



GLOBAL ENVIRONMENT FACILITY  
DRAFT PROJECT DOCUMENT



<b>PROJECT TITLE:</b> Strengthening capacities of agricultural producers to cope with climate change for increased food security through the Farmers Field School approach	
<b>PROJECT SYMBOL:</b> GCP/MOZ/112/LDF	
Recipient Country:	Mozambique
Resource Partner:	Global Environment Facility/Least Developed Country Fund (GEF/LDCF)
FAO project ID:	622616                      GEF/LDCF/SCCF Project ID: 5433
Executing Partner(s):	Ministry of Agriculture and Food security (MASA) and Ministry of Land, Environment and Rural Development (MITADER)
Expected EOD (starting date):	July 2015
Expected NTE (End date):	June 2019
Contribution to FAO's Strategic Framework <sup>1</sup>	<ul style="list-style-type: none"> <li>a. Strategic Objective/Organizational Result: SO-2, SO-5</li> <li>b. Country Programme Framework: Priority Areas 2 – Food availability, access and consumption; and 3 – Environment, natural resources, climate change and disaster risk reduction</li> <li>c. Country Programme Framework: Outcome 2.1: Sustainable increase of crop and animal production and productivity; Output 2.1.1: Small farmers use improved agricultural and animal production techniques in a sustainable way; and Outcome 3.1: Improved natural resources management and resilience to food and agricultural threats; Output 3.1.2: Enhanced adaptation and mitigation capacity of vulnerable communities to climate change and emergencies</li> </ul>
GEF Focal Area/LDCF/SCCF: Climate Change (Adaptation)	
GEF/LDCF/SCCF Strategic Objectives:	
CC-A – 1:	Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level.
CC-A – 2:	Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level.
CC-A - 3:	Promote transfer and adoption of adaptation technology.

<sup>1</sup> For projects operated by country offices, it is necessary to link projects in FPMIS at OR level. For all other projects, linkage at product/service level is necessary

Environmental Impact Assessment Category (insert $\surd$ ): A B C $\surd$	
Financing Plan:	
<b>GEF/LDCF/SCCF allocation:</b>	<b>USD 9,000,000</b>
<u>Co-financing:</u>	
<b>FAO</b>	
- Accelerate Progress towards MDG1c in Mozambique – FAO/EU/MDG	USD 22,400,000 (in cash)
- Food Security and Nutrition for Gaza project – GCP/MOZ/116/BEL	USD 2,500,000 (in cash)
<b>MASA</b>	
- Government Support	USD 770,000 (in kind)
- PRONEA Support Project (PSP)	USD 1,274,657 (in cash)
<b>MITADER</b>	
	USD 400,000 (in kind)
Subtotal Co-financing:	USD 27,344,657
<b>Total Budget:</b>	<b>USD 36,344,657</b>
<b>EXECUTIVE SUMMARY</b>	
<p>Mozambique is a country located in Southeastern Africa, bordering the Mozambique Channel between South Africa and Tanzania, and has a land boundary of 4571 km and a coastline of 2700 km on the Indian Ocean. It remains one of the poorest countries in the world with a per capita income of 646 USD in 2013, ranking 178th out of 187 countries in the 2014 Human Development Index (Index: 0.393). With almost 80 per cent of the labor force working in the agricultural sector, the dependence on natural resources renders the population highly vulnerable to the adverse effects of climate change. The proposed project will intervene in 15 districts within the four provinces of Tete, Sofala, Manica and Gaza.</p> <p>In recent decades, climate change has increasingly impacted Mozambique and in particular the lives of smallholder farmers who are highly dependent on natural resources. Temperatures are increasing, rainfall patterns are changing, and the traditional hot and rainy season and cold and dry season are increasingly variable, which affects the planning of agricultural activities. Climate models are predicting geographically varied gains and losses depending on changing rain patterns. The adverse effects of climate change also impacts the livestock sector as changes in precipitation patterns affect the availability of forage, grazing areas and drying up of watering points.</p> <p>Over the past decade, Mozambique has developed a comprehensive framework of laws, policies, strategies, programmes and action plans addressing rural development, adaptation to climate change and the agricultural sector. However, there are number of challenges that remain to ensure that Climate Change Adaptation (CCA) is fully mainstreamed and integrated into the agricultural sector, such as awareness and internal capacities of key stakeholders including extension services to foster CCA technologies and practices, and cross-sector coordination.</p> <p>In response to the above challenges, the objective of the proposed project is to <i>“enhance the capacity of Mozambique’s agricultural and pastoral sectors to cope with climate change, by up scaling farmers’ adoption of CCA technologies and practices through a network of already established</i></p>	

*Farmers Field Schools (FFS), and by mainstreaming CCA concerns and strategies into on-going agricultural development initiatives, policies and programming.”*

The project strategy is built on four main components. The first is to include improved climate resilient agricultural technologies and approaches in the framework of the Strategic Plan for the Agricultural Sector (PEDSA) and its investment plan (PNISA) with an emphasis on provinces and districts assisted by the Accelerate Progress towards Millennium Development Goal 1c in Mozambique project (MDG1c) and Food Security and Nutrition for Gaza projects. The second component consists of capacity building and promotion of climate resilient agricultural technologies and approaches through Farmer Field Schools (FFS) and other extension approaches in the framework of the PRONEA Support Project (PSP), MDG1c and Food Nutrition and Security for Gaza projects, and other initiatives. The third is to ensure climate change adaptation strategies are mainstreamed into agricultural sector policies and programs with emphasis on rural extension/outreach strategies and plans. And the fourth is to implement a sound monitoring and evaluation framework.

In order to deliver the above-mentioned objective, and in line with the four components, the project includes four outcomes.

The first outcome is to *increase awareness and knowledge of national, provincial and district-level managers and farmers to include CCA best practices and measures into on-going rural development programmes.*

The second outcome is to *promote the adoption of improved CCA strategies, practices and a broader choice of adapted genetic material, in up to 15 districts covering at least three production systems (staple crops, vegetables, mixed tree/crop/animal production systems) through the FFS network that are assisted by FAO MDG1c and Food Security and Nutrition for Gaza projects and other partner programs.*

The third outcome is to *increase institutional capacity and cross-sector coordination for designing and implementing efficient extension/outreach approaches, strategies and mechanisms in support of mainstreaming CCA in the agricultural and animal production sector.*

The fourth outcome is to ensure that *project implementation is based on results based management and application of project lessons learned in future operation facilitated.*

Directly, the project will support at least 80,000 farmers through an existing network of 3200 FFS to develop and implement new approaches, practices including the provision of genetic plant material to increase climate resilience. The project will train 1500 FFS facilitators and at least 200 non-FFS extensionists in providing climate resilient strategies and practices. The project will also build institutional capacity and cross-sector coordination for implementing approaches to mainstream CCA in rural development and the agricultural sector.

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## LIST OF ABBREVIATIONS AND ACRONYMS

Acronym	Full Name
<b>ARA</b>	Regional Water Authorities
<b>AWOS</b>	Automatic Weather Observing Station
<b>AWP/B</b>	Annual Work Plan and Budget
<b>AWS</b>	Automatic Weather Station
<b>BH</b>	Budget Holder
<b>CABI</b>	Centre for Agricultural Bioscience International
<b>CBD</b>	Convention on Biological Diversity
<b>CCA</b>	Climate Change Adaptation
<b>CCAFS</b>	Climate Change Agriculture and Food Security
<b>CDS</b>	Centers of Sustainable Development
<b>CERUM</b>	Centers of Resources and Multiple Use
<b>CTA</b>	Chief Technical Advisor
<b>DC</b>	Direction of Cooperation
<b>DCAP</b>	Crop and Early Warning Unit (of DNSA)
<b>DFD</b>	Diversity Field For a
<b>DFID</b>	UK Department for International Development
<b>DNA</b>	Directorate of National Water
<b>DNEA</b>	National Directorate for Agricultural Extension
<b>DNGA</b>	National Directorate for Environmental Management
<b>DNPA</b>	National Directorate for Environmental Promotion
<b>DNSA</b>	National Directorate of Agricultural Services
<b>DPA</b>	Provincial Directorates of Agriculture
<b>FFS</b>	Farmer Field School
<b>GDP</b>	Gross Domestic Product
<b>ICRISAT</b>	International Crops Research Institute for the Semi-Arid Tropics
<b>IIAM</b>	National Institute for Agriculture Research
<b>INAM</b>	National Institute of Meteorology
<b>INGC</b>	National Institute for Disaster Management
<b>IPPM</b>	Integrated Production and Pest Management
<b>IPM</b>	Integrated Pest Management
<b>LAP</b>	Local Adaptation Plans
<b>LoA</b>	Letter of Agreement
<b>LTO</b>	Lead Technical Officer
<b>LTU</b>	Lead Technical Unit
<b>MDG1c</b>	Accelerate Progress towards Millennium Development Goal 1c in Mozambique project
<b>MITADER</b>	Ministry of Land, Environment and Rural Development
<b>MASA</b>	Ministry of Agriculture and Food Security
<b>NAPA</b>	National Adaptation Plan of Action
<b>NCU</b>	National Coordination Unit
<b>NPC</b>	National Project Coordinator
<b>PECODA</b>	Manual of Environmental Educator
<b>PEDSA</b>	Strategic Plan for the Agricultural Sector
<b>PIR</b>	Project Implementation report
<b>PNISA</b>	National Investment Programme for the Agricultural Sector
<b>PPCR</b>	Pilot Programme for Climate Resilience
<b>PPR</b>	Project Progress Report
<b>PRONEA</b>	National Agricultural Extension Programme
<b>PSC</b>	Project Steering Committee

<b>PSP</b>	PRONEA Support Project
<b>PTF</b>	Project Task Force
<b>REPETE</b>	Periodic meeting for technologies review
<b>SADC</b>	Southern African Development Community
<b>SDAE</b>	District Governmental Services for Economic Activities
<b>SHARP</b>	Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists
<b>SPCR</b>	Strategic Program for Climate Resilience
<b>SPER</b>	Provincial Services for Agricultural Extension
<b>TCID</b>	Investment Center Division Budget Group
<b>UDAC</b>	Districts Farmers' Unions
<b>UNAC</b>	National Farmers' Union
<b>UNCCD</b>	United Nation Convention to Combat Desertification
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change



2. Mozambique is one of the poorest countries in the world with a per capita income of 646 USD in 2013<sup>5</sup>, ranking 178th out of 187 countries in the 2014 Human Development Index (Index: 0.393), placing the country in the category of Low Income Countries.<sup>6</sup> Since independence in 1975, the population has doubled and was estimated at 25.8 million people in 2013<sup>7</sup> with a population density of 29.9 per square kilometer in 2011.<sup>8</sup>
3. In Mozambique, 68.31 per cent of the population lives in rural areas, and almost 80 per cent of the labor force works in the agricultural sector<sup>9</sup>. This prevalence of the primary sector in the economy makes the country extremely dependent on natural resources and vulnerable to the adverse effects of climate change.
4. Mozambique is divided into two major topographical regions, the coastal lowlands with uplands in the center, and high plateaus in the northwest and mountains to the west. The Zambezi River, the biggest river in the country, flows through the center of the country. At the south of the river the lowlands are wider with scattered hills and mountains in the northwest, with an average elevation of 370 meters above sea level. There is agricultural activity in most areas of Mozambique, with varying farming systems depending on their location.

*Figure 2: Topographic Map of Mozambique<sup>10</sup>*



5. The largest area of Mozambican territory is situated in the inter-tropical zone with four distinct tropical climates: humid tropical, dry tropical, semi-arid tropical and a climate modified by altitude. The climate in Mozambique is predominantly humid tropical, characterized by two seasons: a cool and dry one from April to September and a hot and humid one between October and March.
6. In Mozambique, rainfalls are the most intense between December and February. The average precipitation varies from 300 mm in Pafuri in the Gaza Province, and up to 2,000 mm in Tacuane

<sup>5</sup> Source : National Institute of Statistics <http://www.ine.gov.mz/en/Dashboards>

<sup>6</sup> Source : <http://hdr.undp.org/en/countries/profiles/MOZ>

<sup>7</sup> Source: <http://data.worldbank.org/country/mozambique>

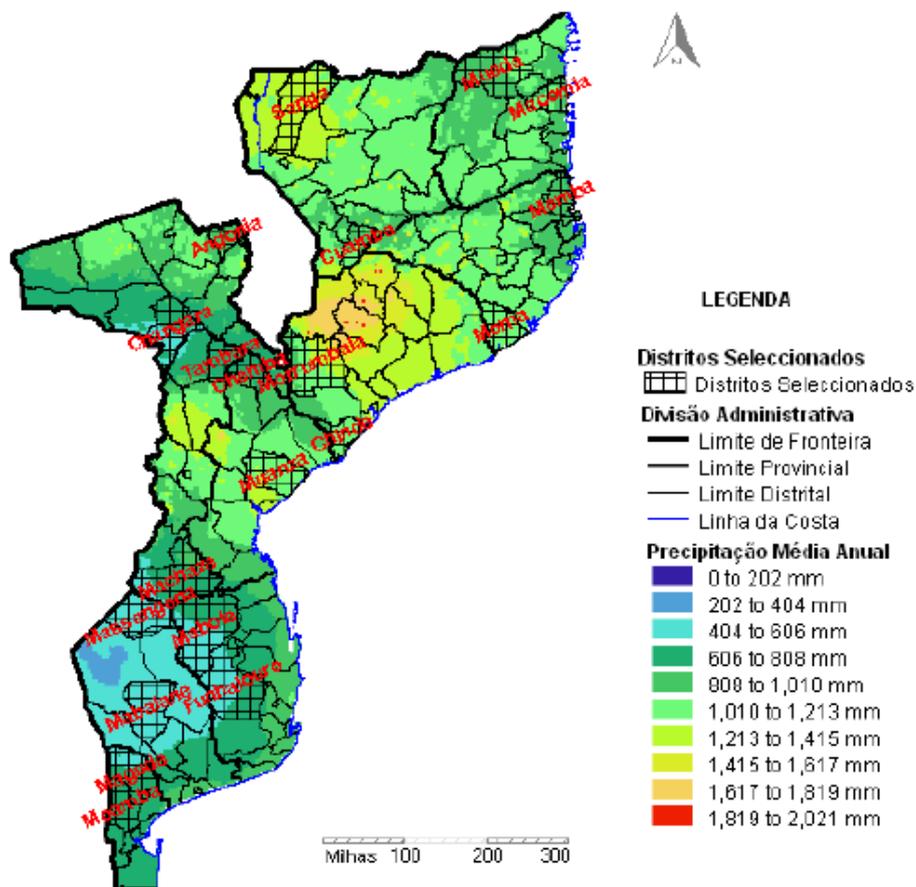
<sup>8</sup> Source : <https://data.un.org/CountryProfile.aspx?crName=Mozambique>

<sup>9</sup> Source : [http://faostat.fao.org/CountryProfiles/Country\\_Profile/Direct.aspx?lang=en&area=144](http://faostat.fao.org/CountryProfiles/Country_Profile/Direct.aspx?lang=en&area=144)

<sup>10</sup> Source: <http://www.worldatlas.com/webimage/countrys/africa/mozambique/mzland.htm>

in the Zambezia Province. The coast line receives about 800 – 900 mm of precipitation per year.<sup>11</sup> In the South of Mozambique, precipitations are relatively high along the coast, but decrease further into the interior of the country until the Libombos Mountains. At the Libombos Mountains, along the border of Swaziland and South Africa, precipitations increase again. The interior zones of the province of Gaza and the border regions adjacent to Zimbabwe and South Africa are all arid. Situated in Gaza province, Pafuri is one of the driest areas of the country. Precipitation patterns are of utmost importance as the majority of subsistence farmers survive on rain fed crops.

*Figure 3: Map of Annual Precipitation Average in Mozambique<sup>12</sup>*



7. Mozambique presents three distinct agro-climate zones:

- The northern zone of the Zambezi River is humid, with a distinct rainy season. Generally, water is available for crops for a full growing season, with drought conditions occurring only twice every ten years.
- The central region, between the south of the Zambezi River and the north of the Save River, experiences drought conditions approximately four years in every ten.
- The southern region has a high risk of drought conditions, with droughts happening seven out of every ten years.

<sup>11</sup> Source: MICOA. 2007. *NAPA*

<sup>12</sup> Source: Republic of Mozambique. 2014-2018. *National Agricultural Investment Plan (PNISA)*.

*Figure 4: Map of Agro-ecological Regions in Mozambique*<sup>13</sup>

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<sup>13</sup> Source: Republic of Mozambique. 2014-2018. *National Agricultural Investment Plan (PNISA)*.

8. When considering the impacts of climate change, Mozambique's National Adaptation Plan of Action (NAPA) and the National Gender, Environment and Climate Change Strategy highlighted the increasing risks of extreme weather events, like floods, cyclones, and longer dry seasons, as well as overall changes in the precipitation patterns. These impacts have dire effects on a resource dependent population, especially women, creating loss of crops, population displacement, disruption of ecosystem-services, environmental degradation and loss of life.<sup>14</sup> Predictions show that there will be little change over most of the coastal area and the southern part of the county, but in northern and north western parts, an increase in rainfall is predicted, exceeding 200 mm in some places.<sup>15</sup>
9. Country-wide temperature variations are due to factors such as latitude, continental features and topography. In general, temperatures are higher in lower latitudes, between 22°C to 26°C, and cooler in higher latitudes and in the west of the country, between 18°C to 20°C. With climate change, temperatures will be increasing in the future, predicting an increase of 1°C to 1.5°C overall. However temperature increase in parts of the south could potentially reach 2°C, whilst the northeastern part of the country could experience increases of 2°C to 2.5°C.<sup>16</sup> The changes in temperature and precipitation will increase in Mozambique representing an important risk to the country's natural resources and its population given its high dependence on the primary sector.
10. Mozambique is a country vulnerable to climate change due to its geographic location, about 2,700 kilometers of coastline, at the confluence of many international rivers flowing into the Indian Ocean, and land areas under sea level. In recent decades, climate change has increasingly impacted Mozambique and in particular the lives of smallholder farmers who are highly dependent on natural resources. Temperatures are increasing, rainfall patterns are changing, and the traditional hot and rainy season and cold and dry season are increasingly variable, which affects the planning of agricultural activities.
11. Rainfall patterns are increasingly unpredictable, hindering farmers' ability to predict seasonal changes and planting cycles of their agricultural crops. Farmers have to cope with a loss of crops, increasing unpredictability of season length, a reduction of the soil available water content in dryland rain-fed crops, drying water sources for irrigation, and loss of biodiversity due to climate change. Climate change in Mozambique also impacts crop yields. The Decision Support System for Agrotechnology Transfer crop modelling software, used by CGIAR CCAFS (Climate Change Agriculture and Food Security), allowed to produce projections for rain-fed maize at the 2050 horizon<sup>17</sup>. The exercise consisted in comparing crop yields projections for 2050 with climate change to yields with the 2000 climate. The results are geographically varied, some areas would benefit from gains in yields while other would have to cope with losses. The results also vary between the two models used (CSIRO and MIROC). Both models show a clear yield gain (between 5 and 25%) in the north. For the southern part of the country, on the one hand the MIROC model shows yield increases of more than 25 percent over significant areas. On the other hand, while the CSIRO model also predicts yield gains in excess of 25 percent in some parts of the south, it projects some yield losses of similar magnitude in other parts of the country. The results of this research are presented in the map below.

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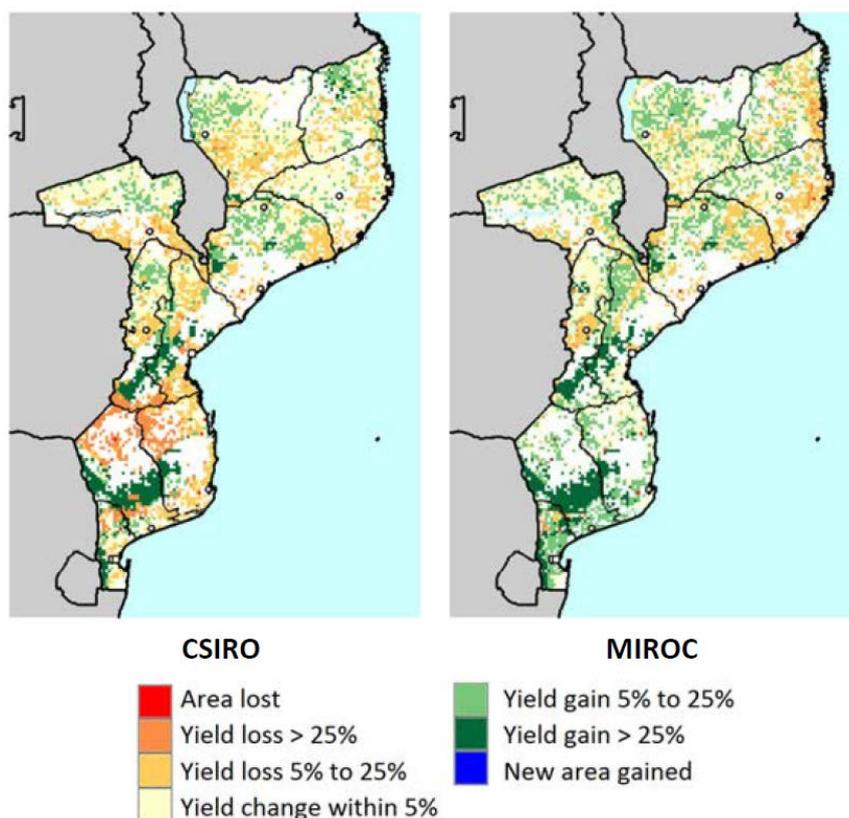
<sup>14</sup> MICOA. 2007. *NAPA*

<sup>15</sup> IFRI. 2012. *Southern African Agriculture and Climate Change: A Comprehensive Analysis - Mozambique*

<sup>16</sup> IFRI. 2012. *Southern African Agriculture and Climate Change: A Comprehensive Analysis - Mozambique*

<sup>17</sup> IFPRI, FANRPAN, CGIAR. December 2012. *Southern African Agriculture and Climate Change: a Comprehensive Analysis – Mozambique*

Figure 5: Change in rain-fed maize yields according to climate change projections<sup>18</sup>



12. The adverse effects of climate change also impacts the livestock sector as changes in precipitation patterns affect the availability of forage, grazing areas and drying up of watering points.
13. Geographic location is one of the key factors that contribute to the country's vulnerability to extreme climate events: some of the tropical cyclones and depressions that form in the Indian Ocean cross the Mozambique Channel and affect the coastal zone. As global temperatures increase, Mozambique is experiencing increases in the frequency and severity of droughts in the interior and floods in coastal regions affecting agricultural production. The unpredictability and impact of these events have an important impact on farmers.

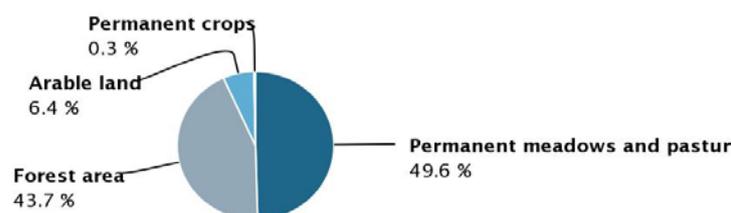
### **The Agricultural and Livestock Sectors**

14. In recent years, the agricultural sector in Mozambique has seen unprecedented growth since the end of the civil war in 1992. In 2013, it represented 29 per cent of its Gross Domestic Product (GDP)<sup>19</sup>, and agriculture remains the main source of livelihood for rural populations.
15. Mozambique has been viewed as the new bread basket of Africa given its increasing potential in the agricultural and livestock sectors. The country has a diverse landscape to accommodate different types of agriculture. The figure below shows land use repartition in Mozambique; 6.7% of total land is used for agriculture. Even if this proportion seems small, agriculture is the main economic activity for subsistence farmers who represent 90% of the population in Mozambique.

<sup>18</sup> Source: IFPRI, FANRPAN, CGIAR. December 2012. *Southern African Agriculture and Climate Change: a Comprehensive Analysis – Mozambique*.

<sup>19</sup> Source: <http://databank.worldbank.org/data/views/reports/tableview.aspx#>

Figure 6: Land Use in Mozambique (2011)<sup>20</sup>



16. Crop production in Mozambique is made up of food crops for consumption and export crops. Regarding food crops, cassava and maize remain the main staples in the country, cassava being predominately produced in the north and maize in the south. Other main producing foods include bananas, beans, rice, sweet potatoes, sorghum, and tomatoes as presented in the table below. However, the country also produces tobacco, cotton, wheat, sugar cane, and cashew nuts mainly for export, as well as other fruits and vegetables, and ground nuts for consumption and export.

Table 1: Mozambique Top Ten Commodities Production Quantity 2012<sup>21</sup>

	Commodity	Quantity (t)
1	Cassava	10051364
2	Sugar Cane	3393904
3	Maize	1177390
4	Sweet Potatoes	900000
5	Bananas	470000
6	Beans, dry	281922
7	Rice, paddy	280000
8	Coconuts	270000
9	Tomatoes	250000
10	Sorghum	239000

17. Maize and cassava are the most produced staple crops in Tete, Manica, Sofala and Gaza provinces, the four provinces targeted by this project (see table 2 below) (although sorghum is the most important crop in the target province of Gaza due to the drier conditions in this province); for instance more than 90% of smallholder farmers grow maize in Tete and Manica provinces.

Table 2: Percentage of smallholders that grew food crops in 2012 for the targeted provinces<sup>22</sup>

% that grows	Tete	Manica	Sofala	Gaza
Maize	94.36	93.94	74.32	90.49
Rice	0.09	1.30	30.02	4.63
Sorghum	26.98	40.10	35.37	1.83
Millet	10.80	12.27	10.18	4.39
Large groundnut	14.55	5.15	3.71	1.32
Small groundnut	23.08	25.52	11.77	55.81
Common beans	29.95	15.48	3.86	13.66
Cowpeas	52.64	51.66	41.46	66.96
Mungbean	4.54	11.16	5.04	15.16
Pigeonpeas	6.89	17.85	25.52	2.33
Cassava	6.94	39.75	42.44	68.75
Sweet potatoes	6.14	4.69	4.48	7.37

Source: MINAG's Agricultural Survey IAI2012

<sup>20</sup> Source: <http://faostat3.fao.org/faostat-gateway/go/to/browse/area/144/E>

<sup>21</sup> FAOSTATS: Country Profile Mozambique

<sup>22</sup> MINAG. 2012. Agricultural Survey.

*Table 3: Average yields and production per household for the main food crops in 2012 for the targeted provinces*<sup>23</sup>

Crop	Average yields (kg/ha) - means				Average production (kg) per household - means			
	Tete	Manica	Sofala	Gaza	Tete	Manica	Sofala	Gaza
Maize	1,077	1,458	1,163	944	617.16	783.14	379.00	230.07
Rice	47	255	510	840	0.04	0.47	38.95	19.73
Sorghum	874	912	750	109	56.55	73.23	80.79	0.49
Millet	1,243	1,004	370	166	18.11	24.03	10.49	1.83
Large groundnut	283	321	572	97	7.92	1.43	1.40	0.15
Small groundnut	494	597	214	363	14.12	17.91	3.25	38.15
Common beans	428	1,279	284	312	29.49	11.89	4.18	6.13
Cowpeas	222	352	232	411	18.41	16.77	8.23	29.26
Mungbean	360	858	196	988	2.03	4.99	1.01	5.90
Pigeonpeas	1,819	793	571	499	25.09	16.50	10.56	0.93
Cassava	-	-	-	-	2,837.76	1,757.22	1,290.17	1,016.58
Sweet potatoes	-	-	-	-	1,918.25	1,709.73	778.36	417.39

18. The livestock sector is not as dominant as the agricultural sector; it is characterized by cattle, sheep, goats, pigs and chickens. Farmers also use their livestock to produce animal products such as eggs and milk.

*Table 4: Mozambique Live Animal Quantity 2013*<sup>24</sup>

Livestock	Total number
<b>Cattle</b>	1690000
<b>Sheep</b>	250000
<b>Goats</b>	4350000
<b>Pigs</b>	1700000
<b>Chickens</b>	19000
<b>Ducks</b>	1750
<b>Geese and guinea fowls</b>	15000
<b>Turkeys</b>	80
<b>Rabbits and hares</b>	170
<b>Poultry Birds</b>	35830
<b>Beehives</b>	44000

19. Livestock makes significant contributions to the livelihood of smallholder farmers and the rural poor. The number of livestock has grown significantly over the past decade and are owned by the rural poor to increase and diversify income, and to reduce risks. The very poor can afford only some chickens, while those at the next level can add pigs, goats and a few cattle, and the better off among the poor can afford larger numbers of chickens, pigs, and cattle. Women often raise chicken and pigs while men generally raise goats and cattle. The contribution of livestock to family income varies by area but is significant overall. About two-thirds of total livestock production happens in Northern and Central Eastern Provinces of the country. Of the total production in these provinces, some 55 percent is pork and 40 percent goats and poultry. Several constraints undermine an increase in livestock numbers, but one of the main reasons is the high prevalence of diseases<sup>25</sup>.

<sup>23</sup> PPG report on Component 1

<sup>24</sup> FAOSTATS

<sup>25</sup> World Bank. 2006. *Mozambique Agricultural Development Strategy: Stimulating Smallholder Agricultural Growth*.

20. In a more regional perspective, cattle are rare in the northern districts of Malema, Ribaué, Alto Molocué and Gurue, according to data from the latest agricultural census of 2009/10 (Table 5). This has a bearing on the adoption of animal traction, which is only found in a selected few districts in the central provinces of Tete, Manica, and Sofala. Smallholders still rely on hand hoes to clear their land, and land expansion is constrained by lack of animal traction or use of tractors.

Table 5: Total livestock by districts<sup>26</sup>

District	Cattle (Source: CAP 2009/10)	Goats (Source: CAP 2009/10)	Sheep (Source: CAP 2009/10)	Pigs (Source: CAP 2009/10)	Chickens (Source: CAP 2009/10)
Malema	1,196	23,398	1,483	17,361	128,117
Ribaué	0	27,012	596	19,281	173,605
Alto Molocué	0	17,121	0	40,366	359,302
Gurue	0	5,505	180	19,655	260,990
Mocuba	387	6,154	0	17,210	318,185
Angonia	26,121	77,218	2,418	36,819	327,463
Tsangano	18,022	36,283	0	10,097	186,980
Barue	16,625	42,381	417	14,411	451,193
Gondola	5,370	71,905	0	14,911	673,346
Manica	43,575	57,995	0	8,727	356,816
Sussundenga	16,197	68,515	180	350	281,521
Buzi	12,127	82,051	572	5,072	345,151
Gorongosa	766	26,531	1,000	17,327	210,610
Maringue	1,486	48,500	5,658	25,037	158,204
Nhamatanda	1,311	77,223	189	18,594	592,097
Total	143,183	667,792	12,692	265,217	4,823,579

## 1.2 RATIONALE

### 1.2.1 Baseline Situation

#### Existing policies and strategies related to Climate Change Adaptation (CCA)

21. In the last decade, Mozambique has reinforced its institutional and strategic framework in order to cope with and adapt to climate change; the most relevant policies that have been developed so far are as follows:

- The *National Adaptation Programme of Action* (NAPA) adopted in 2007. The objective of the NAPA development was to contribute to minimizing the negative impacts of climate change on the most vulnerable populations, in order to implement sustainable development and fight against poverty and losses due to natural disasters in Mozambique. The NAPA document gives an overview of the priorities and urgent activities to be undertaken to cope with and adapt to climate change. These adaptation measures are in line with Mozambique's ratification of international conventions such as the United Nations Framework Convention on Climate Change (UNFCCC), UN Convention to Combat Desertification (UNCCD) and the Convention on Biological Diversity (CBD). The NAPA sets out four broad areas of activities: (i) strengthening an early warning system; (ii) strengthening capacities of agricultural producers to cope with climate change;

<sup>26</sup> MINAG Agricultural Survey 2012

(iii) reduction of climate change impacts in coastal zones; and (iv) management of water resources under climate change.

- The NAPA was followed up by the *National Climate Change Adaptation and Mitigation Strategy* (2013 – 2025), which is financed yearly by the *Economic and Social Plan* (PES) for undertaking small projects implemented by the Ministry of Land, Environment and Rural Development (MITADER). The overall objective of the strategy is "to establish guidelines for action to build resilience, including the reduction of climate risks, communities and the national economy and promote the development of low carbon and green economy, through their integration in the sector planning process and place". The specific objectives are to: (i) become resilient to the impacts of climate change in Mozambique, while minimizing climate risks to people and property, restoring and ensuring the rational use and protection of the natural and built capital; (ii) identify and implement opportunities to reduce Greenhouse Gas emissions that contribute to technological affordable and sustainable use of natural resources and access to financial resources, as well as the reduction of pollution and environmental degradation by promoting low-carbon development; and (iii) building the institutional and human capacity as well as exploring opportunities to access technology and financial resource to implement the National Climate Change Adaptation and Mitigation Strategy.
- In the agricultural sector the *Strategic Plan for the Development of the Agricultural Sector (PEDSA)*, 2011 – 2020, aims at identifying the country's new vision for transforming the agricultural sector from being predominantly a subsistence farming industry to becoming a competitive and sustainable sector that would contribute to food security and raise incomes of rural households "in a competitive and sustainable manner that guarantees social and gender equity"<sup>27</sup>. The PEDSA sets a target for achieving seven percent agricultural growth per year. In order to materialize the vision and scope of the PEDSA objectives, strategic actions have been defined that focus on food production based on the development of the sub-sectors producing cereals, pulses, vegetables and fruit, roots and tubers, livestock, poultry and animal sourced products (dairy, eggs), fish production and aquaculture. This approach provides for the establishment of public-private partnerships and the provision of subsidies to technological packages, mechanization and electricity supply related to the production of nutritious food products, as part of the incentives for private sector involvement. It is expected that priority public investments shall be directed towards geographic areas with a high agricultural potential and food insecurity, in particular the development corridors with easy access to production centers and consumption markets. In the remaining areas the State will support local initiatives in order to enable alternative income sources, including non-agricultural activities that contribute to food and nutritional security.
- The *National Investment Programme for the Agricultural Sector (PNISA)* 2013-2017, reaffirms the vision of the agricultural, livestock and fisheries sectors established in the PEDSA: developing "a prosperous, competitive, equitable and sustainable agricultural sector" whose objectives are "to contribute to food security and nutrition, increase income and profitability of agricultural producers and the rapid, competitive and sustainable increase in market-oriented agricultural production". The specific objectives of the PNISA are to:

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<sup>27</sup> MINAG. 2011. *Strategic Plan for Development of the Agricultural Sector*.

- i. accelerate the production of staple and nutritious food products;
- ii. guarantee income for producers;
- iii. ensure access and secure tenure of the necessary natural resources;
- iv. provide specialized services geared towards the development of the value chain;  
and
- v. boost the development of the areas of greatest agricultural and commercial potential.

The PNISA gives priority to the production of food and cash crops. Priority food crops are maize, rice, wheat, beans, cassava, tomato (and horticulture more broadly), potato, orange and sweet potato. Priority cash crops are cashew, cotton, soy, sesame and tobacco; and priority livestock products are dairy products and eggs. The main goals established for the PNISA are (i) achieving an average growth of at least 7% per year over the next 10 years; (ii) the reduction of chronic malnutrition in children under 5, of 44% in 2008 to 30% in 2015 and 20% in 2020; (iii) the reduction by half of the proportion of people who suffer from hunger by 2015.

Thus the PNISA is structured in 5 components, 21 programmes and 61 subprogrammes. The components are: (i) improvement of production and productivity; (ii) market access; (iii) food and nutritional security; (iv) natural resources; and (v) reform and institutional strengthening. One subprogramme is dedicated to *support sustainable land and water management and reduction of climate change vulnerability*.

