



# REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: LDCF

For more information about GEF, visit [TheGEF.org](http://TheGEF.org)

## PART I: PROJECT INFORMATION

Project Title: Integrating Climate Change into Environment and Sustainable Land Management Practices (ICE-SLM)			
Country(ies):	Angola	GEF Project ID: <sup>1</sup>	5231
GEF Agency(ies):	AfDB	GEF Agency Project ID:	
Other Executing Partner(s):	Ministério do Ambiente (MINAMB)	Submission Date:	06/14/2016
GEF Focal Area (s):	Climate Change	Project Duration(Months)	36
Name of Parent Program (if applicable):	<ul style="list-style-type: none"> <li>➤ For SFM/REDD+ <input type="checkbox"/></li> <li>➤ For SGP <input type="checkbox"/></li> <li>➤ For PPP <input type="checkbox"/></li> </ul>	Project Agency Fee (USD):	419,540

### A. FOCAL AREA STRATEGY FRAMEWORK<sup>2</sup>

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount (USD)	Co-financing (USD)
CCA-1	Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas.	Output 1.1.1: Adaptation measures and necessary budget allocations included in relevant frameworks.	LDCF	578,313	1,807,826
CCA-2	Outcome 2.2: Strengthen adaptive capacity to reduce risks to climate-induced economic losses.	Output 2.2.1: Adaptive capacity of national and regional centers and networks strengthened to rapidly respond to extreme weather events.	LDCF	1,104,053	1,643,478
CCA-3	Outcome 3.1: Successful demonstration, deployment and transfer of relevant adaptation technology in targeted areas.	Output 3.1.1: Relevant adaptation technology transferred to targeted groups.	LDCF	2,733,844	4,108,696
<b>Total project costs</b>				<b>4,416,210</b>	<b>7,560,000</b>

<sup>1</sup> Project ID number will be assigned by GEFSEC.

<sup>2</sup> Refer to the Focal Area Results Framework and LDCF/SCCF Framework when completing Table A.

## B. PROJECT FRAMEWORK

<b>Project Objective: Strengthening climate change into national development activities and promoting adaptive measures and practices</b>						
<b>Project Component</b>	<b>Grant Type</b>	<b>Expected Outcomes</b>	<b>Expected Outputs</b>	<b>Trust Fund</b>	<b>Grant Amount (USD)</b>	<b>Confirmed co-financing (USD)</b>
1. Governance, Capacity Building and Institutional Strengthening	TA	1.1. Climate change policy strategy and legislation reviewed and revised to ensure applicability to various sectors	1.1.1. Climate change adaptation is introduced into environmental national policy, strategy and legislation as part of the NAP process	LDCF	300,000	798,000
			1.1.2. Sectoral Climate Risk Assessment guidelines are developed and used by relevant Ministries	LDCF	300,000	756,000
			1.1.3. Institutional capacities and width of action of the Department of Vulnerabilities and Climate Change (DVCC) are strengthened	LDCF	400,000	840,000
		1.2. Promotion of public consultation and participation in climate change and sustainable natural resources management	1.2.1. Development of an operational training manual are used by government officials and staff	LDCF	300,000	440,000
			1.2.2. Stakeholders and institutions are consulted and their capacity enhanced	LDCF	200,000	666,000
2. Promoting climate adaptation measures into SLM practices in four demonstrations sites (Namibe, Huambo, Kuando Kubango and Cabinda)	Inv	2.1. Dissemination and adoption of good SLM practices and technologies by relevant economic sectors in the pilot demonstration sites	2.1.1. An efficient framework for multi-stakeholders' collaboration is established and climate change adaptation is integrated in planning and management tools at the local level	LDCF	300,000	540,000
			2.1.2. Capacities on SLM and climate change adaptation practices / technologies are strengthened through demonstration projects and efficient learning cycle	LDCF	1,000,000	1,040,000
		2.2. Enhanced enabling environment in support of climate change adaptation technology transfer	2.2.1. Lands managed using adaptive agro-forestry techniques provide alternative resources and incomes, to reduce land degradation and to increase the resilience of the communities	LDCF	800,000	830,000
			2.3.1. Integrated adaptive management plans, especially for	LDCF	400,000	510,000

		2.3. Adoption of adaptive management plans in the agro-forestry sector	forest fire prevention, are developed and sustainable practices are operational in over 2,000 ha of the forests in the pilot sites			
3. Knowledge management coordination, and monitoring and evaluation	TA	3.1. Knowledge and experience sharing and dissemination of lessons learnt and best practices	3.1.1. Coordination mechanisms are established to support knowledge management and coordination with ongoing projects	LDCF	50,000	210,000
			3.1.2. Multimedia materials (including video) are published on project experience/best practices and lessons learned are disseminated	LDCF	50,000	420,000
			3.1.3. Project stakeholders participate in national and international events on climate change adaptation	LDCF	50,000	105,000
		3.2. Implementation of M&E systems	3.2.1. Effective M&E plans and systems are established and M&E documents produced	LDCF	50,000	105,000
Subtotal					4,200,000	7,260,000
Project management Cost (PMC) <sup>3</sup>				LDCF	216,210	300,000
<b>Total project costs</b>					4,416,210	7,560,000

#### C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME (USD)

Sources of co-financing	Name of co-financier	Type of co-financing	Co-financing amount (USD)
GEF Agency	AfDB	Soft Loan	7,560,000
<b>Total Co-financing</b>			7,560,000

#### D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in USD)		
				Grant Amount (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
AfDB	LDCF	Climate Change	Angola	4,416,210	419,540	4,835,750
<b>Total Grant Resources</b>				4,416,210	419,540	4,835,750

- DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? No

<sup>3</sup> PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

## **PART II: PROJECT JUSTIFICATION**

### **A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF**

Changes made during the project design, from the original PIF, only concern Component 1. These changes relate to institutional arrangements, resulting from a thorough full consultative process undertaken with stakeholders in July and August 2015 during project preparation. The table below presents those changes:

<b>Original description at PIF stage</b>	<b>Change from the original PIF</b>
As part of Component 1, it was planned that a Climate Risk Management Unit (CRMU) would be created as part of this project. The institutional capacities and scope of action were supposed to be provisioned to manage climate-related risks.	The relatively newly created (2014) Ministério do Ambiente (MINAMB) <sup>4</sup> heads a Climate Change Office <sup>5</sup> , which is made up of two departments: the Department for Drought and Desertification and the Department of Vulnerability and Climate Change. The Department of Vulnerability and Climate Change (DVCC) will henceforth be the subject of every action previously intended to be that of the Climate Risk Management Unit.
At the time of the formulation of the PIF, the NAP process was not considered as a priority and hence not mentioned.	The launch of the NAP process in Angola in July 2015 creates a significant need in the country to ensure its proper implementation. Various activities have been developed since the PIF to contribute to the success of the NAP process.
In the PIF, the addition of the project is justified vis-à-vis the baseline scenario, the implementation of the Environment Sector Support Project (ESSP or <i>PASE</i> in Portuguese)	If no significant baseline investments are planned through ESSP, it is still considered as the baseline scenario but not exclusively. The project builds on linkages to other ongoing and planned investments in the country.

---

<sup>4</sup> Presidential Decree n° 85/14 of April 24, 2014

<sup>5</sup> Gabinete de Alterações Climáticas, Presidential Decree n° 85/14 of April 24, 2014, Article 3/6 & 22

## A.1 National strategies and plans

Angola is the fourth largest country in Africa, covering an area of approximately 1,246,700 km<sup>2</sup>. Angola has a population of 25.789 million inhabitants<sup>6</sup>, with an annual growth rate of 3.1% in 2014. The country's economy is mainly based on exports from the oil sector and from extractive industries.

Since the country's independence in 1975, a protracted armed conflict ravaged the country destroying most of its infrastructure and agricultural production. After 27 years of a conflict that ended in 2002 – resulting in one million killed people and over four million displaced people – political stability and peace set the ground for an economic boom fueled by increased oil production. With a GDP per capita of USD 7,546 in 2014<sup>7</sup>, Angola is considered an upper middle income country; however, a third of its population lives in poverty. Oil represents 95% of all exports and accounts for 79.5% of fiscal revenues.

Food insecurity and undernourishment remain common challenge for millions of Angolans. At the macro-level, these economic successes from extractive industries have benefited the country's overall GDP growth, but they have provided few positive impacts on the livelihoods of most average Angolans or the agriculture sector that support them. Besides, the economy of the country is vulnerable to oil prices fluctuations.

According to the National Development Plan (2013-2017) and the 2005 National Poverty Reduction Strategy (PRS)<sup>8</sup>, the Government of Angola intends to diversify the economy by developing the agricultural sector with the objective of tackling the joint challenges of poverty and development. The PRS identifies four specific objectives in this sector: (i) strengthening smallholder farming productivity and competitiveness to reduce food insecurity (ii) supporting local markets, (iii) sustainably managing natural resources for mitigation and adaptation to climate change impacts, (iv) capacity building of public institutions relevant to the sector.

In terms of exposure to climate variations, through the last decades, Angola has experienced an increase in the surface temperature – between 0.33°C and 1.5 °C per decade depending on the area – and a decrease in the annual rainfall – of about 2 mm per month between 1960 and 2006<sup>9</sup>. According to the 2011 Angolan National Adaptation Program of Action<sup>10</sup>, the country will face more and more a certain number of issues due to climate change such as an expansion of the semi-arid and arid areas, sea-level rise, floods, soil erosion, more extreme weather events, changes in the frequency and intensity of winds, increased rainfall in the northern part of the country, changes in seas and lakes temperatures, and disruptions of marine currents.

The sectors impacted will be – and in some cases already are – agriculture and fisheries, food security, human settlements and infrastructure (especially along the coastal zone), human health and water resources. National adaptation to climate change is essential for the country in order not to “compromise the efforts of current economic growth, as well as sustainable development”<sup>11</sup>. Angola has therefore established different national plans and strategies, related to climate change issues. The following are worth mentioning: the National Strategy for Climate Change (2011), the National Development Plan 2013-2017, the Energy and Water Sector Action Plan 2013-2017, the National Afforestation and Reforestation Strategy (2010), the Strategic Plan of Disaster Risk Management (2011), the National Energy Security Strategy and Policy (2011), the Strategic Plan for Urban Waste Management (2012), the National Action Programme to Fight Desertification (2014), the launch of the National Adaptation Plan (NAP) in July 2015; and the Intended Nationally Determined Contribution (2015)<sup>12</sup>. Furthermore, the country has

---

<sup>6</sup> UNDP: Human Development Report 2015

<sup>7</sup> Ibid.

<sup>8</sup> [http://planipolis.iiep.unesco.org/upload/Angola/Angola\\_ECP.pdf](http://planipolis.iiep.unesco.org/upload/Angola/Angola_ECP.pdf)

<sup>9</sup> <http://unfccc.int/resource/docs/napa/ago01.pdf>

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

<sup>12</sup> <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Angola/1/INDC%20Angola%20deposito.pdf>

developed the Strategy of Long-term Development for Angola 2025, which aims, among other things, “to guarantee the sustainable use of the environment, natural resources and to fight desertification.”

Soil erosion is among the priority issues related to climate change. The occurrence of more intense rain is worsening the degradation of the soils. More soil erosion has implications on sedimentation in river basins, leading to a potential decrease in river fisheries, an increase in siltation, loss of arable soil and upland flooding, as well as, ultimately, impacts on coastal ecosystems. The increase in the frequency and severity of drought episodes is exacerbating land degradation. This has an impact on crop yields and could lead to increased deforestation for expansion to make up for lost crops. Agro-climatological analyses<sup>13</sup> reveal a decrease in the length of the rainy seasons in some locations, with frequent records of prolonged episodes of droughts during the rainy season.

These scientific results have been verified with farmers’ feelings during the PPG. These rapid changes in the climatic conditions need to be tackled in the rural sector, by integrating an adaptation process into national development activities and by promoting adaptive measures and practices in rural areas. Additionally, Angola merely uses about 10 to 14% of its arable land. The fact that most farmers practice traditional subsistence farming and the common deforestation that accompanies such agricultural practices must be addressed.

The following issues have been identified as the most pressing in the agricultural sector<sup>14</sup>:

- A great scarcity of basic food products;
- The fragmentation of small-scale farms;
- An inefficient organization of entrepreneurial-based holdings;
- The deficient and disorganized distribution circuits of farm and fisheries produce;
- An inadequate organization of the fisheries sector and associated activities;
- The weakness of the economic and social infrastructures;
- The absence of rural extension structured services.

Priority adaptation responses have been identified<sup>15</sup> and confirmed in the recent literature<sup>16</sup> and detailed in recent government planning documents related to climate change: (i) promote alternative renewable energies to avoid deforestation; (ii) promote SLM for increased agricultural yields; (iii) ensure basis access to health services and health monitoring; (iv) study the vulnerability of fishing activities in relation to modifications of climate and currents; (v) extend the electricity grid to rural areas; (vi) revise sectoral laws for proactive adaptation; (vii) create an early warning system for flooding and storms; (viii) establish a national institutional mechanism for adaptation planning and mainstreaming; (ix) control soil erosion through organic methods; (x) diversify crops to less climate sensitive cultures; (xi) complete a technology needs assessment; (xii) introduce varied adaptation approaches according to local conditions; (xiii) set up climate monitoring and data management system; (xiv) study implications of changes in disease patterns (animal) and availability of water for livestock; (xv) and increase water availability through village-level wells and boreholes.

The 2015 Intended Nationally Determined Contribution (INDC) of Angola to the COP-21 in Paris prioritizes the implementation of adaptation measures in the following main sectors<sup>17</sup>: (i) agriculture; (ii) coastal zones; (iii) land-use, forests, ecosystems and biodiversity; (iv) water resources; and (v) health.

---

<sup>13</sup> <http://unfccc.int/resource/docs/napa/ago01.pdf>

<sup>14</sup> Ibid.

<sup>15</sup> Ibid..

<sup>16</sup> <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Angola/1/INDC%20Angola%20deposito.pdf>

<sup>17</sup> Ibid.

Furthermore, among the “Unconditional Adaptation options,” the present project is clearly stated. It is also important to note that among the “Conditional Adaptation options,” agriculture is ranked second among the key sectors.

The 2025 objectives set forth in the Angola Development Strategy for 2000 – 2025 are the following: (i) promote employment and enhance human resources; (ii) build a fairer and more equitable society; (iii) guarantee the sustainable use of the environment natural resources and fight desertification; and (iv) build competitiveness and develop the private sector. The intention is to focus on basic infrastructure, such as access roads, energy production, technical networks of human settlements, new human settlements, structuring of general, technical, vocational and higher education, structuring of the health, telecommunications and agriculture sectors.

These priorities are consistent with the National Medium-term Development Plan for the Agricultural Sector 2013-2017 (PDMPSA), which establishes the following strategic objectives:

- Promote a wider campaign of professional training and transfer of technology to optimize agricultural production and productivity.
- Implement a process of agrarian transformation and rural development based on family farming and the cooperativeness and in public-private partnerships.
- Establish a mechanism for tight coordination and synergies between different sectors and other stakeholders in rural areas, emphasizing society participation in the national development process.
- Contribute to the process of industrialization of the country. Currently agriculture is predominantly a subsistence activity for millions of small farmers who plant an average of 1.4 ha per family in two or three plots of land. Agricultural practices are deeply linked with poverty in these rural areas and lack of access to knowledge for better land management practices. Current practices are affecting natural resources of the country.

Angola has finally initiated the process to develop its National Adaptation Plan (NAP) in July 2015<sup>18</sup> with the support of the GEF-funded NAP Global Support Programme (NAP-GSP). The programme aims to facilitate effective medium- to long-term climate change adaptation planning as well as budgeting planning. This programme is based on three main pillars:

- i. Institutional support;
- ii. Technical support;
- iii. Knowledge brokering.

The project is not only consistent with the objectives of the NAP process, but is complementary to the NAP-GSP since it will enable to substantiate it in the agricultural sector. Also, the Government of Angola has identified food security, infrastructure development, and promotion of green areas and growth of industrial sectors as key development priorities for the country, to be mainstreamed within the NAP process. Viable opportunities for the NAP process have been identified in several sectors such as fisheries, oil, economy, transport, industry and geology.

In 2016, the NAP process will include a high level briefing for decision makers and with long-term planning led by the Ministério do Ambiente (MINAMB). The Department of Vulnerability and Climate Change (DVCC) of MINAMB is crucial for the implementation of the NAP process as the central government body responsible for the coordination, development, implementation and enforcement of environmental policies, particularly in the areas of climate change adaptation. It will hence play a key role in the implementation of the project.

---

<sup>18</sup> <http://www.adaptation-undp.org/angola-launches-their-nap-process>

## **A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities**

This project has been designed in compliance with LDCF guidelines and is in line with the updated Results-Based Management Framework for the LDCF and SCCF (GEF/LDCF.SCCF.9/Inf.4, October 20, 2010).

The project is also in line with Objective 1 of LDCF/SCCF Adaptation to Climate Change focal area aiming at “reducing vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global levels,” with Objective 2 aiming at “increasing adaptive capacities to respond to the impacts of climate change, including variability at local, national, regional and global levels” and with Objective 3 aiming at “promoting transfer and adoption of adaptation technology.” The links to expected outcomes in the LDCF/SCCF Focal Area Strategy Framework also include Outcome 1.1, “Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas,” and Outcome 3.1, “Successful demonstration, deployment and transfer of relevant adaptation technology in targeted areas.”

## **A.3 The GEF Agency’s comparative advantage**

The AfDB has proven experience in preparing, financing, and managing investment projects with SLM components linked to climate change and promotes the inclusion of integrated sustainable natural resources management and climate change in Country Strategy Papers (CSP). The Bank has successfully financed more than 1,000 projects in adaptation (and mitigation) projects in the agriculture and agro business sector, from the Niger basin to the PISEAU in Tunisia, and in Egypt, Malawi and Gambia<sup>19</sup>.

The experience developed in Malawi for the project entitled “Climate Adaptation for Rural Livelihoods and Agriculture” aiming at improve resilience to current climate variability and future climate change by developing and implementing adaptation strategies and measures that will improve agricultural production and rural livelihoods (GEF ID 3302)<sup>20</sup> and other similar programs will be applied in the present case as well.

