaufbau (KfW) and the World Wildlife Fund. This support will be directed toward deforestation, biodiversity protection, land tenure and land management.
- The USAID/WA-funded Climate Program in Côte d'Ivoire focuses on energy efficiency, renewable energy and forestry and agriculture and (ii) the Sustainable and Thriving Environments for West African Regional Development (STEWARD) program, a regional-scale initiative in the Upper Guinean Ecosystem to promote transfer of knowledge and lessons among countries

## **GAMBIA**

- Enhancing Resilience of Vulnerable Coastal Areas and Communities to Climate Change in the Republic of Gambia. In association with UNDP. USD50m. To reduce Gambia's vulnerability to sea-level rise and associated impacts of climate change by improving coastal defenses and enhancing adaptive capacities of coastal communities. Executing Agency: National Environment Agency, Department of Agriculture, Department of Fisheries
- West African Village & Environment Project (WAVE) - WAVE (West African Village & Environment Project) is a non-profit organization formed in 2008 to assist people in one of the world's most poverty stricken regions. It was designed to promote K-12 and environmental education, in addition to developing infrastructure and local commerce in West African communities. Our aim is to establish sustainable projects by working with villages and individuals, providing long-term oversight and training.



## **GHANA**

- SIP-Sustainable Land Management in Ghana. USD136m. Enhanced watershed services and biodiversity maintenance in selected micro-watersheds.
- Green Ghana Volunteers – A project by Volunteer Partnerships for West Africa. The project background is to implement green methodologies using locally available low cost resources to alleviate problems of poverty through income generation and job availability, producing viable planting materials for the rehabilitation of degraded lands, generate dry Moringa oleifera leaf to provide accessible raw materials that meet the code of good practice to guarantee sanitary and nutritional status of Moringa products based on published standards for value added products to meet local and international demands and for direct application of the Moringa dried leaf for regenerative health and nutrition starting with local communities in Greater Accra and Eastern Regions of Ghana.
- Carbon offsetting with Moringa trees - A project by Volunteer Partnerships for West Africa.
- Capacity Building for PCB Elimination – USD6.8m. The primary objective of the full project is to ensure that Ghana has the capacities and capabilities to manage PCBs in a manner consistent with the Stockholm Convention, and compatible with the Convention goal of their elimination from use in equipment by 2025. Executing Agency: EPA Ghana
- Hen Mpano – Western Ghana Integrated Coastal Fisheries Governance Project – A USAID funded multi-year program implemented by URI's Coastal Resources Center addresses threats to biodiversity in fisheries and the coastal environment while fostering regional and national discussions about necessary policy and program reforms. It is formalizing a coastal planning and management program for the Western Region and securing the resources required for its long-term implementation.

## **GUINEA**

- Coastal Marine and Biodiversity Management (Completed Dec 2011) – USD23.8m. The project would promote management of Guinea's coastal biodiversity for both conservation of biodiversity and sustainable development ends, with a particular emphasis on assisting local communities in and around key priority sites to plan, implement, and maintain environmentally sustainable and socially inclusive alternative livelihoods options. Executing Agency: CNSH-Ministry of Planning
- Increased Resilience and Adaptation to Adverse Impacts of Climate Change in Guinea's Vulnerable Coastal Zones. USD166m. To strengthen the protection of vulnerable Guinean coastal communities and areas against the adverse impacts of climate change and climate variability. Executing Agency: UNDP

## **GUINEA-BISSAU**

- West Africa Regional Fisheries Program APL B1 – USD57m. To strengthen the capacity of Guinea-Bissau to govern and manage targeted fisheries, reduce illegal fishing and increase local value added to fish products. Executing Agency: Sub-Regional Fisheries Commission (CSRP), Ministry of Agriculture, Ghana; Ministry of Fisheries, Guinea-Bissau

## LIBERIA

- Strengthening Liberia's Capability to Provide Climate Information and Services to Enhance Climate Resilient Development and Adaptation to Climate Change - To strengthen Liberia's climate-related monitoring capabilities, early warning systems and available information for responding to climate shocks and planning adaptation to climate change. In association with UNDP. USD35m. Executing Agency: Environmental Protection Agency, Ministry of Land, Mines and Energy

## MALI

- Improving Governance to Support Better Livelihood Security and Ecosystem Management in the Drylands of Africa is DfID funded program being implemented by IUCN. There are two sites, one in Kenya, the second in Mali. The latter targets a transboundary ecosystem made up of the Gourma Elephant reserve and the Reserve Sylvo Pastorale et Partielle de Faune du Sahel in Burkina Faso. IUCN works with local communities to identify pastoral practices that benefit the environment and use these practices to provide policy guidance for drylands management.
- Initiatives Intégrées pour la Croissance Economique au Mali (IICEM): IICEM promotes economic growth, helping to reduce poverty and increase food security while strengthening local capacity to adapt to the effects of climate change. It increases technical and organizational skills of value chain actors. IICEM currently works with the following products, incorporating elements of gender equitable opportunity, biodiversity protection and natural resource management: rice, millet/sorghum, maize, potato, mango, tomato, shallots, horticultural products, tiger nuts, soy beans, and fish. Funded by USAID as part of its Accelerated Economic Growth program, the IICEM project is implemented by Abt Associates in partnership with ACDI / VOCA, Sheladia Associates, Inc. and Carana.
- Projet de Mobilisation des Initiatives en Matière de Sécurité Alimentaire (PROMISAM): (Project to Mobilize Food Security Initiatives in Mali) - Strengthening the Capacity of the Malian Government to Develop Analytical and Market-Based Food Security Responses. A USAID/Mali supported-project that helps communities in the GAO region with strategies that help them to develop and sustain their food security plans rather than always rely on emergency food aid as it used to be in the past.
- The Integrated Pest Management Collaborative Research Support Program (IPM CRSP): "Building Local Capacity in IPM Solutions" is a three-year \$2.5 million program funded by the U.S. Agency for International Development (USAID) Mali mission, beginning in 2010 and is managed by Virginia Tech's Office of International Research, Education, and Development (OIRE). The program is to promote agriculture-led growth, increase rural incomes and reduce hunger in Mali. One focus of the program will be improving tomato production, an integral part of the rice-based agriculture in Mali. The project will also promote quality assurance among small farmers and build sustainable national capacity for pesticide residue analysis as a means to meeting international agricultural trade standards and reducing sanitary barriers to trade. In addition the project will provide pesticide safety training to Ministry of Agriculture personnel, extension agents and farmers

## **MAURITANIA**

- Improving Climate Resilience of Water Sector Investments with Appropriate Climate Adaptive Activities for Pastoral and Forestry Resources in Southern Mauritania - Climate change proofing water sector investment by building appropriate climate resilience activities of pastoral and forestry resources in southern Mauritania. In association with AfDB.

## **NIGER**

- Community Action Project for Climate Resilience – Funded by IBRD. USD63m projected approved on November 16, 2011.
- Private Sector Investment to Build Climate Resilience in Niger's Agricultural Sector – Funded by IFC. Approved on December 20, 2010.

## **NIGERIA**

- GGW - Nigeria Erosion and Watershed Management Project (NEWMAP) - To reduce vulnerability to soil erosion in targeted sub-watersheds. USD509m. Executing agency: Federal Ministry of Environment (with State ministries of environment and partner government agencies in up to 11 states)
- SPWA-CC Promoting Energy Efficiency in Residential and Public Sector in Nigeria – In association with UNDP. USD9.8m. To improve the energy efficiency of selected end-use equipment from the residential and public sector in Nigeria (refrigeration appliances, air conditioners, lighting, electric motors and fans...) through the introduction of appropriate energy efficiency policies and measures, such as Standards and Labels (S&L) and demand-side management programmes. Executing Agency: National Energy Commission of Nigeria
- SPWA-BD Niger Delta Biodiversity Project. In association with UNDP. USD14m. To mainstream biodiversity management priorities into the Niger Delta oil and gas (O&G) sector development policies and operations. Executing Agency: Federal Ministry of Environment, Housing and Urban Development.