- The ***National Agricultural Extension Program (PRONEA)*** has three specific objectives: (i) to improve the capacity to implement extension programmes within a pluralistic and participatory framework; (ii) to increase the technical and managerial capacity of producers in the planning, monitoring and evaluation process and in service provision; and (iii) to provide extension services at provincial and district level for the promotion of agricultural productivity and sustainable use of resources. The PRONEA is currently supported by a 5-year project funded by: the ***PRONEA Support Project (PSP)*** for the period 2015-2017.
- The ***Environmental Strategy for Sustainable Development*** (2007 – 2017) seeks to create a common vision for Mozambique for better environmental management leading to sustainable development that will contribute to the eradication of poverty. The strategy sets out key goals and strategies for its natural resources, biodiversity, urban areas, population, and atmospheric pollution. The strategy aims in particular at ensuring equal access to lands and related resources. The document promotes a sound management and exploitation of all natural resources to maintain their ability to function and produce for present and future generations, and therefore support food security and eradication.
- The recent ***Gender, Environment and Climate Change Strategy and Action Plan*** (2014 – 2019), aims at “developing and enhancing, in an integrated way, the gender perspective, in its cross-cutting dimensions with the environment sector, toward improving the quality of life of the population, in particular women and the communities, through mitigation and adaptation to climate change and the sustainable use of natural resources”<sup>28</sup>. The Strategy has six strategic objectives:

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<sup>28</sup> MICOA. 2010. *Gender, Environment and Climate Change Strategy and Action Plan* (2014 – 2019)

- i. Contribute to the empowerment of women and local communities, through access to technologies and other activities aimed at the mitigation and adaptation to climate change and the sustainable use of natural resources;
- ii. Ensure gender equity in environmental decision-making, training and capacity building processes;
- iii. Ensure that plans, policies, programs, strategies and budgets promote gender equity, access to natural resources and measures for the mitigation and adaptation to climate change;
- iv. Ensure that the staff and technicians of all cross-cutting sectors within the major environmental sector have an understanding of gender equity and are able to contribute to the purposes of this strategy;
- v. Contribute to turning MITADER into an institution that actively practices and promotes gender equity in environmental management; and
- vi. Make MITADER Gender Department operational, as a national mechanism for the implementation and monitoring of priority actions within the scope of gender, environment and climate change.

The LDCF project will be particularly well aligned to objective i) and ii) of this Strategy by promoting gender considerations in FFS (Farmers Field School) curricula and by ensuring women's representation among the master trainers and FFS facilitators as well as their participation in FFS training.

More specifically in Priority II on agriculture, the key objectives of the strategy are:

- i. To coordinate the integration of best practices, information, and risk scenarios on gender and climate change considerations into the revised Gender Strategy of the Ministry of Agriculture and Food Security (MASA);
  - ii. To enhance capacity of MASA staff to integrate gender, climate change and agriculture;
  - iii. To establish contacts and alliances within the Southern African Development Community (SADC) region in relation to gender and climate change issues in agriculture;
  - iv. To increase availability and accessibility to effective and sustainable technology, which enables women farmers to cope effectively with the impacts of climate change; and
  - v. To coordinate an increase in women's access to agricultural markets and information.
- Within the framework of its responsibilities, the National Directorate for Environmental Promotion (DNPA) developed **PECODA**, an environmental education program for the period 2010-2025. The goal of this program is to influence society in changing attitude in relation to the environment and to climate change through a more participative and sustainable environmental management. This is done through dialogues, debates and programs of environmental education for communities, schools and media. Its operational plan previews to strengthen capacities of the local decision makers, school teachers, environmental clubs, natural resources management committees, associations and the media, to promote massive environmental education within the communities, to contribute for a better territorial planning and to demonstrate good practices for the solution of environmental problems. For the first phase of PECODA (2010-2014) 300 sites were selected for intervention covering a range of environmental issues such as uncontrolled fire, soil erosion, deforestation, informal resettlement, and water and sanitation. The second phase of PECODA, covering the period 2015-2019 is now in preparation with the priorities being defined at provincial level.

- Some districts have developed **Local Adaptation Plans (LAP)** to address climate change adaptation. Up to now, the LAP for the district of Guijá, in Gaza Province has been concluded and approved, and two additional ones for the districts of Machaze in Manica Province and Angoche in Nampula province are under preparation. These plans are developed following MITADER methodological guide for the development of LAP. The LAPs are to be developed in a participatory manner for communities to develop their vision of development in the context of climate change, and delineate the actions needed to achieve this vision. The LAP should include an action plan with a timeframe, together with an M&E system and investment opportunities to support the resilient development of the district.

The main objectives of the LAP at district level are to:

- Assess climate vulnerability and the capacity of communities to cope with climate change;
- Identify and prioritize adaptation measures exploring the local development opportunities to create climate resilience; and
- Develop capacities to integrate climate change actions in planning processes.

22. The baseline programmes and projects that will co-finance the proposed project are presented in the table below; the present project intends to build upon and complement these.

*Table 6: Related baseline and co-financing projects and programmes implemented in Mozambique*

Title and Project Objective/Description	Lead Agency	Duration and budget balance as of January 2015
<p><b>Food Security and Nutrition for Gaza project</b> The overall objective is to improve the food security and nutrition of vulnerable households in the six selected districts of intervention in Gaza province. This should be done through the achievement of the three following outcomes: (i) increased production and productivity of agriculture and livestock; (ii) improved community based natural resources management; and (iii) Improved nutrition and dietary intake as a result of nutrition education.</p>	FAO	Budget balance: 2.5 million USD  2013-2017
<p><b>Accelerate Progress towards MDG1c in Mozambique</b> The goal is to accelerate progress towards MDG1c in Mozambique by reaching the following objectives: (i) enhance agricultural and fisheries production; (ii) improve access to food, and; (iii) improve nutritional status of vulnerable groups, in particular women and children.</p>	FAO	Budget balance: 22.4 million USD  2013-2017
<p><b>PRONEA Support Project (PSP)</b> The overall objective is to contribute to absolute poverty reduction and an improvement in the quality of life of the rural poor. The purpose of the PSP consists in increasing returns and improving household food security for male and female subsistence farmers, including female-headed and disadvantaged households, through a steady uplift in production efficiency and market orientation</p>	Government	Budget balance: 1,274,657 USD  2015-2017

23. The strategy of the proposed project is to link to the projects listed in the table above as well as to ongoing and planned rural sector development initiatives in Mozambique that start up during

project implementation. A more detailed description of the three projects is provided in Section 2.3 and 2.4.

## 1.2.2 Challenges

24. Despite progressive investments in rural development and commitments to mitigate the negative impact of climate change, smallholder farmers in Mozambique still face various challenges that are not comprehensively addressed by the baseline programmes and projects in the context of climate change

### Agricultural sector

#### Low productivity

25. The agricultural sector in Mozambique is characterized by a low productivity, which can be explained by a multiplicity of factors such as: the unsustainable use of agro-environmental resources, the lack of appropriate and sustainable integration between crop and livestock cycles, the lack of appropriate fertility management, the lack of tree management in the crop fields, the lack of agro-ecologically based intervention to improve soil quality and water management, insufficient water management in drylands, non-secure tenure limiting small scale investments, the occurrence of land conflicts, the lack of capital available to farmers, and the lack of decentralized institutions providing agricultural advice.

#### Lack of appropriate soil fertility management

26. Continuous or almost continuous crop production due to scarce access to arable land, associated with deforestation, leads to the depletion of soil organic matter. Soils are all naturally low on phosphorus in Mozambique and can be classified as having low to moderate fertility<sup>29</sup>. In addition phosphorus and nitrogen are the most severely depleted nutrients in smallholder farm lands. Improving soil fertility and the lack of nitrogen could be compensated by biological nitrogen fixation through the plantation of nitrogen fixing trees but these species have not yet been adopted by the majority of smallholder farmers.
27. As most people grow maize in the provinces of intervention, there is little crop diversification. However, crop diversification would help smallholder farmers control crop disease and pests, and would maximize the efficiency of soil nutrient use.
28. The advice received by farmers through public and private extension services is not based on evidence based decision making such soil analysis derived information, mainly because of the lack of functioning soil analysis laboratory in Mozambique, even though it is crucial to improve the agricultural productivity of the country. The National Institute for Agriculture Research (IIAM) had a functional laboratory and just received support to buy new equipment but needs training for its staff. The *Instituto Superior Politécnico de Manica* has a laboratory with the necessary equipment to perform soil analyses but needs training for its staff as well. The *Instituto Agrário de Chimoio* has a laboratory with equipment but lacks financial support for infrastructure and personal training. The school of Agriculture of Zambeze University has space for laboratory, two soil science teachers and the possibility to contract two lab technicians to do soil analysis, the school however needs support for equipment and training.

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<sup>29</sup> Maria, R., Yost, R. *A survey of soil fertility status of four agroecological zones of Mozambique*. Soil Science, November 2006

### Low access to technical advice

29. The challenges of the public extension and agricultural research network play a role in the low productivity of the agricultural sector. Even though, according to the PNISA, public extension services cover the country's 150 districts, they only reach 11% of all farming households<sup>30</sup>. Furthermore, the capacities and awareness of these agents and technicians vis-à-vis CCA technologies and approaches are low. These services are crucial to agricultural productivity in Mozambique since they are in charge of disseminating information on technologies at household level, including more resilient technologies and approaches, which accounts for the majority of food production.
30. Extension services are reliant on the research sector to meet farmers' needs for innovation and adaptation. However, the public agricultural research system in Mozambique employs a total of 1087 people, with only 16.7% of researchers, and only 10.4% of them hold a PhD<sup>31</sup>.
31. Key international research institutes in the country include: the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the CGIAR CCAFS and the United Nations University Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES). However, it is worth noting that the application of research findings is limited and that the results of R&D are not appropriately transferred to the field. For instance, the research sector has proven that nitrogen fixing trees could address soil nutrient depletion, that the implementation of crop rotation and soil and water conservation practices would help preserve water and soil resources, and that the availability of good quality local and improved seeds on the local market would help increase agricultural productivity under a changing climate. Even though the benefits of these practices are recognized by the research sector, their adoption remains limited in the field.

### Difficult access to markets and to inputs

32. Smallholder farmers have difficulties accessing markets providing inputs and products due to the poor quality of rural financial services, rural roads and transportation network connecting consumer to production sites, and the agricultural information system in terms of opportunities and quality standards for farmers. With few resources at their disposal and limited access to quality social services, most of the communities tend to be highly vulnerable when hazards occur.
33. The low productivity of smallholder farmers in Mozambique can partly be explained by the fact that there is a lack of good quality seeds and improved varieties resilient to climate change in the market. Most farmers use their own saved seeds, mainly from local/landrace varieties which are not adapted anymore to climate variability and erratic rainfall. The use of improved seeds is still very low, thus leading to low yields. Even though the seed sector is formally established, with the existence of basic legal instruments to guide the functioning of the seed industry, and existence of main components of the seed supply chain, namely, variety research and development, variety maintenance, seed quality control, seed multiplication and processing, seed market and extension; smallholder farmers still face challenges to access improved varieties. Various reasons can be pointed out: (i) lack of information about varieties; (ii) lack of seed availability; (iii) lack of seed agro-dealers and retailers; (iv) high seed price; (v) lack of market for surpluses; and (vi) unsuitability of varieties to farmers' needs.

### Difficult access to land tenure and credit

34. Land in Mozambique is owned by the State and only the government can issue land use rights that give people the right to use the land without owning it. Only the infrastructures existing on the land can be sold or bought by other farmers. There is no land privatization which means that it cannot either be sold or bought. This implies that land cannot be used as collateral by farmers to access bank loans or credit from any financial institution.

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<sup>30</sup> Republic of Mozambique, *National Agricultural Investment Plan 2014-2018*.

<sup>31</sup> Republic of Mozambique, *National Agricultural Investment Plan 2014-2018*.

35. Credit, loans or any other financial products for agriculture are hardly accessible for farmers because banks usually claim assets as a guarantee. However, smallholder farmers do not possess any given the current land legal framework. It is worth noting nevertheless that, in the last five years, an increasing number of banks and other rural finance institutions have been settling in rural areas.

## **Natural resources depletion and environmental degradation**

### **Timber products depletion**

36. The field mission undertaken during the PPG phase revealed the depletion of timber resources in most intervention areas. When native tree species are still available, they are either exported as high quality timber products, used to dry tobacco leaves or as charcoal for cooking. In places where intensive agriculture is predominant and where cultivated areas take over forest land, timber availability is so scarce that farmers use corn stalks to produce heat. The stalks not only have limited heat production abilities, but also harvesting them drains the soil of organic matter yet crucial to its fertility. The overall degradation of timber resources reduces access to local products for smallholder farmers and contributes to the lack of food diversification. In addition, non-timber products, which are key to livelihood, have also become scarce.

### **Water scarcity**

37. Water is the most limiting factor for agricultural production in Mozambique; which is mainly due to the lack of application of soil and water conservation techniques and partially to the lack of appropriate small scale irrigation infrastructure. Soil and water conservation technologies and approaches (demi lune, contour boundaries, etc.) are key in preserving solid water content, improving underground water storage, reducing runoff and increasing infiltration. Even in areas where running water is available, there is not enough to irrigate crops at the end of the dry season before the rainy season starts.

## **Institutional Challenges**

### **Lack of capacities**

38. The government of Mozambique and related institutions have limited human resources and capacities when it comes to climate change. For instance, most common areas of expertise amongst the staff of MITADER encompass agronomy, biology, forestry, geography, meteorology, geology, law, administration and international relations, but no employees are specialized specifically on climate change issues. Nine staff are currently involved in coordination and management of climate change related issues; they have backgrounds in physics, meteorology, chemistry, tourism, administration and management, planning and spatial development.
39. Even though the public extension service in Mozambique has expanded considerably in the last years, it is still underfinanced and lacks capacity which explains its poor coverage of households (11% according to the PNISA). At national level, the National Directorate for Agricultural Extension (DNEA) takes into account adaptation to climate change. Even if it remains limited, the directorate presently has two agronomists working on conservation agriculture and climate change, one agent working in agroforestry systems and one veterinary working with animal production, forage banks, and multi-nutritive mineral blocks. At provincial level, it has been noticed during the PPG phase that the Provincial Services for Agrarian Extension (SPER) face challenges with regards to the late disbursement of funds received from the central government, the low mobility of its agents due to a lack of available vehicles and budget for gas, and insufficient communication means and computers. Another challenge faced by the provision of extension services consists in focusing on production-oriented assistance without ensuring the adoption of new and sustainable agricultural approaches and practices amongst farmers and

associations<sup>32</sup>. As mentioned above, the findings of the research sector are not sufficiently applied in the field to foster the adoption of new practices.

#### Lack of coordination across sectors

40. Multiple initiatives in the agriculture sector, carried out by different actors, promote technologies and other changes to the farming system that are intended to contribute to building the resilience of smallholder farmers. However there is no structured way of sharing information, analysis and lessons learned across the multitude of actors working for the improvement of the climate resilience in smallholder farming. Overlaps in coverage happen frequently amongst initiatives, communication between projects is poor, lessons are not systematically shared and learned, and synergies and complementarities are not always considered and capitalized. This can lead to a loss of time and waste of resources spent to tackle issues that have already been solved, and to missed opportunities.
41. As it is underlined in the mid-term evaluation of the National Agricultural Extension Programme (PRONEA)<sup>33</sup>, the vertical coordination between national, provincial and district levels (DNEA, Provincial Directorates of Agriculture (DPA), SPER and District Governmental Services for Economic Activities (SDAE)) in planning and monitoring processes appears ineffective due to budget constraints. Similarly, horizontal coordination at central level between key partners for the implementation of national programmes tends to be limited and ad-hoc.
42. A lack of coordination and interaction between the research and extension services sector has also been noticed during the field mission organized during the PPG.

#### Climate change not fully mainstreamed in sectorial and local planning and project design

43. For instance, the PEDSA addresses some CCA measures aiming to help farmer communities cope with climate risks. However, the plan does not fully mention how to predict, evaluate and map the climate vulnerability of the agricultural sector within each agro-ecological zone. It does not consider either the expected impacts of climate change and the necessary mitigation and adaptation actions to be put in place to minimize these impacts.
44. In addition, the PNISA, proposes investments that are mostly focused on developing and expanding the agricultural sector's activities, and does not take into account specific actions to mitigate climate change induced threats and challenges. The risk faced in this case is that agriculture activities remain focused on the expansion of existing programs to increase production and productivity rather than on the dissemination of climate-resilient farming practices and the creation of more resilient livelihoods to cope with climate change.

### **Agro-meteorological sector**

#### Lack of coordination

45. The policy and institutional mandate to deliver agrometeorological services in Mozambique is spread across multiple institutions: the National Institute of Meteorology (INAM), under the Ministry of Transport and Communications, the Directorate of National Water (DNA), under the Ministry of Public Works and Housing, the five Regional Water Authorities (ARAs) and the National Institute for Agriculture Research (IIAM) under the Ministry of Agriculture and Food Security (MASA). This complicated institutional framework tends to hinder effective coordination and information sharing as well as mutual understanding of what each agency does at the national and local levels.

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<sup>32</sup> IFAD. 2012. *Mid-term review report of the National Agricultural Extension Programme (PRONEA)*

<sup>33</sup> IFAD. 2012. *Mid-term review report of the National Agricultural Extension Programme (PRONEA)*

46. In Mozambique, the hydrological and the meteorological observation networks are under responsibility of DNA (and ARAs) and INAM, respectively. Even though the mandate of DNA, ARAs and INAM to provide hydro-meteorological services is recognized by Government's laws, the lack of financial sustainability is hindering the efficiency of these institutions. More than technological, the gap is institutional and organizational within and among these institutes and there is a real need to develop an integrated and coordinated hydro-meteorological information management system to avoid duplication. The main challenges are: (i) integrating the two hydro-meteorological networks of INAM and DNA; (ii) increasing the density of INAM's observing network particularly in agricultural areas; (iii) standardizing data collection and storage; and (iv) decentralizing the information management system in order to provide tailored information to various users at district level.

#### Lack of available agro-meteorological data for farmers

47. In general there is no systematic use of climate information to support farming activities. Climate data is rarely accessible to farmers and in the limited cases when they do have access to weather bulletin, farmers tend to not fully trust them since they cover large regions and are not specific to their locality. Farmers' climate knowledge is mainly based on traditional knowledge which is becoming less and less accurate as a result of climate change and variability. Some incorrect perceptions of rain patterns persist in farming communities, which is due to the fact that traditional knowledge can't be confronted with scientific data since no systematic and reliable data is available.
48. INAM, DNA and the ARAs produce weather and flood forecasts bulletins that are elaborated in Maputo and disseminated via e-mail or fax. However, these forecasts do not meet users' needs due to three major challenges: (i) the lead time is too short and it does not allow taking appropriate decisions and actions; (ii) the space-resolution is too low for location-specific information; and (iii) the content format and delivery are not tailored for key users' needs.
49. Compared to the past, INAM no longer carries out activities such as crop monitoring, crop yield forecasting or advisory services for farmers. A meteorological bulletin for agriculture is published and contains only meteorological information for the past 10-day period, based on data collected at about 30 stations. The bulletin also includes future precipitation scenarios for the next 3 months based on the seasonal forecast. The bulletin is posted on the INAM website and distributed through email.
50. The National Directorate of Agricultural Services (DNSA) through its Crop and Early Warning Unit (DCAP) from MASA produces, from October to April, a monthly agro-meteorological bulletin providing an evaluation of the current cropping season based on meteorological data collected from about 100 stations as supplied from INAM. However, the content of this bulletin is addressing more the needs of decision-makers at national and provincial level than of agricultural communities at local level.

#### Limited capacities, equipment and technologies for the agro-meteorological sector

51. INAM's meteorological observation network presents a low density of stations and in many of those stations the equipment suffered degradation during the civil war and now require rehabilitation. In 2013, the meteorological network of INAM was composed of: 5 automatic weather observing stations with hourly observations (AWOS) placed at airports, 6 automatic weather stations with hourly observations (AWS), 29 conventional synoptic stations with 8 observations/day, 154 climatological stations with 1 or 3 observations/day (only 38 are operational), 669 rainfall stations.
52. In addition, IIAM manages 22 agro-meteorological stations with 3 observations/day but several instruments are deteriorated and need to be replaced, and five stations are not operational. Maintenance of these stations and training of observers should be under the responsibility of INAM but the lack of funds does not allow keeping these stations fully operational.

53. As a result of the unreliable communication systems in the country, poor data quality and temporal coverage, many agro-meteorological observations have never been stored in the central databases in Maputo. In addition, the climate data management system used by INAM is CLICOM which is outdated and no longer maintained by the World Meteorological Organization.
54. Even if the technical skills of the staff are good, human resources are limited as these institutions have difficulties attracting people. For instance, there was just one agro-meteorologist in INAM, now retired, and a new one will be starting in the end of 2015 once he has finished his Master's degree in Brazil. No agro-meteorologists are in place in IIAM.

## Health- related challenges

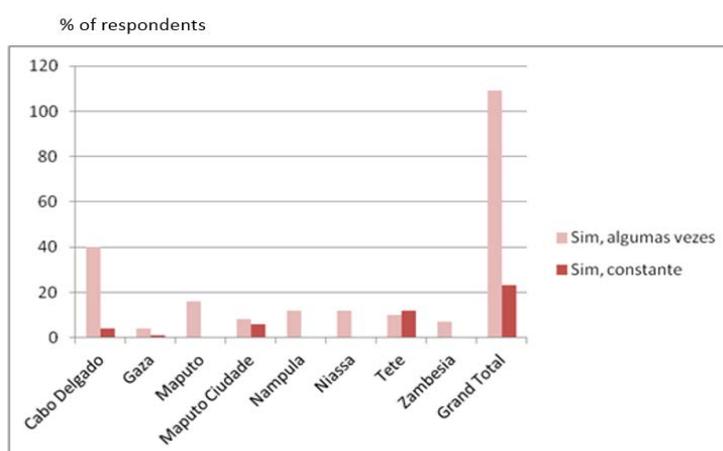
### Food insecurity and Malnutrition

55. Food insecurity in Mozambique can be partly explained by the occurrence of extreme climate events causing sporadic food shortages. Damages usually include the loss of crops, particularly perishable nutrient-dense food crops, and livestock products.
56. Even in the most intensive and productive areas of the country, malnutrition is severe, with a high degree of nutrition imbalance. Chronic malnutrition affects half of the children and almost half of the adults living in Mozambique. Three-fourths of the children and half of the mothers suffer from anemia, and 43% of Mozambican children are stunted<sup>34</sup>. The main cause of this malnutrition is a non-diverse diet lacking protein and micronutrients.

### Pesticides-induced risk

57. Mozambique has made significant efforts in recent years to improve the control of pesticides: ratification of international agreements, development of regulations, controls for illegal dumping of hazardous wastes, tighter border controls, and Integrated Pest Management (IPM) programmes to reduce reliance on pesticides. Although recently Mozambique, supported by FAO, has taken important regulatory measures cancelling the registration of 79 Highly Hazardous Pesticides (HPP), the country still needs to improve the use and misuse of pesticides that have caused serious health and environmental issues. According to the project “Reducing Risks of HHPs in Mozambique” (EP/MOZ/101/EP), and as presented in the figure below, the majority of farmers reports symptoms and signs attributed to pesticides exposure.

*Figure 7: Discomfort or illness experienced during or after pesticide application<sup>35</sup>*



<sup>34</sup> Republic of Mozambique, *National Agricultural Investment Plan (PNISA) 2014-2018*

<sup>35</sup> Source: Power point presentation from the project “Reducing risks of Highly Hazardous Pesticides (HHPs) in Mozambique”. FAO. 07/03/2014.

## **Gender inequality**

58. The UNDP 2013 Gender Inequality Index assigns Mozambique a value of 0.657, ranking it 146 out of 187 countries<sup>36</sup>. Despite some improvements in the policy framework (such as the recent adoption of the Gender, Environment and Climate Change Strategy and Action Plan) and women's political representation, gender inequality remains high in the country. The patriarchal culture tends to prevent women from gaining enhanced economic self-reliance and social independence. Low maternal education is also a strong predictor of low service use and child malnutrition.
59. It is worth noting some differences between the north and the south of the country, as well as between rural and urban areas. For instance, data from the northern Nampula Province demonstrates that woman's political participation is very low and women hardly work outside of subsistence agriculture. To the contrary, the southern part of the country, surrounding Maputo and close to South Africa, has experienced profound socio-economic changes. A great portion of the households are headed by women as a result of male's migration in South Africa to work in the mining sector and more recently in the plantations, services and commercial sectors. This led to an extensive feminization of the agricultural sector. Women tend to be more involved in food crops while men work more for cash crops. Women in Gaza have increasing socio-economic responsibilities and are well represented in the political sphere. In the South, gender inequalities tend to be exacerbated by class, poor women being particularly vulnerable to men's control in patriarchal systems.
60. Women and girls in Mozambique are amongst the groups that are the most affected by climate change. The nature of women's tasks and roles in the communities make them more vulnerable to climate change. Climate change impacts, such as floods, water contamination and salinization, soil erosion, and infrastructure destruction, force women and girls to walk greater distances to find clean water and firewood using time that could otherwise be spent in school and in other personal development activities.

### **1.2.3 Additionality**

61. In the baseline, the three on-going co-financing projects PSP, MDG1c and Food Nutrition and Security for Gaza, the existing public extension network of MASA, and MITADER LAP development methodology, provide entry points for addressing some of the challenges described in the previous section that are likely to be aggravated. This constitutes a cost-effective opportunity to finance the additional costs of adaptation using LDCF funds.
62. With additional financing from LDCF, the proposed intervention will: (i) develop the basic foundations for mainstreaming CCA into rural development and agriculture policies and strategies; (ii) develop the tools and capacities for delivering in a cost-effective manner climate change support and advice to vulnerable rural communities; (iii) provide and disseminate resilient agro-pastoral practices and measures to a sizeable number of rural communities; and (iv) ensure sustainability by integrating CCA into key policy initiatives and ensuring lessons are learnt and disseminated. Specifically, the proposed project will work through the following three components:

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<sup>36</sup> <http://hdr.undp.org/en/content/table-4-gender-inequality-index>

**Component 1: Inclusion of improved climate resilient agricultural practices in the framework of the Strategic Plan for the Agricultural Sector (PEDSA) and its investment plan (PNISA) with an emphasis on provinces and districts assisted by the MDG1c and Food Nutrition and Security for Gaza projects.**

63. LDCF and co-financing funds under this component will be used to (i) address the lack of capacities within government institutions regarding adaptation to climate change; (ii) disseminate more climate-resilient agro-pastoral production practices and measures; (iii) invest in pilots demonstrating agro-pastoral climate resilient systems; and (iv) secure farmer's access to diverse improved and resilient seed varieties. As a result, the basis for the wide scale rolling out and upscaling of climate change adapted practices will be established.
64. The baseline projects support Farmer Field Schools (FFS) as an extension and advisory service for farmers, including both crops and livestock related issues. However it is worth noting that the scope of these FFS does not include CCA considerations. The proposed project will benefit from the extension strategy supported under the PSP and the FFS that are already implemented under the MDG1c and Food and Nutrition and Security for Gaza, and will bring an added value through the dissemination of CCA options, measures and practices through the already established and planned FFS. FFS members which had already benefited from a first one year training cycle under the MDG1c or the Food Nutrition and Security for Gaza projects, will be benefitting from a second training cycle under the LDCF project. The proposed project will also mainstream CCA technologies and approaches into some modules of the current FFS manuals used under these two projects. The LDCF project will build upon capacities strengthened through the PSP and these two projects to raise awareness on climate change aspects and disseminate more climate resilient agro-pastoral technologies and approaches. In alignment with the *Strategy and Action Plan for the Gender, Environment and Climate Change*, the proposed project will ensure that (i) FFS curricula include specific modules focusing on practices that are traditionally managed by women in order to increase their resilience to climate change; and (ii) that all trainings and activities undertaken in the framework of the FFS include a significant proportion of women.
65. CCA options that will be promoted include agro-ecology, conservation agriculture technologies and approaches, access to adapted and improved seed varieties, and agroforestry among others. The baseline projects do not address the potential of trees in the agro-sylvo-pastoral system. The LDCF project will support the planting of trees on farm to prevent water run-off and erosion, to increase soil nutrition and to provide a source of firewood. Further the project will promote the introduction of trees in communal plot and for pasture land management.
66. LDCF additional financing will complement the PSP in addressing the lack of capacity and knowledge on CCA within government institutions at national level (MASA and MITADER), and at provincial level (DPA, SPER, SDAE and provincial managers of agricultural and pastoral programmes). The proposed project will be in synergy with the three baseline projects since they are implementing capacity development activities amongst various governmental agencies in targeted Provinces for applying the FFS approach and methodology. The proposed project will ensure these capacity development activities integrate CCA considerations.
67. As it was previously stated in the challenges section, the soil analysis laboratories within the country are overall functional but not fully equipped and their staff not well trained, which hinders the possibilities of managing soil fertility to support the production and productivity of smallholder farmers. The advice received by farmers through public and private extension services is not based on relevant soil analysis. As climate change impacts and extreme climate events will increase soil degradation and soil erosion, it is essential for farmers to access relevant information on the quality of their soil and the potential measures and options at their disposal to manage their soil fertility. LDCF financing will provide training, equipment and support to two laboratories. These labs will provide extensionists with relevant information on soil quality and fertility, which will be beneficial to the baseline projects as well as other on-going or future initiatives in Mozambique.

68. The LDCF funds will also be used to implement several pilots, through existing FFS, demonstrating a variety of climate resilient technologies and approaches in the fields of water management, forestry, improved and local seed varieties and pesticides risks management. These pilots will help farmer communities to cope with climate change and natural resources management issues.
69. Finally, the LDCF project will reinforce the initiatives of the PSP and the MDG1c project and the CGIAR's system that are already supporting farmer's access to improved seed varieties. Additional LDCF funding will be used to improve the availability of drought resilient improved varieties such as: maize, sorghum, cowpeas, common beans, rice, cassava and sweet potato. The proposed project will link directly to the MDG1c project that has set-up a system to release varieties in targeted provinces, and to the PSP that provide support to the seed multiplication sector. LDCF funding will not only allow these activities to continue in targeted provinces, they will also be introduced for the first time in Gaza province. The proposed project will also support, in collaboration with the CGIAR, the preservation of local/landrace varieties, an aspect not covered by the MDG1c project. Furthering the activities of the MDG1c and PSP projects, the LDCF project will also focus on the wide adoption of appropriate climate resilient varieties targeting at least 5.000 beneficiaries.

**Component 2: Promotion of climate resilient agricultural practices and technologies through Farmer Field Schools (FFS) and other extension approaches in the framework of the PSP, MDG1c and Food Nutrition and security for Gaza projects, and other initiatives**

70. Since the FFS supported by the PSP and the ones implemented under MDG1c and Food Nutrition and security for Gaza projects do not include specifically climate change considerations, LDCF funds will be used to improve and complement the already established FFS training curricula by integrating CCA measures and practices for crops and livestock in order to reduce farmer's vulnerability to climate change. The proposed project will identify gaps in the current FFS curricula and will integrate the missing measures in updated second cycle curricula for the already established FFS. For instance, integrated measures such as agro-ecology, reforestation, conservation agriculture technologies and approaches, access to adapted and improved seed varieties, and agroforestry will be considered through a participatory process and selected in order to be incorporated in the already existing FFS curricula. The new climate change component of the curricula will also include agro-meteorological information. Pesticide risks management aspects will be reinforced particularly in urban agriculture areas.
71. Following the same approach as the baseline projects, the LDCF project will also contribute to gender equity by securing a high participation of women in FFS trainings. The updated training curricula will indeed include gender specific consideration depending on the field crop. Women will represent 30% of the FFS beneficiaries, 30% of the FFS facilitators and 30% of the master trainers, which will ensure that gender consideration are well considered in the FFS curricula and trainings provided. This will directly contribute to the *Strategy and Action Plan for the Gender, Environment and Climate Change* that aims at promoting gender equality and equity, and at improving the participation of women, through their empowerment, in the preservation of natural resources, environmental management, and climate change mitigation and adaptation.
72. In order to enable the efficient implementation of the revised curricula, LDCF additional funding will strengthen the network of master trainers and facilitators supported by the baseline projects by training them specifically in CCA and ecosystem resilience; they will also be properly equipped in order to provide training to farmers in these new issues. Besides the FFS network, additional LDCF funding will provide training to 200 non-FFS extensionist to expand the scope of CCA and ecosystem resilient measures and practices to a broader public.
73. LDCF financing will address the lack of capacities within government institutions such as MITADER's Centers of Sustainable Development (CDS) and the National Institute for Disaster

Management (INGC)'s Centers of Resources and Multiple Use (CERUM); which are presented in more details below. The proposed project will indeed identify the gaps in terms of CCA knowledge within the CDA and CERUM, and will train their staff accordingly in order to enable them to monitor progress towards more climate-proof production systems.

74. Finally, under this component the proposed project will tackle an important challenge in Mozambique which lies in the lack of capacities and equipment within the agro-meteorological sector. Agro-meteorological information is not systematically used to support farming activities as part of the extension network and is rarely accessible to farmers. The baseline projects do not address this issue but will benefit from the intervention of the LDCF project for the implementation of their activities. The rehabilitation and installation of various agro-meteorological equipment, together with the training of current national staff, will benefit not only to the baseline projects but also to a wider range of initiatives in the country. They should have a positive effect in the reduction of smallholder farmers' climate vulnerability by strengthening their access and their use of agro-meteorological advices. The agro-meteorological component of the LDCF project is in the same vein as the Pilot Program for Climate Resilience (PPCR) that seeks to lower the climate-related water risks to local communities, agricultural production and infrastructure as a result of improved hydro-meteorological information. The information provided by this strengthened agro-meteorological network will be integrated in the FFS curricula developed by the LDCF project and will also be disseminated through local radios to reach a high number of farmers. Since the proposed project will intervene through the FFS established by the baseline projects, these projects will therefore benefit from the dissemination of agro-meteorological information within the FFS network.

### **Component 3: Climate change adaptation strategies mainstreamed into agricultural sector policies and programs with emphasis on rural extension/outreach strategies and plans**

75. Under this component, additional LDCF funding will contribute to mainstream CCA into agricultural and rural development planning. This aspect is crucial to ensure the scaling-up of CCA measures and practices in Mozambique. The intervention of the LDCF project in this area will therefore play a major role to truly increase food security and reduce the climate vulnerability of smallholder farmers.
76. LDCF funding will provide climate change impacts and vulnerability trainings to relevant government staff to ensure better sectorial and sub-sectorial planning. The project will also support the elaboration of budgeted Local Adaptation Plans (LAP) in the 15 districts of intervention. These LAPs will be a useful tool to enable the integration of adaptation in local development and agricultural planning and will address the fact that climate change is not yet fully mainstreamed in sectorial and local planning and project design across the country.
77. With additional LDCF funds, an institutional task force with specific terms of references will be set up, gathering both MASA and MITADER, together with the civil society. This task force will ensure a better inter-sectorial coordination and increase potential synergies and sharing of lessons learned regarding climate change-related issues at national level.
78. The proposed project will provide MASA and MITADER with the opportunity of assessing efficiency and cost-effectiveness of FFS-based and non-FFS-based extension approaches. The results of this assessment will not only be beneficial to the LDCF project but also to the baseline projects that will learn from it and will be able to adapt accordingly. Additional LDCF funding will also finance the compilation of good operational CCA technologies and approaches in the agricultural sector in a report that will be published and disseminated. The baseline projects will benefit from this report since it will be directly related to their area of activity.
79. Finally, the proposed project will promote the conception and design of more effective investment proposals to mainstream CCA into agricultural development processes. This will be an important step to ensure an improved resilience to climate change for smallholder farmers in the long term.

### 1.3 FAO's Comparative Advantage

80. FAO is the lead UN agency for agriculture, fisheries, forestry and rural development. Its mandate is to offer Member States the policy and technical ability to raise their levels of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy while safeguarding natural resources. The proposed project is aligned with FAO's comparative advantage on multiple levels: i) FAO's experience in dealing with food security and rural production; ii) FAO's experience with the FFS approach; and (iii) FAO's existing involvement in food security in Mozambique.
81. In terms of food security and rural production, FAO has in-house technical expertise in the wide variety of disciplines related to rural development as well as a capacity to respond to the needs of specific countries. These areas include, among others, policy and strategy development, crop and livestock development, forestry, agriculture and food security information systems, early warning systems, agribusiness and enterprises, sustainable land management and planning, forestry, CCA, and livestock and fisheries systems. At a policy level, FAO has promoted and facilitated coordination between different governmental institutions and relevant stakeholders, all involved in rural development.
82. The proposed project also supports up-scaling of the FFS approach developed by FAO and which will be used for all technology transfer, adoption and related capacity building activities. FAO's Department of Agriculture and Consumer Protection recently completed a review of 20 years of FFS experience, which will lead to the elaboration of a FFS-efficiency Monitoring System and facilitate access to additional funding for FFS-based activities under a results-based framework, including in Mozambique.
83. Finally, FAO gained extensive experience with FFS through the implementation of a series of projects since 2001. FAO has worked in close collaboration with key government agencies such as DNEA and MASA in the introducing and applying the FFS approach to current agricultural extension programmes in Mozambique, such as the "Pan II" project. FAO has thus gained valuable experience during the implementation of these projects and have a full knowledge of the current FFS network in Mozambique which represents a significant advantage that will benefit the proposed LDCF project. FAO has been supporting Mozambique's efforts in achieving food security by raising the nutrition levels of food produced and by improving the agricultural productivity, of the rural population.