Knowledge products have also been produced as a result of earlier interventions and these can be adapted to the local situation in Angola to maximize the impact of the resources.

The co-financed activities are complementary in terms of location as well as knowledge generation.

The AfDB is aware that climate change could reverse the progress achieved in Africa regarding economic growth, poverty reduction, and gender equality. It has indeed undertaken a program in order to climate-proof its investment portfolio and to integrate climate change adaptation and mitigation into its investment due diligence and project design. On April 29<sup>th</sup> 2015, the Bank launched its Climate Risk Management and Adaptation Strategy (CRMA),<sup>21</sup> which outlines its support to climate-proofing investments through policy, legal, and regulatory reforms, and knowledge generation capacity building. The Bank is also supporting the Climate Information for African Development Program (ClimDev Africa) to generate useful information for national environmental policies.

## **A.4. The baseline scenario**

---

<sup>19</sup> [http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AfDB\\_and\\_GEF\\_-\\_A\\_Successful\\_Partnership\\_to\\_Achieve\\_Transformational\\_Change\\_in\\_Africa.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AfDB_and_GEF_-_A_Successful_Partnership_to_Achieve_Transformational_Change_in_Africa.pdf)

<sup>20</sup> [https://www.thegef.org/gef/project\\_detail?projID=3302](https://www.thegef.org/gef/project_detail?projID=3302)

<sup>21</sup> [http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Climate%20Risk%20Management%20and%20Adaptation%20Strategy%20\\_CRMA\\_%20\(2\).pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Climate%20Risk%20Management%20and%20Adaptation%20Strategy%20_CRMA_%20(2).pdf)



Agriculture is central to Angola's strategy to ensure food security and poverty reduction. However, the country has little experience dealing with adaptation to climate change in general, and in the agricultural sector in particular. With its global perspective, GEF is the leading body in the very new area of adaptation to climate change and well positioned to provide knowledge and institutional experience gained from its various programs on adaptation. It is essential for Angola to introduce adaptation into its development decision making process as decided with the launch of the NAP process in July 2015.

AfDB would be the implementing agency for the proposed project. AfDB can bring its expertise and know-how in a wide range of aspects related to project management, rural development, adaptation, etc. One of the solutions to the climate vulnerability of Angola's rural sector is to implement adaptation measures combining technical measures to strengthen the resilience of the farmers to climate change impacts such as soil erosion, to integrate climate risks in sector planning process and to encourage behavior change. These measures should be underpinned by promoting alternative income generating activities to unsustainable practices of exploitation of among others forest resources and adoption / implementation by Angola of institutional, regulatory and policy measures to remove barriers to the adoption of such adaptive practices.

### **Baseline scenario**

In the baseline scenario, the country lacks of proper adaptive responses to tackle climate change in the agricultural sector. Although the country faces a variety of environmental and social problems resulting from a legacy of an extended civil war, which has given rise to widespread poverty, unsustainable utilization of natural resources, weak regulatory and law enforcement frameworks, the efforts focus on the economic development in rural areas, and only on the mitigation of the threats on national natural resources, such as fishing resources or the over-exploitation of plant species. Global environmental concerns such as climate change are, generally speaking, not a priority in current national policy.

The challenges include poverty alleviation and resorbing inadequate human and institutional capacity for planning and implementation of national natural resource policies and national and local level environmental degradation. Indeed, most farmers in Angola are poor and struggle to break out of a cycle of poverty. They also face the challenge of increased emigration rates among young people seeking better lives elsewhere, and the unsustainable use of natural resources. The World Bank reports that 36.6% of the population lived on or below the poverty line of USD \$2 per day in 2008. When disaggregated geographically, the proportion rises to 58.3% of the rural population, compared to 18.7% in urban areas<sup>22</sup>.

The diversification of economic activities and the support to the agricultural sector are national priorities for Angola<sup>23</sup>. In order to escape from the poverty cycle, solutions are proposed in village communities allowing them to develop and invest in new and sustainable forms of agriculture and improved livelihoods and income generation. Angola is among the countries that have a potential to reach production levels that can contribute to the harmonious development of its population. The country has 46.3% of agricultural land, 575,900 km<sup>2</sup>, and only 5.7% of it is exploited<sup>24</sup>. The country has five major ecological zones that correspond to five production systems characteristics, as depicted in the map below:

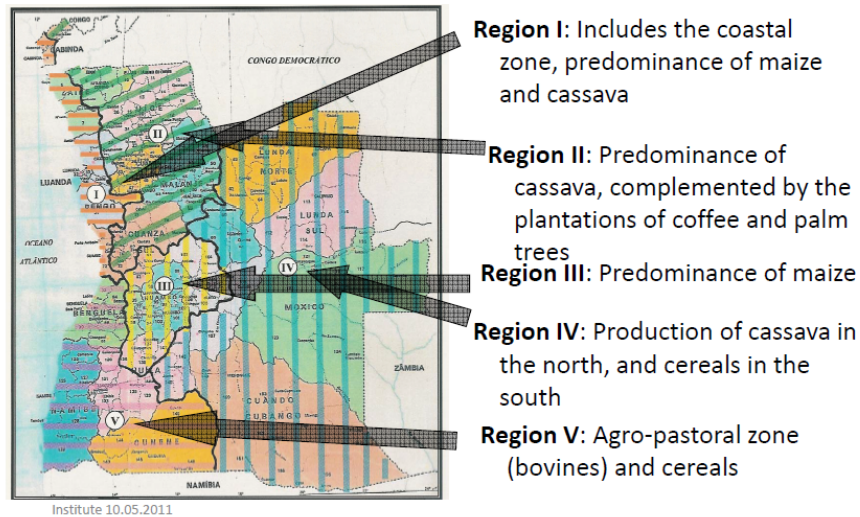
---

<sup>22</sup> <http://www.worldbank.org/en/country/angola/overview>

<sup>23</sup> NDP, "Angola 2015", <http://www.embangola-can.org/pdf/PND.pdf>

<sup>24</sup> <http://www.codespa.org/blog/publicaciones-notas-tecnicas/wp-content/uploads/sites/2/2016/04/rural-market-development-of-quality-seeds-for-small-producers.pdf>.

## Angolan Family Agriculture – Major agricultural regions



Millions of smallholder subsistence farmers plant an average of 1.4 ha<sup>25</sup> per family on two or more parcels of land. Production is based on a single rainy season, which spans from September to December in most of the country, and for the most part uses no mechanization or animal traction, and utilizes relatively low levels of improved inputs such as improved seeds or fertilizer.

Maize is cultivated throughout the country, on a total estimated area of 985,000 ha. The average crop grain yield varies between 25–700 kg/ha on subsistence farms and 1,500–2,500 kg/ha on commercial farms. Maize is predominantly farmed in the central provinces (69%) with remaining areas evenly distributed in the northern provinces (Uíge, Malange, Kwanza Norte, Luanda, Lunda Norte, Zaire, Lunda Sul, Bengo and Cabinda), and southern provinces (Huíla, Kuando Kubango, Namibe, and Kunene). 74 % of total farmland is concentrated on five provinces: Huambo, Huíla, Kwanza Sul, Benguela and Bié. Average yields for maize (500 kg/ha) are very low, due to crop multi-cultivation practices, poor seed quality, low levels of soil fertility, inefficient fertilization, soil acidity, inappropriate sowing seasons and cultural practices<sup>26</sup>.

Another problematic situation in the baseline scenario concerns the forestry sector. The annual forest degradation rate at the national level was estimated at 0.2% from 2000 to 2014 (FRA 2015)<sup>27</sup>. However, no updated data exist because of the absence of a complete forestry inventory. Climate change threatens the degradation of forests and natural resources. The principal underlying causes of land degradation and deforestation can be organized in four categories:

### 1) *Unsustainable agricultural practices*

This includes the use of chemicals fertilizers, slash and burn farming, very little crops rotation, non-adapted techniques in sloping fields. Persistent inadequate soil management practices such as land burning and charcoal production and significantly reducing the fertility of agriculture soil. Soil erosion is observed, as farmers usually don't use adequate cultivation techniques such as terrace and trees plantation. In production areas, there is an

<sup>25</sup> <http://www.fao.org/3/a-mk753e.pdf>

<sup>26</sup> Ibid.

<sup>27</sup> <http://www.fao.org/3/a-i4808f.pdf>

excessive and inappropriate use of chemical fertilizers, which contribute to the impoverishment of the country's arable lands. In a general case, farmers do not use basic agro-ecology techniques such as compost in order to manage the fertility of their soil.

Unsustainable agricultural practices in Angola are directly caused by several factors: non-application of appropriate land management/cultivation techniques, poor provision of extension services, and low level of awareness of both the farmers and local leaders on the economic benefits of soil protection investments. Continued decline in soil fertility is mainly a result of "soil mining", i.e. continued cultivation without replenishing soil fertility with plant nutrients through application of organic manure or/and mineral fertilizers. The long-term consequences are a complete loss of ecosystem function and productivity.

Climate change increase the vulnerability of farmers and hence the feeling of insecurity for crop production and food consumption. Hence farmers tried to reduce their vulnerability and insecurity by using by chemicals and by extending their lands under cultivation.

### *2) Excessive and unmanaged fires and over-exploitation of natural resources by hunters, pastoralists and farmers*

Deforestation and use of fire to clear land for agriculture and grazing threaten the integrity of ecosystems and the quality of soils and water; uncontrolled bushfires cause extensive damage to wide areas of natural and cultivated habitat. This is driven by short-term needs of people for food, resources and income. For example, large areas of forests are burnt rabbits for meat consumption. Communities lack secure access, user rights and management capacity to manage land and resources sustainably, with a longer-term perspective. As mention in the FRA (FAO, 2015)<sup>28</sup>, there is no zoning and land uses planning. Many products have the potential to be harvested sustainably but communities lack the knowledge of the resource base and the capacity to establish, manage and monitor sustainable harvesting regimes. The need for income and lack of sustainable alternative income-generating opportunities drives destructive, illegal activities such as burning large areas for hunting rabbits. All these impacts lead to degradation of lands, making them less resilient and adaptable to climate change and reducing the capacity of soils and forests to sequester carbon. Climate change leads to more fires, which are less controllable (hot temperature).

### *3) Massive cutting of trees for firewood and charcoal production*

Deforestation in Angola is driven by a number of factors (i) the need for charcoal for energy both in the rural and urban areas (ii) forest clearing for expanding agriculture and to compensate for the infertile soils, (iii) forest fires, partly for clearing land for cultivation, and partly for creating grazing lands to compensate for the overgrazing in pasturelands; and, (iv) logging for timber (selected areas). These facts are compounded by poverty, lack of alternative economic activities and high and rapidly growing populations.

Traditional fuelwood and charcoal are the main energy sources for nearly 80% of the population<sup>29</sup>, in particular rural and peri-urban households, and makes up 57% of the country's energy consumption<sup>30</sup>. In 2006, the FAO reported a total annual charcoal consumption of 7.2 million m<sup>3</sup>, equivalent to 0.96 m<sup>3</sup> (100 kg) per capita<sup>31</sup>. Growing charcoal demand and extremely inefficient production methods contribute to progressive deforestation.

At the peak of the war, there were about 4.3 million displaced persons and economic and social infrastructures such as roads, power, water, sanitation, education and health were severely destroyed or rendered non-operational due to the lack of investment and maintenance. The displaced persons resettled and, to satisfy their urgent needs for

---

<sup>28</sup> <http://www.fao.org/3/a-i4808f.pdf>

<sup>29</sup> Angola: Towards an Energy Strategy, IEA, 2006. <https://www.iea.org/publications/freepublications/publication/angola2006.pdf>

<sup>30</sup> National Strategy for Afforestation and Reforestation, MINAGRI (2008).

<sup>31</sup> <http://www.fao.org/docrep/009/j8081e/j8081e00.htm>

firewood for cooking and heating, they cut down extensive areas of forests and tree plantations. As land mines still hamper access to productive land, people are concentrated in land-mine safe areas.

The main charcoal production area in Angola is the Planalto Central, which hosts the subtropical Miombo woodlands. The UNDP GEF project, entitled Promotion of Sustainable Charcoal in Angola through a Value Chain Approach<sup>32</sup>, will address this major problem (the project has been approved in 05/2014 and is currently being formulated).

#### *4) Overgrazing of rangelands.*

Angola's land cover is dominated by arid grasslands, primarily used for grazing. Ranching is mainly practiced in the central part of the country, where most of the land is privately owned. Overgrazing is a problem leading to both bush encroachment and desertification.

These root causes of land degradation are linked – because people are poor and lack alternatives they use unsustainable practices (e.g. cutting trees for fuel wood without replanting) to obtain their immediate needs. Without secure access to land and natural resources there is no incentive or mechanism to plan and invest in good land and resource stewardship for the long-term. Communities are trapped in a cycle of poverty, lack of income and alternatives for generating income and dependence on unsustainable land use and resource management practices. These unsustainable land-use practices and the impacts of climate change put increasing pressure on land.

Land managers therefore have limited knowledge on climate change adaptation techniques, have few incentives for adopting improved practices and have almost no extension services to support their efforts. Consequently, there is poor linkage between climate change adaptation and rural development initiatives (such as SLM). The governmental authorities responsible for planning have limited capacity for cross-sectoral planning.

### **Climate Change vulnerabilities**

#### *Increase in temperatures*

Since the 1960s, there has been an increase in the surface temperature in the area where Angolan territory is located of between 0.33 and 1.5 ° C per decade. There was a higher increase during the cool season, 0.47°C, than in the warm season, 0.22°C, per decade. For the same period, a decrease in the annual rainfall of about 2 mm per month (2.4%), fundamentally in the months of March, April and May and a decrease of 5 mm per month (5.4%) per decade, was observed.

The daily observations of temperature show significant increases in trends of hottest days in all seasons and every night, with the exception of the months of December, January and February. The main trends for temperature increase according to the Global Climate Model refer to 2060 with increases of between 1.2 and 3.2°C and 2090 with increases of about between 1.7 and 5.1°C. Yearly projections also indicate for Angola an increase in temperature of between 20-40% up to 2060 and between 25-65% up to 2090<sup>33</sup>.

#### *Changes of coastal currents*

---

<sup>32</sup> [https://www.thegef.org/gef/project\\_detail?projID=5719](https://www.thegef.org/gef/project_detail?projID=5719)

<sup>33</sup> <http://unfccc.int/resource/docs/napa/ago01.pdf>

Alterations in the Benguela Cold Current may have implications on inshore fishing, on communities and the fishing industry. Alterations in the hydrology of the rivers or changes in water temperature may have implications on river and lake fisheries<sup>34</sup>.

#### *Extreme weather events*

Floods and droughts, in the southern part, are already considered as recurrent phenomena and have caused severe damages. Furthermore, climate change will enhance intensity and frequency of extreme weather events; such as extreme rainfalls or drought episodes, which threaten several sectors essential for the economic growth of the country.

In addition, the most probable effect of climate change on the northern part of the Benguela system are the changes in the frequency and amplitude of tropical intrusions (El Niño), changes in wind-driven currents, changes in wind stress and in the intensity of upwelling, gradual increase in surface temperature of seawater and sea-level, which will have implications on primary productivity of the ecosystems and as a result on the fisheries catch as well as exacerbating prevalent sea level rise and coastal erosion and accretion processes .

#### *Soil erosion and land degradation*

Soil erosion, a problem existing in certain areas (especially urban and peri-urban) may be worsened by the occurrence of more intense rain. More soil erosion will likely have implications on sedimentation in river basins, leading to potential decrease in river fisheries, siltation, loss of arable soil and upland flooding, as well as, ultimately, impacts on coastal ecosystems. Soil erosion could also be exacerbated by an increase in the frequency and severity of drought episodes, which will also have an impact on crop yields and could lead to increased deforestation for expansion to make up for lost crops. Agro-climatological analyses reveal a decrease in the length of the rainy seasons in some locations, with frequent records of prolonged episodes of droughts during the rainy season<sup>35</sup>.

Climate change has contributed to more land degradation due to flash floods, droughts, leading to erosion, soil exhaustion and desertification. In 2006, the Ministry of Agriculture and Rural Development (MINADER) estimated a total soil erosion loss of about 20 million tons per year in the country, equivalent to loss of the capacity to feed 50,000 people annually. Soil erosion causes impacts such as soil sedimentation in streams and rivers, decreasing soil depth and fertility, altering of soil structure, decreasing of soil organic matter, thereby reducing the water holding capacity with consequent leaching of nutrients. Whereas Angola signed the UN Convention to Combat Desertification (UNCCD) in 1994 and ratified it 1997, there is no national report so that no official data exist in Angola to quantify soil erosion and no research process are in place.

#### *Floods*

The concentration of human settlements on the sea coast increases the risk of flooding due to the rise in sea-level, combined with additional pressures from coastal storms, changes in tidal patterns. Despite a lack of historical data for sea levels and coastal status in Angola, based on available data three scenarios have been posited for sea levels estimating potential increases between 0.13 meters and 0.56 meters by 2090. This could therefore have significant impact on the many coastal cities and populations, infrastructure, road networks, building and properties as well as industrial and port infrastructures. Nearly 50% of the Angolan population resides along the coast<sup>36</sup>.

#### *Water scarcity*

---

<sup>34</sup> Ibid.

<sup>35</sup> Ibid.

<sup>36</sup> Ibid.

The lack of water resulting from fewer annual rainfalls seriously affects production of two types of agricultural practices (dry and irrigation). A decrease in the rainfall trend and increase in temperature could provoke a climatic deficit with serious consequences for production, which would place most of the population in a state of severe food insecurity<sup>37</sup>.

High temperatures, rainfall variability, and an increase in severe weather events may also increase the degradation of building materials and infrastructures. The impact of heat could include the expansion of railway tracks and the melting of asphalt with greater frequency and other materials may be more easily damaged. If bridges and other ways of discharging excessive water were planned without taking into account an increase in the maximum flows of rivers, their capacity may not be sufficient to cope with large volumes of water, resulting in flooding of river banks (as was the case in the Province of Kunene in recent years)<sup>38</sup>.