## **SAO TOME AND PRINCIPE**

- Integrated Ecosystem Approach to Biodiversity Mainstreaming and Conservation in the Buffer Zones of the Obo and Principe Natural Parks. In association with IFAD. USD11m. Degraded ecosystems in STP are rehabilitated to provide ecosystem services and habitat for endemic species of flora and fauna of global importance. Environmental Objective: Promote biodiversity mainstreaming and integrated ecosystem management in the buffer zones of Obo and Principe Natural Parks. Development Objective: Increase income generation through biodiversity-friendly production and sustainable business. Executing Agency: Directorate of Environment, Directorate of Agriculture and Rural Development

## **SENEGAL**

- Sustainable Management of Fish Resources - under the Strategic Partnership for a Sustainable Fisheries Investment Fund in the Large Marine Ecosystems of Sub-Saharan Africa. USD25m.

The objective of the proposed project is to empower local fisher communities to co- manage coastal fisheries resources and to conserve and protect the key habitats that support these resources. Executing Agency: Government of Senegal through the Ministry of Maritime Economy.

- COMFISH – Collaborative Management for a Sustainable Fisheries Future is a USAID funded project implemented by URI’s Coastal Resources Center addresses threats to biodiversity and the coastal environment.
- Integrated Marine and Coastal Resource Management (Completed Dec 2011) – USD17m. The proposed project will strengthen the conservation and management of globally significant marine and coastal biodiversity in Senegal. Executing Agency: Ministry of Environment and Sanitation.

## **SIERRA LEONE**

- SPWA-BD Wetlands Conservation Project – USD5.1m. To improve management of priority wetland ecosystems as part of the national framework of conservation in Sierra Leone. Executing Agency: Ministry of Agriculture, Forestry and Food Security (MAFFS)
- Biodiversity Conservation Project - USD18.8m. Improved management of selected priority conservation sites and enhanced capacity for replication of best practices.

# ANNEX F

## PROTECTED AREAS IN WEST AFRICA

Country	IUCN Categories						
	Ia	Ib	II	III	IV	V	VI
	Strict Nature Reserve	Wilderness Area	National Park	Natural Monument	Habitat/ Species Mgmt. Area	Protected Landscape/ Seascape	PA w/ Sustainable NR
Benin	--	--	2	--	--	1	3
Burkina Faso	--	--	3	--	9	--	--
Cameroon	--	--	17	--	9	--	--
Cape Verde	--	--	--	--	--	--	--
Chad	--	--	2	--	7	--	--
Cote d'Ivoire	3	--	8	--	2	--	1
Gabon	--	--	4	--	3	--	--
Gambia	--	--	2	--	1	--	--
Ghana	--	--	7	--	3	--	5
Guinea	1	--	2	--	--	--	--
Liberia	--	--	1	--	--	--	--
Mali	--	--	1	--	7	--	--
Mauritania	--	--	2	--	--	--	1
Niger	1	--	1	--	5	--	--
Nigeria	5	--	8	--	14	--	--
Sao Tome e Principe	--	--	--	--	--	--	--
Senegal	--	--	6	--	6	--	1
Sierra Leone	--	--	2	--	1	--	1
Togo	--	--	3	--	6	--	--
<b>Totals</b>	<b>10</b>	<b>0</b>	<b>71</b>	<b>0</b>	<b>73</b>	<b>1</b>	<b>12</b>

Source: UNEP-WCMC. 2013.

## ANNEX F

## PROTECTED AREAS IN WEST AFRICA

Protected Area (shaded PAs have an international border)	IUCN	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Productive Assets	Involved Institutions
<b>BENIN</b>									
Pendjari National Park	II	NP, UNESCO-BR, Ramsar	MEPN-CENAGREF, AVIGREF	1961	563,442		Yes		GTZ, SNV, French Fund for the Global Environment
W National Park	II	NP, UNESCO-BR, Ramsar	MEPN-CENAGREF	1954	762,438		Yes		EU, UNDP
Ouari Maro Classified Forest	V			1946					
Pendjari Hunting Zone	VI	NP			275,500				
Atakora Hunting Zone	VI								
Djona Hunting Zone	VI								
3 multiple use zones adjacent to the national parks									
Lama Forest			MEPN-DGFRN, MEPN-ONAB	1940s	1900				
37 classified forests			MEPN-DGFRN, MEPN-ONAB						
<b>BURKINA FASO</b>									
Mare aux Hippopotames	IV	NP, UNESCO-BR, Bird Reserve, Ramsar	Dep. Of Water and Forests	1986/1986/2002	186,000				PAGEN BF, UNEP
W National Park	II	NP, UNESCO-BR, Ramsar	Dep. Of Water and Forests	1954/2002/1990	346,000				PAGEN BF, EU, PGET, UNEP, Protected Areas of Sahelian Africa
La Mare d'Oursi		Ramsar	Dep. Of Water and Forests	1990	45,000				PAGEN BF
Deux Bales	II	NP	Dep. Of Water and Forests	1967	56,600				PAGEN BF
Kabore-Tambi	II	NP	Dep. Of Water and Forests	1976	242,700				PAGEN BF
Komoe-Leraba		NP	Dep. Of Water and Forests		280,000				PAGEN BF
Arly	IV	Faunal Reserve	Dep. Of Water and Forests	1954	76,000		Yes		PAGEN BF
Bontioli	IV	Faunal Reserve	Dep. Of Water and Forests	1957	12,700				PAGEN BF
Madjoari	IV	Faunal Reserve	Dep. Of Water and Forests	1955	17,000				PAGEN BF
Singou	IV	Faunal Reserve	Dep. Of Water and Forests	1955	192000				PAGEN BF, Bauer and Van Der Merwe
Arly	IV	Partial Faunal Reserve	Dep. Of Water and Forests	1954	130,000				PAGEN BF
Bontioli	IV	Partial Faunal Reserve	Dep. Of Water and Forests	1957	29,500				PAGEN BF

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Kourtiagou	IV	Partial Faunal Reserve	Dep. Of Water and Forests	1957	51,000				PAGEN BF
Nabere		Partial Faunal Reserve	Dep. Of Water and Forests	Degazetted	36,500				PAGEN BF
Pama	IV	Partial Faunal Reserve	Dep. Of Water and Forests	1955	223,700				PAGEN BF
Sahel		Partial Faunal Reserve	Dep. Of Water and Forests	1970	1,600,000				PAGEN BF
Nazinga Ranch		Protection/Protected Zone	Dep. Of Water and Forests	Degazetted	806,000				PAGEN BF
Beli Bird Sanctuary		Proposed	Dep. Of Water and Forests	Proposed	160,000				PAGEN BF
Mare d'Oursi Bird Sanctuary		Proposed	Dep. Of Water and Forests	Proposed	45,000				PAGEN BF
<b>CAMEROON</b>									
Korup National Park	II	NP	Ministry of Environment & Forests		125,900		No		
Dja Wildlife Reserve	IV	BR, WHS	Ministry of Environment & Forests, ECOFAC		526,000		No		ECOFAC
Douala-Edea Reserve (Southern section)	IV	Wildlife Reserve	Ministry of Environment & Forests, CWCS		160,000		No		CWCS
Faro National Park	II	NP	Ministry of Environment & Forests		330,000		No		
Benoue National Park	II	NP, UNESCO-BR	Ministry of Environment & Forests	1932, 1968, 1981	180,000		No		
Beuanjidah National Park			Ministry of Environment & Forests		214,000		No		
Kalamaloue National Park	II	NP	Ministry of Environment & Forests		4,500		No		
Waza National Park	II	NP, UNESCO-BR	Ministry of Environment & Forests	1934	170,000		No		