### 1.4 PARTICIPANT AND STAKEHOLDER ANALYSIS

84. The main stakeholders that will be involved in the project are:
85. The **Ministry of Agriculture and Food Security (MASA)** who's main responsibilities include the administration, management, protection and conservation of natural resources associated to agricultural activities, in particular land, water, forests, domestic animals and wildlife; the promotion of agricultural production, agroindustry and commerce agricultural inputs and products; development of agriculture research and extension services and technical assistance to farmers. MASA includes:
  - the **National Directorate for Agricultural Extension (DNEA)**, responsible for extending and disseminating practices, technologies and knowledge aiming at increasing crop yields, production and the income of farming communities;
  - the **National Directorate for Agrarian Services (DNSA)**, also includes the Department of Crops and Early Warning (DCAP) which, among others, has a section on agro-meteorology and monitoring designated to collect climatic information, analyze its impact

in crop production and predict the cropped area and production, using maize as the reference crop; and

- the **Mozambique Agriculture Research Institute (IAM)** is the main agriculture research institution of the country. According to its strategic plan (2011-2015), the IAM mission is to produce knowledge and technological solutions for the sustainable development of agriculture (agri-business, food security and nutrition).

86. The **Ministry of Land, Environment and Rural Development (MITADER)** coordinates all matters related with the sustainable use of natural resources and protection of the ecosystems. Its broad responsibility covers inter-sectorial coordination, environmental research and management, environmental impact assessment, planning and spatial development, environmental promotion, education and dissemination, and environmental inspection and supervision. MITADER is responsible for climate change coordination in the country, in light of its responsibility for coordinating the implementation of Agenda 21, and its role as the United Nations Framework Convention for Climate Change (UNFCCC) focal point. MITADER includes:

- the **National Directorate for Environmental Management (DNGA)**, which has the responsibility to promote policies, plans and norms for the correct use of the environment and for environmental quality control (mainly air, water and soil);
- the **National Directorate for Environmental Promotion (DNPA)** which has the responsibility to disseminate information, materials and tools aiming to contribute for a proper environmental management; and
- the **Direction of Cooperation (DC)**, mostly involved in supporting MITADER and the government in dealing with international and regional cooperation agreements and international conventions related to the Environment.

87. The **National Institute of Meteorology (INAM)**, within the **Ministry for Transport and Communication (MTC, *Ministério dos Transportes e Comunicações*)**, is mandated to generate and coordinate the national meteorological services. The main functions of INAM are the production of bulletins concerning weather and flood forecasts (elaborated in Maputo) and disseminated by e-mail or fax. INAM produces a 24-hour and a 4-day weather forecasts, and a 3-month seasonal rainfall outlook for the period OND (October-November-December) and for JFM (January-February-March).

88. Decentralized Government services at provincial and district level will also be involved in the project's implementation:

- the **Provincial Services for Agrarian Extension (SPER)** which operates through a network of extensions officers covering a set of technical fields: communication, organization of smallholders and farmers associations, transfer of technologies, monitoring and evaluation, planning, training, legal advisory services and agro-processing and post-harvest losses.
- the **District Services for Economic Activities (SDAE)** which undertake agriculture and extension services provision at the district level.
- In the first semester of 2014, the distribution of extension agents at provincial level was as indicated in the table below:

*Table 7: Extension Agents distributed per province and by gender<sup>37</sup>*

Provinces	Extension Agents		
	Total	Men	Women
Maputo – City	23	10	13
Maputo	80	56	24
Gaza	95	80	15
Inhambane	160	120	40
Sofala	104	94	10
Manica	88	77	11
Tete	67	58	9
Zambezia	143	118	25
Nampula	183	172	11
Cabo Delgado	148	136	12
Niassa	121	108	13
Total	1212	1029	183

- **Centers of Resources of Multiple Use (CERUM)** have been established by and report to the National Institute for Disaster Management (INGC). They are specialized local institutions aiming to enhance the community coping capacity in arid zones and also to increase their resilience to climate change, while diversifying communities' livelihoods options. There is one in Chigubo district in Gaza Province. These Centres support the development of conservation agriculture practices, post-harvest, animal husbandry and rainwater harvest technologies. The CERUM are part of the district government and work together with the SDAE.
- The **Centres for Sustainable Development (CDS)** are MITADER's subordinated institutions, responsible for the implementation of actions aiming to promote sustainable development in sensitive areas such as coastal zones, urban zones and natural resources. Of particular interest to this project is the CDS for Natural Resources, based in Chimoio, Manica Province, but endowed a national mandate. It is subordinated to MITADER, but links with the provincial governments through the provincial directorates for environmental coordination in each province; it is a technical advisory organization, providing support to all entities that are directly or indirectly involved in natural resources management. Main activities are related to the management of protected areas working in the defence zone with the local authorities and communities; reforestation with native species involving communities; use of Geographic information systems (GIS) for mapping erosion hazard zones, mining degraded areas and fire affected areas; forestry, agriculture and water management practices; and creating new sources of family income, such as the payment for environmental services with the involvement of the natural resources management committees. This Centre is equipped with some equipment such as computers, GPS, scanner, plotter, though probably not enough for the envisaged activities.

89. At the local level several stakeholders from the **Civil Society** were identified in a participatory manner as potential implementation partners:

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<sup>37</sup> Source: MINAG-DNEA. 2014. *Relatório de Balanço do PES 1º Semestre de 2014*. Maputo, Mozambique

- Farmers associations: the National Farmers Union (UNAC), the District Farmers Unions (UDAC), IKURU (farmer apex association);
- NGOs: Save the Children, World Vision, CARE, IUCN;
- Women’s associations: *Organização das Mulheres Rurais*; PROMUGE - Associação Moçambicana para Promoção da Mulher e Genero; and
- Development and environment associations: Lupa – *Associação para o Desenvolvimento Comunitário*, Kulima - *Organismo para o Desenvolvimento Sócio Económico Integrado*, ADCR – *Associação para o Desenvolvimento das Comunidades Rurais- Xai-Xai*, *Associação Environtrade Carbon Livelihoods*.

90. **Academic and research institutions** will take part in the project, such as:

- Eduardo Mondlane University;
- High Polytechnique Institute of Manica (ISPM);
- Instituto Superior Politécnico de Gaza;
- CGIAR-CCAFS; and
- ICRISAT.

91. The **project beneficiaries** will be smallholder farmers from a total of 15 districts from the provinces of Tete, Sofala, Manica, and Gaza. The project is based on a wide involvement of farming communities in order to decrease the overall vulnerability of smallholder farmers and pastoralists. Through 3,200 existing FFS established under FAO MDG1c and Food Security and Nutrition for Gaza projects, LDCF funding will therefore directly reach around 80,000 beneficiaries, including 30% women. It will also directly reach 10,000 additional farmers through non-FFS extensionist support.

92. The **private sector** will also be involved in the project’s implementation. It will be the case for instance for:

- Agro-Alfa, mechanic equipment manufacturer;
- VETAGRO, veterinary private company; and
- Small seed producers. A selection of seed producers from the provinces of intervention is presented in the table below.

*Table 8: Selection of seed companies from the regions of intervention*

Companies	Type of Service		Province	Crops					
	commercialization	Production		Vegetables	Cereals	legumes	Oleaginous	Tubercl e	Pasture
IAP - Insumos Agricultura e Pecuaria	x	x	Tete	-	x	x	-	-	-
Nzara Yopera	-	x	Manica	-	x	x	x	-	-
Bonimar Agro-Comercial	x	x	Tete	X	x	x	x	-	-
Mozseed	x	x	Gaza	-	x	x	x	-	-
Dengo Comercial	-	X	Manica	-	x	-	-	-	-
Semente Perfeita	-	x	Manica	-	x	-	-	-	-
Manica Mbeu	x	x	Manica	X	x	x	-	-	-
IAV	-	x	Manica						-
IAM	-	x	Manica	-	-	-	-	-	-
Mocotex	-	x	Manica	-	-	-	-	-	-
Brazafrica	x	-	Manica	-	-	-	-	-	x

Prime Seed	x	-	Manica	X	-	-	-	-	-
Phoenix Seed	x	x	Manica	-	x	x	-	-	-
Sementes de Angonia	x	x	Tete	-	x	x	x	-	-
Multi Flor de Tete	x	-	Tete	-	x	x	-	x	-

## 1.5 LESSONS LEARNED FROM PAST AND RELATED WORK (INCLUDING EVALUATIONS)

### From FAO's experience on FFS

93. The FFS concept moves away from a traditional top-down approach to agricultural extension services. The FFS approach recognizes that farmers already have experience with and knowledge of agricultural practices. Farmers play a key role in the FFS process, and the different activities lead them to develop individual capacities in order to properly identify, analyze and interpret what happens in the field. This approach helps farmers take appropriate decisions based on their own experimentation. Farmer participation is a key component that needs to be applied in the proposed project to ensure the local ownership and project sustainability in the long term.
94. The project will follow the successful FFS example in East Africa which presents a holistic method and are now being used in other areas. Findings from the article “Farmer Field Schools in rural Kenya: a transformative learning experience” (Duveskog et al., 2010) revealed significant impacts demonstrated by a personal transformation; changes in gender roles and relations, customs and traditions, community relations, and an increase in the economic development of households. Friis-Hansen et al., 2012, also suggested that the most significant impact of FFS could be viewed in terms of building the capacity of local people to make choices and make decisions that ultimately lead to an increased uptake of agricultural innovations, access to services and market, as well as collective action. A major conclusion of the study is that agricultural development programs should focus more on the processes of empowering farmers as opposed to technical solutions that characterize most programs, in order to create an appropriate mix of technological and social advancements for a more sustainable development process.
95. With the aim of discussing the impacts of FFS at a global arena and to confront opinions in future development of FFS, FAO organized a FFS global review. The results will soon be published, reflecting a global consensus on the FFS success stories. The focus was not on “production” as the forum widely discussed the shift in the FFS’s concept to other expected impacts. One central comment describes that “a field school lies in the methodology of delivery for which there might be certain uniformity despite the subject in focus. This is characterizing the ongoing shift that FFS have taken from IPM/IPPM (Integrated Pest Management/Integrated Production and Pest Management) FFS, to poultry FFS, forestry FFS, climate change FFS, CMDRR FFS, pastoral FS. [...] Integration and holistic planning is the issue here”<sup>38</sup>. That is, to deal with the success of ecosystem management, that can only be achieved through involving a wide range of stakeholders.
96. In fact, while certain actions can only be handled by the communities, others require the government, local leaders and indigenous groups to be actively involved in the process to realize success and achieve wider impacts. Also, certain actions may require specialized institutions to tap into the cohesive strength of the FFS. For this, the method also has to build the capacities of different stakeholders to support certain activities. The kind of information/training passed on to the different levels of stakeholders is different. What is appropriate and relevant to the farmer will differ from what is appropriate and relevant to government officials. With this expanded FFS concept, a forum member from Kenya reported that “livelihood improvement for the beneficiaries

<sup>38</sup> Comment from a participant to the FAO Global FFS review that took place in 2012.

is enormous and sustainability aspects have been ensured while commercialization of most activities was achieved as farmers understood the science associated with each technology”<sup>39</sup>. A comment from a post-socialist country, Kyrgyzstan, explains that the “FFS served the goal of facilitating the change from collectivity-based to private farming. However, when visiting FFS training programmes at that time, one got the distinct impression that they were of considerable value to farmers in increasing their self-confidence and self-reliance in coping with the new challenges”<sup>40</sup>. This expanded FFS system is based on endogenous farmers’ and herders’ knowledge. It supports expanded community and decision makers’ capacity building, and harmonizes various approaches into a single tool and will be the foundation leading to the success of the present project.

#### From FFS projects in Mozambique

97. FFS as an extension participatory approach was introduced in Mozambique with FAO technical assistance and in close coordination with the DNEA between 2001 and 2005. It was implemented as a pilot program in two districts of Nicoadala and Namacura in the province of Zambezia in the framework of the **Special Programme for Food Security and Nutrition**. FFS methodology was applied for the first time on rice and vegetables through 124 FFS; with 16 extension workers trained as facilitators.
98. This experience was then expanded and scaled up to cover 12 districts in three provinces of Maputo, Sofala and Manica under the **National Programme for Food Security (PAN II)** from 2004 to 2009. The main lessons learned drawn from the mid-term evaluation of this project were:
- There is a strong demand of participation not only at grassroots level, but also in governmental institutions at different levels. Development projects can represent extraordinary opportunities for different kind of people and of social and professional groups to exert their eagerness to participate;
  - Participatory approaches are highly demanding in terms of careful design and planning, as well as in adequate human and logistic resources. Participation has to be fostered since the formulation phase of the project to be truly inclusive and meaningful;
  - Innovative methodologies cannot be mastered by national staff lacking specific experience and training. They need adequate technical assistance particularly in their early stages;
  - National ownership should not be regarded in opposition to external technical assistance. One should not exclude the other; and
  - Transparent decision making processes, clear procedures of internal monitoring and evaluation, open dialogue among stakeholders at different levels, consensually defined responsibilities and accountability lines are still far from the suitable level, even in projects aiming at improving stakeholders participation and local ownership.
99. The current baseline project **Food Security and Nutrition for Gaza** implemented by FAO has found in its more recent progress report from August 2014, that implementing activities at district level not only improves the chance of achieving the outcomes of the project within the allocated budget, but also ensures that technical assistance matches the needs of farmers in their specific agro-ecological zones.

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<sup>39</sup> Idem

<sup>40</sup> Idem

## **1.6 LINKS TO NATIONAL DEVELOPMENT GOALS, STRATEGIES, PLANS, POLICY AND LEGISLATION, GEF/LDCF AND FAO STRATEGIC OBJECTIVES**

### **Alignment with national development goals, strategies, plans, policy and legislation**

100. Over the past decade, Mozambique has developed a comprehensive framework of laws, policies, strategies, programmes and action plans addressing rural development, adaptation to climate change and the agricultural sector and livestock sectors specifically. The proposed project is in line with this overall framework and contributes particularly to the following:

#### Laws:

- The *Disaster Management Law* (2014) establishes the legal framework for disaster management, including prevention, mitigation of the devastation effects of disasters, rescue operations and assistance arrangements, and also the reconstruction and recovering of affected areas.

#### Development policies and strategies:

- *Action Plan for the Reduction of Poverty* (PARP, 2011 – 2014)
- *National Adaptation Plan of Action* (NAPA, 2007)
- *Environmental Strategy for Sustainable Development* (2007 – 2017)
- *Strategy on Gender, Environment and Climate Change* (2010 – 2014)
- *National Strategy for Adaptation and Mitigation of Climate Change* (2013 – 2025)

#### Sectoral policies, plans and programmes:

- *The Strategic Plan for the Development of the Agricultural Sector* (PEDSA 2011 – 2020)
- *National Investment Program for the Agricultural Sector* (PNISA, 2013 - 2017)
- *Communication, Education and Environmental Promotion Programme* (PECODA, 2010 – 2014)
- *The Action Plan for the Prevention and Control of Soil Erosion* (2008 – 2018)
- *The Action Plan for the Prevention and Control of Wildfires* (2008 – 2018)
- *Food Security and Nutrition Strategy II* (ESAN II, 2008 – 2015), guarantees that all citizens have physical and economic access at all times to sufficient food for an active and healthy life, in fulfilment of their human right to adequate food.
- *Agricultural Policy and Implementation Strategy* (PAEI, approved in 1996) integrates agriculture into Mozambique's economic development objectives in 4 main areas: 1) food security; 2) sustainable economic development; 3) reducing the unemployment rate; and 4) reducing the levels of absolute poverty
- *Rural Development Strategy* (EDR, approved in 1997) aims to improve the quality of life and develop the rural areas
- *Action Plan for the Reduction of Chronic Malnutrition in Mozambique* (PAMRDC, 2011 - 2020) aims at reducing chronic under nutrition for children under 5 years of age from 44% in 2008 to 30% in 2015 and 20% in 2020.
- *National Programme for the Strengthening of Commodities* (2011-2016)
- *Green Revolution Strategy* (ERV, approved 2007) is regarded as a multidimensional strategy to fight against hunger and poverty.

### **Alignment with GEF/LDCF Strategic Objectives**

101. The proposed project has been developed in line with the GEF-LDCF objectives. Specifically, the project supports objectives under focal areas CCA-1, CCA-2 and CCA-3, working directly towards the following outcomes and outputs under each focal area.

*Table 9: Alignment with GEF/LDCF Strategic Objective*

LCDF CCA Objectives	Project Results
<b>CCA-1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level</b>	
<b>Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas</b>	Output 1.2: National, provincial and district-level managers of agricultural and pastoral programs are trained in strategies and processes to include CCA in rural development through FFS and other extension approaches
<b>Output 1.1.1: Adaptation measures and necessary budget allocations included in relevant frameworks</b>	Output 3.6: Draft investment proposals formulated for the financing of more effective extension strategies for mainstreaming and up-scaling CCA in the agricultural and pastoral sectors
<b>CCA-2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level</b>	
<b>Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas</b>	Output 3.1: Manual of Environmental Educator (PECODA) revised and updated and MASA staff trained.
<b>Output 2.1.2.: Systems in place to disseminate timely risk information</b>	Output 2.5: Agro-meteorological decision support tools for farmers, developed in coordination with Instituto Nacional de Meteorología, PPCR and other partners, are tested with 20% of participating FFS and other beneficiary groups in 3 provinces and 8 districts.
<b>Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses</b>	<b>Outcome 2</b> –Adoption of improved CCA strategies, practices and a broader choice of adapted genetic material, in up to 15 districts covering at least three production systems (staple crops, vegetables, mixed tree/crop/animal production systems) through the FFS network that are assisted by FAO MDG1c and Food Security and Nutrition for Gaza projects and other partner programs.
<b>Output 2.2.1: Adaptive capacity of national and regional centers and networks strengthened to rapidly respond to extreme weather events</b>	Output 2.2: At least 1500 FFS facilitators (30% women) trained in CCA and ecosystem resilience strategies and practices in 3,200 FFS  Output 2.3: At least 200 non-FFS extensionists (government, NGOs, private providers, etc.) (30% of women) are trained in climate change adaptation and ecosystem resilience strategies and practices and support 10,000 additional farmers (30% women)  Output 3.1: Manual of Environmental Educator (PECODA) revised and updated and MASA staff trained
<b>Output 2.2.2: Targeted population groups covered by adequate risk reduction measures</b>	Output 1.3: Integrated local adaptation options, measures and practices, specifically suited to support the CCA strategies promoted by the FFS network under Component 2, are participatively identified  Output 1.4: Improved soil, water and crop management practices piloted in selected areas of the targeted districts  Output 1.5: Seeds of a more diverse set of crop/pastures varieties

	identified from existing climate stress tolerant cultivars/varieties made available in local seed systems and piloted in different ecosystems and production systems in the targeted districts
<b>CCA-3: Promote transfer and adoption of adaptation technology</b>	
<b>Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas</b>	<b>Outcome 3</b> – Increased institutional capacity and cross-sector coordination for designing and implementing efficient extension/outreach approaches, strategies and mechanisms in support of mainstreaming CCA in the agricultural and animal production sector.
<b>Output 3.1.1: Relevant adaptation technology transferred to targeted groups</b>	<p>Output 1.3: Integrated local adaptation options, measures and practices, specifically suited to support the CCA strategies promoted by the FFS network under Component 2, are participatively identified</p> <p>Output 1.4: Improved soil, water and crop management practices piloted in selected areas of the targeted districts</p> <p>Output 1.5: Seeds of a more diverse set of crop/pastures varieties identified from existing climate stress tolerant cultivars/varieties made available in local seed systems and piloted in different ecosystems and production systems in the targeted districts</p> <p>Output 2.2: At least 1500 FFS facilitators (30% women) trained in CCA and ecosystem resilience strategies and practices in 3,200 FFS</p> <p>Output 2.3: At least 200 non-FFS extensionists (government, NGOs, private providers, etc.) (30% of women) are trained in climate change adaptation and ecosystem resilience strategies and practices and support 10,000 additional farmers (30% women)</p> <p>Output 2.4: Methods developed and MITADER's CDS (Centros de Desenvolvimento Sustentavel) and INGC's CERUM (Centers of Resources and Multiple Use) officers trained to monitor progress towards more sustainable and climate-proof production systems</p>

### **Alignment with FAO Strategic Objectives**

102. The project addresses FAO's Strategic Objective (SO) 2 – Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner; and more specifically the following organizational outcomes:

- Output 20103 - Organizational and institutional capacities of public and private institutions, organizations and networks are strengthened to support innovation and the transition toward more sustainable agricultural production systems.
- Activity 30309 - Technical multi-sectoral and South-South Cooperation on production intensification and agro-ecology practices in the framework of Save and Grow

103. The project also addresses FAO's Strategic Objective (SO) 5 – Increase the resilience of livelihoods to threats and crises, and more specifically the following organizational outcomes:

- Output 50301 - Improving capacities of countries, communities and key stakeholders to implement prevention and mitigation good practices to reduce the impacts of threats and crises

104. The project will be developed in conformity with the Mozambique FAO Country Programme Framework<sup>41</sup> (CPF, 2012 – 2015), more specifically:

- Priority area 2 - Food availability, access and consumption,
  - (i) Outcome 2.1: Sustainable increase of crop and animal production and productivity;
  - (ii) Output 2.1.1 Small farmers use improved agricultural and animal production techniques in a sustainable way; and
- Priority area 3 – Environment, natural resources, climate change and disaster risk reduction
  - (i) Outcome 3.1: Improved natural resources management and resilience to food and agricultural threats; and
  - (ii) Output 3.1.2: Enhanced adaptation and mitigation capacity of vulnerable communities to climate change and emergencies.

105. FAO Representation in Mozambique is staffed with technical and operational personnel and can mobilize complementary national and international technical expertise within the pool of projects it manages and provide in-country support for the execution of the proposed project.

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<sup>41</sup> [ftp://ftp.fao.org/TC/CPF/Countries/Mozambique/CPF\\_MOZ\\_2012-2015.pdf](ftp://ftp.fao.org/TC/CPF/Countries/Mozambique/CPF_MOZ_2012-2015.pdf)

## SECTION 2 – PROJECT FRAMEWORK AND EXPECTED RESULTS

### 2.1 PROJECT STRATEGY

#### 2.1.1 The agro-ecological FFS Approach

##### The FFS approach

106. The FFS<sup>42</sup> is an approach to extension that is based on the concepts and principles of people-centered learning and was developed as an alternative to the conventional, top-down, extension approaches. It uses innovative and participatory methods to create a learning environment, including learning networks, in which land users have the opportunity to learn for themselves about particular production problems, and ways to address them, through their own observation, discussion and participation in practical learning-by-doing field exercises. The approach can be used to enable farmers to investigate, and overcome, a wider range of problems, including soil productivity improvement, conservation agriculture, control of surface runoff, water harvesting and improved irrigation.
107. The FFS approach was originally developed for training rice farmers on integrated pest management in Southeast Asia. The farmers meet every week from planting to harvest to check on how the crops are growing, look at the amount of moisture in the soil, and count the numbers of pests and beneficial creatures, such as earthworms and spiders. They do experiments in the field. Over the years, FFS has evolved to be used on many crops and to address many issues in many geographical settings across the world. A group of farmers gets together in one of their own fields to learn about their crops and things that affect them. They learn how to farm better by observing, analyzing and trying out new ideas on their own fields. They are supported by a facilitator, who is trained and may be responsible for more than one FFS. The facilitators are trained by master trainers through the use of detailed curriculum and training modules. The facilitators also ensure that a range of top-level scientific expertise is brought to FFS through the master trainers and the training modules. The FFS are therefore an ideal approach for linking field to extension services to scientific research, with, most importantly, information and knowledge flowing equally in all directions.
108. The facilitator of an FFS is normally an extension worker or another farmer who has “graduated” from another field school.<sup>43</sup> The facilitator guides the group, helps them decide what they want to learn and to think of possible solutions, and advises them if they have questions. The farmers draw on their own experience and observations and make decisions about how to manage the crop. During a cropping season, the supported group is required to hold two or more open field days to show other farmers what they are doing.
109. The farmers also host exchange visits for members of other field schools, and visit the other field schools themselves. This allows them to share ideas and see how others are dealing with similar problems. At the end of the cropping season, the farmers graduate: i.e. they receive a certificate from the field school organizer. The members are then qualified to start a new field school as a facilitator. The curriculum of the field schools includes team building and organization skills, as well as covering special topics suggested by the field school members themselves. The field schools are a way for farming communities to improve their decision making skills and to

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<sup>42</sup> Source: [www.fao.org](http://www.fao.org); FAO 2013 (op cit.)

<sup>43</sup> His/her competency is based on field experience and update training and not necessarily on formal training. Notably, in West Africa there is not diplomas, there is no graduation document, nor graduation procedure

stimulate local innovation for sustainable agriculture. The emphasis is on empowering farmers to implement their own decisions in their own fields.<sup>44</sup>

110. FFS is an empowering approach. A typical FFS will have 15-25 members, who, through the FFS experience, become empowered to identify, analyze and understand challenges and mobilize solutions. This organizational capacity can be applied to many challenges, not just productivity. Notably, the organizational capacity can be applied throughout the value chain - to credit and other financing modalities, to processing, to marketing, and to sales and investments.
111. The FFS extension approach has been found to be effective in enhancing farm incomes, technical expertise and yields. As they represent an effective mechanism for group training that can reach thousands of small-scale farmers with knowledge and technical content that each can adapt to their own unique circumstances. These processes empower farmers, both individually and collectively to more effectively participate in the process of agricultural development. From a sustainability point of view, it is recommended that the FFS approach should be used as a means or platform for disseminating CCA technologies among farmers.
112. The LDCF project links the FFS approach with the agro-ecology concept that will form part of the FFS training curricula. Agro-ecology is particularly well-fitted for the FFS approach since it is at the same time a science, a practice and a social movement (Wezel et al., 2009<sup>45</sup>). Agro-ecology addresses multiple challenges amongst which the conservation of the environment, food security, and resilience to climate change. Incorporating agro-ecology into the FFS approach is therefore crucial to reach the objectives of the LDCF project.
113. The FFS approach aims at reinforcing rural populations' CCA capacities. The concept spread through the integration of new resilient practices such as the use of meteorological data in farmer decision processes, use of resilient seed varieties, agricultural facilities, integrated pest management, etc.

#### **Farmer Field School in Mozambique**

114. FFS as an extension participatory approach was introduced in Mozambique with FAO technical assistance and in close coordination with DNEA between 2001 and 2005. It was implemented as a pilot program in two districts of Nicoadala and Namacura in the province of Zambezia in the framework of the Special Programme for Food Security and Nutrition. FFS methodology was applied for the first time on rice and vegetables through 124 farmer field schools; with 16 extension workers trained as facilitators. This experience was then expanded and scaled up to cover 12 districts in the three provinces of Maputo, Sofala and Manica under the project "PAN II" from 2004-2009. The FFS approach was considered the backbone of the "PAN II" project. The program began in 2004 in the provinces of Maputo, Manica and Sofala implemented by MASA with technical assistance from FAO and funding from the Italian government. The FFS were located in 12 districts where the population is more isolated, dispersed, and with basic access to services. In Manica Province the districts involved were: Gondola, Sussundenga, Guro and Machaze. In Sofala the districts targeted were: Nhamatanda, Maringué, Gorongosa and Caia and in Maputo the districts selected were: Boane, Matutuine, Moamba and Manhiça. The aim of the project was to reach about 1000 farmer groups by the end of 2008 to cover a total of about 25,000 families. In total, 646 FFSs were created, 206 of which are in the province of Manica, 289 in the province of Sofala 289 (Central region) and 151 in Maputo (South Zone).
115. Out of those sites, it is worth noting that currently in Sofala Province, the districts of Maringué, Nhamatanda and Gorongosa are also being targeted by the MDGc1 project, and in the Manica Province, the districts of Gongola, Sussundenga and Barué were also selected. This shows

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<sup>44</sup> As mentioned above in West Africa there is no graduation process or certificate. However, a Facilitator can only start a new FFS if s/he has completed a cycle

<sup>45</sup> <http://agroeco.org/socla/wp-content/uploads/2013/12/wezel-agroecology.pdf>

that the FFS movement is building on the existing experience and that trained facilitators are willing to be further engaged in the process.

116. More recently, other projects that use the FFS approach include, 1) The UN Joint Programme on Women empowerment and gender equality (UNJP) implemented in Maputo Province (Magude and Matutuine districts) and in Sofala Province (Nhamatanda, Dondo and Gorongosa districts); 2) FAO/BSF-supported project on “Household food security and nutrition in HIV/AIDS affected areas” of Manica and Sofala provinces; 3) MDGc1 Project that is being implemented in 15 districts in the Beira and Nacala Corridors during the period 2013-2018; 4) PAA in Tete Province in the districts of Angónia and Tsangano. In Tete Province, this project is being implemented with support of one field extension officer in each of the two districts above mentioned. Twenty FFS were already established in the last agricultural season in each district; 5) Food Security and Nutrition for Gaza project is a five-year program, funded by Belgium Fund for Food Security (BFFS) and which is implemented in the arid and semi-arid districts of the Gaza province namely: Guijá, Chigubo, Mabalane, Massingir, Chicualacuala and Massangena.
117. The establishment of this critical mass is seen as an important aspect to ensure sustainability. The extension system was until recently based on a supply perspective and now it has to be driven by demand in order to respond to farmers’ needs. Their basic task is to assist in scaling up the FFS approach in all provinces in the context of PRONEA, the Master Plan for Extension funded by IFAD.
118. To complement the government’s programs, a series of national and international non-governmental organizations are also implementing FFS projects. Just to mention a few of them: CARE International in Angoche district in Nampula Province, Aga Khan Foundation in three districts of Cabo Delgado Province, have carried out a FFS program. Other concrete examples are World Vision in Zambézia Province, the Cotton Research Institute is piloting, with the intention of up-scaling the use of the FFS methodology for improved cotton production of smallholders, together with commercial cotton concessions companies and with assistance from the Centre for Agricultural Bioscience International (CABI). Despite these numerous initiatives implementing FFS, it is worth noting that so far no FFS in Mozambique have promoted the uptake of the agro-ecological approach, an aspect that will be put in place by the proposed project.
119. Given its scope and the meaningful results that has brought up, at the farm level and beyond, the FFS extension approach was found to be effective in enhancing farm incomes, technical expertise and increase of yields. From a sustainability point of view, it is recommended that the FFS approach be used as a means or platform for disseminating CCA technologies among farmers.

## 2.1.2 Project Intervention Area and the Project Sites

120. The project will aim to work in four provinces and 15 districts in Mozambique within the current intervention areas of the MDG1c and the Food Security and Nutrition for Gaza projects. The selection of the areas is based on the level of vulnerability of the population to climate change and opportunities to collaborate with the two baseline projects. The table below presents the selected districts for the proposed project, and the alignment to baseline projects.

*Table 10: Districts of intervention of the proposed project*

Province	District	Main Characteristics	Baseline Project
Tete	Angónia	<ul style="list-style-type: none"> <li>• R10 agro-ecological zone<sup>46</sup></li> <li>• 210,501 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• Average yields of maize: 1,077 kg/ha</li> </ul>	MDG1c

<sup>46</sup> R10: High altitude region of Zambesia, Niassa, Angonia and Manica

		<ul style="list-style-type: none"> <li>• Average yield of sorghum: 874 kg/ha</li> <li>• Average yield of cowpeas: 222 kg/ha</li> <li>• 26,121 heads of cattle</li> </ul>
	Tsangano	<ul style="list-style-type: none"> <li>• R10 agro-ecological zone</li> <li>• 130,356 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 18,022 heads of cattle</li> </ul>
	Macanga	<ul style="list-style-type: none"> <li>• R10 and R7<sup>47</sup> agro-ecological zones</li> <li>• 117,936 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> </ul>
<b>Sofala</b>	Búzi	<ul style="list-style-type: none"> <li>• R5<sup>48</sup> and R4<sup>49</sup> agro-ecological zones</li> <li>• 108,953 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 12,127 heads of cattle</li> </ul>
	Nhamatanda	<ul style="list-style-type: none"> <li>• R5 and R4 agro-ecological zones</li> <li>• 159,983 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 1,311 heads of cattle</li> </ul>
	Gorongosa	<ul style="list-style-type: none"> <li>• R4 agro-ecological zone</li> <li>• 97,267 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 766 heads of cattle</li> </ul>
	Maringué	<ul style="list-style-type: none"> <li>• R6<sup>50</sup> agro-ecological zone</li> <li>• 58,732 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 1,486 heads of cattle</li> </ul>
<b>Manica</b>	Gondola	<ul style="list-style-type: none"> <li>• R4 agro-ecological zone</li> <li>• 200,315 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 5370 heads of cattle</li> </ul>
	Sussundenga	<ul style="list-style-type: none"> <li>• R4 and R10 agro-ecological zones</li> <li>• 97,981 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 16,197 heads of cattle</li> </ul>
	Barué	<ul style="list-style-type: none"> <li>• R4 and R10 agro-ecological zones</li> <li>• 134,007 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 16,625 heads of cattle</li> </ul>
	Manica	<ul style="list-style-type: none"> <li>• R4 and R10 agro-ecological zones</li> <li>• 160,326 inhabitants</li> <li>• Main produced staple crops (provincial level): maize and cassava</li> <li>• 43,575 heads of cattle</li> </ul>

<sup>47</sup> R7: Medium Altitude Region of Zambezia, Nampula, Tete, Niassa and Cabo Delgado

<sup>48</sup> R5: Low Altitude Region of Sofala and Zambezia

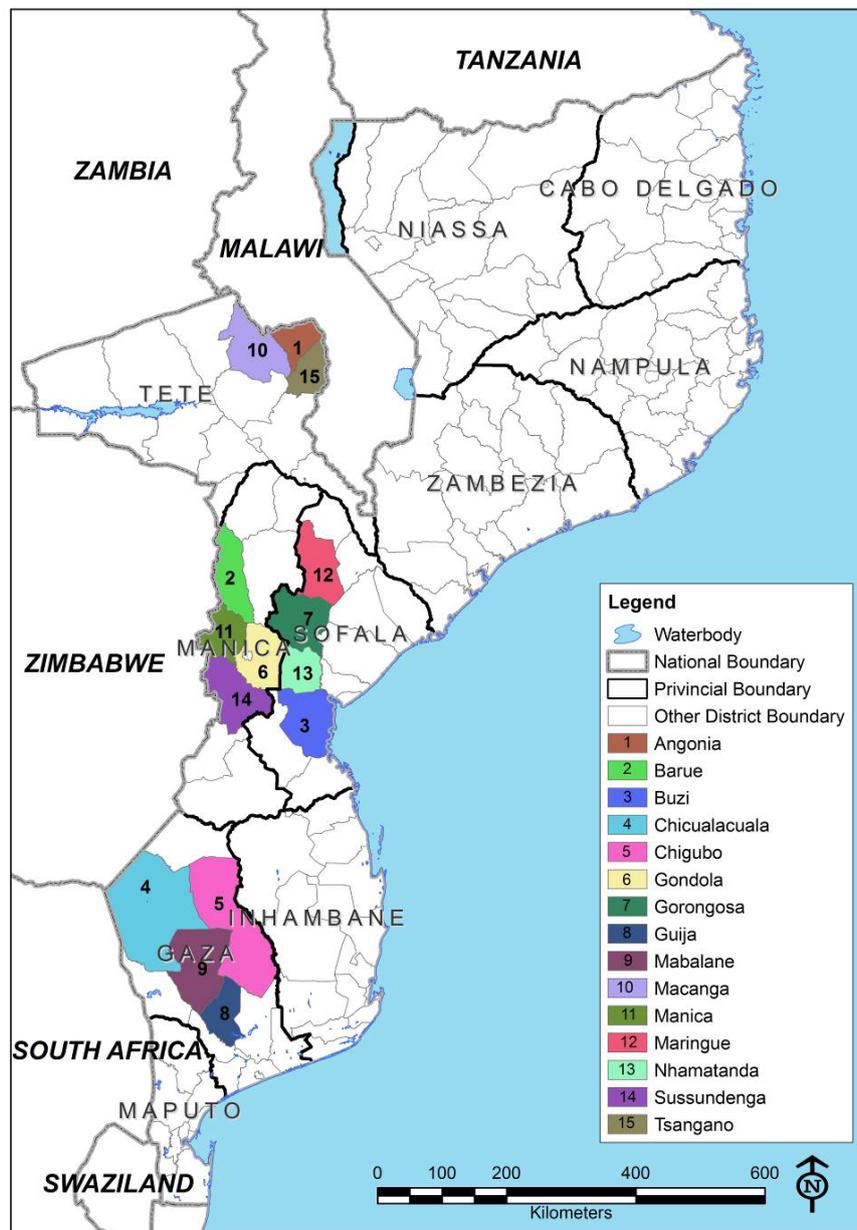
<sup>49</sup> R4: Medium altitude region of Central Mozambique

<sup>50</sup> R6: Semi-Arid Region of the Zambeze Valley and Southern Tete Province

<b>Gaza</b>	Gujá	<ul style="list-style-type: none"> <li>• R3<sup>51</sup> agro-ecological zone</li> <li>• 53,436 inhabitants</li> <li>• Main produced staple crop: sorghum</li> </ul>	Food Security and Nutrition for Gaza project
	Mabalane	<ul style="list-style-type: none"> <li>• R3 agro-ecological zone</li> <li>• 22,626 inhabitants</li> <li>• Main produced staple crop: sorghum</li> </ul>	
	Chicualacuala	<ul style="list-style-type: none"> <li>• R3 agro-ecological zone</li> <li>• 25,947 inhabitants</li> <li>• Main produced staple crop: sorghum</li> </ul>	
	Chigubo	<ul style="list-style-type: none"> <li>• R3 agro-ecological zone</li> <li>• 16,969 inhabitants</li> <li>• Main produced staple crop: sorghum</li> </ul>	

121. The map below represents the districts of intervention of the proposed project.

*Figure 8: Map of Mozambique with the 15 targeted districts*



<sup>51</sup> R3: Center and North of Gaza Province

122. Within these 15 districts, the LDCF project will target 80,000 smallholder farmers, including 30% of women, through the existing network of 3,200 FFS. The targeted districts will have a total population of about 1.6 million inhabitants according to INE projections for 2015. The average household size in rural areas is about 5 members, but it tends to be larger in Manica Province. The majority of smallholders is male-headed but there is considerable variation across districts<sup>52</sup>, as it is presented in the table below.