### Climate change impacts in the targeted areas

First of all, the increase in temperatures has a negative impact on farming through the increase in evaporation. Rainfall dependency for most staple crops, combined with unsustainable land use practices and prevalent soil erosion will entail increased vulnerability of the agricultural systems, leading to significant impact on rural livelihoods<sup>39</sup>. However, some regions are more vulnerable than others. Alterations in rainfall and hydrology affect dry farming and irrigation. The impacts will depend on the area of the country, the agricultural systems in each region and current vulnerabilities<sup>40</sup>. The predicted impacts of climate change have been analyzed for four provinces (Cabinda, Huambo, Kuango Kubango and Namibe provinces). These provinces have been identified because of their high vulnerabilities<sup>41</sup>:

- Province of Cabinda – vulnerability in relation to ecosystems, biodiversity and forests;
- Province of Namibe – vulnerability in relation to the coastline, infrastructures and fisheries;
- Province of Kuando Kubango – vulnerability in relation to water resources;
- Province of Huambo – vulnerability in relation to farming system, soil fertility and forest.

Climate variables / vagaries	Cabinda	Huambo	Kuando Kubango	Namibe
<b>Temperature</b>	↑	↑	↑	↑
Heat waves	+++	+++	+++	+++
Dust storms	NC	+	+++	+++
<b>Rainfall</b>	↓	↓	↓	↓
Rainfall amount	+	+++	+++	+++
Rainfall variability	+	++	++	+++
<b>Extreme events</b>	↑	↑	↑	↑
Drought	+	+++	+++	+++
Floods	++	+++	+	+
Mass movements	++	+++	+	+
Land erosion and coastal erosion	++	+++	+++	+++
<b>Sea-level rise</b>	↑	NC	NC	↑

Key: ↑ increase; ↓ decrease; → stability; NC not concerned.

<sup>37</sup> Ibid.

<sup>38</sup> Ibid.

<sup>39</sup> Ibid.

<sup>40</sup> Ibid.

<sup>41</sup> Ibid.

## Achievements and remaining gaps and needs

### *The case of the ESSP as part of the baseline scenario*

The Environmental Sector Support Project (ESSP) focuses on environmental governance, capacity building and institutional strengthening and integrated natural resource management and environmental conservation. This baseline project has established four agro-ecological centers throughout the country in order to demonstrate sustainable agricultural practices. However, it does not plan to address either the dissemination of climate-change related virtuous practices, or the building of institutional capacity with regards to climate change integration.

The ESSP is part of the baseline scenario since it does not focus on climate change issues, nor sustainable land management. The ESSP does not include the dissemination of climate-change related virtuous practices, or the building of institutional capacity with regards to climate change integration.

The table below presents the current status of implementation of the ESSP, to be considered as part of the baseline scenario.

	<b>Baseline ESSP objectives</b>	<b>Status of implementation</b>
<b>Environmental Governance, Capacity Building and Institutional Strengthening</b>	Review and revise environmental policy, legislation and strategy	Ongoing
	Implement revised environmental policy, legislation and strategy	Ongoing
	Train 40 staff to postgraduate diploma/MSc level in biodiversity, natural resource management, environmental impact assessment, climate change and sustainable land management; 120 staff sent on short-term professional training courses; 50 staff trained in Bank's languages; 200 inspectors trained in Environmental Impact Assessment procedures and reporting; 100 Technicians trained on Environmental Impact Assessment (EIA) methodology and processes; and 40 judges refreshed on application and enforcement of environmental laws	Partially achieved and ongoing
	Develop sectoral EIA guidelines for relevant sectors including but not limited to Agriculture, Water, Forestry, Rural Development and Mining.)	Ongoing
	Promote public consultation and participation in environmental conservation and sustainable natural resource management	Ongoing
	Establish/strengthen National Biodiversity Institute (INABIO), Environmental Training School and a UN Conventions Unit	Ongoing
<b>Integrated Natural Resource and Environmental Management</b>	Establish four (4) pilot sites in Namibe, Kuando-Kubango, Huambo and Cabinda to demonstrate and promote synergy and best practice in sustainable land-use management, biodiversity conservation, and the use of environmental clean technologies	Partially achieved
	Undertake nationwide environmental awareness campaign	Ongoing
	Organize 25 training courses/ workshops to train project beneficiaries and local committees	Ongoing
	Organize 5 training courses/workshops on environmental technologies and develop guidelines for the application of such technologies	No recent information
<b>Planning and management</b>	Planning, management, coordination and implementation of project activities	Ongoing
	Monitoring and evaluation	Ongoing

	Provide technical assistance	Ongoing
	Procurement of relevant office equipment, vehicles	Ongoing

At the local level, four Agro-Ecological Centers (AEC) are being built and furnished. The communities in the sites are requesting trainings, and no specific funding for training on SLM techniques and climate change adaptation measures at the communities' level are planned so far. These centers embrace the concept of sustainable development but do not yet have a tried and tested model (techniques to be promoted, trainings of farmers, etc.), nor a strategy for widespread replication across the country. The GEF-financed project plans to tackle this gap by testing innovative participative methods of sustainable land management that meet people's needs and contribute global benefits in terms of land and forest management.

At the institutional level, training of MINAMB staff has increased capacity in natural resources and environmental management; 16 staff officers were sent to Brazil for training and 15 others are currently under training at the University of Agostinho Neto. Forty judges have also been trained on the implementation of environmental laws. More staff trainings on agro-ecology are planned, and 200 staff members have been trained in languages (English and French), and capacity building for multilateral units has been conducted. Yet, difficulties in the cooperation and coordination between ministries have been experienced and have slowed down the process of revision of environmental policies, strategies and legislation.

Other remaining investments are focusing on the ongoing construction the National Biodiversity Institute (INABIO), the realization of a national environmental awareness campaign, and finishing the 25 training courses/workshops to train project beneficiaries and local committees.

Hence, the baseline scenario would take place during the next years in the absence of the interventions planned under the GEF project. Under the baseline scenario, climate change is not well addressed and:

- i. Existing government bodies and administrations involved in agriculture and SLM would continue their efforts to protect increase productivity while protection lands. However, they can act only with limited financial resources, equipment and capacity building potential, without any special focus on climate change adaptation (as they do not have knowledge on that).
- ii. NGOs, such as ADRA and ADPP, will probably continue capacity buildings to farmers. It is however unlikely that the NGO's current budget for SLM will increase significantly.
- iii. "Farmers Schools" (also called "Farmers Clubs") have been established for about 10 years in the country and provide assistance to farmers to improve their production. However, few innovations exist in terms of SLM and climate change adaptation.
- iv. The Environmental Sector Support Project (ESSP) completed the construction of the four Agro-Ecological Centers (AEC), but with no specific funding for global environmental issues. Training on SLM techniques and CCA measures at the communities' level are hence useful. Hence the necessity for the ICE/SLM-specific dispositions. The ESSP will come to an end, earliest, on December 31<sup>st</sup>, 2016.

In conclusion, in the baseline scenario, the Angolan agriculture and forestry sectors do not take into account the consequences of climate change. While Angola is already observing climate change, not many actions are taken to increase the resilience of the most vulnerable communities of the country, and most farmers in the country remain vulnerable to drought, soil erosion and floods.



### *Other gaps and needs assessment*

As stated above, Angola is highly vulnerable to impacts of climate change, particularly as it relates to agriculture and rural livelihoods. The country is experiencing increasing climate variability which results into poor crop yields or even crop failure due to drought and floods. In the adaptation process, coping strategies constitute the short-term activities, while adaptation strategies constitute the long-term activities. As the first step, communities try to modify their existing practices to better respond to the impact of climate change, while the second step constitute seeking alternative livelihoods.

The ultimate strategy is to develop the capacity of the community to cope with the impact of, and adapt to, climate change by building their livelihood resilience, diversifying their livelihood options, conserving resources and reducing disaster risks associated with climate change. Moreover, adaptation strategies to climate change demand integrated approaches, both within and between the natural ecosystem and the socio economic system.

### **Proposed alternative activities**

In the entire country, adapting to climate change is essential for activities in the agricultural and forestry sectors, a strong sector of the economy facilitating and promoting employment for most of the labor force, rural development, the livelihood of families and the fight against poverty.

The GEF project will build upon the baseline scenario, which includes baseline projects such as the ESSP and integrate climate change adaptation activities at both national and provincial levels.

### *Project objectives*

The baseline situation does not address either the dissemination of climate-change related virtuous practices, or the building of institutional capacity with regards to climate change integration. Hence the project objective aiming at strengthening climate change into national development activities and promoting adaptive measures and practices. It will contribute to the removal of the main institutional, political and financial barriers and those relative to individual capacities and knowledge that hinder effective climate risk management for the agriculture and forestry sectors in Angola. It will introduce adaptation measures to strengthen the resilience of these sectors.

The project's specific objectives are described below:

### **A. 5. Incremental /Additional cost reasoning**

The current baseline scenario consists of a weak consideration of climate change in its interventions:

- 1- At the administrative and institutional level: weak integration of climate change adaptation considerations into development policies and strategies, weak NR policy, institutional, regulatory and incentive framework; a limited degree of cooperation and coordination of climate change between relevant institutions and agencies
- 2- At the project/ investment level: insufficient capacity and experience in sustainable natural resources management and adaptation approaches; inadequate funding; site specific and often uncoordinated interventions which focus on symptoms rather than on root causes; and supported by weak analytical underpinnings. As a result, current practices to NRM have so far not been able to substantively address the challenges including climate change;

- 3- At the pilot site level: The baseline is developing four agriculture natural resources pilot centers which put an accent on clean technologies. The GEF component will promote the testing of climate change adaptation technologies into the 4 demonstration centers.

Without the GEF component, the baseline would thus see, with the added impact of climate change, a continued degradation and failure of productive and nonproductive land use systems with the resulting loss of ecosystem functions and increased poverty.

Angola’s NAPA states that its objectives are to identify and communicate the urgent and immediate needs of the country regarding climate change adaptation, to increase Angola’s resilience to climate variability and to climate change to ensure achievement of poverty reduction programs, sustainable development objectives and the Millennium Development Goals (MDGs) pursued by the Government<sup>42</sup>. The first component of the ICE-SLM program in Angola hence is directly in line with NAPA’s objectives, as it deals with “Governance, Capacity Building and Institutional Strengthening”. What’s more, the first expected outcome of the proposed project is that “Adequate climate change policy, strategy & legislation and public participation ensure an effective application in different sectors”, which is also directly in line with the NAPA’s objectives presented above. Angola has also recently identified the necessity to facilitate the integration of climate change adaptation into relevant new and existing policies, programs and activities to improve resilience and adaptation over the coming years as a key objective in its NAP process<sup>43</sup>.

The proposed ICE-SLM project, in line with Angola’s NAPA objectives can also be seen as a way to provide a way forward on the NAP process by developing strong partnerships at national and local levels, and initiating the inclusion of adaptation within Climate Change policy strategy and legislation to ensure applicability to various sectors and the promotion of public consultation and participation in climate change and sustainable natural resources management. The proposed project will therefore support the first objective of the NAP Process as it will help “facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programs and activities, in particular development planning processes and strategies.”<sup>44</sup> The Climate Change department of MINAMB, as the central government body responsible for the coordination, development, implementation and enforcement of environmental policies, particularly in the areas of climate change adaptation, is crucial for the implementation of the NAP process as well as the ICE-SLM project. The description of concrete support by the ICE-SLM project to help advance Angola’s NAP process are described as part of Component 1 in part A.5 of this document.

<b>Outcome</b>	<b>Baseline Scenario (BAU without the GEF project)</b>	<b>Alternative (with the GEF project)</b>	<b>Incremental Benefit (generated by GEF and co-financing)</b>
Outcome 1: Governance, Capacity Building and Institutional Strengthening	In the baseline scenario, existing and planned initiatives will not lead to the full integration of climate change in national policies enabling an increase of CC resilience of the country.	In the alternative scenario, a whole set of factors are set in motion to bring about the emergence of a sound policy system, in sync with climate constraints.	The building up of the Department of Vulnerability and Climate Change’s capacities will contribute to a thorough integration of climate change in national policies.
Outcome 2: Promoting Climate Change adaptation measures into SLM practices in 4 demonstration sites	In the baseline scenario, the lack of an integrated response to environmental degradation (climate	In the alternative scenario, the integrated and participatory approach of the Agro-Ecological	The incremental benefits of this component are related to the integrated management of pilot sites,

<sup>42</sup> Ibid.

<sup>43</sup> <http://www.adaptation-undp.org/angola-launches-their-nap-process>

<sup>44</sup> [https://unfccc.int/files/adaptation/cancun\\_adaptation\\_framework/national\\_adaptation\\_plans/application/pdf/decision\\_5\\_cp\\_17.pdf](https://unfccc.int/files/adaptation/cancun_adaptation_framework/national_adaptation_plans/application/pdf/decision_5_cp_17.pdf)

	change and land degradation) contributes to a reduction in the overall effectiveness of environmental programmes, including the implementation of the ESSP on the ground. Climate Change adaptation measures are not integrated to the projects in the field, due to a lack of capacities and coordination. Communities are not sufficiently involved in the management of their land and are not adapting their unsustainable practices in a systematic way.	Centers will be consolidated, so that proper SLM techniques will be disseminated. Farmers will be trained in new techniques and business practices that respect the environment. The benefits of the rational management of the lands (ILUMPs) extend beyond the actual areas of intervention of the ESSP. The existing Agro-Ecological Centers will effectively function as platform for stakeholders to exchange and learn about SLM and climate change.	with demonstrations of good practices in the Agro-Ecological Centers (AEC). This will ensure that farmers will be effectively trained and SLM techniques will be disseminated, based on strong experimentation and capitalization (technical, economical and managerial). The total area targeted by the project is 15,000 ha. The AEC will function as a coordination platform between stakeholders. Communities will be involved in the Monitoring System and in the wildfire management.
Outcome 3: Knowledge Management through a structured Coordination Mechanism and Monitoring and evaluation	In the baseline scenario, although some pilot projects have generated some excellent local level knowledge, it is not accessible and tapped into by practitioners and affected people.	In the alternative scenario, the promotion and dissemination of good practices and the replication of successful integrated approaches and integration of climate change in the different sectors lead to an enhanced knowledge management.	Capacities development and tools for dissemination of lessons learnt (document, guidebooks, field visits) are deployed.

The ICE-SLM project has been designed to have a sustainable impact, at the local as well as the national level. The project addresses the key priorities of national development, as seen above. The project benefits from a strong institutional backing, which will ensure its sustainability. A strong commitment from all stakeholders at every level – from Ministries down to villages – will enable the good implementation and execution of projected activities and the integration of adaptation in Angola’s long-term policy, plans and national budgets. As local interventions are guided by local needs and demand, sustainability will be ensured, and adaptive capacities will be built up and enforced.

*Supporting the NAP process for agriculture*

Capacity building, institutional strengthening and governance, the scope of the proposed Component 1 of the project, are key priorities in this ICE-SLM project approach. Governmental institutions will be reinforced so that they are able to face climate change risks and adaptation needs. Adaptation will particularly be introduced and inscribed in main national policy, legislation and budgets and the width of action of the Department of Vulnerability and Climate Change (DVCC) will be strengthened. The strong institutional anchoring of the project is a reason to believe that the “institutional risk” that could endanger the project’s sustainability will not be raised. Capacity building in risk assessment, risk reduction, vulnerabilities assessment, and adaptation technologies, including development policy frameworks, training of staff, and institutional building and strengthening, will underpin the sustainability of the project outcomes.

Institutional capacity enhancement and technical support will facilitate the implementation of the NAP process by enabling relevant ministries to comprehensively and iteratively assess development needs and climate

vulnerabilities, and in fine to integrate climate change adaptation into national and subnational development and sectoral planning.

*Helping the rural communities to be resilient to climate change in four selected sites*

The four selected sites are the provinces of Huambo, Cabinda, Kuando-Kubango, and Namibe.

More informations regarding the project’s site characteristics and vulnerabilities are given in Annex E.

Communities will be engaged and will play an active role in implementation (Component 2), ensuring motivation and sustainability. The dissemination of good Sustainable Land Management practices and technologies in the pilot demonstration sites and their adoption by relevant economic sectors will have consequences in the long-run, as it is expected that it will lead to capacity building and rural livelihood’s enhancement in the pilot sites. It is also expected that the activities introduced during the project implementation will create a dynamic in the villages and that innovations will continue afterwards.

The immediate on-ground activities will be implemented in the four Province where AECs were built during the baseline project (Huambo, Cabinda, Namibe, Kuando Kubango) covering about 25% of the country, and representing the 4 agro-ecological zones of Angola.

At the end of the proposed project, lessons about the activities and challenges will be learnt and disseminated on a large scale, and good practices scaled up. Non-targeted groups will also possibly receive the echoes of the benefits of the project as good SLM practices and technologies can be copied by surrounding villages, hence resulting in the dissemination in larger sites of those good practices.

With GEF support, the approach adopted for this project includes both the institutional capacity building interventions as well as community-based empowerment of local communities to enable them to play an active role in implementing environmental conservation, adaptation of their assets to the challenges of climate change through demonstration projects and sustainable management of the country’s natural resource base.

The interventions at the institutional level are aimed at enhancing the capacity of MINAMB, MINADER (and other relevant stakeholders in the sector including water, fisheries, forestry and mining, NGOs, CBOs, research and academic institutions, private sector as well as provincial and local governments to plan and implement sustainable natural resource management (NRM) and environmental conservation interventions and enforcement of relevant legislation.



At local level the project aims to demonstrate best practices in sustainable forest management and integrated natural resources management. The project will empower local communities through capacity building and dissemination of adaptation technologies and guidelines and will promote the adoption of technologies aimed at enhancing sustainable land management (SLM), climate change (CC) adaptation and biodiversity conservation.

The proposed GEF project is targeted to be demonstrative, integrating substantial development interventions that are meant to be complementary to the baseline. Therefore, if for example component 2 in the baseline is about the establishment of four *hard* investments infrastructures, the same component in the GEF project is meant to be a *softer* component and create a more enabling environment by making these infrastructures more resilient. In general, the activities selected in the GEF are centered around soft activities namely policy reform, demonstration activities and capacity building, given that the baseline has a more investment-oriented approach to mainstreaming climate change in a given sector.

GEF's project has 3 components at three different levels:

<p style="text-align: center;"><b>Component 1.</b> <b>Governance, Capacity Building and Institutional Strengthening</b></p>
---

This component aims at integrating climate change adaptation into decision making at the institutional level. Whereas in the baseline the equivalent component emphasizes the environmental aspects, this component under GEF emphasizes the climate change aspects (climate proofing, climate risk assessment, etc.).