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Protected Area (shaded PAs have an international border)	IU C N	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Pro- ductive Assets	Involved Institutions
Mozoko-Gokoro	II	NP	Ministry of Environment & Forests		1,400				
Mount Cameroon National Park									
Takamanda National Park	II	NP	Ministry of Forestry and Wildlife, WCS		67,500				WCS
Bakossi National Park	II	NP	Ministry of Forestry and Wildlife		29,300				
Campo-Ma'an National Park	II	NP	Ministry of Forestry and Wildlife	1992	264,000			WWF	
Mbam et Djerem National Park	II	NP	Ministry of Forestry and Wildlife	2000	423,400				
Bouba Ndjida National Park	II	NP	Ministry of Forestry and Wildlife		220,000				
Vallée du Mbéré National Park	II	NP			77,760				
Nki National Park	II	NP	Ministry of Forestry and Wildlife		309,300				WWF
Boumba Bek Wildlife Reserve	II	NP	Ministry of Forestry and Wildlife		238,200				WWF
Lobéké National Park	II	NP							
Mpem et Djim National Park	II	NP	Ministry of Environment & Forests						
Kagwene Gorilla Sanctuary	II	Gorilla Sanctuary	Ministry of Environment & Forests		1,944				
Banyang-Mbo Sanctuary	IV	Wildlife Reserve	Ministry of Environment & Forests	1996	69,100				
Santchou Wildlife Reserve	IV	Faunal Reserve	Ministry of Environment & Forests		7,000				
Kimbi Wildlife Reserve	IV	Wildlife Reserve	Ministry of Environment & Forests		5,625				
Lac Ossa Wildlife Reserve	IV	Wildlife Reserve	Ministry of Environment & Forests						
Mengamé Gorilla Sanctuary	IV	Wildlife Reserve	Ministry of Environment & Forests	2001	121,800				OIBT



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Protected Area (shaded PAs have an international border)	IUCN	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Productive Assets	Involved Institutions
<b>CAPE VERDE</b>									
<b>CHAD</b>									
Zakouma National Park	II	Nominated UNESCO WHS	HCNE	1963	300,000		Yes		Wildlife Conservation Society (WCS), EU, RAPAC, PAPACO, GEF, WB
Menda National Park	II	Nominated UNESCO WHS	HCNE	1965	114,000				UNDP, RAPAC, PAPACO, GEF, WB
Sena Oura National Park		Nominated UNESCO WHS	HCNE	Proposed and approved by Chadian National Assembly in 2010	73,520				RAPAC, PAPACO, GEF, WB, UNEP
The Ouadi Rimé-Ouadi Achim Faunal Reserve	IV	Nominated UNESCO WHS	HCNE		8,000,000				RAPAC, PAPACO, GEF, WB
Bahr Salamat Faunal Reserve	IV	Faunal Reserve	HCNE						
Siniaka-Minia Faunal Reserve	IV	Faunal Reserve	HCNE						
Abou Telfane Faunal Reserve	IV	Faunal Reserve	HCNE						
Fada Archei Faunal Reserve	IV	Faunal Reserve	HCNE						
Mandella Faunal Reserve	IV	Faunal Reserve	HCNE						
Binder-Léré Fauna Reserve	IV	Faunal Reserve, Ramsar	HCNE						
<b>COTE D'IVOIRE</b>									
Haut Bandama Fauna and Flora Reserve	Ia	Flora & Fauna Reserve	Office Ivoirien des Parcs et Reserve	1973	12,300				UNEP-WCMC
Mount Nimba National Reserve	Ia	National Reserve	Office Ivoirien des Parcs et Reserve						UNEP-WCMC
Marahoué National Park	II	NP	Office Ivoirien des Parcs et Reserve						UNEP-WCMC
Mont Sangbe National Park	II	NP	Office Ivoirien des Parcs et Reserve						UNEP-WCMC
Mont Peko National Park	II	NP	Office Ivoirien des Parcs et Reserve						UNEP-WCMC
Comoe National Park	II	NP	Office Ivoirien des Parcs et Reserve						UNEP-WCMC
Azagny National Park	II	NP	Office Ivoirien des Parcs et Reserve		19,400				UNEP-WCMC
Tai National Park	II	NP, WHS, BR	Office Ivoirien des Parcs et Reserve	1926	330,000				UNEP-WCMC

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Protected Area (shaded PAs have an international border)	IUCN	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Productive Assets	Involved Institutions
Banco National Park	II	NP	Office Ivoirien des Parcs et Reserve		3000				UNEP-WCMC
Iles Ehotile National Park	II	NP	Office Ivoirien des Parcs et Reserve						UNEP-WCMC
N'Zo Partial Faunal Reserve	IV	Partial Faunal Reserve	Office Ivoirien des Parcs et Reserve		95,000				UNEP-WCMC
Warigue Classified Forest	IV & VI		Office Ivoirien des Parcs et Reserve						UNEP-WCMC
<b>GABON</b>									
Ngove-Ndogo Hunting Area	IV	Hunting Area							
Moukalaba-Dougoua Faunal Reserve	IV	Faunal Reserve							
Iguela Hunting Area	IV	Hunting Area		1966	79,800				
Lopé National Park	II	NP							
Minkebe National Park	II	NP			757,000				
Pongora National Park	II	NP			92,900				
Ivindo National Park	II	NP							
<b>GAMBIA</b>									
River Gambia National Park	II	National Park	Department of Parks and Wildlife Management	1978	58,900				UNEP-WCMC, National Environmental Agency
Niumi National Park	II	National Park	Department of Parks and Wildlife Management		4,940				UNEP-WCMC, National Environmental Agency
Abuko Nature Reserve	IV	Nature Reserve	Department of Parks and Wildlife Management	1968	190				UNEP-WCMC, National Environmental Agency
<b>GHANA</b>									
Kogyae Strict Nature Reserve	Ia	Nature Reserve							
Bomfobiri Wildlife Sanctuary	IV	Wildlife Reserve							
Boabeng-Fiema Wildlife Sanctuary	IV	Wildlife Sanctuary							
Owabi Wildlife Sanctuary	IV	Ramsar, Wildlife Sanctuary							
Shai Hills Game Production Reserve	VI	Game Production Reserve							
Kalakpa Game Production Reserve	VI	Game Production Reserve							
Gbele Game Production Reserve	VI	Game Production Reserve							
Assin-Attandanso Game Production Reserve	VI	Game Production Reserve		1991	13,900				