*Table 11: Socio-economic indicators in targeted districts*

District	Population in 2015 (Source: INE)	Household size (Source: IAI 2012)	Male headed HH (%) (Source: IAI 2012)	Average head's education (years) (Source: IAI 2012)	Head is salaried or self-employed (%) (Source: IAI 2012)
Angonia	210,501	4.23	69.45	2.45	12.37
Macanga	117,936	4.57	76.56	3.67	15.10
Tsangano	130,356	4.35	81.29	1.82	7.29
Barue	134,007	5.52	77.76	3.86	15.32
Gondola	200,315	5.95	68.49	2.99	31.78
Manica	160,326	5.45	85.13	4.37	11.91
Sussundenga	97,981	5.37	74.66	2.09	15.52
Buzi	108,953	5.50	68.26	2.03	19.33
Gorongosa	97,267	4.95	66.48	3.85	39.99
Maringue	58,732	4.27	37.13	0.84	1.48
Nhamatanda	159,983	5.82	83.79	3.32	26.97
Chicualacuala	25,947	5.53	69.88	2.12	39.01
Chigubo	16,969	5.83	76.76	0.93	0.00
Guija	53,436	5.79	55.03	1.87	15.32
Mabalane	22,626	6.88	63.27	1.91	11.95
Total	1,595,335	5.14	71.52	2.79	18.53

## 2.2 PROJECT OBJECTIVE

123. The objective of the project is to enhance the capacity of Mozambique's agricultural and pastoral sectors to cope with climate change, by up scaling farmers' adoption of CCA technologies and practices through a network of already established FFS, and by mainstreaming CCA concerns and strategies into on-going agricultural development initiatives, policies and programming.

124. To achieve this general objective, activities have been organized in the four following components. The specific objectives, methodologies, activities and key outputs of each component are described in further detail below.

## 2.3 EXPECTED PROJECT OUTCOMES, INDICATORS AND TARGETS

125. In order to deliver the above-mentioned objective, and in line with the four components, the project includes four outcomes. These outcomes are designed based on the current baseline in which the PSP, the MDG1c and Food Security and Nutrition for Gaza projects contribute to the

<sup>52</sup> Data from the agricultural survey are only representative at the provincial level. Data from the agricultural census are representative at the district level.

development of a strong FFS network, without however specifically addressing CCA issues for smallholder farmers.

126. **Outcome 1:** Awareness and knowledge of national, provincial and district-level managers and farmers increased to include CCA best practices and measures into on-going rural development programmes.

- **Outcome Indicator 1.1:** (AMAT Indicator 2.2.1) Number and type of targeted institutions with increased adaptive capacity to minimize exposure to climate variability (describe number and type)
  - (i) The baseline for this indicator is that institutions currently have low capacity to reduce vulnerability to climate variability, specifically for agro-pastoralists, and especially within the government national and decentralized structures.
  - (ii) The target is that around 10 staff from MASA/DNEA, 10 staff from MITADER, 10 staff from DNSV, 7 academic partners, 5 national and 12 provincial managers of agricultural programs, 40 staff from DPA/SPER, and 75 staff from SDAE are trained on strategies and processes for mainstreaming CCA practices and measures in rural development through FFS and other extension approaches.
- **Outcome Indicator 1.2:** Number of targeted rural development programmes that include CCA measures
  - (i) The baseline for this indicator is that the on-going agricultural development programmes targeted by this project, in particular the PSP and FAO MDG1c and Food Security and Nutrition for Gaza projects do not incorporate CCA measures.
  - (ii) The target for this indicator is that at least the two baseline programmes incorporate CCA measures.

127. **Outcome 2:** Adoption of improved CCA strategies, practices and a broader choice of adapted genetic material, in up to 15 districts covering at least three production systems (staple crops, vegetables, mixed tree/crop/animal production systems) through the FFS network that are assisted by FAO MDG1c and Food Security and Nutrition for Gaza projects and other partner programs

- **Outcome Indicator 2.1:** (AMAT Indicator 2.2.1.1) Number of staff trained on technical adaptation themes (disaggregated by gender).
  - (i) The baseline for this indicator is that FFS and non-FFS extension staff (master trainers and facilitators) are not trained on technical adaptation themes.
  - (ii) The target for this indicator is that 50 master trainers, 1500 FFS facilitators and 200 non-FFS extensionists are trained on technical adaptation themes and ecosystem resilience strategies and practices. 30% of them are women.
- **Outcome Indicator 2.2:** (AMAT Indicator 3.1.1) Percent of targeted groups adopting CCA strategies, practices and adapted genetic material (disaggregated by gender).
  - (i) The baseline for this indicator is that no CCA strategies, practices and adapted genetic material have been adopted yet.
  - (ii) The target for this indicator is that 50% (a total of 40,000 farmers of which 30% are women) adopt promoted CCA strategies, practices and adapted genetic material through the 3200 supported FFSs.
- **Outcome Indicator 2.3:** Level of use of agro-meteorological information by targeted agro-pastoralists
  - (i) The baseline is that agro-meteorological forecasts are developed in Mozambique but the level of access and use of these forecast by farmers are very low. Forecasts are not widely disseminated to agro-pastoralists in a timely and appropriate fashion.

- (ii) The target is that 20% of participating FFS and other beneficiary groups test agro-meteorological decision support tools that are developed by the project's activities
128. **Outcome 3:** Increased institutional capacity and cross-sector coordination for designing and implementing efficient extension/outreach approaches, strategies and mechanisms in support of mainstreaming CCA in the agricultural and animal production sector.
- **Outcome Indicator 3.1:** Number of annual meetings held of the institutional inter-sectorial task force established.
    - (i) The baseline is that inter-sectorial coordination regarding CCA issues is low.
    - (ii) The target is that a task force is established at national level, including MASA, MITADER and the civil society, and meets at least 3 times a year.
  - **Outcome Indicator 3.2:** (AMAT Indicator 1.1.1.1) Number of development framework that include specific budgets for adaptation actions
    - (i) The baseline is that currently no investment proposals are available for more effective extension strategies for mainstreaming and up-scaling CCA in the agricultural and pastoral sectors.
    - (ii) The target is that a financial investment proposal is formulated and shared at national and provincial level.
129. **Outcome 4:** Project implementation based on results based management and application of project lessons learned in future operation facilitated
- **Outcome Indicator 4:** Fulfilment of planned M&E activities including establishing baseline values for all project indicators, yearly updating of indicators, a mid-term evaluation/review and a final project evaluation.
    - (i) The baseline for this indicator is non-applicable.
    - (ii) The target will be that each planned activity in the M&E plan is completed.

## 2.4 PROJECT OUTPUTS AND ACTIVITIES

130. A set of project outputs and related activities will lead to the four substantive outcomes. Outputs under Outcome 1 will build the foundation for all extension and training activities conducted under Outcome 2. They will build capacities and awareness on CCA technologies and approaches in the existing FFS, reaching a wide variety of stakeholders in targeted areas. This includes building capacity within government institutions from national to local levels, as well as the implementation of pilots demonstrating CCA measures including soil and water conservation technologies and approaches within the FFS, and strengthening access to climate resilient improved seeds varieties for farmers.
131. Outputs under Outcome 2 focus on the implementation and adoption of CCA measures and practices within the already existing FFS network. Outputs under Outcome 2 will increase the adaptive capacity and livelihood quality of smallholder farmers in the targeted regions, which will contribute to the objectives of the co-financing projects. In addition, the rehabilitation and strengthening of the agro-meteorological network, together with the numerous training provided to national staff will benefit other initiatives in the long term, including the baseline projects.
132. Outcome 3 encompasses outputs and activities that will mainstream CCA into local development planning and processes, including an investment proposal to finance CCA measures for the agricultural sector. Outputs under Outcome 3 will also strengthen inter-sectorial coordination and lessons learned sharing for a better implementation of outreach strategies for CCA.

133. Outcome 4 focuses on measuring progress and results achieved under the three first outcomes and paves the way for communication and dissemination in later years. The detailed outputs and activities for the project, along with their baseline, are listed below.

**Component 1: Inclusion of improved climate resilient agricultural practices in the framework of the Strategic Plan for the Agricultural Sector (PEDSA) and its investment plan (PNISA) and with an emphasis on provinces and districts assisted by FAO MDG1c and Food Security and Nutrition for Gaza projects.**

**Outcome 1:** Awareness and knowledge of national, provincial and district-level managers and farmers increased to include CCA best practices and measures into on-going rural development programmes.

*Output 1.1: A multi-stakeholders FFS-based knowledge building strategy is formulated and applied to foster CCA strategies and practices*

134. In the baseline, there is no strategy to disseminate CCA measures and practices through an FFS approach in Mozambique. The PSP contributes to mainstreaming the FFS approach within the agricultural extension services, but does not focus specifically on CCA aspects. The MDG1c and Food Security and Nutrition for Gaza projects both use the FFS methodology in order to enhance smallholder farmers' agricultural and livestock production and food security. However FFS established through these projects do not specifically include CCA considerations.

135. With additional LDCF funding, the proposed project will elaborate in PY1 a strategy to disseminate and include CCA measures and approaches through the PSP initiatives promoting the FFS approach as well as through the existing and planned FFS network under FAO MDG1c and Food Security and Nutrition for Gaza projects.

136. The following activities will be organized:

- Activity 1.1.1: in PY1, training in the use of SHARP (Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists) for managers and technicians at all levels and support for implementing it.
- Activity 1.1.2: in PY1, establishment of a multi-year work plan and FFS-based building strategy to mainstream and disseminate CCA options, measures and practices through already established and planned FFS.
- Activity 1.1.3: in PY1, organization of 4 provincial workshops to inform regional stakeholders and disseminate this strategy.

*Output 1.2: National, provincial and district-level managers of agricultural and pastoral programs are trained in strategies and processes to include CCA in rural development through FFS and other extension approaches*

137. In the baseline, the PSP, the MDG1c and the Food Security and Nutrition for Gaza projects do provide capacity development amongst various governmental and non-governmental agencies for applying the FFS approach and methodology, but this does not take into account adaptation to climate change.

138. With additional LDCF funding, based on the capacity development provided by the PSP, the MDG1c and the Food Security and Nutrition for Gaza projects in Manica, Sofala, Gaza and Tete, the proposed project will strengthen in PY1 and 2 the capacities of national and provincial government staff in terms of CCA. This will ensure that CCA is understood, taken into account and implemented in other national initiatives with the end result of enhancing the livelihood of smallholder farmers in the context of a changing climate. The various trainings organized under this output will ensure that CCA technologies and approaches will be properly integrated into the existing network of FFS (created through the support from the baseline projects) while

implementing Component 2. Furthermore, these activities will directly be linked to the new Gender, Environment and Climate Change Strategy and Action Plan which aims to enhance capacity of MASA staff to integrate gender, climate change and agriculture, among others.

139. The following activities will be organized:

- Activity 1.2.1: in PY1, development of training tools and training material on strategies and processes for including CCA in rural development.
- Activity 1.2.2: in PY1, organization of one national training for MASA/DNEA, DNSV, academic partners and MITADER staff and national managers of agricultural and pastoral programs on strategies and processes for including CCA practices and measures in rural development through FFS and other extension approaches.
- Activity 1.2.3: in PY2, organization of 4 trainings at provincial level for DPA/SPER staff and provincial managers of agricultural and pastoral programs, and SDAE staff (District Directorate for Economic Activities) on strategies and processes for including CCA practices and measures in rural development through FFS and other extension approaches.

*Output 1.3: Integrated local adaptation options, measures and practices, specifically suited to support the CCA strategies promoted by the FFS network under Component 2, are participatively identified*

140. In the baseline, the PSP, MDG1c and Food Security and Nutrition for Gaza projects are establishing a network of FFS in the districts of intervention of the LDCF project. However the scope of the existing FFS does not include specifically local adaptation options, measures and practices.

141. With additional LDCF funding, the proposed project will benefit from the existing and planned FFS network under the baseline projects within which it will organize throughout the project implementation and all-along the establishment of FFS a participatory community analysis of climate resilience using the SHARP tool. The already existing network of FFS will also provide to the proposed project the framework to identify in a participatory manner integrated local adaptation option, measures and practices which will be tailored for men and women needs and traditions. It will therefore be linked to the Gender, Environment and Climate Change Strategy, contributing to promote gender equity and empower women and local communities through access to CCA technologies and the sustainable use of natural resources.

142. The baseline projects will benefit from the intervention of the LDCF project since it will take place within their FFS network and will raise awareness amongst farmers on CCA issues, enhancing the existing FFS network with an aspect, not included at first, that will strengthen smallholder farmers' resilience to climate change and food security.

143. The additional LDCF funding will also support the PSP initiative aiming at incorporating small scale farmers' consultations and representation in decentralized planning, management and decisions making.

144. The following activities will be organized:

- Activity 1.3.1: throughout project life and all-along the establishment of FFS, participatory community analysis of climate risks (through the use of SHARP) for each FFS.
- Activity 1.3.2: In PY1, participatory identification at FFS level of integrated local adaptation options, measures and practices, including the use of soils analysis, agro-ecological practices, conservation agriculture practices, use of compost, Integrated Production and Pest Management (IPPM), erosion control measures, integration of crop-livestock productions, use of fodder and forages into crop rotation, use of adapted seeds of major crops and seeds adapted to animal use, introduction of perennial crops and agroforestry, use of cover crops with nitrogen fixing species, and mitigation options for

pesticides-induced risks. Some of these adaptation technologies and approaches will target specifically women, while others specifically men. Participatory Rural Appraisals (PRA) will be conducted in every FFS to identify specific gender differentiated technologies and practices.

- Activity 1.3.3: In PY2, PY3 and PY4, support implementation of identified integrated local adaptation options, measures and practices through implementation of adapted climate-resilient FFS curricula.

*Output 1.4: Improved soil, water and crop management practices piloted in selected areas of the targeted districts*

145. In the baseline, both FAO MDG1c and Food Security and Nutrition for Gaza projects are implementing FFS to train and make farmers adopt better agricultural practices in order to improve their production, productivity and food security. The PSP project promotes and supports the FFS approach amongst agricultural extension services. However the projects do not provide investments to implement pilots demonstrating CCA practices and measures including soil and water conservation technologies and approaches at the landscape scale within the FFS network. In addition, the production and productivity of smallholder farmers suffer from the fact that there is no functional soil analysis laboratory supporting soil fertility management in Mozambique. IIAM has a laboratory and is currently buying soil analysis equipment but needs support to start operating it and to provide training to its staff. The Instituto Superior Politécnico de Manica already has a laboratory with staff (a head of the soil and plant nutrition lab, a soil fertility lecturer and lab technician, and a research assistantship and Lab technician), and the majority of the necessary equipment to do soil analysis but needs support for consumables and training for its staff<sup>53</sup>.

146. With additional LDCF funding, several investments will be made in PY2, PY3 and PY4 to provide already existing FFS with pilots demonstrating the benefit of CCA technologies and approaches in terms of water, forestry and soil management. The proposed LDCF project will also provide training and equipment to support the functioning of two soil analysis laboratories, which will directly benefit to the baseline projects as well as to a broader range of smallholder farmers across the country. Given the importance and benefits of the agriculture-forestry integration, LDCF funds will also allow FFS to benefit from available plant seedlings including perennials provided by the Agricultural House in Angónia.

147. The following activities will be organized:

- Activity 1.4.1: in PY1 and PY2, training of staff and provision of equipment for IIAM in Maputo and the Instituto Superior Politecnico de Manica in order to support the functioning of one soil analysis laboratory for each institution.
- Activity 1.4.2: in PY2 and PY3, installation of a demonstration site by planting nodulated and mycorrhizal legume trees to prevent water runoff and further deterioration of a gully at Tsangano.
- Activity 1.4.3: in PY2, PY3 and PY4, implementation of pilots supporting resilient soil and water management practices in 500 FFS among the 3200 targeted ones (small scale water management infrastructures, small-scale irrigation infrastructures, growing crops suited to local conditions, nitrogen fixing trees, cover crops to retain soil moisture, agroforestry, hedgerows, different arrangement in pastures, communal afforestation plots, home gardens, water reservoirs, contour boundaries, semi-moon etc.).

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<sup>53</sup> The installed capacity, operational costs and additional services of the Soil and Plant Nutrition Laboratory of the Instituto Superior Politécnico de Manica are detailed in Appendix 7.

- Activity 1.4.4: in PY2, PY3 and PY4, piloting of pesticide risk management practices for FFS located in urban areas of three provinces, namely Manica, Tete and Gaza.
- Activity 1.4.5: in PY2, support to the Agriculture House in Angónia and selected FFS to produce plant seedlings, including perennials, to be available to farmers.

*Output 1.5: Seeds of a more diverse set of crop/pastures varieties identified from existing climate stress tolerant cultivars/varieties made available in local seed systems and piloted in different ecosystems and production systems in the targeted districts*

148. In the baseline, although the public research institute (IIAM) has been developing short and/or drought resilient crop varieties (institutional mandate), small scale farmers do not always have access to such material. MASA also hosts a Seed Department in charge of seed quality control and coordination of the entire seed supply chain, including diffusion of improved varieties. The PSP also aims at enhancing the public-good support services supplied on demand to the production systems of smallholders such as seed multiplication. However, there is a need to strengthen variety release and availability of such varieties, to enable farmers to cope with climate change. On the other hand, local/landrace varieties can play a crucial role in CCA as a result of their adaptability to local conditions. Their preservation is also important given their multipurpose use (research material, food production at community level, etc.).

The CGIAR system has been working in the production of new varieties starting from local seeds, but this activity needs to be strengthened. Collection of local landraces have been conducted previously in the country, but not with a focus on CCA and not with a specific focus in the project area. The country lacks a participatory community based system for local seeds' selection and improvement. This constitutes a barrier for farmers to introduce their local findings and innovation into wider areas and to develop the local seeds market. Also, technical expertise for community-based seed identification, screening, conservation, and multiplication is not present in many decentralised offices. At the moment, local landraces are neither identified, nor stored in a clean manner, nor multiplied with appropriate technologies.

149. With additional LDCF funding, the proposed project will support the availability of short and drought resistant improved seed varieties for small scale farmers. The crops supported by the project will be: maize, sorghum, cowpeas, common beans, rice, cassava and sweet potato. This proposed crop list could be expanded during the project if necessary. The list takes into consideration sorghum, cassava, and sweet potato that are priority crops in Gaza drylands. It should also be considered that the project should use multipurpose varieties for crop and fodder usage in agro-pastoral areas.

The proposed project will link directly to the MDG1c project that has set-up a system to release varieties in targeted provinces. With LDCF funding, these activities will continue in targeted provinces and will be introduced in Gaza province.

The MDG1c project does not support the preservation of local/landrace varieties, an aspect that will be provided through LDCF funding. The proposed project will indeed work with the CGIAR towards a better identification, collection and preservation of local/landrace varieties through activity 1.5.2.

Furthering the activities of the MDG1c project, the GEF project will also focus in the wide adoption of appropriate climate resilient varieties targeting at least 5.000 beneficiaries under activity 1.5.3.

The additional LDCF funding will also benefit the PSP that supports the seed multiplication sector, by improving the availability of adapted seed varieties for farmers.

150. The following activities will be organized:

- Activity 1.5.1: in PY1, completion of a survey on species domestication to inform the potential resilience of agro-forestry systems to climate change in the future.

- Activity 1.5.2: in PY1, PY2 and PY3, release and maintenance of short cycle and drought tolerant improved varieties. Through this activity, the project will:
  - (i) Support IIAM in the evaluation and release of climate resilient varieties (establishment of trials in 4 locations under the supervision of IIAM and project staff); and
  - (ii) Support IIAM in variety maintenance and production of climate resistant pre-basic and basic seeds (the project will provide inputs, support occasional workers, and guarantee supervision of the process).
- Activity 1.5.3: in PY2, PY3 and PY4, preservation of local/landrace varieties through farmers' participation and local best practices. The activity will be developed in conjunction with the CGIAR system in Mozambique that will guarantee the scientific supervision and science soundness of the proposed activity (potential partners present in the country include the CGIAR Climate Change, Agriculture and Food Security Research Programme (CCA-FS), the local ICRISAT office located in IIAM, IITA (main office in Nampula), etc.). The activity will be based on farmers' participation and will include the following steps:
  - (i) Support the Department of Seeds (DS)/IIAM in the identification, collection and basic description (farmers' perception) of local varieties;
  - (ii) Support DS/IIAM in conducting seed screening, morphological description and maintenance of local varieties (germplasm);
  - (iii) Study farmers' best practices to select local varieties, store seeds and share local innovations and best practices within and outside the project;
  - (iv) Establishment of an in situ farmer's based local landrace conservation systems. This will consist in field based gene-banks to be established at community or FFS level; and
  - (v) Multiplication of clean material by farmers/communities.
- Activity 1.5.4: in PY1, PY2, PY3 and PY4, widening the use of improved and local climate resilient seed varieties, the activity will include the following steps:
  - (i) Support National Seed Dialogue Platform;
  - (ii) Training of extensionists in seed production practices and basic seed handling (processing and storage);
  - (iii) Support development of local seed enterprises - constitution, training (management, seed production, processing, storage, marketing);
  - (iv) Support local enterprises in small processing units (3-4 units);
  - (v) Support local seed enterprises in marketing - linking with agro-dealers;
  - (vi) Local seed production with small scale farmers (primarily for community use, with possibility to enter into formal seed system later);
  - (vii) Seed market study (with priority for Gaza province); and
  - (viii) Conduct demonstration plots of improved climate resilient varieties mainly at FFS level.

**Component 2: Promotion of climate resilient agricultural practices and technologies through Farmer Field Schools (FFS) and other extension approaches in the framework of the PSP, MDG1c and Food Security and Nutrition for Gaza projects, and other initiatives.**

**Outcome 2:** Adoption of improved CCA strategies, practices and a broader choice of adapted genetic material, in up to 15 districts covering at least three production systems (staple crops, vegetables,

mixed tree/crop/animal production systems) through the FFS network that are assisted by FAO MDG1c and Food Security and Nutrition for Gaza projects and other partner programs.

*Output 2.1: Training material on CCA best practices developed and integrated into extension curricula, including FFS curricula*

151. In the baseline, the PSP, MDG1c and Food Security and Nutrition for Gaza projects have established and will establish in the coming years FFS in the proposed project's intervention areas. These FFS cover a wide range of topics to improve smallholder farmers' production and food security, but they do not specifically focus on CCA and climate resilient agro-pastoral practices and measures. The PSP is also supporting and promoting the FFS approach and management amongst agricultural extension services.

152. With additional LDCF funding, the proposed project will review and mainstream CCA into FFS curricula and training manuals in the existing and planned FFS. The LDCF project will also develop specific CCA training tools for the FFS master trainers and facilitators.

153. The following activities will be organized:

- Activity 2.1.1: in PY1, on the basis of the FFS curricula developed by the baseline projects, identification of gaps and select CCA technologies and approaches to be integrated into extension curricula, including FFS, through a participatory process (including all activities mentioned in activity 1.3.2, e.g. use of soils analysis, conservation agriculture practices, use of compost, IPPM, erosion control measures, integration of crop-livestock productions, use of fodder and forages into crop rotation, use of adapted seeds of major crops and seeds adapted to animal use, introduction of perennial crops and agroforestry, agro-ecology, use of cover crops with nitrogen fixing species, and mitigation options for pesticides-induced risks).
- Activity 2.1.2: in PY1 and PY2, development of the new FFS curricula and training manuals including a module on CCA, pesticide risk management and agro-meteorological decision support tools (as identified under output 1.3 and 2.5). The curriculum could take the form of a tool box to enable farmers to implement CCA options, measures and practices that are specifically adapted to their agro-ecological environment and socio-cultural specificities. Beyond the climate change-related issues, the updated curricula and training manuals will also include value chains and market access aspects that are necessary to support climate resilient agricultural production and to diversify farmers' livelihood options. Often major constraints to farmers' willingness or ability to adopt new techniques lies in these 'off-farm' factors of value chain and market access. A focus on value chains and marketing is relatively new for Mozambique's extension services, so the project will assist field staff to address these issues. The training manual will be developed by climate change specialists supported by a designer and an editor.
- Activity 2.1.3: in PY1 and PY2, development of CCA training tools and manuals for FFS master trainers and facilitators.
- Activity 2.1.4: in PY2, PY3 and PY4, organization of field-days in FFS and exchange visits.

*Output 2.2: At least 1500 FFS facilitators (30% women) trained in CCA and ecosystem resilience strategies and practices in 3,200 FFS*

154. In the baseline, the majority of master trainers and facilitators within the existing and planned FFS network, set up by the three baseline projects, have not been specifically trained in CCA measures and practices for the agro-pastoral sector.

155. With additional LDCF funding, the proposed project will ensure FFS master trainers and facilitators from the existing and planned FFS network are trained and equipped in CCA technologies and approaches in order to disseminate them to farmers.

156. The following activities will be organized:

- Activity 2.2.1: in PY2, training and provision of equipment for 50 master trainers (30% women) at national-level in CCA and ecosystem resilience practices.
- Activity 2.2.2: in PY2, PY3 and PY4, training and equipment of 1500 facilitators (30% women) in CCA and ecosystem resilience practices, including training of FFS facilitators from the baseline projects, and refresher training course in each province every cropping season.

*Output 2.3: At least 200 non-FFS extensionists (government, NGOs, private providers, etc.) (30% of women) are trained in climate change adaptation and ecosystem resilience strategies and practices and support 10,000 additional farmers (30% women)*

157. In the baseline, extension services in Mozambique lack capacities in terms of CCA and ecosystem resilience knowledge.

158. With additional LDCF funding, the proposed project will ensure that CCA measures and practices are not only disseminated through the FFS network, but go beyond and reach extension services in a broader sense encompassing the government, NGOs and the private sector.

159. The following activities will be organized:

- Activity 2.3.1: in PY2 and PY3, training of 200 non-FFS extensionists (30% women) in CCA and ecosystem resilience strategies and practices.

*Output 2.4: Methods developed and MITADER's CDS (Centros de Desenvolvimento Sustentavel) and INGC's CERUM (Centers of Resources and Multiple Use) officers trained to monitor progress towards more sustainable and climate-proof production systems*

160. In the baseline, CDS and CERUM lack capacities in terms of CCA knowledge.

161. With additional LDCF funding, the proposed project will ensure that these centers are provided with adapted CCA training in order to enable them to monitor progress towards more climate-proof production systems. This monitoring of progress is crucial to ensure the long term sustainability and adoption of CCA practices and measures in the agricultural sector.

162. The following activities will be organized:

- Activity 2.4.1: in PY2, identification of gaps in terms of CCA knowledge and capacities within MITADER's CDS and INGC's CERUM.
- Activity 2.4.2: in PY2, organization of a seminar to present and validate the results of the assessment undertaken in activity 2.4.1.
- Activity 2.4.3: in PY2 and PY3, in line with the validated results, training for CDS and CERUM's officers in CCA monitoring and provide support to monitor progress towards more climate-proof production systems.

*Output 2.5: Agro-meteorological decision support tools for farmers, developed in coordination with Instituto Nacional de Meteorología, PPCR and other partners, are tested with 20% of participating FFS and other beneficiary groups in 3 provinces and 8 districts.*

163. In the baseline, the agrometeorological sector in Mozambique suffers from limited capacities, equipment and technologies. The sector also has difficulties producing and making relevant agrometeorological data accessible to farmers. One of the expected result of the PPCR (through the Strategic Program for Climate Resilience - SCPR) is to lower the climate-related water risks to

local communities, agricultural production and infrastructure as a result of improved hydro-meteorological information. The LDCF project will therefore be able to benefit from and use existing infrastructures that have already been put in place by the SPCR (Strategic Program for Climate Resilience). It is worth noting that the agrometeorological sector, even though essential to agricultural planning and production, is not addressed by the baseline projects.

164. With additional LDCF funding, the proposed project will enhance the network of agrometeorological equipment across the country, strengthening the network of infrastructures put in place by the SPCR. This improved network of agrometeorological equipment will be in synergy and contributing to the efforts of the SPCR in terms of improved agrometeorological information and infrastructure.

165. With the constant support of INAM (climate information's producers), IIAM (agronomic research), DNSA-DCAP (early warning system for crop production), DNEA (agricultural extension) the farmers will receive seasonal climate outlooks and weather forecasts translated and tailored to local context for practical advice concerning seed selection, planting date selection, fertilizer use, pesticide application, etc. The climate information will be integrated at a local scale into the FFS approach and particularly into the organization of training sessions and regularly disseminated through the most appropriate channels in local language.

This project output will support FFS activities around two of the four IIAM Zonal Research Centers (ZRC) which are located in: Central ZRC in Sussundenga (Manica Province) and South ZRC in Chokwe (Gaza). It will be gradually implemented in three provinces and eight districts: Manica (Gondola, Sussundenga), Sofala (Nhamatanda, Búzi); Gaza (Gujá, Mabalane, Chicualacuala, and Chigubo).

Real-time agrometeorological observations in vulnerable areas will be collected and analysed to produce agrometeorological forecasts at local level, seasonal agrometeorological forecasts at regional level as well as regular agromet products during the cropping season. Technical capacity of INAM, IIAM, DNSA-DCAP and SDAE staff will be enhanced through a training programme to enable them to make use of Automatic Weather Stations, agrometeorological forecasts and information, crop yield models, satellite and crop monitoring data, climate data base, in order to provide agricultural advisories that increase resilience of farmers and pastoralists to climate variability and change.

166. The following activities will be organized:

- Activity 2.5.1: in PY1 and PY2, identification of 32 sites (4 in each of the 8 districts as close as possible to the FFS) and installation of new rain gauges when needed.
- Activity 2.5.2: in PY2, provision of GSMs and training for the observers of the 32 selected rainfall stations to send crop calendar recommendations every 10 days to INAM Agromet Unit in Maputo by SMS text messages.
- Activity 2.5.3: in PY2 and PY3, increase INAM's capacity to generate seasonal agrometeorological forecasts at provincial level and agrometeorological forecasts at district level: (i) 4-month training for 1 climatologist from INAM at ACMAD Center (Niamey, Niger) in the development of seasonal agrometeorological forecasts at provincial level; (ii) 4-month training for 1 meteorologist from INAM at ACMAD Center (Niamey, Niger) in the development of agrometeorological forecasts at district level; and (iii) 3-month support from an international consultant to implement ClimSoft climate database management system and provide related training to national staff.
- Activity 2.5.4: in PY2 and PY3, in collaboration with the SPCR, provision and installation of 2 AWS with GSM-GPRS facilities (in IIAM-RZC – Chokwe, and at IIAM-Maputo) and new meteorological instruments for 6 manual stations.
- Activity 2.5.5: in PY2 and PY3, increase INAM, IIAM and DNSA-DCAP's capacity to produce agrometeorological products: (i) 6-month training for 6 agrometeorologists (2

from INAM, 2 from IIAM and 2 from DNSA-DCAP) at University of Liege (Belgium) in the use of FAO agro-meteorological software for real-time agro-meteorological analysis; (ii) 1-month support from an international consultant to set-up the AMESD satellite system at DNSA-DCAP and to train national staff in the use of related products; (iii) 1-month support from an international consultant to install FAO-ASIS software and to train national staff in the use of related products; (iv) 1-month support from international consultant to install the EC-JRC-SPIRITS software and to train national staff in the use of related products.

- Activity 2.5.6: in PY2, PY3 and PY4, integration of climate information into the FFS: (i) integration of agronomic and agrometeorological topics into FFS curricula; (ii) development of agro-meteorological manuals and glossary; (iii) translation of these documents in local language; (iv) organization of training sessions (fully integrated with FFS) before the start, during and before the end of the cropping season; and (v) development of agro-meteorological products at local level.
- Activity 2.5.7: in PY2, PY3 and PY4, regular dissemination of climate information and any other relevant data (such as improved seeds information, etc.) through local radios in local languages.

### **Component 3: Climate change adaptation strategies mainstreamed into agricultural sector policies and programs with emphasis on rural extension/outreach strategies and plans**

**Outcome 3:** Increased institutional capacity and cross-sector coordination for designing and implementing efficient extension/outreach approaches, strategies and mechanisms in support of mainstreaming CCA in the agricultural and animal production sector.

*Output 3.1: Manual of Environmental Educator (PECODA) revised and updated and MASA staff trained.*

167. In the baseline, the lack of capacities at national level hinders the incorporation of climate-change induced threats and impacts in agricultural planning. Although there are other initiatives in Mozambique targeting CCA awareness raising/capacity development at national level<sup>54</sup>, the scope of the three baseline projects do not integrate CCA trainings.

168. With additional LDCF funding, the proposed project will revise and update the Manual of Environmental Educator (PECODA) and will train MASA's staff in climate change impact and vulnerability analysis, which will allow better sectorial and sub-sectorial planning in the future for the agricultural sector. An enhanced agricultural planning will benefit the baseline project as well as future initiatives in the agricultural sector.

169. The following activities will be organized:

- Activity 3.1.1: in PY2, revise and update the Manual of Environmental Educator (PECODA) to include aspects related to climate change and adaptation measures for agriculture.
- Activity 3.1.2: in PY2 and PY3, training for MASA technicians and other civil society organizations in climate change impacts and vulnerability analysis for better sectorial and sub-sectorial planning.

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<sup>54</sup> Section 4.1.2 below provides detail information on Coordination with other ongoing and planned related initiatives.

*Output 3.2: Agricultural policy and current capacities assessed to identify strengths and weaknesses and mainstreaming of CCA aspects into the rural development sector and land planning policies.*

170. In the baseline, climate change is not systematically mainstreamed in policies, strategies and development plans. The districts of intervention of the project do not have local adaptation plans.

171. With additional LDCF funding, the proposed project will support the development of Local Adaptation Plans (LAP) for the 15 district of intervention, and the implementation of 8 of them, in close collaboration with MITADER who developed the methodology to develop the LAP. The baseline projects, already involved in the same districts will benefit from these plans which will strengthen the ability of the agricultural sector to cope with climate change. The project will also organize an international workshop in Maputo on the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, with the aim of better integrating land tenure issues into the present CCA local level planning.

172. The following activities will be organized:

- Activity 3.2.1: in PY1, carry out adaptation needs assessment in the 15 selected project's districts using diverse tools.
- Activity 3.2.2: in PY2 and PY3, develop the LAP for the 15 districts of intervention, including budget, through the use of MITADER guide for developing LAP.
- Activity 3.2.3: in PY3 and PY4, support the implementation of the LAP in the 8 selected districts through the organization of 1 workshop per district to disseminate the LAP and explain how it can be used for local strategic planning.
- Activity 3.2.4: in PY4, organization of awareness-raising seminars for district authorities to promote the use of the LAP information in the district planning process (District Strategic Development Plans and Economic and Social Plans and Budgets) ensuring full participation of women.
- Activity 3.2.5: in PY2, organization of an international workshop in Maputo on *the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*. This policy instrument, developed by FAO, promotes secure tenure rights and equitable access to land, fisheries and forests as a means of eradicating hunger and poverty, supporting sustainable development and enhancing the environment while also taking into account climate change-related issues. The guidelines are described in more details in the section innovativeness of this document.