Component 1 will lead to a legislative and institutional reinforcement as well as to capacity building of stakeholders, government officials and relevant ministries. Capacity will be strengthened, in terms of skills and competencies, integrated working practices, planning and implementation. These enhanced capacities will enable the rooting of adaptation needs in the national and local framework.

Activities under this component are in line with the preparatory work needed to advance the NAP process in Angola. These activities are designed to identify gaps and omissions in intervention frameworks and address them as necessary, to support the formulation of comprehensive adaptation plans, programs and policies, as set out in UNFCCC decision 5/CP.17 on National Adaptation Plans.

***Outcome 1.1. Climate change policy strategy and legislation reviewed to ensure their applicability in various sectors***

**Output 1.1.1. Climate change adaptation is introduced into environmental policy, strategy and legislation as part of the NAP process**

Activity 1: Knowledge reviews are conducted on climate change issues and practices, and the state of the awareness is assessed among officers in relevant ministries. The objective is for climate-change issues to be considered as cross-cutting across every sector and industry, thus enhancing the consideration of these issues and, accordingly, facilitating the implementation of NAP process.

Activity 2: To achieve this, the project will conduct awareness raising activities and workshops across relevant ministries on climate change issues and adaptation benefits according to each ministry's field of action. A focus will be given on sustainable land management practices interlinks with adaptation practices and benefits for food security. The dissemination of knowledge on these issues and the raised awareness amongst ministries officers

directly participate to the progress of the NAP process in the Angola.

Activity 3: The following (including but not limited to) policies/programme documents will be analysed:

- National Strategy on Climate Change, 2007 (Government of Angola, 2007)
- General (National) Plan of the Government of Angola (Government of Angola, 2011a)
- National Adaptation Programme of Action (Government of Angola, 2011b)
- Initial National Communication to the UNFCCC (Government of Angola, 2012)
- Intended Nationally Determined Contribution (Government of Angola, 2015)

The analysis will be compiled in a report in order to be used by government officials and staff for revision.

Activity 4: The project will provide technical support to relevant ministries to help with the revision process. It will also help to target the key development objectives, and their related strategies and policies, which are vulnerable to climate change and should therefore benefit from adaptation measures, in direct support to the preparatory phase of the NAP process in Angola.

- As a result, the gaps identified will be addressed as Ministries will revise and develop new plans and strategies according to the conclusions drawn from the analysis of the aforementioned policies and programme documents. Relevant plans and strategies under conception that could be affected are (i) National Development Plan (2018-2022), (ii) National Agricultural Development Plan, and (iii) Food Security Strategy. These sectors were identified as key development priorities to be mainstreamed within the NAP process. The project, by influencing the introduction of climate change issues into future development strategies and policies, will thus support Angola's effort to implement the NAP process.

#### **Output 1.1.2. Sectoral Climate Risk Assessment guidelines are developed and used by relevant Ministries**

The acute need to generate information and knowledge was singled out in the Initial National Communication to the UNFCCC (in 2012), and is an essential step for the implementation of the NAP process, and was a valid point across all economic sectors. The same issue appeared during the preparation of the contribution of the country to the 21<sup>st</sup> Conference of the Parties of the UNFCCC taking place in December 2015 in Paris.

Activity 5: Guidelines on Climate Risk Assessment will be developed by the Department of Vulnerability and Climate Change (DVCC), adopting a sectoral ambition. The implementation of the guidelines by relevant Ministries will be supervised by DVCC. In that the project will go beyond the preliminary efforts in the baseline scenario.

Activity 6: Training on the benefits of Climate Risk Assessment and on the application of the guidelines will be conducted in relevant ministries to the service of the efficiency of public policy.

Activity 7: The coordination and cooperation between Ministries will be strengthened to efficiently implement the guidelines. The project will ensure that the strategic core of the network engaged in decision-making of climate policy nature remains anchored to the DVCC, for a better overall coordination.

#### **Output 1.1.3. Institutional capacities and width of action of the Department of Vulnerabilities and Climate Change are strengthened**

Activity 8: Gaps in knowledge (climate awareness within the administration), research (e.g. lack of research on the cultural uptake of climate change-related technologies), individual capacity and institutional capacity will be studied and addressed.

Activity 9: After a detailed assessment of the gaps and needs of the DVCC to be able to sustain its role of strategic core in decision-making of climate policy, the project will provide adapted support to the department. Capacity

building activities, technical support and advisory services will enhance the DVCC's (i) institutional capacity for climate change coordination, and monitoring and reporting methods (ii) budget allocations into climate change adaptation measures, and (iii) building of relevant climate change frameworks

Activity 10: The project will also provide institutional support to enable the DVCC to establish climate policies, to support the development of national sectoral strategies and integrate climate change aspects into legislation, thus further participating to help advance the preparatory phase of the NAP process.

### ***Outcome 1.2. Promotion of public consultation and participation in climate change and sustainable natural resources management***

#### **Output 1.2.1. Development of an operational training manual are used by government officials and staff**

Already in its Initial National Communication to the UNFCCC, climate change was deemed “new” and information “scarce,” thereby inducing a dearth in training capacity.

Activity 11: For this purpose the project will support the development of an operational training manual supervised by the DVCC. The manual will promote the integration of climate change into Environmental Impact Assessment (EIA), it will present climate proofing assessment tools and climate adaptation technologies (risks resilience).

Activity 12: When ready, the manual will be presented to and disseminated among relevant ministries to ensure its applicability and relevancy for and to all Ministries.

#### **Output 1.2.2. Stakeholders and institutions are consulted and their capacity enhanced**

Activity 13: The aforementioned guidelines developed by the DVCC will be tested at the investment level through workshops and meetings to ensure they meet stakeholders and institutions' needs for capacity.

Activity 14: Capacity building is brought to the various stakeholders and actors in order to move from “Risk to Resilience,” as it is proven that when risk is reduced, it can make a substantive contribution towards adapting to the impacts of climate change. Therefore, capacity building in risk assessment, risk reduction, vulnerabilities assessment, and adaptation technologies are planned.

## **Component 2.**

**Promoting Climate Change adaptation measures into SLM practices in four demonstration sites** The aim of component 2 is to introduce climate change adaptation techniques into good SLM practices (including agro-forestry) and create an enabling environment to improve rural livelihood resilience to climate change. This component will create a climate change adaptation (CCA) platform for large-scale dissemination of technologies and practices. The objective is large-scale dissemination of these CCA/SLM practices. The platform will be on-site in the four pilot sites: Namibe, Huambo, Kuando Kubango and Cabinda. The component seeks to move from a silos approach (agriculture, forestry, environment dept/ministries) to an integrated approach that increases the collaboration of the different departments and puts in place demonstration investment of climate change adaptation practices and technologies in the agro-forestry sector like: natural regeneration techniques, rangelands and agro systems rehabilitation practices, wind breaks and dune stabilization methods, water efficiency and harvesting techniques. One goal is the large-scale dissemination of CCA/SLM good practices in these provinces.

Under this component 2, existing agro-ecological centers will include efficient CCA platforms for stakeholders' collaboration, with the objective of disseminating concrete techniques of adaptive natural resources management.

They are expected to become “local pools of excellence” in SLM and climate change adaptation for rural areas. Participatory mapping and planning will be developed in each pilot site, to enable project communities to manage their land and implement sustainable agricultural practices, to provide multiple services and benefits, including soil fertility maintenance, lands and biodiversity conservation. Alternative income-generation projects will include production and marketing support to sustainable harvests of natural resources. The monitoring scheme will assess and monitor the efficiency of the SLM methods, and will measure the success of dissemination of SLM efforts and their impacts on soil fertility and agricultural productivity.

The key land conservation outcome under this component of the project will include management for conservation and sustainable use by communities of 15,000 hectares of lands. This global objective has been determined during the PPG with the MARP and includes 10,000 hectares of lands managed with conservation agriculture practices, 3,000 hectares of reforestation, and 2,000 hectares of forest managed with a management plan including a fire strategy. These sustainably managed lands will reduce the vulnerability to climate change of at least 350 rural communities by:

- Increasing crop yield of farmers, and improving food security of communities
- Increasing awareness of communities for climate change adaptation (the farmers will have the knowledge to adapt their agricultural system in a context of global warning)

Improving the sustainable land uses and natural resources management with the integration of climate change adaptation strategy the four pilot provinces.

The expected outputs are that an efficient framework for multi-stakeholders’ collaboration is established at the local level and specific planning and management tools are developed in each pilot site.

### ***Outcome 2.1. Good SLM practices and technologies disseminated in the pilot demonstration sites and adopted by relevant economic sectors***

#### **Output 2.1.1. An efficient framework for multi-stakeholders’ collaboration is established and climate change adaptation is integrated in planning and management tools at the local level**

Activity 15: The sites will host active platforms for planning coordination and knowledge exchange relating to SLM and CCA. A dialogue will be promoted between all local stakeholders at the local level: how to integrate climate change in our practices? How to take into account uncertainties in farming systems? On which climate prediction could we rely on? The stakeholders will (i) meet every 3 months and exchange about land uses and conservation (these meetings will be based on experience sharing both with experts / academics and farmers), (ii) have access to the demonstration fields of SLM “best practices” and to the monitoring scheme database, (iii) benefit from the training modules they need. The stakeholders involved in this platform will be (i) institutional stakeholders (IDA, DNF, CETAC, etc.), (ii) provincial authorities, (iii) NGOs, (iv) scientists (ex. University Augustino Neto in Huambo), (iv) farmers’ organisations and communities’ leaders. Dialogue between stakeholders will also include sensitization towards and promotion of the New Land Tenure Law.

Activity 16: As proposed in the National Biodiversity Strategy and Action Plans (NBSAP)<sup>45</sup> and other strategic documents, planning for the land uses and natural resources management at the local level is essential. This tool, called integrated land uses management plan (ILUMP), will be developed by the project in each site (and will cover 80-100 communities). The ILUMPs are key to developing an integrated approach for agriculture, land and forest management. An initial consultancy and participatory involvement of all the stakeholders will be performed at the inception of the project. A land uses and socio-economic mapping will be produced. It will identify: (i) land uses

---

<sup>45</sup> <https://www.cbd.int/doc/world/ao/ao-nbsap-01-en.pdf>



and status in the selected communities (forest, agriculture, water, etc.), (ii) common objectives of stakeholders at the local level in terms of management the natural resources, (iii) needs in terms of trainings of the stakeholders, (iv) vulnerable areas and potential investments and CC technologies, (iv) economic opportunities for farmers such as specific value chains. For example, during the PPG, interviews were conducted with farmers in Huambo province and showed a rising potential of lemon production. The initial mapping will confirm this hypothesis and identify the market potential (with key economics figures) before the project invest in lemon trees plantation in agro-forestry systems. Moreover, in the province of Huambo, many rural cooperatives and associations are found (Camber of Producers and Cattle Growers of Huambo, the OVIPAKO, etc.) and need to be integrated in the AEC platform.

Activity 17: During the initial mapping, producers' organizations will be met in order to assess their capacities to provide services to their members: services for production (such as seeds selling), services for transformation, and services for commercialization. This analysis will be discussed during the first stakeholders meeting in each of pilot sites in order to better position, through a participatory process, to answer producers' needs: what should be the role of the AEC be to facilitate the production (commercialization of seeds, machines, etc.), the transformation (sharing machine resources such as dryers, mills, etc.), and commercialization of products (selling points in each site)?

Activity 18: Inclusion of a monitoring scheme establishing baseline values and regular monitoring. During the PPG, major gaps have been highlighted for official environmental data in Angola, and many stakeholders interviewed were asking for data about CCA, SLM techniques and knowledge about innovations. For example, the regional study on land degradation lacks much information about surfaces affected by degradation and carbon stocks in the soils. No SLM experience in the country has been capitalized with data about increase of productivity or nutrient quantity and quality in soil. In order to fill this gap, the ILUMP will include a monitoring scheme, which provides information on land use, land fertility, agricultural productivity improvement and carbon stocks. All stakeholders will have access to this Monitoring Scheme. In each pilot site, baseline surveys will establish the extent of the lands under crops / forests and other uses. This Monitoring Scheme will use the data collected during project activities, and establish baseline values and regular monitoring of simple indicators. Wherever possible, monitoring will be carried out in collaboration with existing scheme or other monitoring programmes and in collaboration with the Centre of Tropical Ecology and Climate Change CETAC.

### **Output 2.1.2. Capacities on SLM and climate change adaptation practices / technologies are strengthened through demonstration and efficient learning cycle**

Vulnerability to climate change of agriculture is a major threat of rural communities. This output will support the introduction of Climate Change adaptation into Sustainable Agricultural Land Management (SALM) practices among the farmers through a capacity building process including pilot land plots, training, technical assistance to the farmers and investments for the adoption and dissemination of sustainable farming techniques.

Activity 19: During the PPG, the MINAMB and the MINADER expressed the need for capacities building in CCA and SALM techniques. With the support of an international expertise, a training programme will be organized for at least 5,000 farmers in SALM practices for reducing soil erosion. The training plan will be developed in collaboration with the IDA, farmer's organizations and international experts. It will provided detailed explanations of the efficient SALM techniques adapted in the context of each pilot sites:

- i. Agronomic practices (crop rotation, cover crops and green manure),
- ii. Soil fertility management (mulching, improved fallows and composting),
- iii. Water management (river bank protection) and
- iv. Mechanical land management (terraces, stone lines and anti-erosion small dams).

The learning cycle will be sustained by monitoring in the field both by local agent of the MINADER (Institute for Agricultural Development - IDA and DNF) and by a local NGO that will be also trained by the international expertise.

During the initial mapping, the producers' needs in terms of capacities building will be identified (output 2.1). Based on this evaluation, the following training plan (including several modules) will be developed and implemented:

- Technical training module: one key output of the PPG is the lack of knowledge of farmers in terms of simple SLM techniques such as organic fertilization or agroforestry.
- Economic and management training module: another key finding from the PPG is the need to train farmers not only on the technical aspects of sustainable farming techniques but also on economic management. In fact, the majority of farmers interviewed do not know the costs and revenue of their production system. This makes it hard for them to decide to change their practices, as they cannot compare their current agricultural system with a potential SLM system. In order to encourage the farmers to adopt the SLM techniques, the system's economic advantage must be demonstrated, and the farmers have to understand them. Thus, a Business Development Services (BDS) training module will be developed.
- Financial training module: an analysis of the financial offers provided by the association of Credits and Savings will be carried out and presented to the participants.

Activity 20: Development of Farmers Schools. The learning process of the producers will be based on the "Farmers Schools" which have been developed for about 10 years throughout the country. They are a way of organising small-scale farmers in rural areas to improve food security, alleviate poverty and promote rural development. The farmers are organised in groups of 50. Each club elects its own committee to lead activities. The Farmers Schools have shown good results for training producers, as the trainings are closely related to their products and emphasize practical lessons and "learning by doing." Thus, after an analysis of the Farmers Schools (which services are provided, what are the farmers' needs / development strategy?), the project will:

- Support the existing "Farmers Schools" identified during the initial mapping: the leaders /committee members will be invited to benefit from a complete learning cycle on SLM and climate change adaptation techniques with the three modules presented above. An operational partnership will be developed between the Farmers Schools and the AEC.
- Promote the creation of new farmers' schools in the pilot sites: the project will finance experienced NGOs (such as ADPP or ADRA) to create new farmers' schools.

Activity 21: Capacity building through training sessions. The learning cycle in agro-ecology seeks to improve the capacity of participants to promote agro-ecological practices, by reinforcing both their knowledge (technical aspect) and their skills (methodological aspect). It will consist of both classroom-based sessions (trainings of the farmers clubs leaders / committee) and in-the-field training sessions (farmers clubs methodology). Efforts will be made to organize participatory and dynamic training sessions. Very comprehensive training manuals (with illustration and simple texts) will be given to the participants for dissemination in the communities.

Activity 22: Establishment of pilot demonstration land plots. The discussions hold with the farmers during the PPG reveals that the most effective approach to disseminate appropriate SLM techniques is show the farmers the results and the potential economic gains offered by these techniques. Thus, the project will establish pilot demonstration land plots in each site with two purposes: (i) organising practical training in the field and (ii) producing scientific knowledge in order to capitalize on SALM techniques in the country.

Activity 23: Technical support to group of farmers. Based on first results of these pilot plots, investments for material and equipment for the implementation of soil management techniques on a large scale will be done on plots of groups of farmers. Criteria for selection of farmers will include: their expressed motivation to take a leadership role in the process of dissemination of SALM techniques in his community, time availability, geographic and social representation, and participation preference for members of lesser-represented segments of the population (for example, women and the unemployed).

Trainings on good cultivation techniques will raise average yields compared to current level (e.g. for the main crop, maize, average yield is about 25–700 kg/ha on subsistence farms). This is expected to increase revenues of farmers from main crops. The increase of yield for crops under SALM will be measure through field survey and reported to the Monitoring Scheme database (output 2.1).

Activity 24: Applied research (in partnership with universities in Huambo) to support this output will be conducted to assess forest resources, valuation of forest resources, market analysis relating to crops / value chains and other forest products, the current production and value chain, alternative livelihood options, etc. Cost Benefit Analysis (CBA) analysis of techniques for rehabilitation of degraded lands will also be developed and tested.

## ***Outcome 2.2. Enhanced enabling environment in support of climate change adaptation technology transfer***

### **Output 2.2.1. Lands under adaptive agro-forestry techniques provide alternative incomes, to reduce lands degradation and to increase the resilience of the communities**

Agroforestry is a key technique for climate change adaptation, and will be implemented under the output 2.3. Large-scale tree plantations in agro-forestry systems will be promoted, in line with the 2011 National Strategy for Reforestation, and in close collaboration with the IDA and DNF.

The project will support the establishment of 3,000 ha of agro-forestry systems in the four pilot districts. The objective is to decrease the pressure on forest resources, to develop an income generating activity for communities and to improve degraded lands.

A series of capitalization studies on agro-forestry systems will be performed at the inception of the project with the objective of identifying the appropriate agro-forestry systems and to model their techniques (trees species, density of trees, intercropping, etc.) and economic structure (yield, incomes flows, etc.). Experimentation, including monitoring of the selected agro-forestry systems, will be performed in the four sites.