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Protected Area (shaded PAs have an international border)	IUCN	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Productive Assets	Involved Institutions
Bia National Park/Resource Reserve	II, VI	NP, Game Production Reserve		1935	56,300				
Nini-Suhien National Park	II	NP		1976	16,000				
Digya National Park	II	NP		1900	374,300				
Bui National Park	II	NP		1971	182,000				
Kakum National Park	II	NP		1960	350				
Mole National Park	II	NP		1958	457,700				
<b>GUINEA</b>									
Haut Niger National Park - Kouya Core Area	II	NP, BR							
Parc du Niokolo-Badiar	II	NP							
Mount Nimba Strict Nature Reserve	la	UNESCO WHS							
Siama		BR							
Badiar	II	BR							
<b>LIBERIA</b>									
Sapo National Park	II	NP	FDA	1983	180,363				LCIP
East Nimba Nature Reserve		Nature Reserve	FDA	2003	13,569				
Lake Piso		National Park	FDA		48,593				
Lake Piso		Ramsar-Proposed	EPA		76,091				
Gola Forest		National Park-Proposed	FDA		97,975				
Wonegizi Forest		National Park-Proposed	FDA		29,894				
Kpo Mountains					83,709				
Wologizi					107,533				
Grebo					97,136				
Gbi					88,409				
Nimba West									
Gbedin Wetlands		Ramsar	EPA		25				
Kpatawee Wetlands		Ramsar	EPA		835				
Marshall Wetlands		Ramsar	EPA		12,168				
Mesurado Wetlands		Ramsar	EPA		6,760				
<b>MALI</b>									
Boucle du Baoulé Biosphere Reserve			DNCN				Yes (but no equipment or financial support)		UNDP,WB,UNDP,EU,Mali Govt.
Baoule National Park	II	National Park	DNCN						

## ANNEX F

## PROTECTED AREAS IN WEST AFRICA

Protected Area (shaded PAs have an international border)	IUCN	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Productive Assets	Involved Institutions
Bafing National Park		National Park	DNCN						AfDB, Committee of Village Assoc
Gourma Elephant Reserve	IV	Faunal Reserve	DNCN						GEF,IBRD(WB),Fonds Français pour l'Environnement Mondial
Nienendougou Fauna Reserve		Faunal Reserve	DNCN	2001	40,402				
Tamesna Fauna Reserve of Kidal		Faunal Reserve	DNCN						
Kenebaoule Faunal Reserve	IV	Faunal Reserve	DNCN						
Badinko Faunal Reserve	IV	Faunal Reserve	DNCN						
Ansongo Menaka Partial Faunal Reserve	IV	Faunal Reserve	DNCN						
Kongossambougou Faunal Reserve	IV	Faunal Reserve	DNCN						
Fina Faunal Reserve	IV	Faunal Reserve	DNCN						
Sousan Fauna Reserve	IV	Faunal Reserve	DNCN	1959			Natural Resource Mgt. Plan for extraction		
<b>MAURITANIA</b>									
BANC D'ARGUIN	II	NP, Ramsar, WHS		1976	1,200,000				WCPA, WWF
Diawling National Park	II	NP, Ramsar		1991	16,000				
CHAT TBOUL		Ramsar		2000	15,500				
Reserve de Moufflon		Wildlife reserve							
El Agher		Partial wildlife reserve							
Elephant		Partial wildlife reserve							
Tilemsi		Partial wildlife reserve							
Bale du Levrier (Cap Blanc)		Integral Reserve							
Iles Mauritaniennes		Integral Reserve							
Las Cuevecillas		Integral Reserve							
Ancient Ksour of Ouadane, Chinguetti, Tichitt and Oualata		WHS							

## ANNEX F

## PROTECTED AREAS IN WEST AFRICA

Protected Area (shaded PAs have an international border)	IUCN	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Productive Assets	Involved Institutions
<b>NIGER</b>									
Parc National de W	II	National Park, World Heritage Convention, UNESCO-MAB		1954			Under preparation		EDF
Reserve Naturelle de l'Air et du Tenere	IV	National Nature Reserve, World Heritage Convention, UNESCO-MAB		1988	7,700,000				SCF,IUCN,UNDP,UNEP
Sanctuaire des Addax	Ia	Strict Natural Reserve							
Gadabedji	IV	Faunal Reserve		1955	76,000				
Tamou	IV	Faunal Reserve			75,600				
Tadres		Faunal Reserve							
Termit Massif	IV	Faunal Reserve		1962	700,000				
Dosso	IV	Partial Faunal Reserve		1962	306,500				
Complexe Kokorou-Namga		Ramsar							
Dallol Bosso		Ramsar							
Dallol Maouri		Ramsar							
Gueltas et Oasis de l'Air		Ramsar							
La Mare de Dan Doutchi		Ramsar							
La Mare de Lassouri		Ramsar							
La Mare de Tabalak		Ramsar							
Lac Tchad		Ramsar							
Oasis du Kawar		Ramsar							
Zone humide du moyen Niger		Ramsar							
Zone humide du moyen Niger II		Ramsar							
<b>NIGERIA</b>									
Chad Basin	II	NP		1991	225,800				
Kambari Game Reserve	IV	Game Reserve							
Baturiya Wetlands Game Reserve	IV	Game Reserve							
Gilli-Gilli Game Reserve	IV	Game Reserve							
Kashimbila Game Reserve	IV	Game Reserve		1977	139,600				
Yankari Game Reserve	IV	Game Reserve		1991	224,400				
Pandam Game Reserve	IV	Game Reserve							
Falgore (Kogin Kano) Game Reserve	IV	Game Reserve							
Orle River Game Reserve	IV	Game Reserve							
Lame-Burra Game Reserve	IV	Game Reserve							

## ANNEX F

## PROTECTED AREAS IN WEST AFRICA

Protected Area (shaded PAs have an international border)	IUCN	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Productive Assets	Involved Institutions
Dagida Game Reserve	IV	Game Reserve							
Kwale Game Reserve	IV	Game Reserve							
Ologbo Game Reserve	IV	Game Reserve							
Nguru/Adiani Wetlands Game Reserve	IV	Game Reserve							
Margadu-Kabak Wetlands Game Reserve	IV	Game Reserve							
Cross River	II	NP		1991	400,000				
Gashaka Gumti	II	NP		1991	673,100				
Kainji	II	NP		1979	538,200				
Kamuku	II	NP		1936	112,100				
Okomu	II	NP		1999	18,100				
Old Oyo	II	NP		1991	251,200				
<b>SAO TOME AND PRINCIPE</b>									
<b>SENEGAL</b>									
Niokolo - Koba	II	NP, WHS	Department of Natural Parks	1951	913,000		Yes (No means to implement it)		
Lower Casamance	II	NP	Department of Natural Parks	1970	5,000				
Djoudj (bird)	II	NP	Department of Natural Parks	1971	16,000				
The Langue de Barbarie	II	NP	Department of Natural Parks	1976	2,000				
Sine-Saloum		NP	Department of Natural Parks	1978	73,000				
Madeleine Islands	II	NP	Department of Natural Parks	1976	45				
Ferlo-Sud Wildlife Reserve	IV	Wildlife Reserve	Department of Natural Parks						
St. Louis		MPA	Department of Natural Parks						
Reserve ornithologique de Kalissaye Bird Reserve	IV	Bird Reserve	Department of Natural Parks						
Kayar		MPA	Department of Natural Parks						
Joal-Fadiouth		MPA	Department of Natural Parks						
Abéné		MPA	Department of Natural Parks						