*Output 3.3: Joint MASA/MITADER coordination mechanisms strengthened in support of the implementation and monitoring of extension/ outreach strategies for CCA*

173. In the baseline, there is a lack of coordination between the agricultural and the environmental sector which hinders the ability of the agricultural sector to take into account climate change and environmental issues and vice versa. The MDG1c project has organized a seed national dialogue and, although drought resistant varieties have been considered in the dialogue, this initiative doesn't focus on the coordination of CCA activities.

174. With additional LDCF funding, the proposed LDCF project will improve the collaboration between the two sectors by creating a CCA institutional task force gathering MASA, MITADER and the civil society. Staff from MASA and MITADER will be trained in M&E to enable them to monitor the adoption level of CCA technologies through the FFS network. This increased M&E capacity will be important for the adoption of CCA technologies in the long term and will inform future initiatives.

175. The following activities will be organized:

- Activity 3.3.1: in PY1, set up an institutional task force composed of MASA and MITADER's officers together with the civil society for a better institutional coordination on CCA, including development of the task force TORs and a MoU between the different partners involved.
- Activity 3.3.2: in PY2, training courses for 40 MITADER and MASA staff (national and provincial level) in M&E for assessing the adoption level of CCA technologies disseminated through the FFS methodology and evaluating the impacts of using adaptation practices for farmers to cope with the climate risk.
- Activity 3.3.3: in PY4, assess the adoption level and the benefits of CCA practices for farmers to cope with the climate risk, in at least one district for each province.

*Output 3.4: Comparative assessments of the efficiency and cost-effectiveness of FFS and non FFS-based extension approaches for up-scaling CCA, carried out in selected districts*

176. In the baseline, the FFS approach has been promoted through several projects, including the three co-financing projects. However, no comparative assessment between FFS and non-FFS based approaches for up-scaling CCA has been carried out so far.

177. Additional LDCF funding will enable the realization of this comparative assessment, including CCA aspects. The results of the assessment will be important for the baseline projects already implementing FFS as well as for future initiatives.

178. The following activities will be organized:

- Activity 3.4.1: in PY1, conduct a baseline study on existing FFS and non-FFS extension services including gender considerations.
- Activity 3.4.2: in PY3, carry out comparative assessments of efficiency and cost-effectiveness of FFS and non-FFS extension methods in at least 2 selected districts of each province including gender considerations.
- Activity 3.4.3: in PY4, organization of a workshop at national level to present and disseminate the results and recommendations of the comparative assessment.
- Activity 3.4.4: in PY4, publication and dissemination of a report on the comparative assessment

*Output 3.5: Good operational technologies and approaches for enhanced adaptation to climate risk of the agricultural sector are developed, disseminated and replicated at national level in support of sound CCA policy making and programming*

179. In the baseline, the baseline projects do not specifically take into account adaptation to climate risk in the agricultural sector.

180. With additional LDCF funding, the proposed project will collect good technologies and approaches at national level. The selection of the most appropriate technologies to disseminate and replicate will be done through the periodic meeting for the revision of technologies (REPETE). The results of these data collection will be presented in the form of a report and will enable better policy making and programming in terms of CCA in the future.

181. The following activities will be organized:

- Activity 3.5.1: In PY2, PY3 and PY4, logistical and technical support to REPETE.
- Activity 3.5.2: in PY3 and PY4, collect, synthesize, report and record good technologies and approaches on climate risk management and adaptation in the agricultural sector.
- Activity 3.5.3: in PY4, produce a synthesis report good technologies and approaches on climate risk management and adaptation in agriculture, including the results of the assessment realized in activity 3.3.3.

*Output 3.6: Draft investment proposals formulated for the financing of more effective extension strategies for mainstreaming and up-scaling CCA in the agricultural and pastoral sectors*

182. In the baseline, CCA is not systematically integrated in extension strategies for the agricultural sector.

183. With additional LDCF funding, a financial proposal for integrating CCA into extension strategies will ensure that this aspect is mainstreamed more systematically in the future since funding will be available for it.

184. The following activities will be organized:

- Activity 3.6.1: in PY3, training at national level for 20 MASA staff in the conception and design of more effective investment proposals for mainstreaming and upscaling CCA into agricultural development.
- Activity 3.6.2: in PY3, draft an investment proposal supporting CCA mainstreaming and upscaling in the agricultural and pastoral sectors through a participatory process.
- Activity 3.6.3: in PY4, organization of a validation workshop for the investment proposal at the national and provincial levels.

**Component 4: Project Monitoring and dissemination of results**

185. **Outcome 4**: Project implementation based on results based management and application of project lessons learned in future operation facilitated

186. The baseline for outputs under component 4 is not applicable.

187. With additional LDCF funding, the project will have sound monitoring and evaluation processes which will ensure proper implementation as well as extraction of project lessons learned and recommendations that will serve future initiatives.

*Output 4.1: Project monitoring system operational and providing systematic information on progress in meeting project outcome and output targets*

188. The following activities will be organized:

- Activity 4.1.1: Development of a performance framework (M&E plan) defining roles, responsibilities, and frequency for collecting and compiling data to assess project performance.

*Output 4.2: Timely biannual project progress reports available for adaptive and results based management*

189. The following activities will be organized:

- Activity 4.2.1: Timely development of project progress reports every 6 months.
- Activity 4.2.2: Presentation and dissemination of the report to the steering committee and executing partners through a meeting every 6 months.

*Output 4.3: Midterm evaluation/review and final evaluation conducted*

190. The following activities will be organized:

- Activity 4.3.1: After 24 months of project implementation, a mid-term project evaluation/review will be conducted by an external consultant, who will work in consultation with the project team including FAO-GEF Coordination Unit, the LTO (Lead Technical Officer), and other partners.
- Activity 4.3.2: At the end of project implementation a final project evaluation will be conducted under the supervision of FAO Office of Evaluation, OED, in consultation with the project team including FAO-GEF Coordination Unit, the LTO, and other partners.

## 2.5 GLOBAL ENVIRONMENTAL BENEFITS/ADAPTATION BENEFITS

191. The LDCF project is expected to increase resilience to climate change in the intervention areas through an integrated ecosystem-wide approach. The project will generate both direct and indirect adaptation benefits for smallholder farmers in the project's intervention areas. The project will directly support at least 80,000 farmers, including at least 30% of women, through 3200 FFS to develop and implement CCA technologies and approaches that increase climate resilience. Further, the project will train 1500 FFS facilitators and at least 200 non-FFS extensionists in providing climate resilient strategies and practices. The project will build institutional capacity and cross-sector coordination for implementing approaches to mainstream CCA in the rural development sector.

192. The project will increase the resilience of at least three production systems (staple crops, vegetables, mixed tree/crop/animal production systems), through the adoption of improved CCA strategies, practices, in up to 15 districts assisted by the PSP, MDG1c and Food Security and Nutrition for Gaza projects and other partner programs. The project will more specifically produce the following outputs:

- A multi-stakeholder FFS-based knowledge building strategy is formulated and applied to foster CCA strategies and practices;
- National, provincial and district-level managers of agricultural programs are trained in strategies and processes for mainstreaming CCA in rural development through FFS and other extension approaches;
- Smallholder and emergent farmers benefit from more climate-resilient production systems, specifically suited to support the CCA strategies and practices promoted by the FFS network under Component 2;
- Improved soil, water and crop management practices piloted in selected areas of the targeted districts; and
- Seeds of a more diverse set of crop/pastures varieties chosen from existing climate stress tolerant cultivars/varieties made available in local seed systems and piloted in different ecosystems and production systems in the targeted districts.

193. The project will assist farmers in adopting improved climate resilient technologies and approaches, mostly through FFS facilitating experimental learning on CCA strategies and practices and will more specifically produce the following outputs:

- Training material on CCA best practices developed and integrated into extension curricula, including FFS curricula;
- At least 1500 FFS facilitators (30% women) trained in CCA and ecosystem resilience strategies and practices in 3,200 FFS;
- At least 200 non-FFS extensionists (NGOs, private providers, etc.) (30% women) trained in CCA and ecosystem resilience strategies and practices and support 10,000 additional farmers;
- Methods developed and MITADER's CDS (Centros de Desenvolvimento Sustentavel) and INGC's CERUM (Centers of Resources and Multiple Use) officers trained to monitor progress towards more sustainable and climate-proof production systems; and
- Agro-meteorological decision support tools for farmers, developed in coordination with the Instituto Nacional de Meteorología, PPCR and other partners, tested with 20% of participating FFS and other beneficiary groups.

194. The project will increase institutional capacity and cross-sector coordination for designing and implementing efficient extension/outreach approaches, strategies and mechanisms in support of mainstreaming CCA in the rural development sector:

- Increased human and institutional capacity through a better knowledge and understanding of climate change - induced threats and impacts in the agricultural sector for a better sectorial and sub-sectorial planning;
- Agricultural policy / capacity assessment undertaken to identify gaps and opportunities for mainstreaming CCA into the rural development sector policies;
- Joint MASA/MITADER coordination mechanisms strengthened in support of the implementation and monitoring of extension/ outreach strategies for CCA;
- Comparative assessments of the efficiency and cost-effectiveness of FFS and non FFS-based extension approaches for up-scaling CCA, carried out in selected districts;
- Good operational measure and technologies for enhanced adaptation to climate risk of the agricultural sector developed, disseminated and replicated at national level in support of sound CCA policy making and programming; and
- Draft investment proposals formulated for the financing of more effective extension strategies for mainstreaming and up-scaling CCA in the agricultural and pastoral sectors.

## 2.6 COST EFFECTIVENESS

195. Cost-effectiveness is at the heart of FAO's Department of Agriculture and Consumer Protection's strategy for incorporating CCA concerns into its regular institutional support to sustainable agricultural development in LDCs such as Mozambique. The proposed project design is expected to be highly cost-effective since it builds upon and expand the scope of an existing FFS network that is already operational in several provinces. The project will seek synergies and complementarities with on-going initiatives and programs having similar objectives while avoiding overlaps. All interventions will be coordinated with other GEF projects implemented in the country.

196. Throughout the project, capacities will be strengthened – mainly in CCA, FFS and agrometeorological products - in different institutions at national, provincial and local level. The staff with strengthened capacity while staying in the country after the end of the project will be able to upscale awareness on CCA and FFS, which will allow the project to limit the use of international experts in a cost-effective manner. Notwithstanding, where national expertise is not available, making international expertise unique or exceptionally credible, international expert could be used.

197. The proposed project will not establish new FFS but builds directly upon an existing FFS network, established through support from the PSP, MDG1c and Food Security and Nutrition for Gaza projects, which will allow for a significant reduction in costs. These projects have created a core capacity of technical expertise and experience on FFS in Mozambique that will be used by the proposed project. This includes political and technical capacity in the government and extension services as well as technical expertise for FFS master trainers and facilitators that have previously worked in FFS. By building on these past initiatives, the project capitalizes upon previous work to include CCA aspects into the existing FFS curricula and trainings. The project will therefore not have to bear the cost of establishing new FFS. In the preparation of FAO/GEF project "Integrating climate resilience into agricultural production for food security in rural areas of Mali", a comparison of costs for FFS and standard training approaches to extension was undertaken. Although not directly transferable to this project, the findings were that "building upon 400 existing FFS and 233 experienced facilitators (for crops such as rice, cotton and vegetable gardening) will save 251,540 USD in training costs alone and 220,000 USD in FFS

operation over the project cycle.” Although not a solid economic analysis, this does strongly indicate the cost-effectiveness of the FFS approach.

198. Beyond providing trainings, the project intends to support the agro-meteorological sector by providing equipment such as rain gauges, AWS and GSM. This kind of equipment is not overly expensive and has the potential to introduce a dramatic change in farmers’ adaptive capacities regarding their agricultural practices. National staff will also be trained in the use and maintenance of this equipment which will ensure its durability. These investments are therefore deemed cost-effective.
199. The project will support the seed sector and the operations of soil analysis laboratories. The support provided to the seed sector will be cost-effective since it will build upon existing seed producers and providers while being in synergy with the intervention of the PSP and MDG1c projects. The project will support existing systems such as CGIAR’s and will strengthen existing entities such as IIAM, the National Seed Dialogue and existing local seed enterprises. This will be done by working with international research centres established in the country such as ICRISAT. By focusing on these well-established entities, the project will ensure that funds will be used in a cost-effective manner since the project will not have to establish new structures. The same can be said for the soil analysis laboratories that are already functional within existing institutions (IIAM and Instituto Superior Politecnico de Manica) with basic equipment and staff. The project will therefore complement and strengthen the existing structures by providing missing equipment and training staff. The project will not bear the costs of building a lab from scratch. In addition, the investments are deemed cost effective since the project will incentivize the 2 institutions, through an intermediation process, to include staff remuneration and supply of necessary soil analysis inputs in their respective budget to cover staff costs and equipment maintenance.
200. Cost-effectiveness will also be achieved through knowledge management, synergies and complementarities. Previous knowledge on climate change threats and mitigation practices and strategies does exist both at grass-roots and institutional levels, but it is poorly systematized, shared and disseminated (although other initiatives in Mozambique targeting CCA awareness raising exist – see sub-section 4.1.2. below). Good operational lessons learned and practices for enhanced adaptation to climate risk of the agricultural sector will be developed and disseminated by the project. While the cost of producing a report on the matter is not high, the impacts of the application of such lessons learned could have in the agricultural sector is tremendous. The project also encompasses close cooperation with the on-going GEF projects, as well as with a series of other externally funded initiatives.
201. The project intends to develop investment proposals for the financing of more effective extension strategies for mainstreaming and upscaling CCA in the agricultural sector. While drafting such proposal has a limited cost, their effectiveness and impacts is particularly important since it will allow future investments to mainstream CCA in other initiatives, even after the end of the project.

## **2.7 INOVATIVENESS**

202. The most significant innovation brought by the project is the mainstreaming of CCA in the current FFS network in Mozambique. Although FFS are already in place in Mozambique, the climate resilient practices have not been integrated in these previous initiatives.
203. The FFS approach is also innovative in terms of learning process for the local population. The successful FFS used in East Africa adopts a holistic method to extension and community support. For example, the article "Farmer Field Schools in rural Kenya: a transformative learning experience" reveals the significant impacts demonstrated by a personal transformation; changes in gender roles and relations, customs and traditions, community relations, and an increase in the economic development of households. Further, Friis-Hansen et. al. suggest that the most significant impact of innovative FFS could be viewed in terms of building the capacity of local

people to make choices and decisions that ultimately lead to an increased uptake of agricultural innovations, access to services and market access, as well as collective action. A major conclusion of the study is that agricultural development programs should focus more on the processes of empowering farmers as opposed to the technical solutions that characterize most programs, in order to create an appropriate mix of technological and social advancements for a development process that is sustainable.

204. The proposed project will also introduce new climate resilient and participatory tools such as SHARP. The tool provides a framework for farmers and herders to self-assess their climate resilience. It has been developed in collaboration with the University of Leeds, UK, and has been tested in various FAO FFS projects in Africa. Moreover, the tool is being used in a number of FAO GEF projects working in land degradation and climate adaptation through FFS. The scheme takes place within the initial FFS community dialogues and baseline assessments and allows for an assessment of climate resilience during different phases of project implementation.
205. The project will also promote the innovative agro-ecology approach in the FFS curricula. Agro-ecology is increasingly recognized by the scientific community as three-fold purpose: it is at once a science, a practice and a social movement (Wezel et al., 2009<sup>55</sup>). As a science, agro-ecology integrates multiple disciplines into a “trans-discipline”, drawing on fields such as ecology, agronomy, political economy and sociology. As a set of practices, it can provide multiple benefits to society and the environment, from reducing pollution from agriculture and supporting the conservation of the environment to boosting nutrition security and improving resilience in a changing climate. As a movement, it can address the vitally important issues of distributive and procedural justice in food and agriculture—that is, who gets access to what resources and how to decide<sup>56</sup>. In 2014, FAO officially recognizes agro-ecology as “a promising approach to moving food production onto a more sustainable path”<sup>57</sup>. As such, incorporating agro-ecological farming into FFS curricula is an effective way to enhance agricultural systems management in order to make them both more productive and better at conserving natural resources.
206. The project will also introduce a new and innovative policy instrument: the Voluntary Guidelines on the Responsible Governance of Tenure. The *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* promote secure tenure rights and equitable access to land, fisheries and forests as a means of eradicating hunger and poverty, supporting sustainable development and enhancing the environment. They were officially endorsed by the Committee on World Food Security on 11 May 2012. The Guidelines promote responsible governance of tenure of land, fisheries and forests, with respect to all forms of tenure: public, private, communal, indigenous, customary, and informal. Their overarching goals are to achieve food security for all and support the progressive realization of the right to adequate food in the context of national food security. While supporting efforts towards the eradication of hunger and poverty, the Guidelines are also intended to contribute to achieving sustainable livelihoods, social stability, housing security, rural development, environmental protection, and sustainable social and economic development. The Guidelines are meant to benefit all people in all countries, although there is an emphasis on vulnerable and marginalized people<sup>58</sup>.

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<sup>55</sup> <http://agroeco.org/socla/wp-content/uploads/2013/12/wezel-agroecology.pdf>

<sup>56</sup> <http://www.iatp.org/blog/201409/scientists-praise-and-challenge-fao-on-agroecology#sthash.DLh56nNA.dpuf>

<sup>57</sup> <http://www.fao.org/news/story/en/item/247782/icode/>

<sup>58</sup> <http://www.fao.org/nr/tenure/voluntary-guidelines/en/>

## **SECTION 3 – FEASIBILITY (FUNDAMENTAL DIMENSIONS FOR HIGH QUALITY DELIVERY)**

### **3.1 ENVIRONMENTAL IMPACT ASSESSMENT**

207. Based on the project objective, outcomes and outputs, adverse environmental or social impacts are not likely, and the project conforms to FAO's pre-approved list of projects excluded from a detailed environmental assessment (i.e. Category 'C'). To the contrary, the project and the GEF resources invested are expected to have positive impacts on agricultural lands. The project will support the sustainable use of natural resources, which will create global environmental benefits. The investments in rural areas for SLM and CCA will follow Mozambique's standards and legislation

### **3.2 RISK MANAGEMENT**

#### **3.2.1 Risks and mitigation measures**

208. A detailed risk table including identified potential risks to the project, estimated levels of risks, and proposed mitigation measures for each risk is provided in Appendix 4.

#### **3.2.2 Fiduciary risk analysis and mitigation measures**

209. Not required as this is not a Nationally Executed Project (NEX).

## **SECTION 4 – IMPLEMENTATION AND MANAGEMENT ARRANGEMENT**

### **4.1 INSTITUTIONAL ARRANGEMENTS**

#### **4.1.1 General institutional context and responsibilities**

210. The different national and provincial institutions to be involved in the project, and their respective responsibilities, are described below:

##### **At the National Level**

211. The Ministry of Agriculture and Food Security (MASA) has the mission to contribute to a better food security and to reduce poverty by providing support to the social sector; the private sector, government agencies and non-governmental organizations in order to increase agricultural productivity, agro- industry and marketing under the principle of sustainable use of natural resources.

212. The National Directorate for Agricultural Extension (DNEA) is part of MASA and plays a role in all activities undertaken by the Ministry of Agriculture and Food Security , such as:

- Participate in the preparation, implementation, monitoring and evaluation of policies, sectoral strategies and legislation;

- Establish, monitor and evaluate the director framework for training, information and technical assistance to producers and organizations;
  - Coordinate the collection, evaluation and validation, with the scientific research institutions, of new technologies, services, products and production processes to be spread among agricultural producers;
  - Transfer to producers the data and information relevant to the establishment of priorities for research and technology to increase productivity;
  - Keep the technical and extension services updated to the needs of agricultural producers;
  - Establish mechanisms for the dissemination of technological innovations and training of trainers; and
  - Promote the implementation of agricultural extension activities by other public, private, and non-governmental organizations.
213. The National Directorate for Agrarian Services (DNSA) is part of MASA. The DNSA is responsible for the following areas of activity:
- Agricultural production;
  - Pest and disease prevention;
  - Notice;
  - Seeds , seedlings and propagating material;
  - Irrigation; and
  - Food security coordination.
214. The Ministry of Land, Environment and Rural Development (MITADER); has the mandate of coordinating and fulfilment of the international initiatives on environment and biodiversity issues as well as to adopt the basic legislation that links to the national policy for environment.
215. The Mozambique Agriculture Research Institute (IAM) is the leading research institution in the agricultural sector of the country. Its mission consists in generating knowledge and technological solutions for the sustainable development of agribusiness, and food and nutrition security.
216. The National Institute of Meteorology (INAM) is responsible for providing meteorological information necessary to ensure the sustainable development of the national economy, for mitigating the negative impacts related to climate on human well-being and the natural environment, and for complying with national and international responsibilities in data sharing.

#### **At the Provincial level**

217. The Provincial Directorate of Agriculture (DPA) works under MASA. Its responsibilities include:
- promote the development of agricultural production, livestock , forestry and beekeeping in the Province;
  - promote the organization of farmers' associations;
  - plan, organize and direct extension activities in the Province;
  - manage inventories of the land resources in the Province and ensure its proper use and protection;
  - ensure the implementation of agrarian legislation and regulations; and
  - ensure the annual evaluation of technical and other staff of the DPA.
218. The Provincial Services for Agrarian Extension (SPER) are responsible for the provincial services of agricultural extension. The head of SPER reports to the DPA and technically at national level to the DNEA. The core function of the SPER consists of planning, providing

training, technical support, supervising and monitoring districts extension services. The SPER is also responsible for coordinating and consolidating the activities that comprise more than one department, such as contracts and the link between training and research. In the case of projects at provincial level, the provincial extension service in collaboration with the teams of district extension will be responsible for the identification and formulation of projects and for its submission for approval by the DPA.

### **At the District Level**

219. The District Services for Economic Activities (SDEA). Regarding agriculture, the SDAE are responsible for:

- Promoting the appropriate use of land;
- Promoting forest management;
- Ensuring the respect of the legislation;
- Promoting the education of populations for fire control;
- Monitoring cultivated areas and production yields
- Disseminating among producers appropriate technologies to increase yields
- Encouraging food products and crop yields; and
- Encouraging the planting of shade trees and fruit; and promote plant health.

### **4.1.2 Coordination with other ongoing and planned related initiatives**

220. Coordination will be ensured by FAO office in Mozambique as well as MASA and MITADER. MASA and MITADER will ensure coordination with national initiatives, while FAO will facilitate coordination with internationally supported initiatives and with initiatives in other Eastern African countries. Coordination mechanisms will be supported by the project staff and management unit.

221. The project will be implemented in close collaboration with a number of partner projects, and coordination across the projects will be important. The collaboration with projects will take the form of co-financing agreements and/or sharing of best practices and lessons learned. These partner projects fall into two categories: (i) baseline projects in Mozambique (discussed earlier), which are the related projects and programmes that the present project will directly collaborate with through co-financing arrangements; and (ii) related projects with which coordination will focus on exchanging lessons and sharing inputs and technical expertise.

222. There will be a direct collaboration with the baseline project **Food Security and Nutrition for Gaza**, where the overall program objective is to improve the food security and nutrition of vulnerable households in the selected six districts of intervention in Gaza Province. A direct collaboration will be established as well with the **MDG1c** project, where the objectives are to: (i) enhance agricultural and fisheries production; (ii) improve access to food, and; (iii) improve nutritional status of vulnerable groups, in particular women and children. There will also be a direct collaboration with the **PSP** currently being implemented for the period 2012-2016 and funded by IFAD. This project aims at supporting the agricultural extension services in order to increase returns and improve household food security for male and female subsistence farmers, including female-headed and disadvantaged households, through a steady uplift in production efficiency and market orientation. The PSP was designed to support PRONEA's three components as follows: Component 1: Supply Side Development of agricultural service provision, both public and private sector development; Component 2: Demand Side Development for agricultural extension service provision, association capacity to participate in planning, as well as in economic development, and Component 3: Agricultural Extension Service Provision, at provincial and district level. PSP supports PRONEA intervention in 42 of the 128 districts of the country.

223. The LDCF project will collaborate closely with the 5.5-year (2013-2018) **Pilot Program for Climate Resilience (PPCR)** of the Strategic Climate Fund (SCF) for a Mozambique's **Strategic Program for Climate Resilience (SPCR): Transforming Hydrological and Meteorological Services Project**<sup>59</sup>. The PPCR is a regional multi-donor programme that led to the development of the SPCR in Mozambique, which encompasses several projects such as the Transforming Hydrological and Meteorological Services Project. In addressing the existing institutional and technological gaps of INAM, DNA and ARAs, the SPCR aims to strengthen hydrological and meteorological information services to deliver reliable and timely climate information to local communities and to support economic development. This project is structured around three components. Component A is addressing the strengthening of hydrological information management (DNA and ARAs) while Component B focuses on strengthening of weather and climate information management (INAM). This component will support: strengthening and optimisation of the physical meteorological monitoring networks; improving quality control and standard enforcement for meteorological data; data management, modelling, forecasting, extreme weather prediction and early warning systems and Information and Communication Technology; skills, capacities and training; and development and improved access to information products. Finally, Component C of the project addresses resilience through delivery of improved weather and water information. The component will support pilot interventions to enable more effective end-to-end delivery of hydro-meteorological information. The proposed pilots will include: early warning systems and flood forecasting in the Zambezi, Limpopo and Incomati River basins; hydro-meteorological information for farmers in pilot locations in the Gaza and Inhambane provinces; weather service alerts in coastal areas in Inhambane; and innovations for interagency delivery of data.

Output 2.5 under Component 2 of the LDCF project has to take stock of the gradual implementation of the Mozambique's **SPCR: Transforming Hydrological and Meteorological Services Project**<sup>60</sup>. There is a need for a very close collaboration between INAM, the SPCR and the LDCF projects in order to benefit from the improvement of INAM's network and structure. It is important to note that, excluding the pilot testing in Gaza and Inhambane provinces to deliver weather forecasts to farmers, the support to the agro-meteorology sector within INAM is not part of the SPCR project's intervention.

224. Extension and research services have developed and put in place some mechanisms to exchange experiences including **REPETE** which undertakes periodic meetings, sets up thematic working groups, and direct links between research stations and extension officers, for the revision of technologies at provincial and national level, to evaluate and make a decision on the most appropriate technologies, practices and abilities to be disseminated. REPETE is recognized as the most efficient instrument to evaluate and decide on the technologies, involving all the actors (research and extension services, inputs and service providers, farmers and development partners); at national level REPETE meets every two years and it is expected to increase the frequency of these meetings, organized per thematic area such as natural resources management, climate change adaptation, FFS, cereals, roots and tubers, post-harvest, animal husbandry and so on. The project will be collaborating with this initiative by supporting the organisation of regular meetings.

225. The project will also cooperate with the **IFAD Pro-poor Value Chain Project in the Maputo and Limpopo Corridors (PROSUL)** and IFAD's global mechanism on CCA - the **Adaptation for Smallholder Agriculture Programme (ASAP)**. In particular, the cooperation will regard the ASAP Outcome 1 (Climate resilient Horticultural Value Chains developed and promoted in 8 districts of Gaza and Maputo Provinces) and Output 3 aiming to enhance the meteorological facility at IIAM's research station in Gaza to make reliable meteorological observations that contribute to national data base and can be used by growers in forecasting pest and disease out breaks.

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<sup>59</sup> <http://www.worldbank.org/projects/P131049/climate-resilience-transforming-hydro-meteorological-services?lang=en>

<sup>60</sup> <http://www.worldbank.org/projects/P131049/climate-resilience-transforming-hydro-meteorological-services?lang=en>

226. The **CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)** addresses the increasing challenge of global warming and declining food security on agricultural practices, policies and measures. The proposed project will work in collaboration with the CCAFS under output 1.5 regarding the preservation of local/landrace varieties.
227. The project will also collaborate with the **AGP Pesticide team on CCA** in urban agriculture through FFS to reduce pesticide impacts on the environment and health. A collaboration will also be established with the **AGP Seed team** through the implementation of Component 1.

*Table 12: Collaboration with on-going or planned initiatives*

<b>Project title and description</b>	<b>Agency</b>	<b>Collaboration</b>
<p><b>Food Security and Nutrition for Gaza project</b> The overall objective is to improve the food security and nutrition of vulnerable households in the six selected districts of intervention in Gaza province. This should be done through the achievement of the three following outcomes: (i) increased production and productivity of agriculture and livestock; (ii) improved community based natural resources management; and (iii) Improved nutrition and dietary intake as a result of nutrition education.</p>	FAO	Co-financing – USD 2,5 million
<p><b>MDG1c project</b> The goal is to accelerate progress towards MDG1c in Mozambique by reaching the following objectives: (i) enhance agricultural and fisheries production; (ii) improve access to food, and; (iii) improve nutritional status of vulnerable groups, in particular women and children.</p>	FAO	Co-financing – USD 22,4 million
<p><b>PRONEA Support Project (PSP)</b> The overall objective is to contribute to absolute poverty reduction and an improvement in the quality of life of the rural poor. The purpose of the PSP consists in increasing returns and improving household food security for male and female subsistence farmers, including female-headed and disadvantaged households, through a steady uplift in production efficiency and market orientation</p>	IFAD	Co-financing – USD 1,274,657
<p><b>Pilot Programme for Climate Resilience (PPCR): Mozambique’s Strategic Program for Climate Resilience</b> The PPCR is a regional multi-donor programme that led to the development of the SPCR in Mozambique, which encompasses several projects such as the Transforming Hydrological and Meteorological Services Project. In addressing the existing institutional and technological gaps of INAM, DNA and ARAs, the SPCR aims to strengthen hydrological and meteorological information services to deliver reliable and timely climate information to local communities and to support economic development.</p>	World Bank	Cooperation, sharing of best practices and lessons learned, and use of weather forecast system in the agro-meteorological sector
<p><b>Pro-poor Value Chain Project in the Maputo and Limpopo Corridors (PROSUL) and the Adaptation for Smallholder Agriculture Programme (ASAP).</b> ASAP Outcome 1 relates to Climate resilient Horticultural Value Chains developed and promoted in 8 districts of Gaza and Maputo Provinces and Output 3 to enhance the meteorological facility at IIAM’s research station in Gaza to make reliable meteorological observations that contribute to</p>	IFAD	Cooperation, sharing of best practices and lessons learned

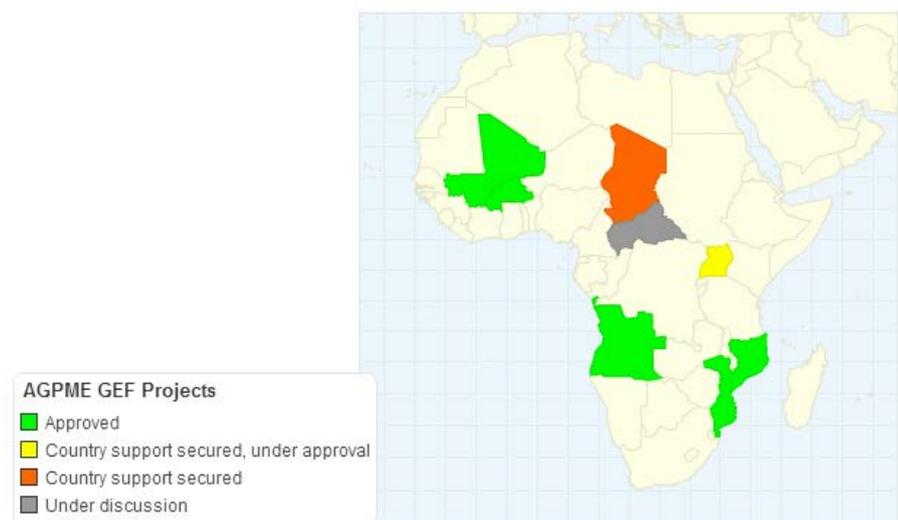
national data base and can be used by growers in forecasting pest and disease out breaks.		
<b>CCAFS</b> This program addresses the increasing challenge of global warming and declining food security on agricultural practices, policies and measures.	CGIAR	Cooperation under output 1.5, sharing of best practices and lessons learned

### Climate Change Resilience Projects in Africa

228. FAO AGPME works in synergy with a number of partners to operate projects aimed at improving the resilience of farmers and herders in an effort to safeguard their traditional way of life, preserve their local indigenous knowledge and improve the livelihoods of their communities. FAO projects are implementing 4,500 Farmers Field Schools and rehabilitating 67,000 hectares of soil.

229. The map below shows the climate resilience and agro-ecology projects implemented by FAO AGPME in Africa.

*Figure 9: Map locating AGPME projects in Africa<sup>61</sup>*



230. Amongst these AGPME projects, the proposed LDCF project will collaborate in particular with the following projects in Burkina Faso, Angola and Mali:

- Integrating Climate Resilience into Agricultural and Pastoral Production for Food Security in Vulnerable Rural Areas through the Farmer Field School Approach - GCP/BKF/054/LDF. This project in Burkina Faso aims to enhance the capacities of the agricultural and pastoral sectors to cope with climate change through CCA integration into agricultural development initiatives and policies, and through a network of established FFSs;
- Land Rehabilitation and Rangeland Management in Smallholder's Agro-pastoral Production Systems in Southwestern Angola. This project in Angola is paving the road for the introduction of land tenure rights in Field School modules; and

<sup>61</sup> Source : <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/spi/climate-change-resilience-in-africa-agpme-projects/en/>

- Strengthening resilience to climate change through integrated agricultural and pastoral management in the Sahelian zone in the framework of the Sustainable Land Management approach in Mali. This project aims at enhancing the capacity of Mali's agro-pastoral sector to cope with climate change, by mainstreaming CCA strategies, practices, and technologies adoption into on-going agro-pastoral and agricultural development initiatives in the framework of the national Sustainable Land Management approach and program (CSI-GDT).

## 4.2 IMPLEMENTATION ARRANGEMENTS

### 4.2.1 Roles and responsibilities of the executing partners<sup>62</sup>

231. FAO will be the GEF Agency responsible for supervision and provision of technical guidance during the project implementation. In addition, FAO will act as executing agency and will deliver procurement and contracting services to the project using FAO's rules and procedures, as well as financial services to manage GEF-LDCF resources. The technical execution of the project will be supported by the Government of Mozambique represented by the Ministry of Agriculture and Food Security (MASA). The key partners that will be involved in the project are:

#### At the national level:

232. The institutions involved in the project's implementation will be:

- The Ministry of Agriculture and Food Security (MASA);
- The National Directorate for Agricultural Extension (DNEA);
- The National Directorate for Agrarian Services (DNSA);
- The Mozambique Agriculture Research Institute (IIAM);
- The Ministry of Land, Environment and Rural Development (MITADER);
- The Direction of Cooperation (DC);
- The National Institute of Meteorology (INAM).

233. **MASA** will be the lead government counterpart and the project implementing partner. FAO will execute the project as requested by the Mozambique Government in close cooperation with MASA and the other project partners. MASA will be responsible for coordinating project activities and undertaking any activity aimed at supporting the implementation or integration of climate change into local or national policies.

234. Overall responsibility for project implementation and management remains with MASA, National Directorate for Agriculture Extension Services (DNEA), while responsibility for National Climate Change Policy Coordination remains with MITADER and its National Directorate for Environmental Promotion (DNPA), who will designate a focal point to follow-up the implementation of project activities and ensure that the policy and strategic priorities are followed.

#### At the provincial level

235. At the provincial level, the **Provincial Directorate of Agriculture (DPA)** will be involved in the implementation of Component 1 and 2 in the respective provinces. The **Provincial Services for Agrarian Extension (SPER)** will operate through a network of extensions officers in order to

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<sup>62</sup> The roles and responsibilities presented here have been discussed with stakeholders and take into account the following article: Osbahr, H. et al "Effective livelihood adaptation to climate change disturbance: Scale dimensions of practice in Mozambique". *Geoforum*. 39 pages. 1951-1964. 2008. This article promotes cross-scale approaches to rural livelihoods practice in adopting CCA practices.

implement project's activities. At the district level, extension services will be guided by the **District Service for Economic Activities (SDEA)**, and the team of extensionists.

Non-Governmental Organizations:

236. The following civil society organisations will be involved in project activities, as project beneficiaries, contributors to providing extension services, or providing technical support for agro-meteorological information: National Farmers Union (UNAC), District Farmers Unions (UDAC), and IKURU (farmer apex association), and Radio Mozambique. This list will also include organisations mentioned in section 1.4, paragraph 89, p. 36.