The objective of the agro-forestry systems will be defined according to the local needs and to the National Strategy for Reforestation. It will basically focus on (i) high value trees for growing markets to generate income for farmers, (ii) specific fast growing plantations to produce sustainable wood in the long term, and (iii) adapted species to fertilize soils (leguminous such as *Moukouna*, *Green pig*, *Cajanus cajanus*, *libania*, *leucena*, etc.).

A high value agroforestry system identified during the PPG is: lemon trees (density 6m x 6m), with leguminous inside and *libania* outside in living fence.

Indigenous fast-growing trees will be also planted on under-productive agricultural lands or degraded forests to supply the fuel wood market (links will be made with the Charcoal Value Chain UNDP-GEF project). The species selected are easy to establish and could easily be planted by direct sowing with good seed. The species are ecologically friendly within the climatic environment of the target area. The selected species are: *Acacia auriculiformis*, *Cassia Senna siemea*, *Eucalyptus camaldulensis*, and *Filao*.

It was further confirmed through interviews with farmers during the PPG that there is available land for tree plantations in areas established for agro-forestry and woodlots and that there is an interest in diversifying production (wood, fruits, crops) and selling wood to the market.

Technical assistance provided by the project will support farmers to plant indigenous species. Nurseries will also produce endangered species such as *Trema orientalis*. The project will identify and train a total of 2,000 households in the four pilot sites for agro-forestry establishment (minimum 2,000 hectares). Activities under this output will involve:

Activity 25: Training all communities/woodlot managers on agro-forestry best practices, including use of specified tree species and optimal ecological yield from such species.

Activity 26: Technical support provided on tree nursery management as an entrepreneurial activity.

Activity 27: Production and dissemination of over 2 million tree seedlings to communities.

Activity 28: Establishment of simplified agroforestry management plan.

Activity 29: Moreover, the project proposes to organize the implementation of income-generating activities around the Ecological Perimeters (EP) concept. EPs are established on about 2 to 5 hectares in each community and provide food (vegetables, fruits), wood (fuel wood and other purposes), non-wood products, fruits, medicinal plants, vegetables and orchards, mushroom production, water supply, saplings for replanting degraded forests, etc.

As malnutrition in rural areas remains a major challenge, the project will focus on Moringa trees plantation (interviews in Huambo showed agronomic potential and demand for Moringa) and Moringa value chain establishment.

### ***Outcome 2.3. Adoption of adaptive management plans in the agro-forestry sector***

#### **Output 2.3.1. Integrated adaptive management plans, especially on forest fires prevention, are developed and sustainable practices are operational over 2,000 ha in the forests of the pilot sites**

Forests maintenance, through micro-climate regulation and livelihood contribution, are an important avenue for climate change adaptation. The project will produce forest fire management plans as a constitutive part of the ILUMP, with an operational community involvement plan for wildfire management. This aims at ensuring the participation of local people in forest fire management planning in order to reduce the number and spread of wildfires (that have been identified as a main driver of deforestation). Indeed, the number and severity of wildfires (fires on woodlands, including forests, burning without control and for no intended purpose) are growing in many regions of Angola. Pilot approaches in participatory fire management will be implemented over 2,000 ha.

Activity 30: An initial mapping of the project zones will be carried out by a team of local experts. A detailed assessment for each area will include: a clear delimitation of the forests, identification of the biodiversity and the ecosystems services, identification of the uses and the users and the stakeholders to the natural resources (forest dweller communities but also private sector, civil society, institutions and decision-makers), identification of expectations and behavior of local people in regard to forest fires and burning, and an assessment of potential income generating activities (as incentive to involve communities in the fire management). The data collected will support the design of participatory fire management plans.

Activity 31: The forest fire management plans will be developed for each forest. They will include:

- i. The situation description (reference assessment),
- ii. The measures required to conserve lands and to sustainably manage natural resources,
- iii. The responsibilities of each stakeholder,
- iv. A detailed work plan and budget.

Stakeholders will validate each plan during meetings held at the Agro-Ecological Centers and in the forests, before the official approval by authorities. Along with this process, a co-management convention will be negotiated at the local level, and agreed upon and signed by each local authority and Community Committee to clarify roles, responsibilities and benefits in relation to management of the forests.

The proposed community-based approach to fire management will involve:

Activity 32: Development of policy and legislation that will enable the participation of all stakeholders in forest fire management.

Activity 33: Promoting the exchange of information and experience from other countries (e.g. in the Caprivi region of Namibia).

Activity 34: Ensuring involvement of local communities and other stakeholders in income-generating forest and pasture management activities.

Activity 35: Trainings of government officials, traditional authorities and local people on the role of forests and trees in the environment, the links between fire and availability of locally used products and principle of forest fire management.

Activity 36: Organization and training of local fire management units (Community Committee) in prescribed burning and in fire control techniques (such as fire breaks at strategic points or encouragement of overgrazing to reduce fuel loads in critical fire areas).

Activity 37: Provision of necessary firefighting tools to local fire management units.

Activity 38: Production and dissemination of fire awareness materials and introduction of fire awareness programs at local schools.

In order to implement successfully the wildfire management plan, communities must:

- Have sufficient land tenure (formal and informal) to ensure their rights are considered: a convention will be signed between each local authority and Community Committee.
- Be convinced that involvement in land and fire management decision-making and activities will improve their livelihoods, health and security: awareness campaigns will be promoted by the project, and income generating activities will be developed to act as incentive for the involvement of local communities.

Activity 39: The Agro-Ecological Center, in partnership with the Centre of Tropical Ecology and Climate Change (CETAC), will ensure the monitoring of wildfires and the implementation of the integrated forest fire management plans.

**Component 3.**  
**Knowledge Management through a Structured Coordination Mechanism and Monitoring and Evaluation**

The outcome under component 3 includes the promotion and dissemination of good practices and replication of successful integration of climate change in the different sectors. It will fill the gaps of lack of climate change knowledge in different institutions throughout the country (governmental institutions, NGO, etc.). Although some pilot projects have generated some excellent local level knowledge (in SLM but not yet in climate change adaptation), such knowledge is not accessible and tapped by practitioners and affected people. Capacity development and tools for dissemination of lessons learnt (document, guidebooks, field visits) will be supported by the project.

This component is linked to the baseline's Components 1 and 3. From Component 2, lessons learnt in the techniques adapted to the national context – biophysical and social – will be disseminated among stakeholders and investors. National experts will participate in practitioners' events in the region. Demonstration activities will be set up jointly between the different projects. The component will also provide resource for the implementation of an M&E framework that will be established at preparation stage.

***Outcome 3.1. Knowledge and experience sharing and dissemination of lessons learnt and best practices***

**Output 3.1.1. Coordination mechanisms are established to support knowledge management and coordination with ongoing projects**

The information from the sites will be shared, in order to exchange and diffuse knowledge at the national level.

Activity 40: In order to achieve this coordination, the project will coordinate research program and partnership with research centers, ensure the coherence of the practices promote and sectorial development strategy.

Activity 41: Inter-provincial workshops will be organized in order to disseminate climate change adaptation knowledge from the four sites to other provinces.

Activity 42: Each site will also conduct “trainers of trainers” training sessions to develop trainers who will in turn diffuse knowledge and good practices. These trainers will act as relays to communities in the whole region. These trainers will also relay information from remote farmers/communities and bring back knowledge/good practices/initiatives implemented within the region to the main center. The trainers will also give return-on-investments experiments based on real life implementation of SLM practices that will enrich the center's knowledge. Therefore, each site will have a considerable knowledge production potential, rising from experiments from all over the region. This will also ensure that practices promoted in each site are easy to implement (as they emerge from non-specialist farmers).

Activity 43: The results from the sites will enable to promote the development of a network of local resource centers in the region:

- Tree/seeds nurseries (= teaching local entrepreneurs/farmers how to build and manage a nursery, to produce/select drought resistant seedlings etc.)
- Cooperatives to share agricultural machines, and support access to bigger markets etc. (= learning how to create and manage a cooperative)

**Output 3.1.2. Multimedia materials (including video) are published on project experience/best practices and lessons learned are disseminated**

Activity 44: Published materials (including video) and informational meetings with stakeholders on project experience/best practices and lessons learned from climate change adaptation measures experimented in the four pilot sites. These materials, in electronic form, will be posted on the project website and will be widely disseminated throughout the region and to other countries planning to implement similar activities within 6 months following the end of the project.

Activity 45: National Plan to implement outreach/promotional activities targeting climate change adaptation measures. The objective is to promote good practices learnt at the local level (in the 4 Agro-Ecological Centers) into the other regions of Angola. This will include the preparation of promotional materials, briefing sessions with staff and NGOs who are implementing projects in other regions of the country and, organizing field visits between different areas.

**Output 3.1.3. Project stakeholders participate in national and international events on climate change adaptation**

Activity 46: Capacity development of concerned Ministries/Institutions to monitor and document project experience. This will support the Monitoring Scheme (output 2.1.1) by making it more available and used by stakeholders. On-the-job training will be provided by international/local consultants to some 50 stakeholders on how to monitor, record/document project experience. Stakeholders will be encouraged to participate in national and international events on climate change adaptation and SLM. This will be pursued in order to increase awareness to climate change and SLM – which is currently very limited.

***Outcome 3.2. Implementation of M&E systems***

**Output 3.2.1. Effective M&E plans and systems are established and M&E documents produced**

Activity 47: Four monitoring schemes providing sets of monthly data in each project sites will be developed. (see outcome 2.1, output 2.1.1)

**A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:**

<b>Risk description</b>	<b>Rating</b>	<b>Mitigation measures</b>
Adverse climatic variability and changes resulting in flash floods and prolonged drought undermine achievement of benefits	Medium	Awareness raising and promote climate resilience activities. Promote the use of early warning systems at the community level
Insufficient time dedicated by collaborating and partner organizations and agencies to successfully implement the project components	Low	During the project preparation phase, time availability and commitments will be discussed among the participating organizations and agencies to ensure that none is carrying a heavier burden that it can sustain, especially among MINAMB and the provincial branches

Communities reluctant to participate in the project activities	Low	Engage community leaders and encourage platforms for information sharing and exhibition of good practices for communities to visually identify benefits
Inadequate participation by all stakeholder groups to identify and prioritize adaptation needs in a sufficiently objective manner	Medium	Careful attention will be given to ensuring the involvement of all relevant stakeholders at an early stage and throughout the project implementation process. This will facilitate consideration of all points of view and balanced, objective prioritization of project activities
Limitations in adoption of sustainable land management practices	Medium	Promote feedback sharing and experience exchange. Engage community leaders in community mobilization activities.
Environmental risks/ Climate Change.	Medium	Flexibility of tools used, in case of a rapid change in the environmental parameters, or in the face of climate change-caused challenges. Flexibility of environmental impact assessments, which may need to be updated during the project implementation phase if the environmental situation changes significantly. .
Lack of technical capacity to effectively implement project activities	Low	Ensure knowledge transfer from technical assistance provided by identifying national counterparts, and enable the development of such capacities nationally and sub-nationally.
Weak capacity of communities is a risk for all project activities proposed at pilot sites level – land use planning (ILUMPs) and management, agroforestry, IGAs, wildfire management plans, etc.	High	Large part of project budget devoted to capacity development at the community level – stakeholder meetings, trainings, and learning by doing through project implementation. Specific training activities will include agroforestry, organic fertilizer production and management, project monitoring, and land use planning and management. The selection of a small number of pilot sites (4) will allow thorough development of activities which are chosen by all stakeholders in AEC and have strong technical and financial support to ensuring their effectiveness.
Issues in public procurement, contract award, financial resources handling	High	Adequate procurement and disbursement support staff recruited and trained, built up from the ESSP project
Limited sustainability of the project	Medium	Capacity building in risk assessment, risk reduction, vulnerabilities assessment, and adaptation technologies, including development policy frameworks, training of staff, and institutional building and strengthening will underpin the sustainability of the project outcomes. Component 2 activities will demonstrate and spread model practices in terms of sustainable land management and adaptation to climate change. These practices are specific to each agro-ecological zone and will be implemented following a participative and demand-led approach, ensuring the sustainability of their adoption by the Angolan population.
Lack of coordination among government stakeholders	Medium	Strengthening of the DVCC through institutional and technical support, as well as targeted capacity



		building will make it the core of all climate-change related decisions, and monthly meetings between Ministries experts and led by the DVCC are organized to share feedback on respective projects ensures coordination and cooperation.
--	--	--

## A.7. Coordination with other relevant GEF financed initiatives

### All GEF-financed initiatives

GEF_ID	Project Name	Focal Area	Agency	GEF Grant	Cofinancing
4082	National Biodiversity Project	Biodiversity	UNDP	2,000,000	6,000,000
4589	Expansion and Strengthening of Angola Protected Area System	Biodiversity	UNDP	5,800,000	13,700,000
4720	Land Rehabilitation and Rangelands Management in Small Holders Agropastoral Production Systems in Soutwestern Angola	Land Degradation	FAO	3,013,636	12,250,000
5177	Promoting Climate-resilient Development and Enhanced Adaptive Capacity to Withstand Disaster Risks in Angola, Cuvelai River Basin	Climate Change	UNDP	8,200,000	28,050,000
5230	Addressing Urgent Coastal Adaptation Needs and Capacity Gaps in Angola	Climate Change	UNEP	6,180,000	11,520,000
5231	Integrating Climate Change into Environment and Sustainable Land Management Practices	Climate Change	AfDB	4,416,210	19,995,000
5432	Integrating Climate Resilience into Agricultural and Agropastoral Production Systems through Soil Fertility Management in Key Productive and Vulnerable Areas Using the Farmers Field School Approach	Climate Change	FAO	6,668,182	25,325,000
5719	Promotion of Sustainable Charcoal in Angola through a Value Chain Approach	Climate Change	UNDP	4,620,000	13,164,095
5320	Assisting Least Developed Countries (LDCs) with country-driven processes to advance National Adaptation Plans (NAP-GSP)	Climate Change	UNEP	1,998,000	8,400,000
5868	Expanding the Ongoing Support to Least Developed Countries (LDCs) with Country-driven Processes to Advance National Adaptation Plans (NAP-GSP Phase II)	Climate Change	UNEP	6,350,000	8,400,000

There is a donor coordination framework in the natural resource and environmental sector in Angola. Meetings are held periodically where donors share knowledge and experience on their respective interventions in the sector.

Some of the donor-funded activities in the environment and natural resource sector include:

- i. the Fisheries Sector Support Project funded by the Bank;
- ii. the National Biodiversity Project funded by GEF;
- iii. the Sanitation and Environmental Project funded by EU;
- iv. the Public Hygiene and Environmental Sanitation Project funded by UNICEF;
- v. the Sustainable Land Management Project funded by UNDP;
- vi. the Water, Public Hygiene and Environmental Sanitation Project jointly funded by UNDP and the Spanish Government.

The UNEP GEF program ‘Addressing Urgent Coastal Adaptation Needs and Capacity Gaps in Angola’ is of particular relevance to the AfDB project. The UNEP project will provide scientific and technical data to inform the natural resource management decisions and planning that this baseline project will undertake. As there are significant gaps in regards to accurate and reliable climate data, this project will ground the institutional interventions of the AfDB project with climate information, particularly in the pilot centres which are geographically common (Cabinda) between the two GEF projects (Component 2).

Information gleaned from improved climate monitoring will support the baseline project in making institutional decisions. The UNEP project will therefore strengthen the adaptation component to the AfDB baseline and GEF project’s activities in the environmental sector which will in turn promote sustainability of the baseline interventions despite climate variability.

The UNDP program ‘Promoting climate-resilient development and enhanced adaptive capacity to withstand disaster risks in Angolan's Cuvelai River Basin’ (Provincial Government of Cunene) aims to support adaptation of the most vulnerable communities to hydro-meteorological disasters in the region. This will be done through enhancing human and institutional capacity for increased sustainable rural livelihoods among those communities, investments in a comprehensive early warning system, and enhanced knowledge and planning.

Some of the expected outcomes and outputs include increased resilience of smallholder farmer communities through facilitating and improving access to climate-resilient seeds, a functional end-to-end Famine and Flood Early Warning System, an update of a Province-level Master Plan through mainstreaming climate resilience considerations, and development and dissemination of micro-seasonal maps of different climate-resilient crops to extension agents. Comprehensively, these activities have the potential to change agricultural practices and enhance resilience to climate change, as well as to lead to replication and scaling up.

This is a resourceful project that is not only complementary to AfDB’s GEF project but also instrumental in demonstrating the use of early warning systems /monitoring/consequential actions such as the use of these systems for agricultural -increased productivity – activities, such as flood resistant seed varieties. AfDB’s GEF product may research these seeds (properties) in the 4 resource centres (located in other provinces and not Cunene) and feed the knowledge to this project and vice versa through the coordinated mechanism.

The Umbrella Program for National Communication to the UNFCCC (UNEP): The process of preparing national communications and strengthening the information base in national institutions on climate change provides a backdrop on which this project can build. It has created a basic level of understanding among national institutions on articulating climate change matters and this project can further collaborate with such national institutions to create strengthened networks that can implement this project (particularly component 1, “Governance”).

The LDCF financed, UNDP-UNEP programme on Assisting Least Developed Countries (LDCs) with country-driven processes to advance National Adaptation Plans, or NAP Global Support Programme has been set up to assist countries to bring greater focus and attention to medium and long-term climate change adaptation planning as well as budgeting. It provides support to the LDCs in the form of one on one institutional support to countries to sensitize national stakeholders in undertaking stock-takes and facilitate NAP road-maps; regional training on

relevant tools, methods and guidelines to support effective climate change adaptation planning; knowledge sharing to enhance international and regional cooperation. In Angola, the first National Adaptation Plan training for key ministries was held in July 2015 with the support of the programme. The activities of the NAP GSP are directly in line with the proposed ICE-SLM project, especially on component 1 activities (see part A.5).

### **Other initiatives**

Climate for Development in Africa Programme (ClimDev-Africa): AfDB ClimDev-Africa programme supports Africa's response to climate variability and change by building regional, sub-regional and national policy capacity. It will improve the quality and availability of information and analysis to decision-makers. The proposed project will coordinate with this intervention by ensuring that climate change adaptation initiatives are folded effectively in policy documents and will synergize activities by sharing information garnered through the implementation of Components 1, 2 and 3.