## ANNEX F

## PROTECTED AREAS IN WEST AFRICA

Protected Area (shaded PAs have an international border)	IUCN	Type	Mgmt. Institution	Date Estab.	Area (ha)	No. of Staff	Management Plan	Potential/Productive Assets	Involved Institutions
Bamboung		MPA	Department of Natural Parks						
Saloum Delta National park	II	NP	Department of Natural Parks						
Niokolo-Badiar	II		Department of Natural Parks						
Delta Saloum-Niumi			Department of Natural Parks						
Djoudj-Diawling	II		Department of Natural Parks						
Samba Dia Classified Forest	VI	Classified Forest	Department of Natural Parks						
<b>SIERRA LEONE</b>									
Sankan Biriwa (Tingi Hills) Non Hunting Forest Reserve	II	Forest Reserve							
Kangari Hills Non Hunting Forest Reserve	VI	Forest Reserve		1924	8,573				
Tiwai Island Game Sanctuary	IV	Game Sanctuary	Environmental Foundation for Africa		1200				
Outamba-Kilimi National Park	II	National Park		1974	110,900				
<b>TOGO</b>									
Doungou		Reserve			4,350				
Bayémé		Natural Resource Management Area			158				
Amou-Mono		Natural Resource Management Area			12,700				
Togodo-Sud		NP			15,000				
Togodo-Nord		Natural Resource Management Area			10,500				
Galangashie	IV	Faunal Reserve			12,490				
Oti-Kéran		NP			69,000				
Oti-Mandouri		Faunal Reserve			110,000				
Alédjo	IV	Faunal Reserve			765				
Fosse aux Lions	II	NP							
Fazao-Malfakassa National Park	II	NP							
Togodo Faunal Reserve	IV	Faunal Reserve		1952	31,000				
Kéran National Park	II	NP							
Sirka Faunal Reserve	IV	Faunal Reserve							
Abdoulaye Faunal Reserve	IV	Faunal Reserve		1951	30,000				
Djamdé Faunal Reserve	IV	Faunal Reserve							

## GUIDELINES & DEFINITIONS

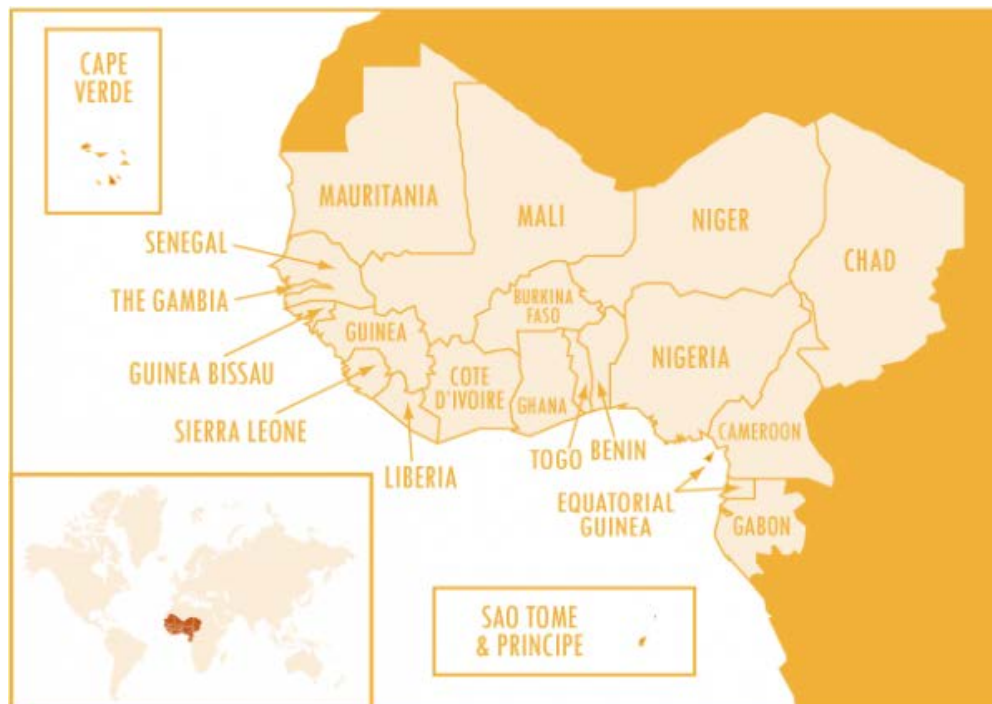
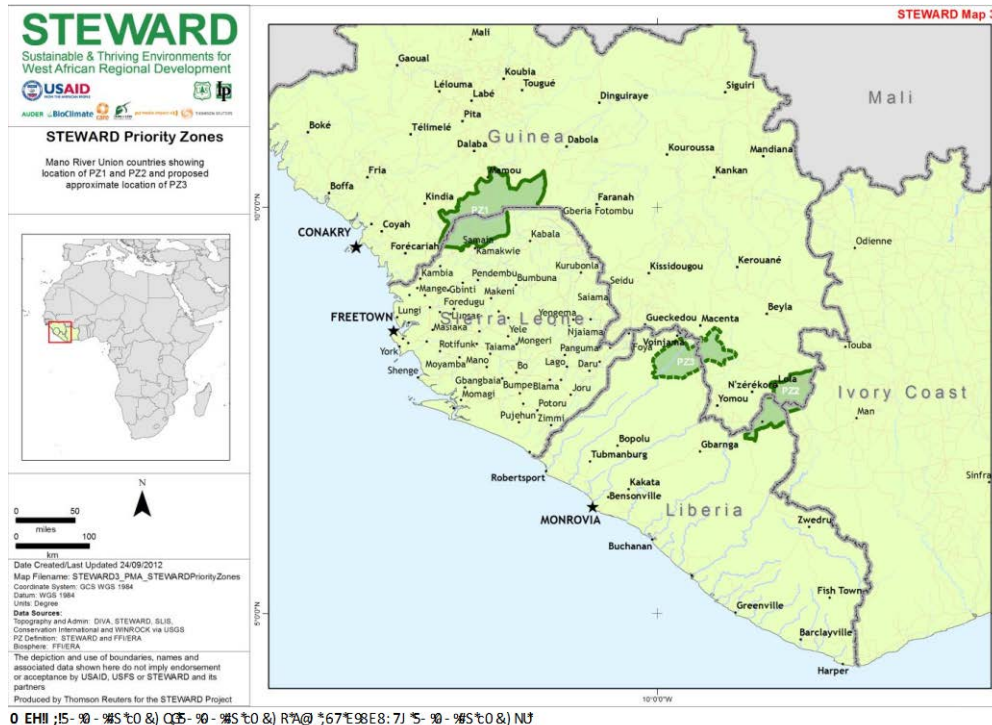
Protected Area	Name of the protected area
<b>Type</b>	National Park (NP); Forest Reserve (FR); RAMSAR site, UNESCO WH, etc. Use logical definitions; some PAs may be have 2 designations
<b>Mgmt. Institution</b>	Name of the institution responsible for the management/oversight of the PA; Logical abbreviations are acceptable (e.g., E&F, FDA, EPA, etc.)
<b>Established</b>	Date PA was established; if unknown use: Unknown
<b>Area</b>	Area in hectares (if known)
<b>No. of Staff</b>	Number of permanent staff; if unknown type: Unknown
<b>Management Plan</b>	Is there one? Enter: Yes or No; if Yes and the date it was done is known, put the date in parentheses; e.g. Yes (2010)
<b>Potential/Productive Assets</b>	Use simple logical descriptors: Tourism (TOUR), Watershed (WATER), Wetland (WETL), Natural Disaster Prevention (NDPR), etc. (use word wrap in the cells)
<b>Involved Institutions</b>	List names of supporting organizations, projects, NGOs, etc.
<b>NOTE 1:</b> For transboundary protected areas, and/or PAs that have a national border as a limit, shade the entire row	
<b>NOTE 2:</b> If there are no known protected areas in a country, enter: None known in the Protected Area cell	