Project Coordination

237. The responsibility for the daily project management and implementation will be done by a National Coordination Unit (NCU), based at MASA/DNEA and acting at district level through the district governmental service for economic activities (SDAE) which includes the local agriculture extension services. At MASA-DNEA, the NCU will remain responsible for the implementation of all project's components, while the SDAE will assume the responsibility for the implementation of Components 1 and 2. The DPA will be involved in technical oversight, planning and monitoring and evaluation of the project activities in the respective provinces. For this purpose a provincial facilitator for the project implementation will be recruited and based in the respective DPA.

238. FAO will sign Memorandum of Understanding (MoU) with MITADER, MASA, the DPA and the SDAE (which host the extension services at district level). The MoU will establish the main responsibilities of the partner institutions for the project implementation.

239. The project will achieve a number of key outputs through letters of agreements (LoAs). These letters will be elaborated and signed between FAO and collaborating partners (including service providers). The service provider will then be administratively managed by FAO Mozambique. Funds received by the service provider under a LoA (Letter of Agreement) will be used to execute the project activities in conformity with FAO's rules and procedures. The respective LoAs are listed under the "Contracts" budget line of the project budget. Proposed and tentative LoAs are summarized in the table below.

*Table 13: Proposed LoA for project implementation*

Expected outputs	Activities	Service Provider
1.1	Activity 1.1.1: training of core group of managers	MASA (in collaboration with scientific partners to be identified, and international experts paid separately by the project)
1.1	Activity 1.1.2: establishment of a multi-year work plan and FFS-based building strategy	MASA (in collaboration with scientific partners to be identified, and international experts paid separately by the project)
1.1	Activity 1.1.3: organization of 4 provincial workshops to inform regional stakeholders and disseminate the strategy	MASA/DPA
1.2	Activity 1.2.2: organization of one national training on strategies and processes for mainstreaming CCA practices and measures in rural development	MASA/DNEA (in collaboration with scientific partners to be identified, and international experts paid separately by the project)
1.2	Activity 1.2.3: organization of 4 trainings at provincial level for DPA/SPER staff and provincial managers of agricultural and pastoral programs, and SDAE staff	MASA/DNEA and DPA (in collaboration with scientific partners to be identified, and international experts paid separately by the project)
1.3	Activity 1.3.2: participatory identification at FFS level of integrated local adaptation options, measures and practices	SDEA (in collaboration with local NGO and/or farmer organisation)
1.3	Activity 1.3.3: support implementation of identified integrated local adaptation options, measures and practices	SDEA (in collaboration with local NGO and/or farmer organisation)
1.4	Activity 1.4.1: training of staff and provision of equipment for IIAM in Maputo and the Instituto Superior Politecnico	IIAM and the Instituto Superior Politecnico de Manica (with support from an equipment

	de Manica	provider)
1.4	Activity 1.4.2: installation of a demonstration site by planting nodulated and mycorrhizal legume trees at Tsangano	SDEA and IIAM
1.4	Activity 1.4.3: implementation of pilots supporting resilient soil and water management practices	IIAM, SDEA and private companies as providers
1.4	Activity 1.4.4: diffusion of pesticide risk management practices for FFS located in urban areas	SDEA (in collaboration with international experts paid separately by the project)
1.4	Activity 1.4.5: support to the Agriculture House in Angónia and selected FFS to produce plant seedlings	Agriculture House in Angónia
1.5	Activity 1.5.1: completion of a survey on species domestication	IIAM (in collaboration with service providers paid separately by the project)
1.5	Activity 1.5.2: release and maintenance of short cycle and drought tolerant improved varieties	IIAM with seed multiplier organizations
1.5	Activity 1.5.3: preservation of local/landrace varieties through farmers' participation and local best practices.	IIAM, CGIAR, ICRISAT
1.5	Activity 1.5.4: widening the use of improved and local climate resilient seed varieties	IIAM, local seed companies
2.1	Activity 2.1.1: identification of gaps and select CCA technologies and approaches to be integrated into extension curricula	MASA/DNEA (in collaboration with scientific partners to be identified, and international experts paid separately by the project)
2.1	Activity 2.1.2: development of the updated FFS curricula and training manuals	MASA/DNEA (in collaboration with scientific partners to be identified, and international experts paid separately by the project)
2.1	Activity 2.1.3: development of CCA training tools and manuals for FFS master trainers and facilitators	MASA/DNEA (in collaboration with scientific partners to be identified, and international experts paid separately by the project)
2.1	Activity 2.1.4: organization of field-days in FFS and exchange visits	DPA and SDEA
2.2	Activity 2.2.1: training and provision of equipment for 50 master trainers (30% women) at national-level in CCA and ecosystem resilience practices	MASA/DNEA (in collaboration with scientific partners to be identified, and international experts paid separately by the project)
2.2	Activity 2.2.2: training and equipment of 1500 facilitators (30% women) in CCA and ecosystem resilience practices	MASA/DNEA (in collaboration with local NGO and/or farmer organisation)
2.3	Activity 2.3.1: training of 200 non-FFS extensionists (30% of women) in CCA and ecosystem resilience strategies and practices	MITADER/DNEA (in collaboration with local NGO and/or farmer organisation)
2.4	Activity 2.4.1: identification of gaps in terms of CCA knowledge and capacities within MITADER's CDS and INGC's CERUM	MITADER and INGC (in collaboration with international experts paid separately by the project)
2.4	Activity 2.4.2: organization of a seminar to present and validate the results of the assessment undertaken in activity 2.4.1	MITADER
2.4	Activity 2.4.3: training for CDS and CERUM's officers in CCA monitoring	MITADER and INGC (in collaboration with international experts paid separately by the project)
2.5	Activity 2.5.1: installation of new rain gauges	INAM (in collaboration with one private company)
2.5	Activity 2.5.2: provision of GSMs and training for the observers of the 32 selected rainfall stations	INAM (in collaboration with one private company)
2.5	Activity 2.5.3: increase INAM's capacity to generate seasonal agrometeorological forecasts at provincial level and agrometeorological forecasts at district level	ACMAD (in collaboration with international experts paid separately by the project)
2.5	Activity 2.5.4: provision and installation of AWS and new meteorological instruments for 6 manual stations	INAM and IIAM (in collaboration with one private company)
2.5	Activity 2.5.5: increase INAM, IIAM and DNSA-DCAP's capacity to produce agro-meteorological products	University of Liege (in collaboration with international experts paid separately by the project)

2.5	Activity 2.5.6: integration of climate information into the FFS	INAM, IIAM and SDEA
2.5	Activity 2.5.7: regular dissemination of climate information and any other relevant data through local radios in local languages	Radio Mozambique
3.1	Activity 3.1.1: revise and update the PECODA	MITADER (in collaboration with international experts paid separately by the project)
3.1	Activity 3.1.2: training for MASA technicians and other civil society organizations in climate change impacts and vulnerability analysis	MASA (in collaboration with international experts paid separately by the project)
3.2	Activity 3.2.1: carry out adaptation needs assessment in the 15 selected project's districts	MITADER
3.2	Activity 3.2.2: develop the LAP for the 15 districts of intervention	MITADER
3.2	Activity 3.2.3: support the implementation of the LAP in the 8 selected districts	MITADER
3.2	Activity 3.2.4: organization of awareness-raising seminars for district authorities to promote the use of the LAP information in the district planning process ensuring full participation of women in the local level planning	MITADER
3.2	Activity 3.2.5: organization of an international workshop in Maputo on the Voluntary Guidelines on Land Tenure	MASA (in collaboration with international experts paid separately by the project)
3.3	Activity 3.3.1: set up an institutional task force composed by MASA and MITADER's officers and the civil society	MASA and MITADER (in collaboration with international experts paid separately by the project)
3.3	Activity 3.3.2: training courses for MITADER and MASA staff in M&E	MASA/DNEA (in collaboration with international experts paid separately by the project)
3.3	Activity 3.3.3: assess the adoption level and the benefits of CCA practices for farmers to cope with the climate risk	MASA (in collaboration with international experts paid separately by the project)
3.4	Activity 3.4.1: conduct a baseline study on existing FFS and non-FFS extension services including gender considerations	MASA (in collaboration with international experts paid separately by the project)
3.4	Activity 3.4.2: carry out comparative assessments of efficiency and cost-effectiveness of FFS and non-FFS extension methods including gender considerations	MASA (in collaboration with international experts paid separately by the project)
3.4	Activity 3.4.3: organization of a workshop at the national level to present and disseminate the results and recommendations of the comparative assessment	MASA (in collaboration with international experts paid separately by the project)
3.4	Activity 3.4.4: publication and dissemination of a report on the comparative assessment	MASA/DNEA, publishing company
3.5	Activity 3.5.1: support to REPETE	MASA/DNEA
3.5	Activity 3.5.2: collect, synthesize, report and record good measures and technologies on climate risk management and adaptation in the agricultural sector	MASA (in collaboration with international experts paid separately by the project)
3.5	Activity 3.5.3: produce a synthesis report good measures and technologies on climate risk management and adaptation in agriculture	MASA (in collaboration with international experts paid separately by the project)
3.6	Activity 3.6.1: training at national level for 20 MASA staff in the conception and design of more effective investment proposals for mainstreaming and upscaling CCA into agricultural development	MASA (in collaboration with international experts paid separately by the project)
3.6	Activity 3.6.2: draft an investment proposal	MASA (in collaboration with international experts paid separately by the project)
3.6	Activity 3.6.3: organization of a validation workshop for the investment proposal	MASA (in collaboration with international experts paid separately by the project)
4.3	Activity 4.3.1 and activity 4.3.2 : mid-term evaluation/review and final evaluations	International consultant

#### **4.2.2 FAO's role and responsibilities, as the GEF Agency, including delineation of responsibilities internally within the FAO**

240. Executing Responsibilities (Budget Holder). Under FAO's Direct Execution modality, FAO Representative in Mozambique will be the Budget Holder (BH) of this project. The BH, working in close consultation with the Lead Technical Officer (LTO), will be responsible for a timely operational as well as administrative and financial management of the project. The BH will head the multidisciplinary Project Task Force (see below) that will be established to support the implementation of the project and will ensure that technical support and inputs are provided in a timely manner. The BH will be responsible for financial reporting, procurement of goods and contracting of services for project activities in accordance with FAO rules and procedures. Final approval of the use of GEF resources rests with the BH, also in accordance with FAO rules and procedures.
241. Specifically, working in close collaboration with the LTO, the BH will: (i) clear and monitor annual work plans and budgets; (ii) schedule technical backstopping and monitoring missions; (iii) authorize the disbursement of the project's GEF resources; (iv) give final approval of procurement, project staff recruitment, LoAs, and financial transactions in accordance with FAO's clearance/approval procedures; (v) review procurement and subcontracting material and documentation of processes and obtain internal approvals; (vi) be responsible for the management of project resources and all aspects in the agreements between FAO and the various executing partners; (vii) provide operational oversight of activities to be carried out by project partners; (viii) monitor all areas of work and suggest corrective measures as required; (ix) submit to the GEF Coordination Unit, the TCID (Investment Centre Division Budget Group) semi-annual budget revisions that have been prepared in close consultation with the LTO; (x) be accountable for safeguarding resources from inappropriate use, loss, or damage; (xi) be responsible for addressing recommendations from oversight offices, such as Audit and Evaluation; and (xii) establish a multi-disciplinary FAO Project Task Force to support the project.
242. FAO Lead Technical Unit (LTU). The Plant Production and Protection Division of the Department of Agriculture, Ecosystem Management team (AGPME) at FAO HQ will be the LTU for this project and will provide overall technical guidance in its implementation.
243. FAO Lead Technical Officer (LTO). The team leader of the ecosystem management team of the AGPME will be the LTO for this project. Under the general technical oversight of the LTU, the LTO will provide technical guidance to the project team to ensure delivery of quality technical outputs. The LTO will coordinate the provision of appropriate technical backstopping from all the concerned FAO units represented in the Project Task Force. The Project Task Force is thus composed of technical officers from the participating units (see below), operational officers, the Investment Centre Division/GEF Coordination Unit and is chaired by the BH. The primary areas of LTO support to the project include:
- Review and ensure clearance by the relevant FAO technical officers of all the technical Terms of Reference (TOR) of the project team and consultants;
  - Ensure clearance by the relevant FAO technical officers of the technical terms of reference of LoAs and contracts;
  - In close consultation with MASA, lead the selection of the project staff, consultants and other institutions to be contracted or with whom an LoA will be signed;
  - Review and clear technical reports, publications, papers, training materials, manuals, etc.;
  - Monitor technical implementation as established in the project results framework;
  - Review the Project Progress Reports (PPRs) and prepare the annual Project Implementation Review (PIR).
244. Within FAO, a multidisciplinary Project Task Force (PTF) will be established by the BH which is mandated to ensure that the project is implemented in a coherent and consistent manner

and complies with the organization's goals and policies, as well as with the provision of adequate levels of technical, operational and administrative support throughout the project cycle. The PTF comprises at least of the BH, Lead Technical Unit (AGPME) and the GEF Coordination Unit.

245. FAO GEF Coordination Unit in Investment Centre Division will review and approve project progress reports, annual project implementation reviews, financial reports and budget revisions. The GEF Coordination Unit will provide project oversight, organize annual supervision missions, and participate as a member in FAO Project Task Force and as an observer in the project steering committee meetings, as necessary. The GEF Coordination Unit will also assist in the organization, as well as be a key stakeholder in the mid-term evaluation/review and final evaluation. It will also contribute to the development of corrective actions in the project implementation strategy in the case needed to mitigate eventual risks affecting the timely and effective implementation of the project. The GEF Coordination Unit will, in collaboration with FAO Finance Division, request the transfer of project funds from the GEF Trustee based on six-monthly projections of funds needed.
246. The Investment Centre Division Budget Group (TCID) will provide final clearance of any budget revisions.
247. FAO Finance Division will provide annual Financial Reports to the GEF Trustee and, in collaboration with the GEF Coordination Unit and the TCID Budget Group, call for project funds on a six-monthly basis from the GEF Trustee.

#### **4.2.3 Project technical, coordination and steering committees**

248. The institutional arrangements are described in the organization chart below.
249. FAO will be the GEF implementing and executing agency. In the framework of this project FAO will recruit an administrator/operational expert who will be in charge of the operations of the project. MASA will be the lead government counterpart and the national executing partner agency of the project while MITADER will be the climate change policy coordination focal point.
250. A Project Steering Committee (PSC) will be established and chaired by MASA. It will be comprised of representatives from FAO, MITADER, DNEA/SPER, DNSA/SDAE, DNPA, IIAM, INAM, provincial and district representatives. The National Coordinator (see below) will be the Secretary to the PSC. The PSC will meet at least two times per year to ensure:
  - Oversight and assurance of technical quality of outputs;
  - Close linkages between the project and other ongoing projects and programmes relevant to the project;
  - Timely availability and effectiveness of co-financing support;
  - Sustainability of key project outcomes, including up-scaling and replication;
  - Effective coordination of government partner work under this project; and
  - Approval of the six-monthly Project Progress and Financial Reports, the Annual Work Plan and Budget.

The members of the PSC will each assure the role of a Focal Point for the project in their respective agencies. Hence the project will have a Focal Point in each concerned institution. As Focal Points in their agency, the concerned PSC members will (i) technically oversee activities in their sector, (ii) ensure a fluid two-way exchange of information and knowledge between their agency and the project, (iii) facilitate coordination and links between the project activities and the work plan of their agency, and (iv) facilitate the provision of co-financing to the project.

251. A National Coordination Unit (NCU) will be established within MASA. The NCU will be hosted by MASA and will include:
  - a full time National Project Coordinator (NPC), leader of the NCU;

- a full time international Chief Technical Advisor with expertise in FFS and CCA for the first three years of project implementation;
- a full time monitoring and evaluation expert;
- a full time operation and administration officer; and
- four provincial facilitators with expertise in FFS aspects which will be based in Provincial Directorate of Agriculture premises.

The ToRs of NCU's staff are provided in Appendix 5. The NCU staff will be recruited by the project and will report (through the NPC) to the BH. The NCU will carry out its functions in line with FAO rules and regulations.

Some key functions of the NCU are:

- Technically identify, plan, design and support all activities;
- Liaise with government agencies and regularly advocate on behalf of the project;
- Prepare the Annual Work Plan and Budget (AWP/B) and monitoring plan;
- Be responsible for day-to-day implementation of the project in line with the AWP;
- Ensure a results-based approach to project implementation, including maintaining a focus on project results and impacts as defined by the results framework indicators;
- Coordinate project interventions with other ongoing activities;
- Monitor project progress;
- Be responsible for the elaboration of FAO Project Progress Reports (PPR) and the annual Project Implementation Review (PIR); and
- Facilitate and support the mid-term evaluation/review and final evaluation of the project.

NCU's staff will be supported by national and international consultants which will be recruited during project implementation as needed. The list and ToR of required consultants are presented in Appendix 5.

252. The National Project Coordinator (NPC) will lead the NCU and work closely with FAO office and MASA. The NPC reports to the BH on operational issues and to the CTA on technical issues. The NPC is a full-time position. The NPC will lead and organize the day-to-day execution of the project. The NPC will take the lead in communications with government agencies and advocacy. The NPC will be responsible for providing technical advice and guidance in his/her area of technical expertise. The NPC will report regularly on project progress in line with FAO procedures, and will develop and submit semi-annual PPRs and annual PIRs (the PIRs will be prepared in collaboration with the LTO and with the contribution of the CTA – Chief Technical Adviser). In addition to technical and substantive duties, the NPC will:

- Oversee creation of a participatory monitoring system for the Project's work;
- Ensure real-time monitoring of project progress and the alerting of MASA, BH and LTO of potential problems that could result in delays in implementation;
- Help identify consultant candidates and work with the BH to ensure their timely recruitment;
- Ensure the project's effective and efficient work with stakeholders in the pilot areas;
- Help organize and supervise consultant inputs;
- Oversee creation of the Project's approach to managing and sharing knowledge, and to identifying and disseminating lessons learned;
- Communicate, advocate and engage in policy dialogue;
- Coordinate activities with co-financing donors and other projects related to FFS; and
- Take a lead in the organization and technical implementation of several activities.

253. A Chief Technical Adviser (CTA) will directly support the NPC and the NCU and ensure best international technical and management practices are integrated into the Project work plan and activities. The CTA reports to the BH on operational issues and to the LTO on technical issues. The CTA is a full time position for the first three years of the project. The CTA will be an internationally recognized expert on CCA in Eastern Africa or similar agro-environmental conditions and will have significant experience with extension systems and with the FFS approach.

The CTA will support all aspects of the day-to-day execution of the project. The CTA will support the NPC in reporting on project progress, and will contribute to the development of semi-annual PPRs and annual PIRs. In addition the CTA will:

- Ensure that latest and best international practices and approaches are reflected in the design and planning of project activities;
- Design and propose a participatory monitoring system for the project's work;
- Support real-time monitoring of project progress and the alerting of the BH and the LTO to potential problems that could result in delays in implementation;
- Help identify consultant candidates, especially international candidates;
- Support design of the project's work with stakeholders in the pilot areas;
- Help organize and supervise consultant inputs;
- Propose an approach to managing and sharing knowledge, and to identifying and disseminating lessons learned;
- Provide on-the-job capacity development to all members of the NCU; and
- Communicate, advocate and engage in policy dialogue.

254. An Operations and Administration Officer, under the direct supervision of the NPC and FAO BH, will ensure a smooth and timely implementation of project activities in support of the results-based work plan, through operational and administrative procedures according to FAO rules and standards.

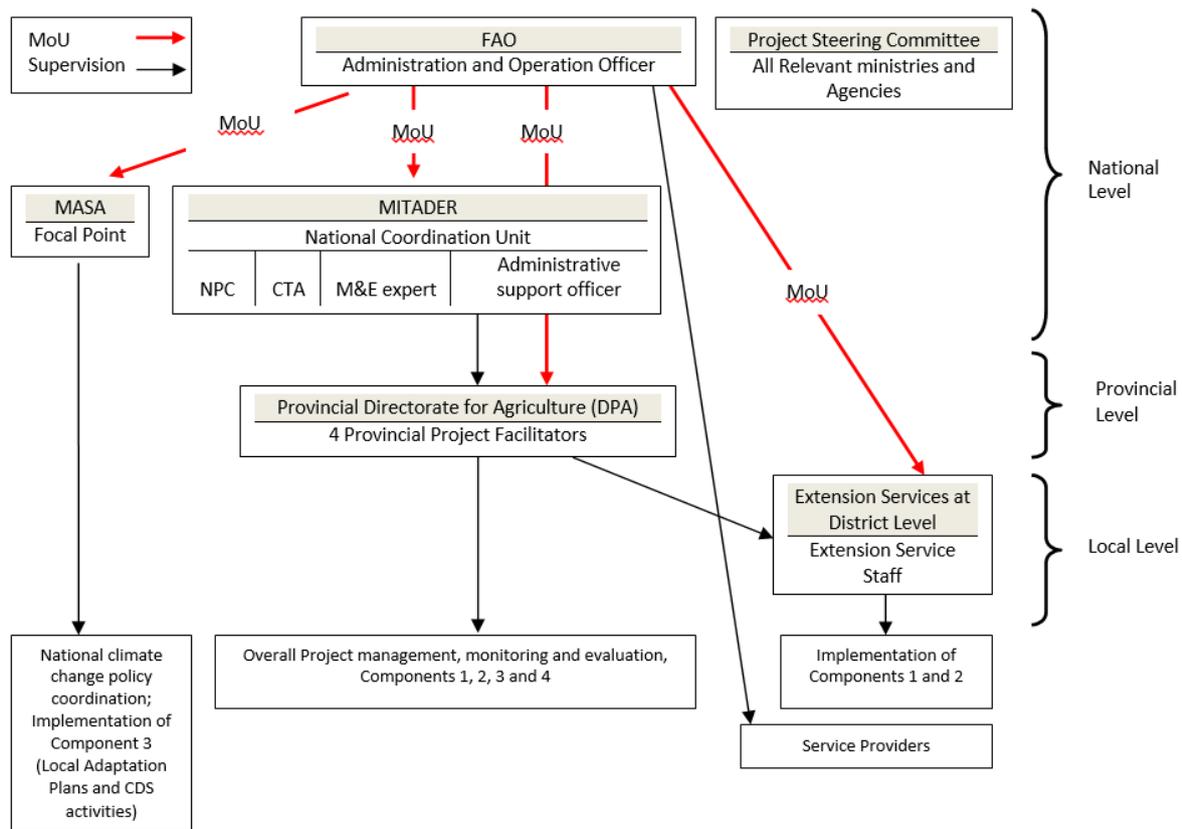
255. Four Provincial Project Facilitators; under the supervision of the CTA and the NPC will be based in the DPA of each Province of intervention. They will ensure project activities in the provinces are technically of high quality, firmly anchored into the local sustainable development processes, and contributing to the overall project objective.

256. Technical partners and local service providers will provide technical services to the project.

#### **4.2.4 Organizational chart**

257. The figure below represent the institutional arrangement for the implementation of the proposed project.

Figure 10: Proposed Institutional Arrangements



## 4.3 FINANCIAL PLANNING AND MANAGEMENT

### 4.3.1 Financial plan (by component and by co-financier)

258. The total cost of the project will be US\$ 36,344,657 to be financed through a US\$ 9,000,000 GEF/LDCF grant and US\$ 27,344,657 in co-financing from: (i) FAO (US\$ 24,900,000), (ii) MASA (US\$ 770,000 in kind and US\$ 1,274,657 in cash from the PSP), and (iii) MITADER (US\$ 400,000 in kind). The table below shows the costs by component and by sources of financing. FAO will, as the GEF agency, only be responsible for the execution of the GEF resources and FAO co-financing. All co-financing letters can be found in Appendix.

Table 14: Summary of Financial Contributions (all figures in US\$)

Component/output	FAO (MDG1c and Food)	MASA	MITADER	Total Co- financing	% Co- financing	GEF	% GEF	Total
<b>Component 1: Inclusion of improved climate resilient agricultural practices in the framework of the Strategic Plan for the Agricultural Sector (PEDSA) and its investment plan (PNISA) and with an emphasis on provinces and districts assisted by the MDGc1 and Food Nutrition and Security for Gaza projects</b>	<b>11 455 000</b>	<b>800 000</b>	<b>-</b>	<b>12 255 000</b>	<b>77%</b>	<b>3 700 000</b>	<b>23%</b>	<b>15 955 000</b>
O 1.1 A multi-stakeholders FFS-based knowledge building strategy is formulated and applied to foster CCA strategies and practices	800 000	200 000	-	1 000 000	80%	255 438	20%	1 255 438
O 1.2 National, provincial and district-level managers of agricultural and pastoral programs are trained in strategies and processes to include CCA in rural development through FFS and other extension approaches	700 000	200 000	-	900 000	85%	163 765	15%	1 063 765
O 1.3 Integrated local adaptation options, measures and practices, specifically suited to support the CCA strategies promoted by the FFS network under Component 2, are participatively identified	3 000 000	100 000	-	3 100 000	77%	915 265	23%	4 015 265
O 1.4 Improved soil, water and crop management practices piloted in selected areas of the targeted districts	4 000 000	50 000	-	4 050 000	76%	1 283 266	24%	5 333 266
O 1.5 Seeds of a more diverse set of crop/pastures varieties identified from existing climate stress tolerant cultivars/varieties made available in local seed systems and piloted in different ecosystems and production systems in the targeted districts	2 955 000	250 000	-	3 205 000	75%	1 082 266	25%	4 287 266
<b>Component 2: Promotion of climate resilient agricultural practices and technologies through Farmer Field Schools (FFS) and other extension approaches in the framework of the PSP, MDGc1 and Food Nutrition and Security for Gaza projects, and other initiatives</b>	<b>8 315 000</b>	<b>584 657</b>	<b>50 000</b>	<b>8 949 657</b>	<b>72%</b>	<b>3 400 012</b>	<b>28%</b>	<b>12 349 669</b>
O 2.1. Training material on CCA best practices developed and integrated into extension curricula, including FFS curricula	615 000	150 000	-	765 000	67%	368 890	33%	1 133 890
O 2.2 At least 1500 FFS facilitators trained in CCA and ecosystem resilience strategies and practices in 3,200 FFS	6 700 000	164 657	-	6 864 657	89%	836 669	11%	7 701 326
O 2.3 At least 200 non-FFS extensionists (government, NGOs, private providers, etc.) are trained in climate change adaptation and ecosystem resilience strategies and practices and support 10,000 additional farmers	-	270 000	-	270 000	55%	222 308	45%	492 308
O 2.4 Methods developed and MITADER's CDS (Centros de Desenvolvimento Sustentavel) and INGC's CERUM (Centers of Resources and Multiple Use) officers trained to monitor progress towards more sustainable and climate-proof production systems	-	-	50 000	50 000	12%	372 309	88%	422 309
O 2.5 Agro-meteorological decision support tools for farmers, developed in coordination with Instituto Nacional de Meteorología, PPCR and other partners, are tested with 20% of participating FFS and other beneficiary groups in 3 provinces and 8 districts.	1 000 000	-	-	1 000 000	38%	1 599 836	62%	2 599 836
<b>Component 3: Climate change adaptation strategies mainstreamed into agricultural sector policies and programs with emphasis on rural extension/outreach strategies and plans</b>	<b>3 930 000</b>	<b>200 000</b>	<b>350 000</b>	<b>4 480 000</b>	<b>83%</b>	<b>911 340</b>	<b>17%</b>	<b>5 391 340</b>
O 3.1 Manual of Environmental Educator (PECODA) revised and updated and MASA staff trained/planning	950 000	80 000	50 000	1 080 000	92%	97 599	8%	1 177 599
O 3.2 Agricultural policy and current capacities assessed to identify strengths and weaknesses and mainstreaming of climate change adaptation aspects into the rural development sector and land planning policies	-	-	170 000	170 000	37%	284 099	63%	454 099
O 3.3 Joint MASA/MITADER coordination mechanisms strengthened in support of the implementation and monitoring of extension/ outreach strategies for CCA	1 100 000	80 000	80 000	1 260 000	91%	130 599	9%	1 390 599
O 3.4 Comparative assessments of the efficiency and cost-effectiveness of FFS and non FFS-based extension approaches for up-scaling CCA, carried out in selected districts	980 000	-	-	980 000	83%	196 099	17%	1 176 099
O 3.5 Good operational technologies and approaches for enhanced adaptation to climate risk of the agricultural sector are developed, disseminated and replicated at national level in support of sound CCA policy making and programming	-	40 000	-	40 000	30%	94 721	70%	134 721
O 3.6 Draft investment proposals formulated for the financing of more effective extension strategies for mainstreaming and up-scaling CCA in the agricultural and pastoral sectors	900 000	-	50 000	950 000	90%	108 223	10%	1 058 223
<b>Component 4: Project monitoring and evaluation</b>	<b>450 000</b>	<b>260 000</b>	<b>-</b>	<b>710 000</b>	<b>60%</b>	<b>479 214</b>	<b>40%</b>	<b>1 189 214</b>
O 4.1 Project monitoring system operational and providing systematic information on progress in meeting project outcome and output targets	250 000	155 000	-	405 000	60%	265 466	40%	670 466
O 4.2 Timely biannual project progress reports available for adaptive and results based management	200 000	105 000	-	305 000	70%	133 748	30%	438 748
O 4.3 Mid Term and final evaluation conducted	-	-	-	-	0%	80 000	100%	80 000
<b>Project Management</b>	<b>750 000</b>	<b>200 000</b>	<b>-</b>	<b>950 000</b>	<b>65%</b>	<b>509 434</b>	<b>35%</b>	<b>1 459 434</b>
<b>Total Project</b>	<b>24 900 000</b>	<b>2 044 657</b>	<b>400 000</b>	<b>27 344 657</b>	<b>75%</b>	<b>9 000 000</b>	<b>25%</b>	<b>36 344 657</b>

### **4.3.2 GEF/LDCF/SCCF inputs**

259. The GEF funds will finance inputs needed to generate the outputs and outcomes under the project. These include: (i) local and international consultants for technical support and project management; (ii) support to designing and establishing an improved approach to FFS, incorporating CCA, in Mozambique; (iii) support to direct monitoring activities; (iv) support through LoA/contracts with technical institutions and service providers supporting the delivery of specific project activities on the ground; (v) international flights and local transport and minor office equipment; and (vi) training and awareness raising material. GEF resources will also finance publications for awareness raising and education on adaptation best practices.

### **4.3.3 Government inputs**

260. As detailed in Table 14 above, MASA will provide US\$ 770,000 in-kind co-financing consisting mainly of staff time, office space and utilities, and support for local travel; and US\$ 1,274,657 in cash co-financing through the PSP.

261. MITADER will provide US\$ 400,000 in-kind co-financing consisting mainly of staff time, office space and utilities.

### **4.3.4 FAO inputs**

262. FAO will provide technical assistance, support, training and supervision in the execution of activities financed by GEF resources. The GEF project will complement and be co-financed by two projects and activities implemented by FAO Representation in Mozambique. These projects are described in previous sections and include:

- Food Security and Nutrition for Gaza project, providing US\$ 2,500,000; and
- MDG1c, providing US\$ 22,400,000.

### **4.3.5 Financial management of and reporting on GEF/LDCF/SCCF resources**

#### **Financial Records**

263. FAO shall maintain a separate account in United States dollars for the project's LDCF resources showing all income and expenditures. Expenditures incurred in a currency other than United States dollars shall be converted into United States dollars at the United Nations operational rate of exchange on the date of the transaction. FAO shall administer the project in accordance with its regulations, rules and directives.

#### **Financial Reports**

264. FAO-Mozambique as the BH shall prepare six-monthly project expenditure accounts and final accounts for the project, showing amount budgeted for the year, amount expended since the beginning of the year, and separately, the un-liquidated obligations as follows:

1. Details of project expenditures on a component-by-component and output basis, reported in line with project budget codes as set out in the Project Document, as at 30 June and 31 December each year;
2. Final accounts on completion of the project on a component and output-by-output basis, reported in line with project budget codes as set out in the Project Document; and
3. A final statement of account in line with FAO Oracle project budget codes, reflecting actual final expenditures under the project, when all obligations have been liquidated.

265. The BH will submit the financial reports for review and monitoring by the LTU and FAO GEF Coordination Unit. Financial reports for submission to the donor (GEF) will be prepared in

accordance with the provisions in the GEF Financial Procedures Agreement and submitted by FAO Finance Division.

### **Budget Revisions**

266. Semi-annual budget revisions will be prepared by the BH in consultation with FAO Representation in Mozambique in accordance with FAO standard guidelines and procedures.

### **Responsibility for Cost Overruns**

267. The BH is authorized to enter into commitments or incur expenditures up to a maximum of 20 percent over and above the annual amount foreseen in the project budget under any budget subline provided the total cost of the annual budget is not exceeded.

268. Any cost overrun (expenditure in excess of the budgeted amount) on a specific budget subline over and above the 20 percent flexibility should be discussed with FAO GEF Coordination Unit with a view to ascertaining whether it will involve a major change in project scope or design. If it is deemed to be a minor change, the BH shall prepare a budget revision in accordance with FAO standard procedures. If it involves a major change in the project's objectives or scope, a budget revision and justification should be prepared by the BH for discussion with the GEF Secretariat.

269. Savings in one budget subline may not be applied to overruns of more than 20 percent in other sublines even if the total cost remains unchanged, unless this is specifically authorized by FAO GEF Coordination Unit upon presentation of the request. In such a case, a revision to the project document amending the budget will be prepared by the BH.

270. Under no circumstances can expenditures exceed the approved total project budget or be approved beyond the NTE date of the project. Any over-expenditure is the responsibility of the BH.

### **Audit**

271. The project shall be subject to the internal and external auditing procedures provided for in FAO financial regulations, rules and directives and in keeping with the Financial Procedures Agreement between the GEF Trustee and FAO.

272. The audit regime at FAO consists of an external audit provided by the Auditor-General (or persons exercising an equivalent function) of a member nation appointed by the governing bodies of the Organization and reporting directly to them and an internal audit function headed by the Inspector-General who reports directly to the Director-General. This function operates as an integral part of the Organization under policies established by senior management, and furthermore has a reporting line to the governing bodies. Both functions are required under the Basic Texts of FAO which establish a framework for the terms of reference of each. Internal audits of interest accounts, records, bank reconciliation and asset verification take place at FAO field and liaison offices on a cyclical basis.

## **4.4 PROCUREMENT**

273. The BH, in close collaboration with the NPC, the LTO and the Budget and Operations Officer will procure the equipment and services provided for in the detailed budget in Appendix 3, in line with the AWO and Budget and in accordance with FAO's rules and regulations.

274. Prior to commencement of procurement, the BH, in close consultation with the NPC and LTU, will complete the procurement plan for all services and equipment to be procured by FAO.

275. The procurement plan shall be updated every 12 months and submitted to and cleared by FAO BH and LTO with the AWP/B and annual financial statement of expenditures report for the next instalment of funds.

## 4.5 MONITORING AND REPORTING

### 4.5.1 Oversight and monitoring responsibilities

276. The M&E tasks and responsibilities clearly defined in the project's detailed Monitoring Plan (see below) will be achieved through: (i) day-to-day monitoring and supervision missions of project progress (NCU); (ii) technical monitoring of indicators (NCU); (iii) Field School-level monitoring activities (by project M&E experts and local technical services); (iv) mid-term evaluation/review and final evaluation (independent consultants and FAO Office of Evaluation); and (v) continual oversight, monitoring and supervision missions (FAO).
277. During the Inception Phase of the project, the NCU will set up a project progress monitoring system strictly coordinated with subsystems in each of the four provinces. Participatory mechanisms and methodologies for systematic data collection and recording at the level of the Field School will be developed in support of indicators, monitoring and evaluation. During the inception workshop (see section 4.5.3 below), M&E related tasks to be addressed will include: (i) presentation and clarification (if needed) of the project's results framework indicators and targets and their means of verification, and assumptions and risks with all project stakeholders; (ii) review of the M&E indicators and their baseline; (iii) drafting the required clauses to include in consultants' contracts to ensure they complete their M&E reporting functions; and (iv) clarification of the respective M&E tasks among the project's different stakeholders, (v) finalization of the first results-based AWP and Budget, (vi) prepare financial reporting procedures and obligations, and (vii) scheduling of PSC meetings. One of the main outputs of the Inception Phase will be a detailed monitoring plan, agreed upon by all stakeholders and based on the M&E plan summary presented in section 4.5.4 below.
278. The Inception Phase will conclude with the holding of an Inception Workshop organized by the NCU. The workshop will: (a) assist all stakeholders to fully understand and take ownership of the project; (b) review and confirm/finalize project indicators and results framework with stakeholders; (c) review the project's first AWP with results-based annual budget; (d) discuss the roles, functions, and responsibilities within the project's decision-making structures; and (e) review a detailed M&E work plan and budget based on the M&E plan summary presented in Table 15, below. The first PSC meeting will be held within two months of the inception workshop.
279. The day-to-day monitoring of the project implementation will be the responsibility of the NCU with support from the CTA and the M&E expert, driven by the preparation and implementation of AWP/B followed up through six-monthly PPRs. The preparation of the AWP/B and six-monthly PPRs will represent the result of a unified planning process between the main project partners. As tools for results-based-management, the AWP/B will identify the actions proposed for the coming project years and provide the necessary details on output targets to be achieved, and the PPRs will report on the monitoring of the implementation of actions and the achievement of output targets. Specific inputs to the AWP/B and the PPRs will be prepared based on participatory planning and progress review with local stakeholders and coordinated through the NCU and service providers and facilitated through project planning and progress review workshops. These inputs would be consolidated by the respective Service Provider Managers before forwarding them to the CTA and to NPC who will consolidate the information into a draft AWP/B and PPRs. An annual project progress review and planning meeting should be held with the participation of all involved service providers. Subsequently, the AWP/B and PPRs are submitted to the PSC for approval (AWP/B) and review (PPRs), and to FAO for approval. The AWP/B will be developed in a manner consistent with the project's results framework to ensure adequate fulfillment and monitoring of project outputs and outcomes.
280. Following the approval of the project, the project's first year AWP/B will be adjusted (either reduced or expanded in time) to synchronize with an annual reporting calendar. In subsequent years, the project work plan and budget will follow an annual preparation and reporting cycle as specified in section 4.5.3 below.