Integrating and Up-Scaling Climate Resilience through Soil Fertility Management into Agricultural and Agro pastoral Production Systems for Food Security in Key Productive and Vulnerable Areas Through the Farmers Field School approach (FAO). The project will be based in Angola's Central Plateau and the project aims to enhance the resilience of small farmers in coping with declining ecosystems services due to increasing climate variability, droughts, and extreme events. Although this initiative will be conducted in the interior while our project will be based in Namibe, Huambo, Kuando Kubango and Cabinda, there are opportunities for engagement, the sharing of lessons learned, particularly in the areas of resilient agriculture, and of ecosystems protection.

It is therefore suggested that this project set up a coordination mechanism for joint capacity building activities for: i) planning complementary activities between the different projects; ii) documenting lessons learned and knowledge management (component 3); iii) exchange of piloting activities and learning while doing, particularly in the 4 pilot centres (component 2).

## **B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:**

### **B.1 Stakeholders engagement in project implementation**

The key stakeholders involved in the project are the local communities and the Governmental Departments and Agencies that deal with environmental management in Angola. The project will be implemented by MINAMB working in close collaboration with MINADER and other line Ministries involved in natural resources management. The communities play a role in project planning, implementation, monitoring and evaluation through established local committees. The strengthening of the Government Departments and Agencies through capacity building of the relevant staff serves the entire nation, providing leadership in safeguarding the environment and imparting the knowledge on local communities. The capacity building will also enable the Government to provide a suitable environment for the private sector to be able to support activities in sectors such as agriculture, fisheries and mining.

Key Stakeholders include:

- National and provincial administrations, including MINAMB, MINADER and related institutions like the Centro de Ecologia Tropical e Alterações Climáticas (CETAC)<sup>46</sup>, the National Institute of Biodiversity (INABIO), the Institute for Agrarian Research (IIA), the Office for Food Security (GSA), and the Institute for Agricultural Development (IDA), the Instituto de Desenvolvimento Florestal<sup>47</sup>

---

<sup>46</sup> <http://cetacangola.com/>

<sup>47</sup> <http://www.idf-facility.gov.ao/>

(IDF), etc.

- Civil Society Organisations (CSOs), Non-Governmental Organizations (NGOs), such as Acção para o Desenvolvimento Rural e Ambiente<sup>48</sup> (ADRA), Ajuda de Desenvolvimento de Povo par Povo<sup>49</sup> (ADPP), the Confederação das Associações de Camponeses e Cooperativas Agropecuárias de Angola (UNACA), Jubileu 2000, etc.;
- National scientists and experts in economics, natural and social sciences, climate and development experts, from universities and other research bodies in the region, for instance the Faculty of Agricultural Sciences from the the Universidade Agostinho Neto<sup>50</sup>; and Inter-governmental organizations: NEPAD, SADC, FAO, UNDP and the WB

#### *Additional information regarding MINAMB and MINADER*

The Ministério do Ambiente (MINAMB) holds the mandate for designing, implementing and monitoring national environmental policies including environmental impact assessments, management of protected areas and relevant international environmental conventions (biodiversity, climate, land degradation, etc.). The Ministry is comprised of the Directorate of Environment, the Directorate of Biodiversity, the Directorate of Technologies and Environmental Norms, the Directorate for Prevention and Environmental Impact Evaluation. It has also a Cabinet of Climate Change and a National service for environmental fiscal policies. The Ministry has five organs under his responsibilities:

- i. The National Institute of Environmental Management,
- ii. The Environmental Fund,
- iii. The National Institute of Biodiversity and Conservation Areas (INBAC),
- iv. The Centre of Tropical Ecology and Climate Change (CETAC),
- v. The Centre of Pollution Analysis and Environmental Control.

The Environmental Framework Law of 1998 is a major regulation with regard to environmental management in the country. A National Environmental Management Plan (NEMP) has been prepared, identifying key priority areas for the conservation and sustainable use of natural resources.

The Ministry of Agriculture and Rural Development (MINADER) holds the mandate for designing national policies related to agriculture and forestry. The organs for policy execution are:

- i. The Institute for Agriculture Development (IDA)
- ii. The Institute for Forestry Development (IDF)

These institutions under the MINADER have decentralized staff in each of the country's eighteen provinces. The decentralized staffs serve as technical advisors to rural communities for crops management at the grassroots level. This team works in cooperation with NGOs and farmers' organizations.

## **B.2 Socioeconomic benefits at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF)**

---

<sup>48</sup> <http://www.adra-angola.org/>

<sup>49</sup> <http://www.adpp-angola.org/>

<sup>50</sup> <http://www.agostinhoneto.co.ao/>

Socio-economic benefits are numerous for the 25,000 beneficiaries targeted by the project to adopt climate resilient practices. The adaptation activities of the project involve significant co-benefits, synergies and trade-offs, including:

Social benefits	Economic benefits
Some 100 green jobs created in Agro-Ecological Centers, in sustainable forest and land management	More than 15,000 ha will be restored, with higher fertility, services supply and production potential.
Some 30 stakeholders trained to monitor, promote and develop the integration of climate change into SLM practices.	At the long-run food security will be increased as a result of the dissemination of adaptation practices. This will be coming from an increased production in the agriculture sector (by, e.g. introducing innovation such as early maturing/drought resistant crops).
Over 350 rural communities will be trained and reap larger incomes at the end of the project. Participation of civil society, through the involvement of NGOs, including women NGOs already mentioned above, and stakeholder consultations, in the decision-making process related to climate change, and reduction in land degradation, and for information and awareness raising activities.	Fighting negative economic impacts, through a better consideration of climate change in investment decision – making;  The communities will benefit from the demonstration centers both technically but also economically, as these will be considered as shops to sell high value products from communities.

#### *Job creation and income generating activities*

As the project will support the operationalization of the four agro-ecological centers, it will create some 100 jobs for the operation and maintenance of these Centers. Moreover, 350 communities will benefit from additional income-generating activities (IGAs), technical support in sustainable agriculture practices, forestry management and natural resources monitoring, conducted by the project.

Additional income generating activities will be introduced by the project activities through, for instance, the sales of agroforestry parcels products. The introduction of new practices and technologies will enhance agricultural yields and hence augment households' revenues and quality of life. As a result, villagers livelihoods will become more resilient and their adaptive capacity will be enhanced.

#### *Food security and health*

The project also plans to put in place community demonstration committees whose aim will be the promotion of the adoption of practices and technologies such as agroforestry, fruit tree culture and sustainable land management. This will lead to a diversification of culture and better agricultural yield, supporting – with an income increase - food security and better nutrition. Additional incomes and more diverse food resources, as well as more sustainable households' livelihoods, can thus contribute to better health, especially for vulnerable groups such as women and children.

#### *Gender equality*

In Angola, women play a critical role in the rural areas (they represent 55% of the inhabitants of the identified villages) and especially in natural resources management. Women often rely on these resources for their livelihoods (firewood, income generating activities, etc.). The participation of women in practice and technologies selection at the community level is also expected to be high as women dominate most of the activities targeted in the agro-forestry sector. They will reap benefits and strengthen the anchoring of the aforementioned practices within the community. Thus, in the project activities, women will constitute for at least 55% of the beneficiaries (trainings of outcome 2).

The project will create positive benefits in terms of gender equality through a number of initiatives planned in the project conception. The project will promote positive gender outcomes through a number of training courses and workshops designed to raise awareness and enhance knowledge and skills in sustainable natural resources management, adaptation to climate change and conservation practices. The most vulnerable communities will be starting to adapt to climate change as the project will support while they become more and more autonomous. This support will especially target women's groups and will focus on natural resources management and the implementation of national adaptation plans.

#### *Integration of youth*

The proportion of youth in the targeted villages' populations has strongly increased. Youth now represent 73% of inhabitants of the identified villages. A key challenge in these areas is to provide jobs and/or income generating activities for these young people. Thus, the project will benefit to at least 75% of young people (less than 35 years old) and trainings will focus on entrepreneurship capacity development.

**Table. The involvement of women and youth in the project (example of the Huambo pilot site)**

Community / village	Inhabitants	Women		Youth (age < 34)	
	Number	Number	%	Number	%
<b>Community ("ombala") of Dondo with 6 villages involved:</b>	<b>2918</b>	<b>1614</b>	<b>55%</b>	<b>2093</b>	<b>72%</b>
<i>Dondo</i>	940	510	54%	654	70%
<i>Dende</i>	353	191	54%	237	67%
<i>Chitete</i>	446	254	57%	313	70%
<i>Sambumba</i>	375	213	57%	282	75%
<i>Ulenge</i>	317	176	56%	232	73%
<i>Cangoti I</i>	487	270	55%	375	77%
<b>Community ("ombala") of Muenessi with 2 villages involved:</b>	<b>624</b>	<b>341</b>	<b>55%</b>	<b>426</b>	<b>68%</b>
<i>Chawayala</i>	151	92	60%	105	70%
<i>Chipuiya</i>	473	249	53%	321	68%
<b>Community ("ombala") of Cachaca with 14 villages involved:</b>	<b>6235</b>	<b>3413</b>	<b>55%</b>	<b>4601</b>	<b>74%</b>
<i>Betanea</i>	236	121	51%	162	69%
<i>Betanea Po</i>	484	254	52%	376	78%
<i>Caminga</i>	1275	734	58%	911	71%
<i>Canganda</i>	178	101	57%	125	70%
<i>Catuma I</i>	704	404	57%	565	80%
<i>Catuma II</i>	617	341	55%	443	72%
<i>Ch. Protest</i>	462	257	56%	338	73%
<i>Chiquendo</i>	501	243	49%	387	77%
<i>Copongo</i>	760	404	53%	529	70%
<i>Copongo Pr</i>	127	74	58%	95	75%
<i>Messele</i>	339	195	58%	259	76%
<i>Pacheco</i>	201	98	49%	163	81%
<i>S. José</i>	72	35	49%	44	61%
<i>Sapanguele</i>	279	152	55%	204	73%

Social groups such as women and youth will be actively involved in the implementation of development activities at the local (village) level in each of the 4 pilot sites.

#### *Sustainable Development at National Level*

The project will produce a wide range of advantages that will benefit the entire Angolan population. The protection of the environment and integrated sustainable land and natural resources management are crucial to the sustainable development of the country. As the majority of the Angolan population relies on natural resources, the project aims at stopping the deterioration of those natural resources and establishing sustainable practices in the long run. Local

communities could also benefit from ecotourism if natural resources and biodiversity are restored or protected. An active participation of the local communities will ensure those objectives are met.

Component 2 activities will demonstrate and spread model practices in terms of sustainable land management and adaptation to climate change. Those practices are specific to each agro-ecological zone and will be implemented following a participative and demand-led approach. This will ensure their adoption in the long run by the Angolan population.

During the realization of Component 1 activities, individual and institutional capacities will be developed and strengthened, enabling MINAMB to identify and implement the necessary modifications to its development plans and programs at national, local and sectoral levels, thus ensuring successful achievement of SDG13. Relevant ministries officers will have an increased understanding of climate risks and adaptation benefits, and Climate Risk Assessment methods will be used in all sectors.

### **B.3. Cost-effectiveness**

Addressing the adverse impacts of climate change imposes an additional cost on Angola in the country's effort to achieve its development goals<sup>51</sup>. This implies additional costs for Angola, i.e. costs imposed to meet its adaptation needs due to the adverse impacts of climate change, compared to a business as usual scenario. The project has been designed to achieve the greatest results with the most cost-effective use of invested resources and the concept of additional costs has been applied to determine the level of funding required. Project activities were formulated based on a consultative approach and based on prioritized actions included in the NAPA. Activities were developed and prioritized using a cost-benefit analysis, in order to maximize adaptation benefit in relation to the investment required. Technology demonstration activities were designed to provide access by the country and the community with the best available technology or technical approaches, and where necessary, additional feasibility and cost analyses will be undertaken during the inception phase.

Adaptation actions are selected to offset the predicted impacts of climate change and to restore welfare in the agriculture and forestry sector. The costs of these actions together with the cost implications of changes in the frequency of extreme weather events are also considered. Climate change affects production by altering yields and areas where crops can be grown. From the documents available for Angola, such as the national communication to the UNFCCC, the NAPA and the INDC, temperature and precipitation changes are expected to lower crop yields and production. The GEF investment will put 15,000 ha of land under improved sustainable natural resources and land management practices with another 15,000 hectares benefiting indirectly from policy changes and updated training materials and extension package. The GEF resources present a strategic mixture of direct on-the ground activities promoting the adoption and replication of adaptive best practices by local communities in 4 sites, and interventions to strengthen the policy enabling environment for a national scale-up. In broad terms previous experiences across the GEF portfolio of projects show that working with local communities is generally cost effective because they are the direct beneficiaries of the project.

The project will operate in 4 pilot areas where the AfDB has experience with the ESSP (the involvement is very recent in some cases). Co-financing has been mobilized through a range of ongoing baseline activities, such as training in key ministries, construction and operationalization of some facilities. The underlying objective is to benefit from this AfDB experience and other partner resources as a leverage and to expand beneficiaries' communities while bringing additional funding from GEF, AfDB and co-financiers, as well as operational partnerships with other programmes. This is clearly more cost-effective than starting from scratch in trainings

---

<sup>51</sup> 3 In particular, for the purpose of UNFCCC Decision 3/CP.11 "Further guidance for the operation of the Least Developed Countries Fund," the term "additional costs" means the costs imposed on vulnerable countries to meet their immediate adaptation needs.

farmers on agro-ecology with no pre-existing baseline. By investing in these four pilot areas, the project will be able to capitalize on existing capacity building, complement the expenditure baseline in one given community and increase the focus on land degradation and climate change adaptation. This will not only considerably increase the chances of success of the project, but it will enhance its incremental and replication aspects.

For Component 1, the LDCF project activities will build on existing networks, achievements and existing experiences and former actions, such as training of MINAMB staff to languages, sustainable natural resources management and environmental impact assessment. This will allow institutional capacity to be built cost-effectively, which will ultimately support the strengthening of climate change into national development policies. This approach of complementing existing related projects is more cost-effective than the implementation of a separate initiative, as it will allow the LDCF project to be managed within the existing institutional and management frameworks. Moreover, the project will also enhance its cost effectiveness through partnership and exchange with other on-going initiative such as the NAP-GSP activities for the government of Angola.

Through Component 2, the project will increase the resilience to climate change of the rural population, and indirectly increase productivity in the long-run, yielding considerable economic benefits as well as improvement in the functional integrity of ecosystems. At the operational level, project implementation arrangements will minimize bureaucracy, administrative and managerial wastage, and follow AfDB standard rules and procedures for procurement and recruitment. A cost effectiveness appraisal will be made prior to final approval by the executing agency. One of the main challenges of the project is one of transversal cooperation on adaptive practices. The strategy of the project is also to build local capacity in the 4 sites for replicating and adapting the new participatory management models, the most cost-effective approach for ensuring the sustainability and replicability of the project.

The project will also be cost-effective in that project design and project implementation have and will be able to include a variety of stakeholders, each with their value added in supporting implementation. Local communities and NGOS such as ADRA, ADPP or UNACA will be able to bring their expertise to support project implementation in the four sites in the provinces of i) Cabinda, ii) Namibe, iii) Kuando Kubango, and iv) Huambo.

In conclusion, the project is considered cost-effective for the following primary reasons:

- Project investments will build on existing networks and on-going activities at the institutional and field levels. The proposed LDCF project will benefit from infrastructure investments undertaken by the ESSP to build and furnish the AECs, as well as from investment in staff training which will support the effectiveness of the LDCF project's capacity building activities in relevant ministries. In pilot sites as well, the project will be able to capitalize on existing capacity building, complement the expenditure baseline in one given community and increase the focus on land degradation and climate change adaptation.
- Project support is expected to improve the overall cost-effectiveness of the adaptive practices in the four sites services (Cabinda, Namibe, Kuando Kubango, and Huambo Provinces). It is anticipated that a modest investment of GEF resources will result in: (a) significant improvements in the resilience of the ecosystems in the targeted sites of Angola; (b) more efficient management of water, especially in Kuando Kubango; (c) improved farming systems in relation to the stress coming from climate-related extreme events; (d) more climate proof and hence cost-effective infrastructures along the coastline in Namibe Province, especially when these infrastructures are for fishery purposes.
- Project investments will significantly increase the incomes of the farmers generated from new adaptive practices introduced by the project. It will increase the incomes flows, particularly towards the low-income households. This additional financing will then be reinjected in the local economy with an incremental improvement in the targeted areas. Project support for detailed assessments on tools and funding mechanisms or improving the institutional framework may contribute, over the long-term (i.e. beyond the term of the project), to addressing some of the fundamental weaknesses in the current local and municipal administrations in the four sites.



### **C. BUDGETED M & E PLAN:**

The project will be monitored through the following M&E activities.

#### *Project start*

A Project Inception Mission will be held within the first 2 months of project start with those with assigned roles in the project organization & structure, AfDB country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Mission is crucial to building ownership for the project results and to plan the first year annual work plan. An Inception Workshop will then be held, that should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of AfDB staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Based on the project results framework and the relevant GEF Tracking Tool if appropriate, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule Project Board meetings. Roles and responsibilities of all project organization structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

An Inception Mission report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

#### *Quarterly*

Based on the initial risk analysis submitted, the risk log shall be regularly updated in AfDB information system. Risks become critical when the impact and probability are high. Note that for GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of value chain actors are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).

Based on the information recorded in AfDB information system, a Project Progress Report can be generated in the Executive Snapshot.

#### *Annually*

Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (1 July to 30 June). The APR/PIR combines both AfDB and GEF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes — each with indicators, baseline data and end-of-project targets (cumulative)

- Project outputs delivered per project outcome (annual)
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- AfDB information system
- Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

#### *Periodic Monitoring through site visits*

AfDB will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report will be prepared by the AfDB and will be circulated no less than one month after the visit to the project team and Project Board members.

#### *Mid-term of project cycle*

The project will undergo an independent Mid-Term Review at the mid-point of project implementation. The Mid-Term Review will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the Mid-Term Review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-Term Review will be prepared by the AfDB based on guidance from the GEF. The management response and the evaluation will be uploaded to AfDB corporate systems. The relevant GEF Focal Area Tracking Tools will also be completed during the Mid-Term Review cycle.