## ACRONYMS USED IN THE TABLE

<b>UNESCO-BR</b>	<b>UNESCO Biosphere Reserve</b>
WHS	World Heritage Site
<b>BENIN</b>	
MEPN CENAGREF AVIGREF	Village Associations for the Management of Wildlife Reserves
GEF	Global Environment Facility
ONAB	National Forest Office
DGFRN	General Directorate for Forestry and Natural Resources
<b>BURKINA FASO</b>	
PGET	Planning Trans-border Ecosystems Management
PAGEN BF	Projet de Partenariat pour l'Amélioration de la Gestion des Ecosystèmes Naturels au Burkina Faso
<b>CHAD</b>	
RAPAC	Réseau des Aires Protégées d'Afrique Centrale
PAPACO	Programme Aires Protégées d'Afrique du Centre et de l'Ouest
HCNE	National High Committee for the Environment
<b>LIBERIA</b>	
LCIP	Liberia Community Infrastructure Program
<b>MALI</b>	
DNCN	National Office for the Conservation of Nature
MEA	Ministry of Agriculture and Sanitation
<b>MAURITANIA</b>	
WCPA	World Commission on Protected Areas
<b>SENEGAL</b>	
MPA	Marine Protected Area



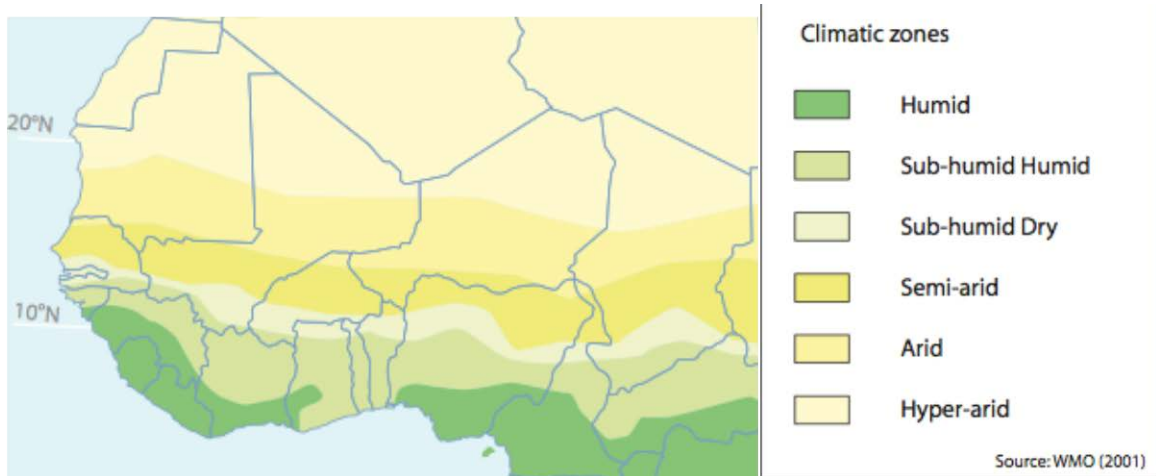
# ANNEX G MISCELLANEOUS MAPS





Map R-1 Rainfall in West Africa.

Source: Encyclopedia Britannica



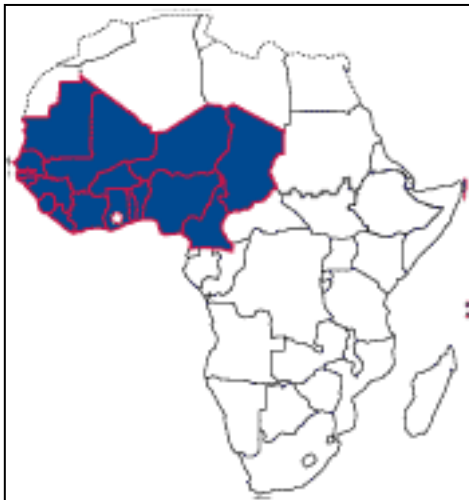
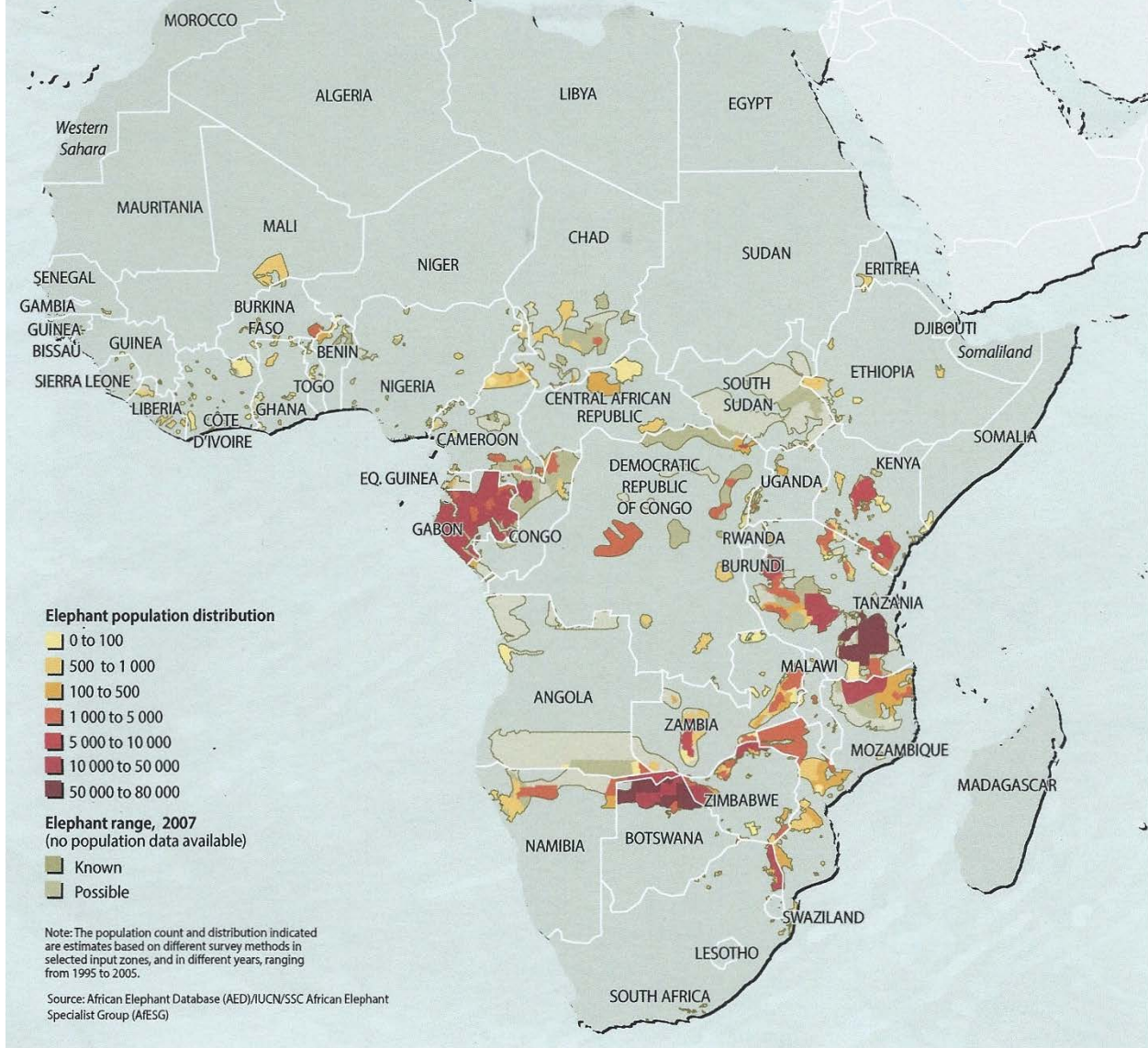
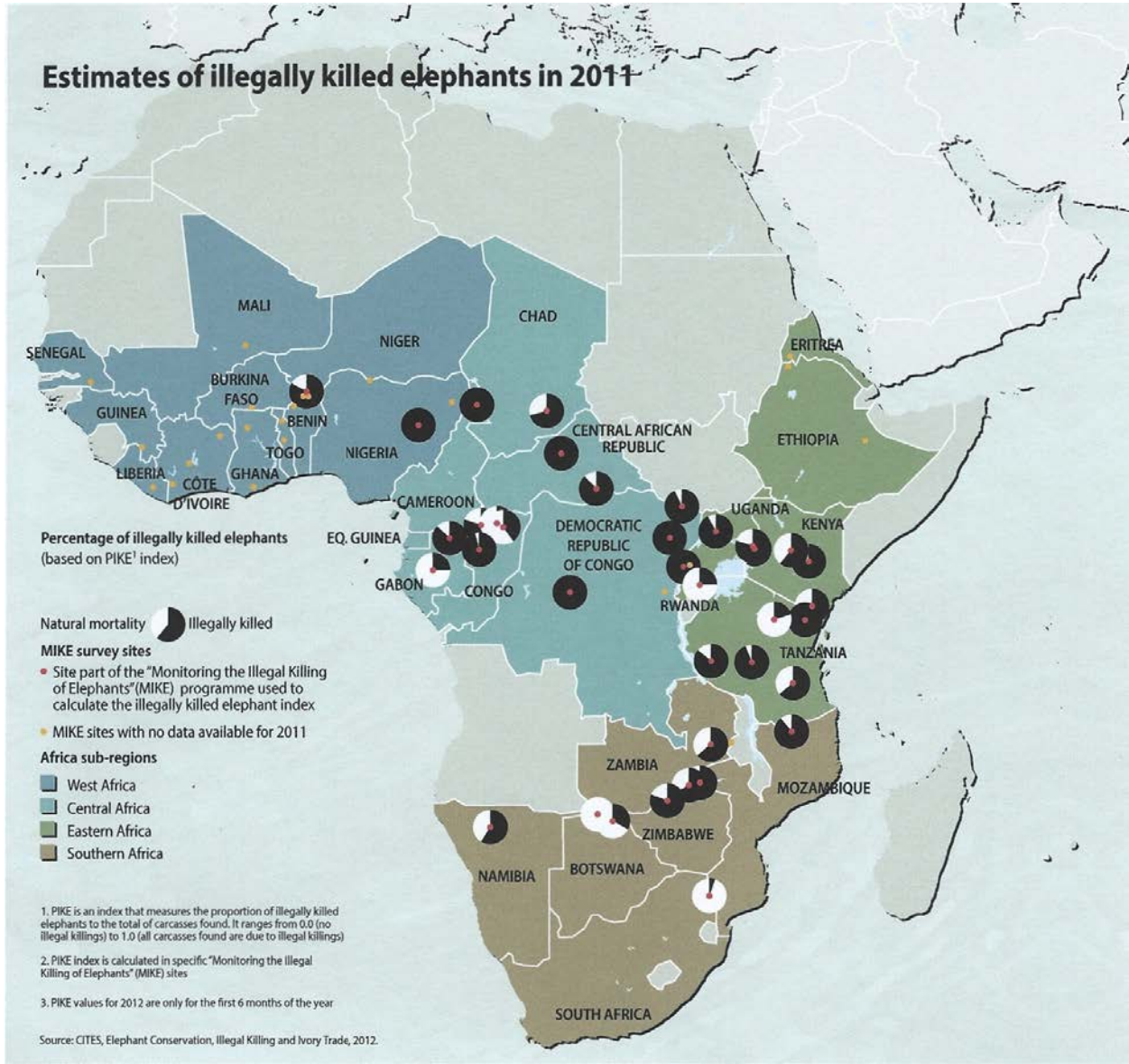