## **4.5.2 Indicators and information sources**

281. The project's Results Framework (RF) indicators will be the main reference point for M&E of project outcomes including contributions to adaptation benefits. A detailed RF is provided in Appendix 1. The RF indicators and means of verification will be applied to monitor project performance and impact. Data collected will be of sufficient detail to track outputs and outcomes and flag project risks early on, using FAO's monitoring procedures and progress reporting formats. The NCU will link each AWP/B to the RF indicators to ensure that project implementation maintains a focus on achieving the impact indicators as defined. A key element to this will be the elaboration and monitoring of output target indicators in each AWP/B that cumulatively lead to outcome level results. Output targets will be monitored on a semi-annual basis and outcome target indicators will be monitored on an annual basis if possible or as part of the mid-term evaluation/review and final evaluation.
282. In line with GEF requirements, the Adaptation Monitoring and Assessment Tool (AMAT) indicators will be measured and reported three times – at project outset, project mid-term and project end.
283. The main sources of information to support the M&E programme will be: (i) participatory progress monitoring and workshops with beneficiaries; (ii) on-site monitoring of Field School training and activities; (iii) PPRs prepared by the NCU; (iv) consultants' reports; (v) participant training tests and evaluations; (vi) mid-term and post-project impact and evaluation studies completed by independent consultants; (vii) financial reports and budget revisions; (viii) PIR prepared by the LTO supported by the BH and the NCU; and (ix) FAO supervision mission reports.

## **4.5.3 Reporting schedule**

284. Specific reports that will be prepared under the M&E program are: (i) Project inception report; (ii) AWP/B; (iii) PPRs; (iv) PIR; (v) Technical Reports; (vi) co-financing reports; and (vii) Terminal Report. In addition, assessment of CCA through use of the LDCF/SCCF AMAT will be undertaken during mid-term evaluation/review and final project evaluation (against the baseline to be completed during project inception).

### Project Inception Report

285. After approval of the project an inception workshop will be held. Immediately after the workshop, the NPC will prepare a Project Inception Report in consultation with FAO LTO, BH and national partners. The report will include a narrative on the institutional roles and responsibilities and coordinating action of project partners, progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. It will also include a detailed first year AWP/B, a detailed project monitoring plan based on the M&E plan summary presented in section 4.5.4 below. The draft inception report will be circulated to FAO and the PSC for review and comments before its finalization, no later than three months after project start. The report should be cleared by FAO BH, LTU and FAO GEF Coordination Unit and uploaded in FPMIS by the LTU.

### Results-Based Annual Work Plan and Budget (AWP/B)

286. The draft of the first AWP/B will be prepared by the NPC and the CTA in consultation with the Project Task Force and reviewed at the project Inception Workshop. The Government of Mozambique's inputs will be incorporated and the NPC will submit a final draft AWP/B within two weeks of the IW to the BH. For subsequent AWP/B, the NPC will organize a project progress review and planning meeting for its assessment. Once comments have been incorporated, the BH will circulate the AWP/B to the LTO and the GEF Coordination Unit on a no-objection basis prior to uploading in FPMIS by the BH. The AWP/B must be linked to the project's Results Framework indicators so that the project's work is contributing to the achievement of the indicators. The AWP/B should include detailed activities to be implemented to achieve the project outputs and output targets and divided into monthly timeframes and targets and milestone dates for output

indicators to be achieved during the year. A detailed project budget for the activities to be implemented during the year should also be included together with all monitoring and supervision activities required during the year. The AWP/B should be approved by the Project Steering Committee.

#### Project Progress Reports (PPRs)

287. The NPC will prepare six-monthly PPRs and submit them to FAO LTO and the BH no later than 31 July (covering the period January through June) and 31 January (covering the period July through December). The first semester six month report should be accompanied by the updated AWP/B. The PPRs are used to identify constraints, problems or bottlenecks that impede timely implementation and take appropriate remedial action. PPRs will be prepared based on the systematic monitoring of output and outcome indicators identified in the Project Results Framework. FAO LTO and BH will review the progress reports, collect and consolidates eventual FAO comments from the LTU, the GEF Coordination Unit, and the BH Office and provide these comments to MASA. When comments have been duly incorporated the LTU will give final approval and submit the final PPR to the GEF coordination Unit for final clearance. Thereafter the BH will upload final documents in FPMIS.

#### Annual Project Implementation Review (PIR)

288. The LTO, with support from the NPC/CTA and BH will prepare an annual PIR covering the period from July (the previous year) through to June (current year). The PIR will be submitted to FAO GEF Coordination Unit for review and approval no later than 20 July. FAO GEF Coordination Unit will upload the final report on FAO FPMIS and submit it to the GEF Secretariat and Evaluation Office as part of the Annual Monitoring Review report of FAO-GEF portfolio. FAO GEF Coordination Unit will provide the updated format when the first PIR is due.

#### Technical Reports

289. Technical reports will be prepared to document and share project outcomes and lessons learned. The drafts of any technical reports must be submitted by the NPC to the BH who will share it with the LTU for review and clearance and to FAO GEF Coordination Unit for information and eventual comments, prior to finalization and publication. Copies of the technical reports will be distributed to the PSC and other project partners as appropriate. The final reports will be posted on FAO FPMIS by the LTU.

290. The drafts of any technical reports must be submitted by the NPC/CTA or executing partners to the BH who will share it with FAO LTO. The LTO will be responsible for ensuring appropriate technical review and clearance of the reports. The BH will upload the final cleared reports onto the FPMIS. Copies of the technical reports will be distributed to the national executing partners and other Project partners as appropriate. These will also be posted on the Project website and FAO FPMIS.

#### Co-financing Reports

291. The BH, with support from NPC/CTA, will be responsible for collecting the required information and reporting on in-kind and parallel co-financing provided by the Government of Mozambique and other partners. The NPC, with support from the CTA will compile the information received from the executing partners and transmit in a timely manner to the LTO and BH. The report covers the period from July (the previous year) through to June (current year). The format and tables to report on co-financing can be found in the PIR.

#### GEF/LDCF/SCCF AMAT Tracking Tool

292. Following the GEF policies and procedures, the tracking tool for climate change adaptation area will be submitted at three moments: (i) with the project document at CEO endorsement; (ii) at the project's mid-term evaluation/review; and (iii) with the project's terminal evaluation or final completion report.

## Terminal Report

293. Within two months of the project completion date, the NPC, with the technical support of the CTA, will submit to the BH and LTO a draft Terminal Report. The report will include a list of outputs detailing the activities undertaken under the project, lessons learned and any recommendations to improve the efficiency of similar activities in the future. This report will specifically include the findings of the final evaluation as described above. The main purpose of the final report is to give guidance at the ministerial or senior government level on the policy decisions required for the follow-up of the project and to provide the donor with information on how the funds were utilized. The terminal report is accordingly a concise account of the main products, results, conclusions and recommendations of the project, without unnecessary background, narrative or technical details. A final project review meeting should be held to discuss the draft terminal report before it is finalized by the BH and approved by FAO LTU and the GEF Coordination Unit.

### **4.5.4 Monitoring and evaluation plan summary**

294. The table below provides a summary of the main M&E reports, responsible parties and timeframe.

*Table 15: Summary of M&E Related Costs:*

<b>Type of M&amp;E Activity</b>	<b>Responsible Parties</b>	<b>Time-frame</b>	<b>Estimate of costs</b>
<b>Inception Workshop (IW)</b>	NCU, supported by the LTO, BH, and GEF Coordination Unit (GCU)	Within two months of project start up	Covered by output 1.1
<b>Surveys to determine AMAT baseline values</b>	NCU and service providers	Within three months of project start up	USD 0 - data is collected by the NCU.
<b>Project Inception Report</b>	NCU, cleared by FAO LTO, LTU, BH, and the GCU	No later than one month post IW.	USD 0 - project inception report is developed by the NCU.
<b>Field based impact monitoring</b>	NCU, MASA and other relevant agencies – including regional and provincial - to participate.	Periodically - to be determined at inception workshop.	USD 20,000
<b>Supervision visits and rating of progress in PPRs and PIRs</b>	LTU/LTO, other participating units and GCU	Annual or as required	The visits of the LTO and the GCU will be paid by GEF agency fee. The visits of the NPC and CTA will be paid from the project travel budget
<b>Project Progress Reports</b>	NCU, with inputs from MASA, PSC members and other partners	Semi-annual	USD 0 (as completed by CTA and NCU)
<b>Project Implementation Review report</b>	NCU supported by the LTO and cleared and submitted by the GCU to the GEF Secretariat	Annual	Paid by GEF agency fee
<b>AMAT</b>	NCU supported by the LTO	Project start-up, mid-Term and project end.	USD 0 - data is collected by the NCU.
<b>Co-financing Reports</b>	NCU, FAO	Annual	Completed by NPC

	Mozambique		and CTA
<b>Technical reports</b>	NCU, LTO & Participating Units	As appropriate	USD 10,000 (Report on best practices and lessons learned)
<b>Mid-term Evaluation/Review</b>	External Consultant, in case of MTE: FAO Office for Evaluation in consultation with the project team including the GCU and other partners	At mid-point of project implementation	USD 40,000 for independent consultants and associated costs. In addition the agency fee will pay for expenditures of FAO staff time and travel
<b>Final evaluation</b>	Under the responsibility of FAO Office of Evaluation in consultation with the project team including the GCU and other partners	At the end of project implementation	USD 40,000 for external, independent consultants and associated costs. In addition the agency fee will pay for expenditures of FAO staff time and travel
<b>Terminal Report</b>	NCU, LTO, TCSR Report Unit	At least two months before the end date of the Execution Agreement	USD 0 (as completed by CTA and NPC)
<b>Total Budget</b>			<b>USD 110,000</b>

#### 4.5 PROVISION FOR EVALUATIONS

295. An independent mid-term evaluation/review will be undertaken after two years of project implementation. The review will determine progress being made towards achievement of objectives, outcomes, and outputs, and will identify corrective actions if necessary. It will inter alia:

- review the effectiveness, efficiency and timeliness of project implementation;
- analyse the effectiveness of implementation and partnership arrangements;
- identify issues requiring decisions and remedial actions;
- identify lessons learned about project design, implementation and management;
- highlight technical achievements and lessons learned; and
- propose any mid-course corrections and/or adjustments to the implementation strategy as necessary.

296. An independent Final Evaluation will be completed within six months prior to the actual completion date (NTE date) of the project. It will aim at identifying project outcomes, their sustainability and actual or potential impacts. It will also have the purpose of indicating future actions needed to assure continuity of the process developed through the project. FAO Office of Evaluation, in consultation with project stakeholders, will be responsible for organizing and backstopping the Final Evaluation, including: finalizing the ToR, selecting and backstopping the team and Quality Assurance of the final report. The evaluation will, inter alia:

- assess relevance, efficiency and effectiveness of project design and implementation;
- assess project actual outputs and potential outcomes, impacts and sustainability;
- assess project performance in gender mainstreaming and achievements on gender equality;

- identify lessons learned about project design, implementation and management; and
- highlight achievements and practices worth up-scaling and/or replication.

297. Some critical issues to be evaluated in the midterm evaluation/review and final evaluation will be: (i) the level of integration of CCA resilient practices and policies into the agricultural sector of Mozambique; (ii) the effectiveness of the FFS network and of the inter-institutional coordination mechanism in developing and promoting climate resilient agriculture practices and technologies in support of small holder farmers; (iii) evidence that CCA strategies are being mainstreamed into the policies and programs of the extension and outreach strategies and plans of the agricultural sector.

298. The ToRs for the Final Evaluation team (one international and one national consultant) will be prepared in close consultation with the NPC, FAO BH, LTO and GEF Coordination Unit, and under the ultimate responsibility of FAO Office of Evaluation, in accordance with FAO evaluation procedures and taking into consideration evolving guidance from the GEF Independent Evaluation Office. The TOR and the report will be discussed with and commented upon by the project partners.

## 4.6 COMMUNICATION AND VISIBILITY

299. Giving high visibility to the project and ensuring effective communications in support of the project's message is to be addressed through a number of activities that have been incorporated into the project design. The project will be transparent and ensure effective communication through the following component related activities:

- Component 1. Four provincial workshops to inform regional stakeholders will be organised under output 1.1 to disseminate the FFS- based building strategy;
- Component 2. The FFS approach will be communicated through different activities under this component such as visits, a number of trainings, publication of training tools, and the diffusion of agro-meteorological information ;
- Component 3. This component will contribute to high visibility and communication of the project through the publication of a revised and updated Manual of Environmental Education, the development of 15 Local Adaptation Plans, and the organization of awareness-raising seminars for district authorities, as well as the publication and dissemination of a comparative assessment on FFS and non-FFS extension methods, and finally a publication of a synthesis report on collected experiences on climate-risk management. The project will also organize an international workshop on *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*, which will be the opportunity to present the project to a broader audience; and
- Component 4: project progress reports, the mid-term evaluation/review and final evaluation will be valuable document for all partners that will intervene in the future in the region.

## SECTION 5: SUSTAINABILITY OF RESULTS

### 5.1 SOCIAL SUSTAINABILITY

300. The proposed project has a fundamental participatory approach. The involvement of national, provincial and local institutions and partners as well as local communities will be sought

throughout the intervention of the project. The participatory and didactic approach adopted at the grass-root level in the project through the FFS system will contribute to avoiding elite capture and to minimizing marginalization at the community level.

301. In order to ensure that communities' perceptions are well represented in project, the SHARP tool will be used and promoted in the project. One of the aims of the tool consists of empowering farmers and rural communities to self-assess their resilience to climate change. SHARP can also be used following a gender disaggregated approach in order to specifically promote self-assessment of women resilience to climate change. The tool can be used for instance to assess the baseline situation and the effects of the project intervention on production, livelihoods, and environmental conservation. SHARP also analyses local level policy frameworks regarding climate resilience. It will be used in the project, to conduct climate risk analysis at FFS level, and to carry out an adaptation needs assessment at district level for the development process of the LAP.
302. The FFS curricula that will be developed under the proposed project will be demand driven and the input of rural communities, including women, will be sought during their development. The identification of integrated local adaptation options at FFS level will be done in a participatory manner in order to take into account and build upon local habits and the available indigenous knowledge. This participatory process will also be gender sensitive ensuring women's perceptions are well represented.
303. Throughout the project, several demonstration sites will be implemented to show the effects and impacts of different techniques such as the plantation of legume trees, resilient soil and water management practices, plots with improved climate resilient varieties, etc. This demonstration sites will allow farmers to experience the benefits of these new techniques, get familiar with them and use their own judgment to adopt them or not. These techniques will therefore not be forced onto the farmers but rather proposed and promoted as a sustainable alternative. Specific techniques will be promoted to women.
304. The project will support better access to agro-meteorological and resilient seed varieties for farmers. Farmers will also be involved in the identification, collection and preservation of local seed varieties. This will empower local communities in their agricultural practices and will ensure farmer's knowledge and perception are included in project's outputs.
305. Any document and outputs produced through the project intervention such as the FFS-based knowledge building strategy or the LAP will be shared at the provincial and district level after their development. This will ensure the documents are well adapted and understood, which will foster people's ownership over the different outputs.
306. Finally, since the project respects and strengthens existing decision-making processes and institutions at all levels, it should ensure that, although new approaches and technologies will be introduced, they do not lead to social dysfunction or negative social impacts. On the contrary, the project is designed to strengthen social capital, providing a good basis for social sustainability.

## **5.2 ENVIRONMENTAL SUSTAINABILITY**

307. A vast majority of the population in the project intervention areas depends directly on natural resources for their livelihoods; one of the main issues addressed by the project includes the impacts of the ongoing environmental degradation and depletion of natural resources on the agricultural sector. The project aims to safeguard natural resources and strengthen sustainable agricultural practices in Mozambique in order to reinforce the resilience to climate change of rural communities in the provinces of intervention.
308. The FFS model being promoted under this project integrates an ecosystem-based approach to the agricultural sector. This approach aims at developing and scaling up CCA practices and technologies for local communities through practical activities in the field. The FFS approach

promotes the adoption of CCA practices by local communities, likely to be adopted at a larger scale after the end of the project, which will foster the resilience of the environment and the agricultural sector in the long term.

309. The project will durably strengthen the ability of local communities to cope with climate change and hazardous climate events that are likely to be more frequent in the future. The project will promote improved seed varieties that are better adapted to Mozambique's current climate conditions. The availability of and access to agro-meteorological information will also support the decision-making process of local communities when facing hazardous climate events. This should allow local communities to be more resilient to climate change in the future and at the same time better protect the environment.

## **5.3 FINANCIAL AND ECONOMIC SUSTAINABILITY**

### Economic sustainability

310. By making smallholder farmers more resilient to climate change in the provinces of intervention, the project will strengthen their economic development. The intervention will enable its beneficiaries to better cope with climate change and adapt their agricultural practices. This will minimize the negative impacts of climate change on their crops and income in the long term, therefore contributing to the economic sustainability of the targeted regions. In addition, farmers will have better access to improved and resilient seed varieties, which will help them increase their yields and therefore their income in the long term. The project will also support local seed production with farmers, mostly for community use at the beginning but with a possibility to enter into formal market later on, which would be an opportunity for additional income.
311. The changes introduced by the project will be developed in a participatory manner and will respect local needs, local resources and local capacity. Hence, the local communities will be able to sustain the economic improvements after the project. Moreover, by strengthening the existing extension system and the capacity of technical agencies (both governmental and non-governmental), the project creates an institutional capacity that can continue support local communities after the project has been completed.

### Financial Sustainability

312. The project will support many national institutions in terms of training and equipment. This will be the case for instance for different ministries, extension staff, the Agriculture House in Angonia, CDS and CERUM staff, soil analysis laboratories, the IIAM, etc.
313. With regards to the provision of extension support, the FFS approach to extension introduced by the project is low-cost and relatively easy to maintain, with early gains. Previous Field School experience, including in Mozambique, demonstrates that with limited governmental input the structure can continue to function and sustainability should be achievable.
314. The project will provide agro-meteorological equipment and training to INAM, IIAM and DNSA-DCAP. On the one hand, this investment is financially sustainable since the staff of each institution will receive high quality training that will allow them to maintain and keep the equipment producing the necessary data. Ideally on the other hand, the project would demonstrate the usefulness of such information to farmers, and would help develop a demand-driven approach whereby farmers demand and pay for agro-meteorological products. This would not only ensure the financial sustainability of the information services, it would also ensure that the information generated responds to the real needs of the farmers.
315. The same can be said about the support to the Agriculture House in Angonia for plant seedlings production or to the support to the operations of the soil analysis labs under the project. The provided trainings will ensure that even after the project has ended, capacities will be available in-house to run the equipment provided by the project. The institutions will therefore be

able to produce useful quality products that should also help develop a demand-driven approach where farmers demand and pay for these products (soil analysis as well as plant seedlings). Regarding the support to the operations of the 2 soil analysis labs, the project will conduct an intermediation process with the 2 institutions incentivizing them to include in their respective budget equipment maintenance, staff remuneration and supply of necessary soil analysis input.

316. Moreover, the LAP developed under the project will include budget allocations. This will ensure that CCA is taken into account in future investments, which will foster the financial sustainability of the project.

#### **5.4 SUSTAINABILITY OF CAPACITIES DEVELOPED**

317. The project will develop capacity at many levels which will contribute to the overall body of capacity related to FFS and extension systems in Mozambique. This capacity will all be aligned to, and integrated into, existing organizations, both governmental and non-governmental, and therefore will have a sustained use after the project. The project will not support new structures, or support organizations on issues for which they do not currently have a mandate on.

318. The project will strengthen the capacity of planners and technical decision makers on climate resilient approaches to agriculture. It will develop materials that can be used for training, awareness raising and dissemination, and which (based on past experience) will continue to be used after the project. The project will also build capacity of provincial governmental and non-governmental agencies by supporting extension systems. Moreover, the project will directly train in CCA at least 50 master trainers, 1500 facilitators, and 80,000 farmers through the FFS network. In each case the training will be designed in a participatory manner to respond to the needs and resources of the beneficiaries, it will be a focused, demand-driven, needs-driven training. The FFS approach is based on a learning-by-doing process and the recipients of the training are well placed to immediately apply the contents of the training to their work. By addressing the immediate needs of farmers, there is a strong reason to believe it will be used after the project is finalized. FFS are “grass-root labs” that, through using participatory monitoring, will increase local leadership, strengthening long-term farmers’ capacities in the adaptive management of their land. The FFS-based knowledge building strategy that will be developed by the project will contribute to the expansion and upscaling of this approach to extension, which should ensure that capacity building on CCA through FFS will continue even after the end of the project.

#### **5.5 APPROPRIATENESS OF TECHNOLOGIES INTRODUCED**

319. The project will test, validate and promote local knowledge-based technologies (agricultural measures and practices) to increase sustainability and diversify production. Technologies will be introduced based on participatory requests from FFS or communities and will only include sustainable CCA technologies and approaches that also meet social acceptance. Technologies and approaches introduced will be tailored for men and women and will be in line with their needs and traditions.

#### **5.6 REPLICABILITY AND SCALING UP**

320. Strategies for up-scaling the FFS approach is built into the project design. An FFS dissemination strategy together with a multi annual work plan will be established under output 1.1, contributing to the up-scaling of the approach. In addition, the project will partner with and complement other projects and programmes, which is a good opportunity for exchange and scaling up of the successful CCA practices in Mozambique. Integrating climate resilience into local development plans will enable the FFS approach to expand beyond the areas targeted for this

project. Moreover, the fact that the project focuses on four different provinces will facilitate replicability in the country.

## APPENDICES

## APPENDIX 1: RESULTS MATRIX

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
<p><b>Project Objective/Impact</b></p> <p>To enhance the capacity of Mozambique’s agricultural and pastoral sectors to cope with climate change, by upscaling farmers adoption of Climate Change Adaptation (CCA) technologies and practices through a network of already established Farmers Field Schools (FFS), and by mainstreaming CCA concerns and strategies into on-going agricultural development initiatives, policies and programming</p>								<p>Close involvement of national institutions after the end of the project</p> <p>CC impacts remain in the scale of what was projected</p> <p>Buy-in by local communities of adoption technologies</p> <p>Political stability</p>
<p><b>Outcome 1</b></p> <p>Awareness and knowledge of national, provincial and district-level managers and farmers increased to include CCA best practices and measures into on-going rural development programmes</p>	<p>Outcome Indicator 1.1: (AMAT Indicator 2.2.1) Number and type of targeted institutions with increased adaptive capacity to minimize exposure to climate variability</p>	<p>Institutions currently have low capacity to reduce vulnerability to climate variability, specifically for rural communities</p>	<p>30 Managers and technicians at all level trained in SHARP</p> <p>Multi-year work plan and FFS-based building strategy</p>	<p>40 DPA/SPER</p> <p>75 SDAE</p> <p>12 Provincial managers of agricultural programs trained in strategies and processes for</p>		<p>30 Managers and technicians at all level trained in SHARP</p> <p>10 MASA/DNEA</p> <p>10 DNSV</p> <p>10 MITADER</p> <p>7 Academic</p>	<p><u>Means:</u></p> <p>Training attendance sheets and reports</p> <p>Interviews with training beneficiaries</p> <p>Multi-year</p>	<p>Relevant institutions participate actively in project’s trainings and workshops</p> <p>Interest in FFS remain constant</p>

<sup>63</sup> Value in the case of quantitative indicators and description of situation in the case of qualitative indicators. Please insert the year of the baseline

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
			<p>developed 10 MASA/DNEA 10 DNSV 10 MITADER 7 Academic partners 5 National Managers of agricultural programs trained in strategies and processes for mainstreaming CCA practices and measure in rural development</p>	<p>mainstreaming CCA practices and measure in rural development 5 IIAM staff 5 Instituto Superior Politecnico de Manica staff trained in soil analysis</p>		<p>partners 40 DPA/SPER 75 SDAE 5 National Managers of agricultural programs 12 Provincial managers of agricultural programs trained in strategies and processes for mainstreaming CCA practices and measure in rural development 5 IIAM staff 5 Instituto Superior Politecnico de Manica staff trained in soil analysis Multi-year work plan and FFS-based building strategy developed</p>	<p>work plan and strategy <u>Resp:</u> Project team Service Providers</p>	<p>Pilots respond to the real needs of smallholder farmers, including women Buy-in by local communities of adoption technologies and agro-meteorological information IIAM and CGIAR stay involved in seed production and dissemination Seed companies remain interested in project activities throughout project implementation</p>

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
	Outcome Indicator 1.2: Number of targeted rural development programmes that include CCA measures	On-going agricultural development programmes targeted by this project, in particular the PSP and the FAO MDG1c and Food Security and Nutrition for Gaza projects do not incorporate CCA measures.				At least the two baseline programmes incorporate CCA measures	<u>Means:</u> Interviews with farmers Progress reports <u>Resp:</u> Project team	
Output 1.1 A multi-stakeholders FFS-based knowledge building strategy is formulated and applied to foster CCA strategies and practices	n/a	There is currently no FFS-based building strategy to disseminate CCA practices	30 Managers and technicians at all level trained in SHARP Multi-year work plan and FFS-based building strategy developed 4 provincial workshop organised to disseminate the strategy			30 Managers and technicians at all level trained in SHARP Multi-year work plan and FFS-based building strategy developed 4 provincial workshop organised to disseminate the strategy	<u>Means:</u> Training and workshop attendance sheet and agenda Multi-year work plan and strategy <u>Resp:</u> Project team Service Providers	
Output 1.2 National, provincial and	n/a	Lack of capacities of capacities of national,	10 MASA/DNEA	40 DPA/SPER 75 SDAE		10 MASA/DNEA 10 DNSV	<u>Means:</u> Trainings	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
district-level managers of agricultural and pastoral programs are trained in strategies and processes to include CCA in rural development through FFS and other extension approaches		provincial and district-level managers of agricultural and pastoral programs regarding CCA technologies and approaches	10 DNSV 10 MITADER 7 Academic partners 5 National Managers of agricultural programs trained	12 Provincial managers of agricultural programs trained		10 MITADER 7 Academic partners 40 DPA/SPER 75 SDAE 5 National Managers of agricultural programs 12 Provincial managers of agricultural programs trained in strategies and processes for mainstreaming CCA practices and measure in rural development	attendance sheets Interviews with training beneficiaries <u>Resp:</u> Project team Service Providers	
Output 1.3 Integrated local adaptation options, measures and practices, specifically suited to support the CCA strategies promoted by the FFS network under Component 2, are participatively identified	n/a	The already established FFS network do not include local adaptation options, measures and practices	List of adaptation options, measures and practices identified in FFS supported in year 1	List of adaptation options, measures and practices identified in FFS supported in year 2	List of adaptation options, measures and practices identified in FFS supported in year 3	Local adaptation options, measures and practices are identified at FFS level in a participatory manner	<u>Means:</u> Reports from discussions held in the FFSs List of adaptation options, measures and practices	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
							Resp: Project team Service Providers	
Output 1.4 Improved soil, water and crop management practices piloted in selected areas of the targeted districts	n/a	The soil analysis laboratories have some equipment and some staff but lacks human capacities and additional equipment There is no pilots demonstrating CCA practices and measures within the existing FFS network		2 functioning soil analysis laboratories Pilots supporting resilient soil and water management practices implemented in 100 FFS Pesticide risk management practices diffused in FFS located in urban areas in Manica province	Demonstration sites on legume trees to prevent water runoff established Pilots supporting resilient soil and water management practices implemented in 300 FFS Pesticide risk management practices diffused in FFS located in urban areas in, Tete province	2 functioning soil analysis laboratories, 1 in IIAM and 1 in Instituto Superior Politecnico de Manica 500 demonstration sites on legume trees to prevent water runoff and improve soil fertility established Pilots supporting resilient soil and water management practices, implemented in 500 FFS Pesticide risk management practices diffused in FFS located in urban areas of 3 provinces	Means: Field visits Progress reports Resp: Project team Service Providers	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
						(Manica, Tete and Gaza) Introduction of hedgerows, pasture arrangements, communal afforestation plots and home gardens in 500 FFS		
Output 1.5 Seeds of a more diverse set of crop/pastures varieties identified from existing climate stress tolerant cultivars/varieties made available in local seed systems and piloted in different ecosystems and production systems in the targeted districts	n/a	Expertise is lacking to identify, screen, conserve and multiply climate resilient local landraces.	1 report on survey on species domestication 2 meetings of the National Seed Dialogue 60 extensionists trained in seed production	4 trials established 1 ton of climate resilient pre-basic/basic seed produced 10 field gene-banks established 2 meetings of the National Seed Dialogue 2 local seeds enterprises are supported 1 small processing units are supported Local seed	2 tons of climate resilient pre-basic/basic seed produced 20 field gene-banks established 2 meetings of the National Seed Dialogue 5 local seeds enterprises are supported 2 small processing units are supported Local seed production is supported in at least 15 communities	Survey on species domestication realised Establishment of 4 trials 3 tons of climate resilient pre-basic/basic seed produced 30 field gene-banks established 2 local varieties per crop and per project province are identified, collected and described The National Seed Dialogue Platform meets twice a year	<u>Means:</u> Report survey on species domestication Training curricula Agenda of National Seed Dialogue Meetings Field visits FFS reports Project reports <u>Resp:</u> Project team Service Providers	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
				production is supported in 8 communities 10 demonstration plots on climate resilient varieties	1 seed market study conducted 50 demonstration plots on climate resilient varieties	60 extensionists trained in seed production 8 local seeds enterprises are supported 3 small processing units are supported Local seed production is supported in at least 20 communities through FFS 1 seed market study conducted 75 demonstration plots on climate resilient varieties		
<b>Outcome 2</b> Adoption of improved CCA strategies, practices and a broader choice of adapted genetic material, in up to 15 districts covering at least three production systems (staple crops, vegetables, mixed tree/crop/animal production systems) through the FFS network that are	Outcome Indicator 2.1: (AMAT Indicator 2.2.1.1) Number of staff trained on technical adaptation themes (disaggregated by gender)	FFS and non-FFS extension staff (master trainers and facilitators) are not trained on technical adaptation themes		50 Master trainers trained 500 FFS facilitators trained and equipped 100 non-FFS extensionists are trained	1000 FFS facilitators trained and equipped 200 non-FFS extensionists are trained	50 master trainers, 1500 FFS facilitators and 200 non-FFS extensionists are trained on technical adaptation themes and ecosystem resilience strategies and practices. 30% of	<u>Means:</u> Trainings attendance sheets Progress reports <u>Resp:</u> Project team Service Providers	Interest in FFS remain constant Activities respond to the real needs of farmers (including women) Farmers and relevant institutions

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
assisted by the FAO MDG1c and Food Security and Nutrition for Gaza projects and other partner programs						them are women		participate actively in the trainings provided Agro-meteorological products respond to the needs of main end-users
	Outcome Indicator 2.2: (AMAT Indicator 3.1.1) Percent of targeted groups adopting CCA strategies, practices and adapted genetic material (disaggregated by gender)	No CCA strategies, practices and adapted genetic material have been adopted yet			30% of the beneficiaries adopt promoted CCA strategies, practices and adapted genetic material	45,000 (50%) beneficiaries (13,500 (30%) women) adopt promoted CCA strategies, practices and adapted genetic material through the 3200 FFS supported	<u>Means:</u> Field visits Interviews with FFS beneficiaries Progress reports <u>Resp:</u> Project Team Service Providers	
	Outcome Indicator 2.3: Level of use of agro-meteorological information by targeted agro-pastoralists	Agro-meteorological forecasts are developed in Mozambique but the level of access and use of these forecast by farmers are very low. Forecasts are not widely disseminated to agro-pastoralists in a timely and appropriate fashion			10% of participating FFS	20% of participating FFS and other beneficiary groups test agro-meteorological decision support tools that are developed by the project's activities	<u>Means:</u> FFS reports Progress reports <u>Resp:</u> Project team Service Providers	
Output 2.1 Training material on CCA	n/a	The existing FFS network does not	Gaps identified in existing FFS	Curricula of the 3,200	10 FFS exchange visits	3,200 existing FFS include CCA	<u>Means:</u> FFS	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
best practices developed and integrated into extension curricula, including FFS curricula		cover CCA-related issues	curricula	existing FFS revised to include CCA Training manuals including CCA developed CCA training tools for FFS master trainers developed 5 FFS exchange visits organised	organised	in their curricula	curricula Attendance sheets and agendas of exchange visits <u>Resp:</u> Project team Service Providers	
Output 2.2 At least 1500 FFS facilitators (30% women) trained in CCA and ecosystem resilience strategies and practices in 3,200 FFS	n/a	Existing FFS facilitators have not been trained in CCA measures and practices		50 master trainers trained and equipped (30% women) 500 facilitators trained and equipped	1000 facilitators trained and equipped	50 master trainers 1,500 facilitators 200 non-FFS extensionists trained in CCA and equipped	<u>Means:</u> Training attendance sheets Interviews with trainings beneficiaries <u>Resp:</u> Project team Service Providers	
Output 2.3 At least 200 non-FFS extensionists (government,	n/a	Extension services in Mozambique lack		100 non-FFS extensionists trained and	200 non-FFS extensionists trained (30%	200 non-FFS extensionists trained and	<u>Means:</u> Training attendance	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
NGOs, private providers, etc.) (30% of women) are trained in climate change adaptation and ecosystem resilience strategies and practices and support 10,000 additional farmers (30% women)		capacities in terms of CCA and ecosystem resilience knowledge		4,000 additional farmers supported	women) and 8,000 additional farmers supported	10,000 additional farmers trained	sheets Interviews with trainings beneficiaries <u>Resp:</u> Project team Service Providers	
Output 2.4 Methods developed and MITADER's CDS (Centros de Desenvolvimento Sustentavel) and INGC's CERUM (Centers of Resources and Multiple Use) officers trained to monitor progress towards more sustainable and climate-proof production systems	n/a	CDS and CERUM lack capacities in terms of CCA knowledge		15 CDS staff 15 CERUM staff trained in CCA monitoring	30 CDS staff 30 CERUM staff trained in CCA monitoring	30 CDS staff 30 CERUM staff trained in CCA monitoring and start monitoring progress towards more climate-proof production systems	<u>Means:</u> Training attendance sheets Interviews with trainings beneficiaries <u>Resp:</u> Project team Service Providers	
Output 2.5 Agro-meteorological decision support tools for farmers, developed in coordination with Instituto Nacional de Meteorología, PPCR and other partners, are tested with 20% of participating FFS and other	n/a	Limited capacities, equipment and technologies in the agrometeorological sector. Difficulties to produce and make		32 sites identified GSM provided for the 32 sites 4-month training for 1 climatologist from INAM in the	3-month support from an international consultant to implement ClimSoft 1-month support from an international	32 sites identified and provided with new rain gauges when needed GSM provided for the 32 sites INAM and DNSA-DCAP's capacities	<u>Means:</u> FFS reports Progress reports <u>Resp:</u> Project team Service Providers	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
beneficiary groups in 3 provinces and 8 districts.		relevant agrometeorological data accessible to farmers		development of seasonal agrometeorological forecasts at provincial level 4-month training for 1 meteorologist from INAM the development of agrometeorological forecasts at district level 6-month training for 6 agro-meteorologists (2 from INAM, 2 from IIAM and 2 from DNSA-DCAP) in the use of FAO agro-meteorological software 2 AWS with GSM-GPRS facilities	consultant to set-up the AMESD satellite system at DNSA-DCAP 1-month support from an international consultant to implement FAO-ASIS software 1-month support from international consultant to implement EC-JRC-SPIRITS software New meteorological instruments for 6 manual stations 10% of participating FFS test agrometeorological support tools Regular dissemination of agro-	increased with: (i) 4-month training for 1 climatologist from INAM in the development of seasonal agrometeorological forecasts at provincial level (ii) 4-month training for 1 meteorologist from INAM the development of agrometeorological forecasts at district level (iii) 3-month support from an international consultant to implement ClimSoft (iv) 6-month training for 6 agro-meteorologists (2 from INAM, 2 from IIAM and 2 from DNSA-DCAP) in the use		