#### *End of Project*

An independent Final Evaluation will take place three months after the final Project Board meeting and will be undertaken in accordance with AfDB and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the Mid-Term Review, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the AfDB based on guidance from the GEF.

The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded. The relevant GEF Focal Area Tracking Tools will also be completed at project completion stage.

During the last two months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

#### *Learning and knowledge sharing*

Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

*Audit clause*

The project audit will be conducted in accordance with applicable AfDB audit policies.

*Table: Project Monitoring and Evaluation Workplan and Budget*

<b>Type of M&amp;E activity</b>	<b>Responsible Parties</b>	<b>Budget USD Excluding project team staff time</b>	<b>Time frame</b>
Year 1: Inception Workshop and Report	Project Manager PMT (Project Management Team – GoA-AfDB) AfDB, GEF	Indicative cost: USD 20,000	Within first two months of project start up with the full team on board
Year 1, 2, 3: Measurement of Means of Verification of project results.	AfDB GEF/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members. PMT, esp. M&E expert	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
End of year 1, 2, 3: Measurement of Means of Verification for Project Progress on output and implementation	Oversight by Project Manager PMT, esp. M&E expert Implementation teams	To be determined as part of the Annual Work Plan's preparation. Indicative cost is USD 50,000	Annually prior to ARR/PIR and to the definition of annual work plans
End of year 1, 2, 3: Annual review	Project manager; PMT; AfDB and GEF	None	Annually
Every quarter for 3 years: Periodic status/ progress reports	Project manager and team	None	Quarterly
After 18 months after project start: Mid-term Review	Project Manager PMT (Project Management Team – GoA-AfDB) AfDB, GEF External Consultants (i.e. evaluation team)	Indicative cost: USD 45,000	At the mid-point of project implementation.

Type of M&E activity	Responsible Parties	Budget USD Excluding project team staff time	Time frame
At the end of Y3: Terminal Evaluation	Project Manager PMT (Project Management Team – GoA-AfDB) AfDB, GEF External Consultants (i.e. evaluation team)	Indicative cost: USD 45,000	At least three months before the end of project implementation
Years 1, 2, 3: Audit	AfDB Project manager PMT	Indicative cost per year: USD 3,000 (USD 15,000 total)	Yearly
Years 1, 2, 3: Visits to field sites	AfDB GEF Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly
<b>Total indicative cost Excluding project team staff time and AfDB staff and travel expenses</b>		<b>USD 175,000</b>	


**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):** (Please attach the Operational Focal Point endorsement letter(s) with this form. For SGP, use this OPF endorsement letter).

<b>NAME</b>	<b>POSITION</b>	<b>MINISTRY</b>	<b>DATE (MM/dd/yyyy)</b>
<b>Carlos Avelino Manuel CADETE</b>	Operational focal point National Director of Statistics, planning and Studies Cabinet	Ministério do Ambiente (MINAMB)	

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.
---

<b>Agency Coordinator, Agency Name</b>	<b>Signature</b>	<b>Date (Month, day, year)</b>	<b>Project Contact Person</b>	<b>Telephone</b>	<b>Email Address</b>
Mahamat Assouyouiti		06/14/2016	Boue Zinso	Z.BOUE@AFDB.ORG	+22520262753

**ANNEX A: PROJECT RESULTS FRAMEWORK** (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Country and Project Name: Angola, Integrating Climate Change into Environment and Sustainable Land Management Practices						
Purpose of the project: Strengthening climate change into national development activities and promoting adaptive measures and practices						
RESULTS CHAIN	PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS / MITIGATION MEASURES	
	Indicator (including KSI)	Baseline	Target			
IMPACT	<p><b>Impact:</b></p> <p>Better integration of climate change into national activities and an improved resilience of rural communities to climate change in 4 pilot sites in rural areas</p>	<p>Number of direct beneficiaries (and % of women) who integrate climate change adaptation in their activities</p> <p>Climate change adaptation knowledge is available in the AEC</p>	<p>Climate change adaptation is neither integrated at institutional level nor at the communities' level</p> <p>Climate change information and advice unavailable for rural communities</p>	<p>At least 25,000 beneficiaries (at least 30% women) are trained and implemented climate change measures in field.</p> <p>Policy document integrates climate change adaptation</p> <p>Available information for agricultural-dependent communities in the 4 pilot sites</p>	<p>Project documentation</p> <p>Quarterly reports</p> <p>Feedback from community members</p>	<p><b>Risk:</b> Lack of commitment and understanding by the selected communities</p>
	OUTCOMES	<p><b>Outcome 1:</b></p> <p>Adequate climate change policy, strategy &amp; legislation and public participation ensure an effective application in different sectors</p>	<p>1.1 Policy and regulatory framework revised or developed, and implemented</p> <p>1.2 Number of legislation dissemination activities</p>	<p>1.1 No framework at present time and no analysis of CC policies ever undertaken</p> <p>1.2 Current dissemination activities with very few information on the effects of climate change into SLM</p>	<p>1.1 Framework completed within the 12 months following the project initiation and approved by the Government of Angola in early Year 2, and existing policies revised and implemented</p> <p>1.2 At least 3 dissemination activities implemented in each pilot site by the end of Year 2</p>	<p>Published documents</p> <p>Government decrees and laws</p> <p>Copies of information packages and participants' list</p>
<p><b>Outcome 2:</b></p> <p>Introduction and dissemination of climate change adaptation techniques into good SLM practices (including agro-forestry) and create an enabling environment to improve rural livelihood resilience to climate change</p>		<p>2.1 Government initiatives at province level are coordinated and integrated in pilot AEC</p> <p>2.2 Number of beneficiaries who adopted climate resilient practices (% of women)</p>	<p>2.1 None at present time</p> <p>2.2 None at present time</p>	<p>2.1 Coordinated plans for each of the pilot sites are developed within the 12 months following the project's initiation and effectively implemented</p> <p>2.2 At least 25,000 farmers (at least 30% women) adopted CCA/SLM practices and technologies</p>	<p>Project evaluation reports</p> <p>Final report and website</p>	<p><b>Risks:</b> Insufficient institutional support and political commitments; Lack of coordination of the various stakeholders</p> <p><b>Mitigation measures:</b> Strong follow-up and communication upon the project towards institutions</p>

<b>Country and Project Name: Angola, Integrating Climate Change into Environment and Sustainable Land Management Practices</b>					
<b>Purpose of the project: Strengthening climate change into national development activities and promoting adaptive measures and practices</b>					
RESULTS CHAIN	PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS / MITIGATION MEASURES
	Indicator (including KSI)	Baseline	Target		
<b>Outcome 3:</b> A comprehensive coordination and M&E mechanism capturing project good practices / learnt lessons are appropriately disseminated within the project areas	3.1 Public and institutional awareness about climate change and adaptation's options (% of women involved in these activities)	3.1 Lack of a coordinated mechanism to disseminate information to all stakeholders	3.1 Increased awareness among stakeholders to develop climate change adaptation  3.1 Increased women participation.	Attendance registers from seminars and presentation  Field survey	

COMPONENTS	<p><b>Component 1: Governance, Capacity Building and Institutional Strengthening</b></p> <p><b>1.1 Climate change policy strategy and legislation reviewed and revised to ensure applicability to various sectors</b></p> <p>1.1.1 Climate change adaptation is introduced into environmental national policy, strategy and legislation as part of the NAP process</p> <p>1.1.2 Sectoral Climate Risk Assessment guidelines are developed and used by relevant Ministries</p> <p>1.1.3. Institutional capacities and width of action of the Department of Vulnerabilities and Climate Change (DVCC) are strengthened</p>	<p>1.1.1. Knowledge review on climate change issues and practices compiled in a report</p> <p>1.1.1. Awareness on climate change and SLM</p> <p>1.1.2 Guidelines are developed and implemented by relevant Ministries</p> <p>1.1.2 Coordination between Ministries is strengthened</p> <p>1.1.2 Consultation of the DVCC by other ministries for technical support is frequent and desired</p> <p>1.1.3. Gap, knowledge and capacities are assessed</p> <p>1.1.3. Activities to address DVCC capacity/ technical needs are conducted</p>	<p>1.1.1 Decision-makers have not yet integrated climate change issues in their planning and decision-making process</p> <p>1.1.1. Ministries officials and staff have insufficient knowledge on CC issues related to SLM.</p> <p>1.1.2 No concrete guidelines on tackling climate change issues.</p> <p>1.1.2. Actions are uncoordinated and split between Ministries acting independently</p> <p>1.1.2 The DVCC is new within MINAMB, with little visibility for other relevant ministries</p> <p>1.1.3. Lack of information on the current level of knowledge and capacity within DVCC</p> <p>1.1.3. The lack of information (previous indicator) could not allow adapted activities to support the DVCC</p>	<p>1.1.1 Climate-change issues are considered by every sector and industry</p> <p>1.1.1. Ministry officials and staff are fully aware of CC issues related to SLM</p> <p>1.1.2 One guideline document per relevant sector</p> <p>1.1.2 Monthly meetings between Ministries experts and led by the DVCC are organized to share feedback on respective projects</p> <p>1.1.2 The DVCC is at the core of all climate change-related decisions</p> <p>1.1.3. Capacity and knowledge needs are clearly identified</p> <p>1.1.3. DVCC's capacities enhanced according to the identified needs</p>	<p>Revision of policy documents</p> <p>Meetings and workshops with policy-makers and relevant organizations</p> <p>Number of training activities and number of staff attending these training activities.</p> <p>Reports from training activities undertaken, including attendance registers.</p>	<p><b>Risk:</b> data is scarce and its reliability is an issue. <b>Mitigation measure:</b> availability of equipment and a technical expertise to integrate international data on climate</p> <p><b>Risk:</b> institutional and political fragility as well as a lack of coordination between ministries impede the good implementation of measures training and the training and learning of key actors. <b>Mitigation measures:</b> Government remains stable and commits itself to put climate change issues as a priority in its policy documents; Training starts as soon as the project is launched to allow for a quick knowledge and skills acquisition. The project fosters coordination between ministries.</p>
	<p><b>1.2 Promotion of public consultation and participation in climate change and sustainable natural resources management</b></p> <p>1.2.1 Development of an operational training manual are used by government officials and staff</p> <p>1.2.2 Stakeholders and institutions are consulted and their capacity enhanced</p>	<p>1.2.1. An operational training manual is developed and used</p> <p>1.2.1 Climate proofing assessment tools are elaborated within the OTM and validated by all specialists from all relevant ministries</p> <p>1.2.2. Guidelines are tested by the DVCC at the investment level</p> <p>1.2.2. Capacity building on climate risks is brought to various stakeholders and actors</p>	<p>1.2.1. No such manual is available at present time</p> <p>1.2.1. Every department is acting independently according to its own agenda and criterion of climate change factors</p> <p>1.2.2. No guidelines are available</p> <p>1.2.2. Low capacity on risk assessment, risk reduction, vulnerabilities assessment and adaptation technologies</p>	<p>1.2.1. The DVCC supervises the development of the operational training manual to ensure its applicability and relevancy for and to all ministries</p> <p>1.2.1. An operational training manual is developed and implemented, in cooperation with all ministries</p> <p>1.2.1 All ministries evaluate projects following the same criterion of climate change factors as per the OTM</p> <p>1.2.2. Guidelines meet stakeholders and institutions needs</p> <p>1.2.2. Stakeholders are actors moved toward resilience through capacity building activities on climate risks</p>		



<p><b>Component 2. Promoting climate adaptation measures into SLM practices in four demonstration sites (Namibe, Huambo, Kuando Kubango and Cabinda)</b></p> <p><b>2.1 Dissemination and adoption of good SLM practices and technologies by relevant economic sectors in the pilot demonstration sites</b></p> <p>2.1.1 An efficient framework for multi-stakeholders' collaboration is established and climate change adaptation is integrated in planning and management tools at the local level</p> <p>2.1.2 Capacities on SLM and climate change adaptation practices / technologies are strengthened through demonstration projects and efficient learning cycle</p> <p><b>2.2 Enhanced enabling environment in support of climate change adaptation technology transfer</b></p> <p>2.2.1 Lands under adaptive agro-forestry techniques provide alternative resources and incomes, to reduce lands degradation and to increase the resilience of the communities</p> <p><b>2.3 Adoption of adaptive management plans in the agro-forestry sector</b></p> <p>2.3.1 Integrated adaptive management plans, especially on forest fires prevention, are developed and sustainable practices are operational over 2,000 ha in the forests of the pilot sites</p>	<p>2.1.1 Climate change adaptation is included in the Integrated Land Uses Management Plan (ILUMP) and involved MINAMB, MINADER, IDA and IDF.</p> <p>2.1.2 Number of communities trained on CC adaptation (organic fertilization, water management and trees plantation) and put in place at least one of those practices on their field</p> <p>2.1.2 Improved yield for principal crops under CCA/SLM</p> <p>2.2.1 Number of trees planted in agro-forestry systems in order to restore lands and raise incomes for communities.</p> <p>2.2.1 Percentage of increase of households' income.</p> <p>2.3.1 Number of hectares of forest covered by wildfire management plans</p>	<p>2.1.1 No ILUMP at present time and scare collaboration</p> <p>2.1.2 A few SLM initiatives through Farming Schools, but without any climate change adaptation consideration</p> <p>2.1.2 Baseline to be established during the project's inception through survey of communities involved</p> <p>2.2.1 No large scale reforestation in the four provinces</p> <p>2.2.1 Baseline to be established during the project's inception through survey of communities involved</p> <p>2.3.1 No wildfire management strategy, no wildfire action plan</p>	<p>2.1.1 One ILUMP validated in each pilot site, and at least 4 meetings per year within the AEC</p> <p>2.1.2 At least 25,000 farmers trained (at least 30% women)</p> <p>2.1.2 A 20% increased yields for principal crops under CCA/SLM</p> <p>2.2.1 At least 2 million trees are planted in each pilot site</p> <p>2.2.1 A 20% increase in households' income</p> <p>2.3.1 At least 2,000 ha of forest are effectively managed against wildfire</p>	<p>Project documentation</p> <p>Registers of community beneficiaries kept by the organisation implementing the SLM practices and techniques at each project site</p> <p>Surveys and interviews with local community members at project intervention sites</p> <p>Site visits to verify SLM practices and techniques</p> <p>Project monitoring system</p> <p>Project reports</p> <p>Survey reports</p>	<p><b>Assumptions:</b> Cooperation of government entities, communities and NGOs; Communities in target projects sites are willing to cooperate and adopt climate change adaptation measures; Continued interest of stakeholders.</p> <p><b>Risks:</b> Communities in the project sites are not committed to cooperate and/or accept proposed adaptation measures; Deficient coordination and weak capacity of relevant stakeholders to implement measures, practices and techniques on the project sites.</p> <p><b>Mitigation measure:</b> Planned assistance provided by the Social Affairs Ministry or civil organisations</p> <p><b>Risk:</b> Mitigation measures put in place like infrastructures are not properly maintained.</p> <p><b>Mitigation measure:</b> Project is incremental to the ESSP</p> <p><b>Risk:</b> The construction costs are greater than expected. <b>Mitigation measure:</b> preliminary studies are undertaken to establish the specification and refine the budget balance</p>
<p><b>Component 3: Knowledge management coordination, and monitoring and evaluation</b></p>					

**Country and Project Name:** Angola, Integrating Climate Change into Environment and Sustainable Land Management Practices  
**Purpose of the project:** Strengthening climate change into national development activities and promoting adaptive measures and practices

RESULTS CHAIN	PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS / MITIGATION MEASURES
	Indicator (including KSI)	Baseline	Target		
<p><b>3.1 Knowledge management coordination, and monitoring and evaluation</b></p> <p>3.1.1 Coordination mechanism Knowledge and experience sharing and dissemination of lessons learnt and best practices</p> <p>3.1.2 Multimedia materials (including video) published on project experience/best practices and lessons learnt disseminated</p> <p>3.1.3 Project stakeholders participate in national and international events on climate change adaptation</p>	<p>3.1.1 Availability of the mechanism, and operational</p> <p>3.1.2 Availability of information on project experience</p> <p>3.1.3 Number of people involved in events on climate change adaptation</p> <p>3.1.3 Increased awareness on climate change adaptation</p>	<p>3.1.1. No mechanism in place</p> <p>3.1.2 Lack of information on best practices and lessons learnt. Available information is not being widely shared with communities</p> <p>3.1.3 Very limited at present time</p>	<p>3.1.1. and 3.1.2 Within the 6 months following the project's end, learnt lessons are disseminated through paper copy (booklets, journals...) and electronically</p> <p>3.1.3 Increased awareness among stakeholders to promote and develop climate change adaptation projects</p>	<p>Project documentation</p> <p>Project Monitoring System</p> <p>Project final report and web site</p>	<p><b>Assumptions:</b> Cooperation of Government entities, communities and the private sector implementing and executing agencies;</p> <p><b>Risks:</b> Poor coordination between implementing and executing agencies; Insufficient project adoption by populations.</p> <p><b>Mitigation measure:</b> permanent communication on the project's advancement.</p> <p><b>Risk:</b> collected data are not used to ensure the follow-up. <b>Mitigation measure:</b> an expert in charge of the evaluation follow-up is part of the project management team</p>
<p><b>3.2 Implementation of M&amp;E systems</b></p> <p>3.2.1 Effective M&amp;E plans and systems are established and M&amp;E documents produced</p>	<p>3.2.1 Climate &amp; lands data and experimentation results are available for all stakeholders</p>	<p>3.2.1 No comprehensive monitoring scheme exists at present time</p>	<p>3.2.1 At least 4 monitoring schemes providing sets of monthly data in each project sites</p>		

**Country and Project Name:** Angola, Integrating Climate Change into Environment and Sustainable Land Management Practices  
**Purpose of the project:** Strengthening climate change into national development activities and promoting adaptive measures and practices