Fig. 1 Map of West Africa. Source: Center for Geographic Analysis at Harvard University 2012.

# African elephant range and population distribution





# ANNEX H

## SIGNATORIES OF ENVIRONMENTAL CONVENTIONS, TREATIES, AND PROTOCOLS IN WEST AFRICA

Convention, Treaty, Protocol Name	COUNTRY																			
	◆ = Signed      □ = Not signed																			
	Benin	Burkina Faso	Cameroun	Cape Verde	Chad	Côte d'Ivoire	Gabon	Ghana	Gambia	Guinea	Guinea Bissau	Liberia	Mali	Mauritania	Niger	Nigeria	Sao Tome/Principe	Senegal	Sierra Leone	Togo
Convention on Biological Diversity (CBD)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Cartagena Protocol on Biosafety	◆	◆	◆	◆	◆	□	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	□	◆	□	◆
Nagoya Protocol on Access to Genetic Resources	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
UN Framework Convention on Climate Change	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

Convention, Treaty, Protocol Name	COUNTRY																			
	◆ = Signed      □ = Not signed																			
	Benin	Burkina Faso	Cameroun	Cape Verde	Chad	Côte d'Ivoire	Gabon	Ghana	Gambia	Guinea	Guinea Bissau	Liberia	Mali	Mauritania	Niger	Nigeria	Sao Tome/Principe	Senegal	Sierra Leone	Togo
(UNFCCC)																				
Kyoto Protocol	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Ramsar Convention on Wetlands of International Importance	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region	◆	□	◆	□	□	◆	◆	◆	◆	◆	◆	◆	□	◆	□	◆	□	◆	◆	◆
Convention to Combat Desertification (CCD)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Convention on the Control of	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	□	◆	□	◆



Convention, Treaty, Protocol Name	COUNTRY																			
	◆ = Signed      □ = Not signed																			
	Benin	Burkina Faso	Cameroun	Cape Verde	Chad	Côte d'Ivoire	Gabon	Ghana	Gambia	Guinea	Guinea Bissau	Liberia	Mali	Mauritania	Niger	Nigeria	Sao Tome/Principe	Senegal	Sierra Leone	Togo
Transboundary Movements of Hazardous Wastes and their Disposal																				
Convention on Fishing and Conservation of Living Resources of the High Seas	□	◆	□	□	□	□	□	□	□	□	□	□	□	□	□	◆	□	◆	◆	□
Convention on Long-Range Transboundary Air Pollution (EU Convention)	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Convention on the Conservation of Migratory Species of Wild Animals	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	□	◆
Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter	□	□	□	◆	□	◆	◆	□	□	□	□	□	□	□	□	◆	□	□	□	□
Convention on the Protection and Use of Transboundary Watercourses and	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□



Convention, Treaty, Protocol Name	COUNTRY																			
	◆ = Signed      □ = Not signed																			
	Benin	Burkina Faso	Cameroun	Cape Verde	Chad	Côte d'Ivoire	Gabon	Ghana	Gambia	Guinea	Guinea Bissau	Liberia	Mali	Mauritania	Niger	Nigeria	Sao Tome/Principe	Senegal	Sierra Leone	Togo
from Ships																				
International Convention for the Conservation of Atlantic Tunas (ICCAT)	□	□	□	□	□	◆	□	◆	□	◆	□	□	□	◆	□	◆	◆	◆	◆	□
International Convention for the Prevention of Pollution of the Sea by Oil (Members of Int Maritime Org)	◆	□	◆	◆	□	◆	◆	◆	◆	◆	◆	◆	□	◆	□	◆	◆	◆	◆	◆
International Convention for the Regulation of Whaling (ICRW)	□	□	□	□	□	□	□	□	□	◆	□	□	□	□	□	□	□	◆	□	□
International Treaty on Plant Genetic Resources for Food and Agriculture	◆	◆	◆	□	◆	◆	◆	◆	□	◆	◆	◆	◆	◆	◆	□	◆	◆	◆	◆
International Tropical Timber Agreement, (ITTA)	□	□	◆	□	□	◆	◆	◆	□	□	□	◆	□	□	□	□	□	□	□	◆
Rotterdam Convention on the Prior Informed Consent	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	□	◆	□	◆