RESULTS CHAIN	PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS / MITIGATION MEASURES
	Indicator (including KSI)	Baseline	Target		
<p><b>1. Governance, Capacity Building and Institutional Strengthening</b>            Activity 1: Knowledge reviews and awareness assessment among ministries officers            Activity 2: Awareness raising activities including workshops on CC issues and adaptation benefits + SLM in ministries            Activity 3: Analysis of policies and programmes documents compiled in a report            Activity 4: Technical support for policies and strategies revision process and for introduction of CC issues into new policies            Activity 5: Development of guidelines on Climate Risk Assessment            Activity 6: Training on benefits of Climate Risk Assessment and on the application of the guidelines            Activity 7: Strengthening of coordination and cooperation between ministries            Activity 8: Study of the gaps in knowledge, research, individual and institutional capacities in DVCC            Activity 9: Addressing these gaps through capacity building activities, technical support and advisory services to enhance DVCC's capacity in CC coordination, monitoring and reporting methods, in budget allocations for CCA measures, and in building CC frameworks            Activity 10: Institutional support to DVCC to establish climate policies            Activity 11: Development of an operational training manual for integration of CC into EIA and present climate proofing assessment tools, adaptation technologies            Activity 12: Presentation and dissemination of the manual among ministries and assess its applicability            Activity 13: Evaluating relevancy of CRA guidelines through meeting with stakeholders and institutions            Activity 14: Capacity building to stakeholders and actors in risk assessment, risk reduction, vulnerabilities assessment and adaptation technologies</p> <p><b>2. Promoting climate adaptation measures into SLM practices in 4 demonstration sites, namely Namibe, Huambo, Cuando-Cubango and Cabinda</b>            Activity 15: Establishment and promotion of a dialogue between AEC stakeholders            Activity 16: Production of an ILUMP            Activity 17: Assessment, analysis and discussions of producers' organizations capacities            Activity 18: Inclusion of monitoring scheme in IULMP            Activity 19: Training programme for at least 5,000 farmers in SALM practices, with following monitoring in the field            Activity 20: Farmers schools development by supporting existing ones and promoting the creation of new ones            Activity 21: Capacity building through agroecology training sessions in the AECs and in the field with helping documents            Activity 22: Establishment of pilot demonstrative land plots in AECs to disseminate SLM techniques            Activity 23: Technical support to group of farmers for implementation of soil management techniques            Activity 24: Applied research on assessment of forest resources, valuation of forest resources, market analysis, alternative livelihoods options.            Activity 25: Training all communities/woodlot managers on agro-forestry best practices, including use of specified tree species and optimal ecological yield from such species            Activity 26: Technical support provided on tree nursery management as an entrepreneurial activity            Activity 27: Production and dissemination of over 2 million tree seedlings to communities;            Activity 28: Establishment of simplified agroforestry management plan.            Activity 29: Implementation of income-generating activities around the Ecological Perimeters concept            Activity 30: Initial mapping of project zones by local experts to support the initiation of forest fire management plans            Activity 31: Development of forest fire management plans for each forest            Activity 32: Development of policy and legislation that will enable the participation of all stakeholders in forest fire management,            Activity 33: Promoting the exchange of information and experience from other countries            Activity 34: Ensuring involvement of local communities and other stakeholders in income-generating forest and pasture management activities            Activity 35: Trainings of government officials, traditional authorities and local people on the role of forests and trees in the environment, the links between fire and availability of locally used products and principle of forest fire management            Activity 36: Organization and training of local fire management units in prescribed burning and in fire control techniques            Activity 37: Provision by the project of the necessary firefighting tools to local fire management units,            Activity 38: Production and dissemination of fire awareness materials and introduction of fire awareness programmes at local schools            Activity 39: The AEC, will ensure the monitoring of wildfires and the implementation of the integrated forest fire management plans</p> <p><b>3. Knowledge management coordination, and monitoring and evaluation</b>            Activity 40: Coordinate research programme and partnership with research centers, ensuring coherence of practices promoted, and development strategy            Activity 41: Organization of inter-provincial workshops to disseminate adaptation knowledge from AEC            Activity 42: "Trainers of trainers" training programme to create trainers who will diffuse knowledge and good practices            Activity 43: Promotion of the development of a network of local resource centers in the region            Activity 44: Realization and publishing of multimedia materials on best practices and lessons learnt            Activity 45: Creation of National Plan to implement outreach/promotional activities targeting climate change adaptation measures.            Activity 46: Capacity development of institutions including ministries to monitor and document project experience</p>				<p><b>Component 1:</b> 1.5 million usd (gef) + 10 million usd (loan)  <b>Component 2:</b> 2,5 million usd (gef) + 6 million usd (loan)  <b>Component 3:</b> 0,2 million usd (GEF) + 2 million USD (loan)  <b>Project Management Cost:</b> 216,210 USD  <b>In-kind from the GoA:</b> 1,995 million USD  <b>Total cost of the project:</b>  <b>4,416,210 USD GEF + 18,000,000 USD loan + 1,995,000 USD in-kind: 24,411,210 USD</b></p>	

**ANNEX B: RESPONSES TO PROJECT REVIEWS** (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

**RESPONSES TO COUNCIL RECOMMENDATIONS**

Comment	Response
<p><u>Germany's Comments</u>  <i>Germany approves the following PIF in the work program but asks that the following comments are taken into account:</i>            Suggestions for improvement to be made during the drafting of the final project proposal:</p> <p>1. The PIF provides fairly detailed information on the LDCF contribution to the baseline project. However, we recommend providing more information on why the current baseline entails merely a “weak-enabling consideration of climate change in its interventions” (p.8).            This seems somewhat surprising, considering that the activities of the baseline project include, according to the PIF, e.g. establishing/strengthening a Climate Risk Management Unit, (Component 1, <i>Environmental Governance, Capacity Building and Institutional Strengthening</i>) and establishing four pilot sites to “<i>demonstrate and promote synergy and best practice in sustainable land-use management [....] adaptation to climate change</i>” (Component 2, <i>Integrated Natural Resource Management and Environmental</i>).            We would therefore recommend clarifying why climate change has despite this approach not been considered in the baseline project, and take the lessons learned into account in the design and implementation of this LDCF project. Please specify the baseline project’s title.</p> <p>2. As part of Component 1 of the project, the PIF foresees the development of sectoral climate risk assessment guidelines, an operational training manual integrating climate change into EIA, climate proofing assessment tools and climate adaptation technologies.            While we support this, we would suggest ensuring that existing regional/international guidelines and training manuals and tools will be used to the extent possible.</p> <p>3. Regarding coordination with other related initiatives, the list appears to be partly outdated, e.g. the German-supported project mentioned has already been concluded. We ask to update the project list.</p> <p>4. The PIF acknowledges the critical role of women in natural resources management, and states that the project will promote positive gender outcomes through e.g. training and workshops. We appreciate this approach yet we would recommend providing more detailed information on the inclusion of gender aspects in the final project document, both in terms of gender-disaggregated outputs (e.g. how many women will be trained) and results (how will women and men benefit from the project activities).</p>	<p>1. In hindsight, the ESSP was resolutely not climate-change – oriented, and did not yield significant results in that regard.</p> <p>2. No satisfactory and up-to-date guidelines are in existence, hence the need to elaborate some in view of what we now know, and thereby mobilizing the newly-built institutional capacities.</p> <p>3. Duly revised.</p> <p>4. Women’s participation at the sites level was studied. Given the role of Angolan women in the rural areas and in the production, harvesting, and processing of agricultural products, women, together with youth, will significantly benefit from the project activities implementation. The participation of women in practice and technologies selection at the community level is expected to be high as women dominate most of the activities targeted in the agro-forestry sector. They will reap benefits and strengthen the anchoring of the aforementioned practices within the community.</p>

**ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS<sup>52</sup>**

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

<b>PPG Grant Approved at PIF: 150,000 USD</b>			
<b><i>Project Preparation Activities Implemented</i></b>	<b><i>GEF/LDCF/SCCF/NPIF Amount (USD)</i></b>		
	<b><i>Budgeted Amount</i></b>	<b><i>Amount Spent To date</i></b>	<b><i>Amount Committed</i></b>
RCE and PAR	130 000 USD	90 000 USD	
<b>Total</b>	130 000 USD	90 000 USD	0

---

<sup>52</sup> If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

**ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

### The four pilot sites characteristics

<b>SITE 1: HUAMBO</b>
<b>Presentation: key characteristics</b>
<p>Huambo lies in the centre of Angola and covers much of the topographic zone known as the <i>planalto central</i> (literally the Central Highlands). The whole province is 1,300 meters above sea level. The eastern and southern areas of Huambo consist largely of gently rolling hills between flat river valleys, whereas the western areas are more rugged with relatively deeply valleys. This is from <i>planalto</i> that many of Angola's biggest rivers flow because rainfall is higher than in most other areas of the country. Soil erosion is thus very rapid in the whole province and in particular in the west.</p> <p>The ferralsols dominate the surface area of the province but produce little in agricultural terms because the soils are permeable, with a low water-holding capacity. This permeability combined with the high rainfall results in leaching with the consequent rapid loss of mineral nutrients and organic matter from the soil. Maize and manioc are the main crops on these soils. With no improvement practices of the soil, maize yields average only about 300 kilograms per hectare. Chemical fertilizers have been promoted in the last years in order to increase yields. Alluvial fluvisols are also found on lower elevations, mostly along drainage lines. They are much more productive, since maize yields can reach 1,000 kilograms per hectare.</p> <p>Although Huambo receives greater rainfalls than other provinces, rainfall is often highly variable. Long dry periods occur occasionally when little rain is received over extended periods, and these may cause crop and other plant growth to slow and seedlings to die if the dry conditions coincide with hot weather at critical times in the growth cycle. Conversely, extended wet periods occur from time to time, and they can limit plant growth too.</p>
<b>Natural resources</b>
<p>The Miombo forest is the most representative ecosystems in Huambo. This is a mixture of broadleafed, deciduous trees, generally dominated by species belonging to <i>Brachystegia</i>, <i>Julbernardia</i>, and <i>Isobertinia</i>. Woodlands are under pressure of charcoal production and wildfire.</p> <p>Huambo is one of the poorest provinces in Angola and the magnitude of the issues are impacting severely on people and environment. Deforestation is a major environmental threat; especially densely populated areas surrounding Huambo city are depleted of biomass; indigenous vegetation is destroyed in most areas close to the city and under threat elsewhere in the province. The charcoal and sustainable energy focus is particularly important for Huambo province because a great number of people depend on charcoal production for their daily livelihoods. Little has been done in terms of improved agricultural production, value addition in terms of pricing, proper market research, sustainable harvesting, replanting, alternative energies and alternative livelihoods. Overall understanding of SLM is low; there is a need to train extension services and upcoming professionals in the field; thus focus on developing SLM modules for the Agro-Ecological Center of Chippipa, extension and teachers training levels.</p>
<b>Climate change: vulnerability, gaps and needs</b>
<p>In Huambo, the following main vulnerabilities to climate change have been identified:</p> <ul style="list-style-type: none"> <li>(i) decrease crop yield,</li> <li>(ii) loss to soil and decrease of soil fertility,</li> <li>(iii) forest degradation and decrease of environmental service (micro-climate regulation).</li> </ul> <p>Still, farmers and the communities are not properly informed about the impacts of climate change, nor about adaptive practices and SLM. Farmers schools are organized at small scale in the province, but they do not integrate climate change adaptation in the trainings of farmers.</p> <p>The needs identified for climate change adaptation of rural population are: (i) diversified and resistant crops, (ii) crop association with trees in order to keep moisture in soil, adapted agricultural practices (water retention), small infrastructures, reforestation and assisted natural regeneration.</p>

<b>SITE 2: CABINDA</b>
<b>Presentation: key characteristics</b>
<p>Cabinda is the province further north of Angola, separated from the rest of the territory by a range of 90 km, which belongs to the Republic of Congo. With an area of 7.270km<sup>2</sup> it is bounded on the west by the Atlantic Ocean. The rugged terrain ranges from sea level to about 800m in the interior Northeast. The Chiloango river runs through the Northeast territory to the Southeast, and it is the most dominant hydrographic basin of the province.</p> <p>The two major soil units are ferrasols – more represented in areas of lower topography and paraferalitic – most represented in the countryside, in the mountainous northeast, that is quite fertile. The main crops are cassava, bananas and peanuts. Oil palm trees also play an important role in the diet. Precipitation ranges from a minimum of 800mm in S-SW to more than 1400 mm at higher altitudes Northeast, with two maximums in November and April.</p>
<b>Natural resources</b>
<p>The tropical wet evergreen forest, the tropical lowland rain forest and the savannah with shrubs are the main vegetation groups of the province. Along the Mayombe Mountains, tropical evergreen forest extends south into Angola, because of deep soils, mist and clouds over the area (influence of the cold Benguela stream). The tropical lowland rain forest is never leafless. It consists of several strata, including an upper strata of large trees, which may be 40-60m high. The forest has in many places been degraded and secondary forests are composed of fast growing light-wood species, especially the umbrella tree (<i>Musanga cecropoides</i> or <i>M. smithii</i>). The savannah with shrubs is more representative in the coast area, dominated by species <i>Hymenocardia acida</i>, <i>Piliostigma thonningii</i> and <i>Annona arenaria</i> and grass stratum.</p>
<b>Climate change: vulnerability, gaps and needs</b>
<p>In Cabinda, the main vulnerabilities to climate change have been identified as forest degradation and decrease of environmental service (micro-climate regulation).</p> <p>Still, farmers and the communities are not properly informed about the impacts of climate change, nor about adaptive practices and SLM. The needs identified for climate change adaptation of rural population are: reforestation and assisted natural regeneration, windbreak, crop association with trees.</p>
<b>SITE 3: KUANDO KUBANGO</b>
<b>Presentation: key characteristics</b>
<p>Kuando-Kubango province comprises a vast area of 199,049 km<sup>2</sup>, with Kuando and Kubango main rivers, of permanent flow, even in the dry season. The altitude ranges between 970m and 1500m (NE). The psammitic soils are the most representative, divided in two main topographical situations: psammitic soils of the dry sands of platforms and psammitic soils of the valleys. There are also soils related to limestone formations most represented along the Kuando river.</p>
<b>Natural resources</b>
<p>The existing cultures are scarce and mainly undemanding as millet, cassava and beans. Agriculture along the rivers is poorly developed because of the difficulty of handling the peaty soil. Fishing and hunting are the main means of sustaining communities. The rainy season extends from November to March, and rainfall ranges between a maximum of 1100mm Northwest and a minimum of 700mm and 800mm in the Southeast (Mavinga). January and February are the months of higher rains.</p> <p>According to Diniz (2006) in terms of vegetation, there are different groups to consider, such as:</p>



- Mosaic of dense dry forest and open forest (*Julbernardia*, *Cryptosepalum* and *Pteleopsis*)
- Mosaic of open forest and woodland savannah (*Brachystegia*, *Guibourtia* and *Cryptosepalum*)
- Savannah woodland and wooded savanna (*Baikiaea*, *Burkea*, *Guibourtia* and *Pterocarpus*)
- Savannah with bushes, trees and grasslands (*Peltophorum*, *Combretum* and *Acacia*)
- Clusters of *Ricinodendron rautanenii*.

#### Climate change: vulnerability, gaps and needs

In Kuando Kubango, the following main vulnerabilities to climate change have been identified:

- (i) decrease crop yield,
- (ii) water shortage for cattle,
- (iii) alteration of river and fisheries.

Still, farmers and the communities are not properly informed about the impacts of climate change, nor about adaptive practices and SLM.

The needs identified for climate change adaptation of rural population are: drought resistant crops, adapted agricultural techniques (water retention), reforestation and assisted natural regeneration, windbreak, crop association with trees, trainings, access to water for cattle, optimized transhumance route.

#### SITE 4: NAMIBE

##### Presentation: key characteristics

Namibe province has 57.091km<sup>2</sup>, comprises the South coastline. It is an arid region and has a vast desert surface, an extension of the African Southwest "Namib Desert". The rugged terrain ranges from sea level to about 1700m in the interior Southeast mountains. There are several types of soils, naturally correlated with the underlying lithological material.

According to Diniz (2006) the main soils are:

- Alluvial soils - represented in the most important rivers (except Cunene river).
- Brown calcareous soils - restricted distribution in the coastal North-shore.
- Black heavy clays - essentially clay and very restricted distribution (Southeast)
- Tropical arid soils - averages textures and widely distributed. Related to the characteristic arid climates of the region. The petrocalcic arid soils occur in extremely dry or desert climate range (Iona region).
- Tropical fersiallitic soils - dominant in the inner peripheral range, corresponding to the gneissic and granitic rocks of the Old Massif.
- Lithosols and litholic soils - considerable representation, especially in the desert when in correspondence with outcrops of conglomerate.
- Chromo-psammic soils of dry regions
- Desert dunes
- Rock outcrops.

##### Natural resources

The possibilities for agriculture are very restricted and limited to the areas of the most important rivers along the coastline. Fishing is the main livelihood of the people on the coast. The stock farming is a common practice for the Herero ethnic group (*Mucubais*) using transhumance for herds' management. The average rainfall is less than 100mm and every month of the year can be considered dry. However, the coastal areas are characteristic of high values of relative humidity of air of about 70% (annual average).

In terms of vegetation there are the following groups:

- Temperate dry short-grass steppe (Eastern Namibe province) - in poorly drained areas, consisting of *Eragrostis*, *Aristida* and other grasses. There can be a few wooded areas of *Colophospermum mopane* and *Adansonia digitata*.
- Tropical and subtropical semi-desert vegetation low - this is a true steppe, with very widely spaced

grasses. The most common of the many genera of shrubs and shrublets are *Pentzia*, *Chrysocoma*, *Euryops* and, on saline soil, *Salsola*, *Suaeda* and *Atriplex*. *Welwitschia bainesii* often occurs in association with *Zygophyllum stapfii*.

- Desert with isolated bushes (Southern Namibe coast) - small patches of *Eragrostis cyperoides* or *E. spinosa*.

#### **Climate change: vulnerability, gaps and needs**

In Namibe, the following main vulnerabilities to climate change have been identified:

- (i) decrease crop yield,
- (ii) water shortage for cattle,
- (iii) transhumance period alteration.

Still, farmers and the communities are not properly informed about the impacts of climate change, nor about adaptive practices and SLM.

The needs identified for climate change adaptation of rural population are: drought resistant crops, adapted agricultural techniques (water retention), reforestation and assisted natural regeneration, windbreak, crop association with trees, trainings, access to water for cattle, optimized transhumance route.