Convention, Treaty, Protocol Name	COUNTRY																			
	◆ = Signed									□ = Not signed										
	Benin	Burkina Faso	Cameroun	Cape Verde	Chad	Côte d'Ivoire	Gabon	Ghana	Gambia	Guinea	Guinea Bissau	Liberia	Mali	Mauritania	Niger	Nigeria	Sao Tome/Principe	Senegal	Sierra Leone	Togo
Procedure for Certain Hazardous Chemicals and Pesticides in International Trade																				
Stockholm Convention Stockholm Convention on Persistent Organic Pollutants	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
United Nations Convention on the Law of the Sea (Niger signed but not ratified)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

# ANNEX I

## TRANSHUMANCE IN WEST AFRICA – A VIABLE SUSTAINABLE PASTORAL PRACTICE GONE WRONG?

### PASTORALISM – A WORLD-WIDE PRACTICE

It is estimated that pastoralists globally number between 100-200 million. If the millions practicing extensive agro-pastoralism were to be included the number will rise sharply. Pastoralism can be defined as a system of production in which humans and domestic livestock live in a symbiotic relationship, making use of natural pastures on an extensive basis, whereby the human population gains greater part of its support from the animals kept, both directly from milk, meat, hides and indirectly through exchange of livestock products for other goods (Toulmin, 1983). Some recent analyses and reports have sought to bring out the positive aspects of pastoralism, for example, providing a highly efficient way of managing the sparse vegetation and relatively low fertility of dryland soils. These proponents further argued that although mobile pastoralism is the most viable form of production and land use in most of the world's fragile drylands (Anon; [www.iucn.org/wisp/pastoralist\\_portal/pastoralism](http://www.iucn.org/wisp/pastoralist_portal/pastoralism)). Pastoralism is often listed as one of the major livestock production systems in Africa (Dixon *et al.*, 2001). The pastoral systems occupy 346 million ha (14% of the land area of Africa). In East Africa, 90% of meat consumed comes from pastoral herds and, in Kenya alone, the sector is estimated to worth US\$800 million.

Transhumance, a sub-type of pastoral system, is characterized by regular movement of herds among fixed points in order to exploit seasonal availability of pastures. In West Africa, another practice, called nomadism, associated with livestock producers who typically do not grow crops but depend on the sale or exchange of animals and their products to obtain food, and undertake movements that are opportunistic to follow pasture resources in a pattern that varies from year to year, is also sometimes loosely referred to as transhumance.

**From an age-old economic viable practice to a current menace posing environmental and security threat:** Although the practice of transhumance has been around for centuries, with relatively peaceful accommodation with crop farmers along migrated routes and those in the temporary settled areas, through exchanges of products and foods, the practice in recent times has resulted in severe conflicts in most parts of West Africa wherever migrating herds pass or attempt to settle. Conflicts have usually centered on the destruction of crop farms, pollution of rivers and ponds serving as source of drinking water for communities and alleged improper behavior of herders. Afforestation programs have failed in some countries because of destruction of young trees by grazing animals and chopping of tree branches by herders to feed migratory animals. Almost all coastal countries in West Africa (Cote D'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroun) with borders with landlocked dry countries with large pastoral herds have experienced conflicts between resident communities with cattle herders from the northern countries

(mainly Chad, Niger, Mali, Burkina Faso, northern Cameroun). In some cases transhumant herds cross more than one country border in order to look for feed and water. Violent clashes between herders and local residents which sometimes require local enforcement agencies interventions to restore peace have led to loss of humans and cattle. In one such incident in Northern Ghana, as many as 20 people were killed and several properties destroyed. Security of districts and regions have been threatened through clashes between armed herders and local residents to the scale that national security personnel have had to be deployed to such areas.

**Underlying causes for increased tensions and clashes:** Reasons for the expanded migratory herds and longer stay periods at the areas of migration are believed to include deteriorating feed and water situations in the counties or regions of origin of herds. Human population growth and climate variability and climate change are said to be contributing to the reduction of feed and water resources in the areas where the animals originate. Herders with their animals therefore undertake transhumance into more feed and water-endowed countries in the south, where similar human population growth pressures and climate change variability are being experienced. Further south in the sub-humid and forest zone more intensive agricultural farming and growing of tree crops have reduced areas available for grazing. Transhumant livestock therefore encroach on planted farms. Furthermore, the excessive cutting of trees for farming and other commercial purposes has also reduced tsetsefly habitats and tsetseflies, and thereby allow trypano-susceptible ruminants to live in these areas for longer periods without a threat of infections with trypanosomiasis. Based on the above mentioned trends, opponents of transhumance argue that herders should not settle in their areas, and should bear the cost of damage done to their crops when it occurs. For the proponents of pastoralism and by extension transhumance, a counter argument is that many social pressures have been put on pastoral systems, including encroachment on rangelands in low-medium potential rainfall areas by cropping farmers, and blocking of traditional migratory routes previously used by migratory herds. It is the position of such proponents that perhaps the state of the art findings on the viability of pastoralism, and its positive influence on drylands ecosystems, are not communicated effectively to decision makers. It is however acknowledged that alternative policy options will still need to be formulated, and that key policy gaps include regulation of transhumance, production investment, mobile service delivery, conflict resolution, decentralization and democracy adapted to mobile populations, alternative and complementary income generation opportunities, etc. The underlying assumption and logic for the need of policy options towards pastoralism as a system of production is that pastoral areas are not isolated from national and international political and socio-economic aspects and in the planning of development programmes, the interactions between the pastoral and broader sectors must be taken into account to achieve a holistic approach (Johnson, 1992; Bonfiglioli, 1992).

**ECOWAS to the rescue?:** In West Africa, ECOWAS has attempted to address this region-wide problem as part of its efforts to encourage free movement of people and goods in the member states. A transhumance Protocol WAS developed by ECOWAS and presented to stakeholders and in 1998 was adopted by Heads of State of Decision A/DEC.5/10/98 regulating transhumance between ECOWAS member States. The relevant Article (3) on the legality of cross-border transhumance states that “ *The crossing of land borders for the transhumance of cattle, sheep, goats, camels and donkeys according to conditions defined by this Decision is authorized between all the countries of the Community.* An International Certificate of Transhumance was also subsequently adopted, provisions which established the Key specifications common to bi-lateral agreements for cross-border mobility as: Essential documents required to cross the borders are specified – e.g. passport, vaccination and animal health certificates; Time periods for mobility are specified – e.g. between November and April, and not

exceeding a period of 30 days; Entry and exit points and livestock corridors along which animals must travel are specified; Conflict resolution conditions are specified.

In spite of the Protocol, each year, cattle migration is hindered by administrative red tape and serious incidents in pastoral areas due to failure to comply with national and regional regulations, damage to fields and harvests, grazing in protected areas and loss of animals. This permanent tension between transhumant livestock breeders and inhabitants in pastoral areas leads sometimes to bloody clashes. To reduce the tension and clashes Countries in the block are encouraged to develop and implement policies and strategies aimed to support transhumant pastoralism while creating conditions for change to sedentary agro-pastoralism: draw up and harmonize pastoral codes taking account of regional aspects, strengthen capacities of livestock farmers by encouraging creation of professional farmer organizations, training in integrated management of pastures and herds and improving livestock production systems, in particular in the direction of crop-livestock integration, promote teaching and research on how to improve pastoral systems, and promote access to agricultural services (advice, markets, funding) and basic social services (health, education, access to clean water). <http://www.oecd.org/swac/publications/38402714.pdf>