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
					meteorological information through local radios	of FAO agro-meteorological software (v) 1-month support from an international consultant to set-up the AMESD satellite system at DNSA-DCAP (vi) 1-month support from an international consultant to implement FAO-ASIS software (vi) 1-month support from international consultant to implement EC-JRC-SPIRITS software  2 AWS with GSM-GPRS facilities and new meteorological instruments for 6 manual stations provided and installed		

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
						20% of participating FFS and other beneficiary groups test agro-meteorological decision support tools that are developed by the project's activities Regular dissemination of agro-meteorological information through local radios		

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
<b>Outcome 3</b> Increased institutional capacity and cross-sector coordination for designing and implementing efficient extension/outreach approaches, strategies and mechanisms in support of mainstreaming CCA in the agricultural and animal production sector	Outcome Indicator 3.1: Number of annual meetings held of the institutional inter-sectorial task force established	Inter-sectorial coordination regarding CCA issues is low No task force is in place at the national level	Institutional task force set up MoU signed ToR agreed	3 institutional task force meetings	3 institutional task force meetings	A task force is established at national level and meets at least 3 times a year	<u>Means:</u> ToR MoU Institutional task force meetings agendas <u>Resp:</u> Project team Service Providers	Relevant institutions are willing to cooperate Relevant institutions participate actively in the trainings provided by the project LAP remain a main document for development planning and CCA mainstreaming at district level The FFS extension method proves to be efficient and cost effective REPETE remains a relevant platform for the revision of technologies
	Outcome Indicator 3.2: (AMAT Indicator 1.1.1.1) Number of development framework that include specific budgets for adaptation actions	Currently no investment proposals are available for more effective extension strategies for mainstreaming and up-scaling CCA in the agricultural sector				Investment proposal supporting CCA mainstreaming and upscaling in the agricultural and pastoral sectors is drafted	A financial investment proposal is formulated and shared at national and provincial level	<u>Means:</u> Workshops agendas and attendance sheets Financial investment proposal <u>Resp:</u> Project Team Service Providers
Output 3.1 Manual of Environmental Educator (PECODA) revised and updated and MASA staff trained	n/a	Lack of CCA capacities at national level hinders the incorporation of climate change-		Manual of Environment Educators (PECODA) revised and updated to	20 MASA technicians 20 staff from CSO trained in climate change	Manual of Environment Educators (PECODA) revised and updated to include	<u>Means:</u> PECODA <u>Resp:</u> Project team Service	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
		induced threats and impacts in agricultural planning		include CCA 10 MASA technicians 10 staff from CSO trained in climate change impact and vulnerability analysis	impact and vulnerability analysis	CCA 20 MASA technicians 20 staff from CSO trained in climate change impact and vulnerability analysis	Providers	
Output 3.2 Agricultural policy and current capacities assessed to identify strengths and weaknesses and mainstreaming of CCA aspects into the rural development sector and land planning policies	n/a	Climate change is not systematically mainstreamed in policies, strategies and development plans. The districts of intervention of the project do not have local adaptation plans	Needs assessment realized in 2 district	Needs Assessment developed in 8 districts LAP developed in 2 districts 1 workshop organised in Maputo on the Voluntary Guidelines on Land Tenure	Needs assessment developed in 15 districts LAP developed in 8 districts 4 workshops on the LAP organized in 4 districts (1 per district)	Adaptation needs assessment carried out in the 15 districts of intervention 15 LAP developed Implementation of the LAP supported in 8 districts Organization of an international workshop in Maputo on the Voluntary Guidelines on Land Tenure	<u>Means:</u> LAP Workshops agendas and attendance sheets <u>Resp:</u> Project team Service Providers	
Output 3.3 Joint MASA/MITADER	n/a	Lack of coordination	Institutional task force set up	3 institutional task force	3 institutional task force	1 Institutional task force	<u>Means:</u> ToR	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
coordination mechanisms strengthened in support of the implementation and monitoring of extension/outreach strategies for CCA		between the agricultural and the environmental sector		meetings 40 MITADER and MASA national and provincial level staff trained in M&E	meetings	including MASA, MITADER and the civil society set up (including its ToR and MoU signed between MASA and MITADER) 40 MITADER and MASA national and provincial level staff trained in M&E for assessing the level of adoption of CCA technologies 1 assessment of CCA farming practices adoption level and benefits	MoU Institutional task force meetings agendas Training attendance sheets and curricula Assessment report <u>Resp:</u> Project team Service Providers	
Output 3.4 Comparative assessments of the efficiency and cost-effectiveness of FFS and non FFS-based extension approaches for up-scaling CCA, carried out in selected districts	n/a	No comparative assessment between FFS and non-FFS based approaches for up-scaling CCA has been carried out recently	1 baseline study on existing FFS and non-FFS extension services conducted		Comparative assessments	1 comparative assessments report on efficiency and cost-effectiveness of FFS and non-FFS extension methods in at least 2 selected districts of each province	<u>Means:</u> Comparative assessment report Workshop agenda and attendance sheet <u>Resp:</u> Project team	

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
							Service Providers	
Output 3.5 Good operational technologies and approaches for enhanced adaptation to climate risk of the agricultural sector are developed, disseminated and replicated at national level in support of sound CCA policy making and programming	n/a	No synthesis report on enhanced adaptation to climate risk of the agricultural sector				1 synthesis report on enhanced adaptation to climate risk of the agricultural sector published and disseminated	<u>Means:</u> Synthesis report <u>Resp:</u> Project team Service Providers	
Output 3.6 Draft investment proposals formulated for the financing of more effective extension strategies for mainstreaming and up-scaling CCA in the agricultural and pastoral sectors	n/a	CCA is not systematically integrated in extension strategies for the agricultural sector			Investment proposal drafted	Investment proposal drafted and validated	<u>Means:</u> Investment proposal Validation workshop agenda <u>Resp:</u> Project team Service Providers	
<b>Outcome 4</b> Project implementation based on result-based management and application of project lessons learned in future operations facilitated.	Outcome Indicator 4: Fulfilment of planned M&E activities including establishing baseline values for all project indicators, yearly updating of	n/a		30-40% progress in achieving project outcomes.	50% percent progress in achieving project outcomes	Project outcomes achieved and showing sustainability	<u>Means:</u> PIRs Midterm and final evaluations <u>Resp:</u> Project team	The M&E team provides quality reports in a timely manner Accurate data is available to perform project

Results Chain	Indicators	Baseline <sup>63</sup>	Milestones				Means of Verification and Responsible Entity	Assumptions
			Year 1	Year 2	Year 3	End of Project Target – year 4		
	indicators, a mid-term evaluation/review and a final project evaluation							M&E tasks
Output 4.1: Project monitoring system operational and providing systematic information on progress in meeting project outcome and output targets	n/a	n/a	Performance framework developed	Monitoring of results	Monitoring of results	Performance framework developed	<u>Means:</u> Performance framework <u>Resp:</u> Project Team	
Output 4.2. Timely biannual project progress reports available for adaptive and results based management	n/a	n/a	Two six-monthly progress reports prepared. (one PPR and one PIR)	Two six-monthly progress reports prepared. (one PPR and one PIR)	Two six-monthly progress reports prepared. (one PPR and one PIR)	Six-monthly progress reports prepared and submitted. (one PPR and one PIR)	<u>Means:</u> PIRs PPRs <u>Resp:</u> Project Team	
Output 4.3. Midterm review/evaluation and final evaluation conducted	n/a	n/a		Mid-term evaluation/review conducted		Mid-term evaluation/review and final evaluation conducted.	<u>Means:</u> Mid-term review/evaluation and final evaluation reports <u>Resp:</u> Project team and independent evaluators	



## APPENDIX 2: WORK PLAN

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
<b>Component 1: Mainstreaming improved climate resilient agricultural practices in the framework of the Strategic Plan for the Agricultural Sector (PEDSA) and its investment plan (PNISA) and with an emphasis on provinces and districts assisted by the MDG1c and Food Nutrition and Security for Gaza projects.</b>																		
Output 1.1: A multi-stakeholders FFS-based knowledge building strategy is formulated and applied to foster CCA strategies and practices	Activity 1.1.1: training in the use of SHARP (Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists) for managers and technicians at all levels and support for implementing it	MASA, DPA/SPER, SDAE, CSO																
	Activity 1.1.2: establishment of a multi-year work plan and FFS-based building strategy to mainstream and disseminate CCA options, measures and practices through already established and planned FFS	MASA																
	Activity 1.1.3. organization of 4 provincial workshops to inform regional stakeholders and disseminate this strategy	MASA																
Output 1.2: National, provincial and district-level managers of agricultural and pastoral programs are trained in strategies and processes for mainstreaming CCA in rural development through FFS and other extension approaches	Activity 1.2.1: development of training tools and training material on strategies and processes for including CCA in rural development	MASA/DNEA																
	Activity 1.2.2: organization of one national training for	MASA/DNEA, MITADER,																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	MASA/DNEA, DNSV, academic partners and MITADER staff and national managers of agricultural and pastoral programs on strategies and processes for including CCA practices and measures in rural development through FFS and other extension approaches	DNSV																
	Activity 1.2.3: organization of 4 trainings at provincial level for DPA/SPER staff and provincial managers of agricultural and pastoral programs, and SDAE staff (District Directorate for Economic Activities) on strategies and processes for including CCA practices and measures in rural development through FFS and other extension approaches	MASA/DNEA, DPA/SPER, SDAE																
Output 1.3: Integrated local adaptation options, measures and practices, specifically suited to support the CCA strategies promoted by the FFS network under Component 2, are participatively identified	Activity 1.3.1: throughout project life and all-along the establishment of FFS, participatory community analysis of climate risks (through the use of SHARP) for each FFS	DPA/SPER, SDAE																
	Activity 1.3.2: participatory identification at FFS level of integrated local adaptation options, measures and practices, including the use of	DPA/SPER, SDAE																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	soils analysis, agro-ecological practices, conservation agriculture practices, use of compost, Integrated Production and Pest Management (IPPM), erosion control measures, reforestation, integration of crop-livestock productions, use of fodder and forages into crop rotation, use of adapted seeds of major crops and seeds adapted to animal use, introduction of perennial crops and agroforestry, use of cover crops with nitrogen fixing species, and mitigation options for pesticides-induced risks																	
	Activity 1.3.3: support implementation of identified integrated local adaptation options, measures and practices through implementation of adapted climate-resilient FFS curricula.	DPA/SPER, SDAE																
<u>Output 1.4:</u> Improved soil, water and crop management practices piloted in selected areas of the targeted districts	Activity 1.4.1: training of staff and provision of equipment for IIAM in Maputo and the Instituto Superior Politecnico de Manica in order to support the functioning of one soil analysis laboratory for each institution	IIAM, Instituto Superior Politecnico de Manica																
	Activity 1.4.2: installation of a	DPA/SPER,																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	demonstration site by planting nodulated and mycorrhizal legume trees to prevent water runoff and further deterioration of a gully at Tsangano	SDAE																
	Activity 1.4.3: implementation of pilots supporting resilient soil and water management practices in 500 FFS among the 3200 targeted ones	DPA/SPER, SDAE																
	Activity 1.4.4: piloting of pesticide risk management practices for FFS located in urban areas of three provinces, namely Manica, Tete and Gaza	DPA/SPER, SDAE																
	Activity 1.4.5: support to the Agriculture House in Angónia and selected FFS to produce plant seedlings to be available to farmers	DPA/SPER, SDAE																
Output 1.5: Seeds of a more diverse set of crop/pastures varieties identified from existing climate stress tolerant cultivars/varieties made available in local seed systems and piloted in different ecosystems and production systems in the targeted districts	Activity 1.5.1: completion of a survey on species domestication to inform the potential resilience of agro-forestry systems to climate change in the future.	MASA, IIAM																
	Activity 1.5.2: release and maintenance of short cycle and drought tolerant improved varieties	MASA, IIAM																
	Activity 1.5.3: preservation of local/landrace varieties through farmers' participation and local	IIAM, CGIAR																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	best practices.																	
	Activity 1.5.4: widening the use of improved and local climate resilient seed varieties	IIAM and private companies																
<b>Component 2: Promotion of climate resilient agricultural practices and technologies through Farmer Field Schools (FFS) and other extension approaches in the framework of the PSP, MDG1c and Food Nutrition and security for Gaza projects, and other initiatives</b>																		
<u>Output 2.1:</u> Training material on CCA best practices developed and integrated into extension curricula, including FFS curricula	Activity 2.1.1: on the basis of the FFS curricula developed by the baseline projects, identification of gaps and select CCA technologies and approaches to be integrated into extension curricula, including FFS, through a participatory process	MASA																
	Activity 2.1.2: development of the new FFS curricula and training manuals including CCA, pesticide risk management and agro-meteorological decision support tools	MASA																
	Activity 2.1.3: development of CCA training tools and manuals for FFS master trainers and facilitators	MASA																
	Activity 2.1.4: organization of field-days in FFS and exchange visits	MASA, DPA																
<u>Output 2.2:</u> At least 1500 FFS facilitators (30% women) trained in CCA and ecosystem resilience	Activity 2.2.1: training and provision of equipment for 50	MASA																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
strategies and practices in 3,200 FFS	master trainers (30% women) at national-level in CCA and ecosystem resilience practices																	
	Activity 2.2.2: training and equipment of 1500 facilitators (30% women) in CCA and ecosystem resilience practices, including training of FFS facilitators from the MDG1c and Food Nutrition and security for Gaza projects, and refresher training course in each province every cropping season	MASA																
Output 2.3: At least 200 non-FFS extensionists (government, NGOs, private providers, etc.) (30% of women) are trained in climate change adaptation and ecosystem resilience strategies and practices and support 10,000 additional farmers (30% women)	Activity 2.3.1: training of 200 non-FFS extensionists (30% of women) in CCA and ecosystem resilience strategies and practices	MASA																
Output 2.4: Methods developed and MITADER's CDS (Centros de Desenvolvimento Sustentavel) and INGC's CERUM (Centers of Resources and Multiple Use) officers trained to monitor progress towards more sustainable and climate-proof production systems	Activity 2.4.1: identification of gaps in terms of CCA knowledge and capacities within MITADER's CDS and INGC's CERUM	MITADER, INGC																
	Activity 2.4.2: organization of a seminar to present and validate the results of the assessment undertaken in activity 2.4.1	MITADER, INGC																
	Activity 2.4.3: in line with the validated results, training for CDS and CERUM's officers in CCA monitoring and provide support to monitor progress towards more climate-proof	MITADER, INGC																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4				
			Q1	Q2	Q3	Q4													
	production systems																		
Output 2.5: Agro-meteorological decision support tools for farmers, developed in coordination with Instituto Nacional de Meteorología, PPCR and other partners, are tested with 20% of participating FFS and other beneficiary groups in 3 provinces and 8 districts.	Activity 2.5.1: identification of 32 sites (4 in each of the 8 districts as close as possible to the FFS) and installation of new rain gauges when needed.	INAM																	
	Activity 2.5.2: provision of GSMs and training for the observers of the 32 selected rainfall stations to send calendar recommendations every 10 days to INAM Agromet Unit in Maputo by SMS text messages	INAM																	
	Activity 2.5.3: increase INAM's capacity to generate seasonal agrometeorological forecasts at provincial level and agrometeorological forecasts at district level	INAM																	
	Activity 2.5.4: provision and installation of 2 AWS with GSM-GPRS facilities (in IIAM-RZC – Chokwe, and at IIAM-Maputo) and new meteorological instruments for 6 manual stations.	IIAM																	
	Activity 2.5.5: increase INAM, IIAM and DNSA-DCAP's capacity to produce agro-meteorological products	INAM, IIAM and DNSA-DCAP																	
	Activity 2.5.6: integration of climate information into the	INAM																	

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	FFS																	
	Activity 2.5.7: regular dissemination of climate information and any other relevant data (such as improved seeds information, etc.) through local radios in local languages.	INAM, Local radios																
<b>Component 3: Climate change adaptation strategies mainstreamed into agricultural sector policies and programs with emphasis on rural extension/outreach strategies and plans</b>																		
Output 3.1: Manual of Environmental Educator (PECODA) revised and updated and MASA staff trained	Activity 3.1.1: revise and update the Manual of Environmental Educator (PECODA) to include aspects related to climate change and adaptation measures for agriculture	MITADER																
	Activity 3.1.2: training for MASA technicians and other civil society organizations in climate change impacts and vulnerability analysis for better sectorial and sub-sectorial planning.	MASA, CSO																
Output 3.2: Agricultural policy and current capacities assessed to identify strengths and weaknesses and mainstreaming of climate change adaptation aspects into the rural development sector and land planning policies.	Activity 3.2.1: carry out adaptation needs assessment in the 15 selected project's districts using diverse tools.	MASA																
	Activity 3.2.2: develop the LAP for the 15 districts of intervention, including budget, through the use of MITADER guide for developing LAP	MITADER																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	Activity 3.2.3: support the implementation of the LAP in the 8 selected districts through the organization of 1 workshop per district to disseminate the LAP and explain how it can be used for local strategic planning	MITADER																
	Activity 3.2.4: in PY4, organization of awareness-raising seminars for district authorities to promote the use of the LAP information in the district planning process (District Strategic Development Plans and Economic and Social Plans and Budgets) ensuring full participation of women	MITADER																
	Activity 3.2.5: organization of an international workshop in Maputo on the Voluntary Guidelines on Land Tenure	MASA																
Output 3.3: Joint MASA/MITADER coordination mechanisms strengthened in support of the implementation and monitoring of extension/outreach strategies for CCA	Activity 3.3.1: set up an institutional task force composed by MASA and MITADER's officers and the civil society for a better institutional coordination on CCA	MASA, MITADER																
	Activity 3.3.2: training courses for 40 MITADER and MASA staff (national and provincial level) in M&E for assessing the adoption level of CCA	MASA, MITADER																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	technologies disseminated through the FFS methodology and evaluating the impacts of using adaptation practices for farmers to cope with the climate risk																	
	Activity 3.3.3: assess the adoption level and the benefits of CCA practices for farmers to cope with the climate risk, in at least one district for each province	MASA, MITADER																
<u>Output 3.4:</u> Comparative assessments of the efficiency and cost-effectiveness of FFS and non FFS-based extension approaches for up-scaling CCA, carried out in selected districts	Activity 3.4.1: conduct a baseline study on existing FFS and non-FFS extension services including gender considerations	MASA/DNEA,																
	Activity 3.4.2: carry out comparative assessments of efficiency and cost-effectiveness of FFS and non-FFS extension methods in at least 2 selected districts of each province including gender considerations	MASA/DNEA,																
	Activity 3.4.3: organization of a workshop at national level to present and disseminate the results and recommendations of the comparative assessment	MASA/DNEA																
	Activity 3.4.4: publication and dissemination of a report on the comparative assessment	MASA/DNEA																
<u>Output 3.5:</u> Good operational technologies and	Activity 3.5.1: logistical and	MASA, IIAM																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
approaches for enhanced adaptation to climate risk of the agricultural sector are developed, disseminated and replicated at national level in support of sound CCA policy making and programming	technical support to REPETE																	
	Activity 3.5.2: collect, synthesize, report and record good technologies and approaches on climate risk management and adaptation in the agricultural sector	MASA, IIAM																
	Activity 3.5.3: produce a synthesis report good measures and technologies on climate risk management and adaptation in agriculture, including the results of the assessment realized in activity 3.3.3.	MASA, IIAM																
<u>Output 3.6:</u> Draft investment proposals formulated for the financing of more effective extension strategies for mainstreaming and up-scaling CCA in the agricultural and pastoral sectors	Activity 3.6.1: training at national level for 20 MASA staff in the conception and design of more effective investment proposals for mainstreaming and upscaling CCA into agricultural development	MASA, MITADER																
	Activity 3.6.2: draft an investment proposal supporting CCA mainstreaming and upscaling in the agricultural and pastoral sectors through a participatory process	MASA, MITADER																
	Activity 3.6.3: organization of a validation workshop for the investment proposal at the national and provincial levels	MASA, MITADER																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
<b>Component 4: Project monitoring and dissemination of results</b>																		
<u>Output 4.1:</u> Project monitoring system operational and providing systematic information on progress in meeting project outcome and output targets	Activity 4.1.1: Development of a performance framework (M&E Plan) defining roles, responsibilities, and frequency for collecting and compiling data to assess project performance	MASA, M&E expert																
<u>Output 4.2:</u> Timely biannual project progress reports available for adaptive and results based management	Activity 4.2.1: Timely development of project progress reports every 6 months	MASA																
	Activity 4.2.2: Presentation and dissemination of the report to the steering committee and executing partners through a meeting every 6 months	MASA, independent evaluators																
<u>Output 4.3:</u> Midterm evaluation/review and final evaluation conducted	Activity 4.3.1: a mid-term project evaluation/review will be conducted by an external consultant, who will work in consultation with the project team including FAO-GEF Coordination Unit, the LTO, and other partners	MASA, FAO-GEF Coordination Unit, independent evaluators																
	Activity 4.3.2: At the end of project implementation a final project evaluation will be conducted under the supervision of FAO Office of Evaluation, OED, in consultation with the project team including FAO-GEF Coordination Unit, the LTO,	MASA, FAO-GEF Coordination Unit, independent evaluators																

Output	Activities	Responsible institution/ entity	Year 1				Year 2				Year 3				Year 4			
			Q1	Q2	Q3	Q4												
	and other partners																	

## APPENDIX 3: RESULT BUDGET



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## APPENDIX 4: RISK MATRIX

Risk	Risk Level	Mitigation Measure
High-probability of increased occurrence of extreme weather events which may affect crop and livestock cycles and increase food/nutritional insecurity.	H	Mitigated by supporting the implementation of CCA policies and measures to strengthen pro-active and coordinated responses. Developing adaptation plans for rural development and by linking with on-going emergency/post-emergency initiatives that are implemented by the government. Community-level field observation capacities will be fostered to anticipate climate-change-related disruptions. Finally, the project will support the access and use of climate data which allow better planning.
The limited experience in project coordination between MITADER and MASA may constitute a challenge	M	MITADER and MASA will benefit from several trainings and an inter-sectoral task force including both ministries and the civil society will be set up under Component 3 in order to ensure a good project coordination.
Partnership-building capacities to ensure mainstreaming into on-going initiatives may constitute a challenge	L	Since the LDCF-funded activities and management will be closely linked to the MDG1c, PSP and Food Security and Nutrition for Gaza projects, this risk is considered to be limited The project is also expected to build additional partnerships with other agricultural development and agricultural services provision projects country-wide
Climate change shocks and/or pest and diseases outbreaks may cause seeds shortages that may negatively influence new varieties distribution.	M	The project will address this risk by fostering community-level field observation capacities to reduce seed multiplication failures, and by closely linking with the MDG1c project and other initiatives working on seed production and inputs distribution schemes.
Reluctance to endorse and participate in the project activities by stakeholders and reluctance/slowness of local institutions to agree on project activities	L	The risk of reluctance of stakeholders is low. Nevertheless it will be addressed through local participation in project implementation. Achievements on the ground that bring benefits to local producers will be demonstrated during the project to overcome skepticism. Regarding local institutions, common objectives will be established by giving emphasis on local ownership of the process as well as capacity.
Risk of management change in local institution	M	A medium risk of ongoing modification within the framework of the local institutional settings is present. The risk will be addressed by strongly involving local institution at all level, and building appropriate programmes for the involvement of relevant officers and institutional sectors.
Lack of adequate human and material resources for the implementation of this project could disturb the implementation of the various activities of the project.	L	Government capacity is not likely to represent a high risk for the project because the capacity for climate resilient development exists in the country (but is not systematically geared towards explicit and specific CCA goals). However the risk of lack of capacities will be mitigated by mobilizing and articulating the capacity of different actors, projects, programs and bilateral agencies to work intensively with government and gradually transfer skills to government counterparts.
Local populations do not see the benefit of resilient practices.	L	The project will ensure a high level of ownership from the population through the participative FFS approach. This model encourages farmers to actively get involved in order to try out and adopt CCA practices and technologies, and gain experience through a learning-by-doing process. Trainings are given by local facilitators in order to ensure the continuity and appropriation of the learning process by the local population.

<p>Difficulty to perpetuate the equipment provided for the functioning of the soil analysis laboratories because of a lack of long-term financing and involvement from the IIAM and Instituto Superior Politecnico de Manica.</p>	<p>H</p>	<p>The project will conduct an intermediation process with these 2 institutions incentivizing them to include in their respective budget equipment maintenance, staff remuneration and supply of necessary soil analysis input.</p>
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## **APPENDIX 5: TERMS OF REFERENCE (ToRs) OF KEY STAFF**

This Appendix provides Terms of reference for the following:

### NCU Staff

- National Project Coordinator (NPC);
- International CTA;
- M&E expert;
- Administration and operation officer;
- Divers; and
- Provincial project facilitators.

### Nationally recruited staff and consultants:

- Climate Change Adaptation Trainer;
- Expert in investment plans and local adaptation strategies development;
- National communications and publications officer;
- Support to resilience assessment at a field level;
- Expert in resilient soil and water management practices;
- Seeds expert.

### Internationally recruited staff and consultants:

- Agro-meteorology expert;
- International expert in assessment of resilience against desertification in agricultural and pastoral areas (SHARP);
- Pesticide risk management expert;
- Extension services expert for comparative assessment of the efficiency and cost-effectiveness of FFS and non FFS-based extension approaches for up-scaling CCA;
- Expert in ClimaSoft software (3 months);
- Expert to implement AMESD satellite system (1 month);
- Expert in FAO-ISIS software (1 month);
- Expert in EC-SRC-SPIRITS software;
- Evaluators

## **NATIONAL PROJECT COORDINATOR (NPC)**

### 1. Scope

This position is full time for the entire duration of the project. Total input: 48 months.

Under the supervision of: FAOR, LTO

Reporting to: FAOR, LTO.

Nationally recruited

### 2. Objective

To ensure the smooth running of the project and the timely provision of high quality inputs as needed.

### 3. Tasks

The NPC will be responsible for the operational planning, management and monitoring of all project's activities, as indicated in the project document. The NPC will provide technical, logistics and managerial support and ensure a good implementation of the activities in line with the project result framework, work plan and approved budget. This will include:

#### **Manage National Coordination Unit**

- Prepare annual and quarterly work plans and prepare ToR for all inputs;
- Lead process to mobilize NCU staff, project consultants and sub-contracts;
- Lead process to finalize 'letters of agreement' with implementation partners;
- Ensure all NCU staff and all consultants fully understand their role and their tasks, and support them in their work;
- Oversee day-to-day implementation of the project in line with the work plans;
- Organize regular planning and communication events, starting with inception mission and inception workshop;
- Oversee preparation and implementation of M&E framework;
- Oversee creation of a participatory monitoring system for the Project's work;
- Ensure real-time monitoring of project progress and the alerting of MASA, BH and LTO of potential problems that could result in delays in implementation;
- Help identify consultant candidates and work with the BH to ensure their timely recruitment;
- Ensure the project's effective and efficient work with stakeholders in the pilot areas;
- Help organize and supervise consultant inputs;
- Oversee preparation and implementation of project communication and knowledge management frameworks; and
- Prepare progress reports and all monitoring reports. This includes the six monthly progress reports and contributions to the annual Project Implementation Review (PIR) to be compiled by the LTO.

#### **Lead interactions with stakeholders**

- Liaise with government agencies;

- Regularly advocate on behalf of the project to partners;
- Coordinate project interventions with other ongoing activities, especially those of co-financers and other GEF projects;
- Regularly promote the project and its outputs and findings on a national, and where appropriate, regional stage; and
- Coordinate activities with co-financing donors and other projects related to FFS.

### **Technical support**

- Oversee development of the approach to climate change resilient FFS in Mozambique;
- Support development of project strategic approach;
- Ensure quality of project activities and project outputs;
- Support development and preparation of training materials;
- Oversee creation of the Project's approach to managing and sharing knowledge, and to identifying and disseminating lessons learned;
- Communicate, advocate and engage in policy dialogue; and
- Take a lead in the organization and technical implementation of several activities.

### **4. Qualifications**

- Higher degree related to natural resources management;
- At least ten years' experience in the Mozambique agricultural sector;
- At least five years' experience working with local communities in Mozambique;
- Solid experience in project management and in particular results based management;
- Demonstrated previous experience working with the field school approach to extension or with similar approaches;
- Previous experience working with international partners on related issues;
- Demonstrated expertise in agro-ecology, conservation agriculture;
- Demonstrated commitment to participatory natural resource management techniques; and
- Portuguese language skills preferential, English language skills an asset.

## CHIEF TECHNICAL ADVISOR (CTA)

### 1. Scope

This position is full-time during 3 years.

Reports to: FAO and LTO

Internationally recruited.

### 2. Objective

To directly support the NPC and the NCU and ensure best international technical and management practices are integrated into the Project work plan and activities.

### 3. Tasks

- Ensure that latest and best international practices and approaches are reflected in the design and planning of project activities;
- Design and propose a participatory monitoring system for the project's work (in cooperation with the M&E expert);
- Support real-time monitoring of project progress and the alerting of the BH and the LTO to potential problems that could result in delays in implementation;
- Help identify consultant candidates, especially international candidates;
- Support design of the project's work with stakeholders in the pilot areas;
- Help organize and supervise consultant inputs;
- Propose an approach to managing and sharing knowledge, and to identifying and disseminating lessons learned;
- Provide on-the-job capacity development to all members of the NCU; and
- Communicate, advocate and engage in policy dialogue
- Support all aspects of the day-to-day execution of the project
- Support the NPC in reporting on project progress, and will contribute to the development of semi-annual PPRs and annual PIRs contributions.

### 4. Qualifications

- Higher degree related to climate change adaptation;
- An internationally recognized expert on CCA in Eastern Africa or similar agro-environment
- Has significant experience with extension systems and with the FFS approach.
- Demonstrated academic results (e.g. papers published) on field schools and agro-pastoral areas;
- At least 10 years of experience in project and results based management;
- Demonstrated commitment to participatory natural resource management techniques;
- Previous experience in Mozambique an asset; and
- Portuguese language skills preferential, English language skills an asset.

## **MONITORING AND EVALUATION EXPERT**

### 1. Scope

This position is full time for the entire duration of the Project.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

Nationally recruited

### 2. Objective

To ensure the design and sound implementation of the Monitoring and Evaluation System

### 3. Tasks

Compile a comprehensive M&E plan:

- Define methodologies for measurement and monitoring of indicators and information sources;
- Make sure baseline is established for all indicators;
- Define responsibilities and frequency for data collection and monitoring of indicators;
- Allow for adaptive management of project execution;
- Document institutional memory of the project; and
- Facilitate project progress reporting and communication of results.

### 4. Qualifications

- Higher degree related to rural development;
- Experience in establishing project results and progress monitoring systems;
- At least three years' experience working with local communities in the agricultural sector in Mozambique;
- Demonstrated previous experience working with the field school approach to extension or with similar approaches;
- Demonstrated previous experience working with the monitoring field schools or similar extension approaches;
- Previous experience working with international partners on related issues; and
- Portuguese language skills preferential, English language skills an asset.

## **OPERATIONS AND ADMINISTRATION OFFICER**

### 1. Scope

This position is full-time over the entire duration of the Project.

Under the supervision of: FAO BH, Reporting to: FAO BH

Nationally recruited.

### 2. Tasks

Under the direct supervision of the FAO BH and in consultation with the NPC, the Operations and Administrative Officer will have the following responsibilities and functions:

- Ensure smooth and timely implementation of project activities in support of the results-based work plan, through operational and administrative procedures according to FAO rules and standards;
- Coordinate the project operational arrangements through contractual agreements with key project partners;
- Arrange the operations needed for signing and executing Letters of Agreement (LoA) with relevant project partners;
- Maintain inter-departmental linkages with FAO units for donor liaison, Finance, Human Resources, and other units as required;
- Day-to-day manage the project budget, including the monitoring of cash availability, budget preparation and budget revisions to be reviewed by the NPC;
- Ensure the accurate recording of all data relevant for operational, financial and results-based monitoring;
- Ensure that relevant reports on expenditures, forecasts, progress against work plans, project closure, are prepared and submitted in accordance with FAO and GEF defined procedures and reporting formats, schedules and communications channels, as required;
- Execute accurate and timely actions on all operational requirements for personnel-related matters, equipment and material procurement, and field disbursements;
- Participate and represent the project in collaborative meetings with project partners and the Project Steering Committee, as required;
- Undertake missions to monitor the outputs-based budget, and to resolve outstanding operational problems, as appropriate;
- Be responsible for results achieved within her/his area of work and ensure issues affecting project delivery and success are brought to the attention of higher level authorities through the BH in a timely manner;
- In consultation with FAO Evaluation Office, the LTU, and FAO-GEF Coordination Unit, support the organization of the mid-term and final evaluations, and provide inputs regarding project budgetary matters;
- Provide inputs and maintain the FPMIS systems up-to-date; and
- Undertake any other duties as required.

### 3. Qualifications

- University Degree in Economics, Business Administration, or related fields;
- Five years of experience in project operation and management related to natural resources management, including field experience in developing countries;
- Proven capacity to work and establish working relationships with government and non-government representatives;
- Portuguese language skills preferential, English language skills an asset; and
- Knowledge of FAO's project management systems.

## **DRIVER**

### 1. Scope

Two drivers for the entire project, part time.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

Nationally recruited

### 2. Context

Standard FAO driver TOR

### 3. Tasks

The driver will be responsible, but not limited, to perform the following tasks and duties:

- Maintain the project vehicles in clean and good conditions;
- Responsible for the day by day maintenance for the vehicles;
- Daily update of vehicle log books;
- Transport staff and/or equipment within the duty station and to/from other locations; and
- Meets official personnel at the airport and facilitates immigration and customs formalities as required.

### 4. Qualifications

At least three year experience as driver.

## **PROVINCIAL PROJECT FACILITATORS**

### 1. Scope

Full time for 4 year of implementation of the Project (recruited after 4 month of project start)

4 positions, one per Province of intervention, based in the DPA.

Under the supervision of: CTA, NPC. Reporting to: CTA, NPC

Nationally recruited

### 2. Objective

To ensure the activities in the provinces are technically of high quality, are firmly anchored into the local sustainable development processes, and are firmly contributing to the overall project objective.

### 3. Tasks

- Provide advice on all activities to take place at the provincial, district and local level;
- Ensure full coordination with local government agencies and all similar activities taking place in the province;
- Channel information to/from project management and local partners;
- Organize the planning phase and promote the development / implementation of plans and arrangements related to environmental and gender issues;
- Support and organize capacity building to strengthen existing organizations;
- Where necessary, support the activities required for the emergence of new organizations;
- Where possible, create linkages between project activities and other activities being implemented, financed by government or development partners;
- Coordinate the activities between the FFS and the Research structures;
- Provide technical support to government agencies at the local level;
- Help draft TOR for local partners;
- Organize and conduct community dialogue on the concepts and principles of FFS towards the selection of the community facilitator;
- Support service providers for the establishment of FFS; and
- Support and technically supervise activities.

### 4. Qualifications

- Higher degree related to agriculture and rural development;
- At least five years' experience working with local communities in rural development in Mozambique;
- Demonstrated and full knowledge of agricultural and rangelands issues in the province;
- Knowledge of concerned local languages.
- Previous experience working with international partners and national government agencies/programmes; and
- Portuguese language skills preferential, English language skills an asset.

## **NATIONAL CLIMATE CHANGE ADAPTATION TRAINER**

### 1. Scope

This position is for 12 months during the entire duration of the project.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Tasks

- Assist the project management in programming the technical assistance that will be provided through the project;
- Assess all project training and capacity building activities, identify entry points for integrating climate change, and develop material in order to integrated climate change;
- Review and revise training programmes for managers;
- Ensure that updated best practices are transferred in a simple and concise manner into training material and training activities; and
- Undertake field visit and provide examples on how FFS could drive CCA practices and climate resilience in partners' programmes.

### 3. Qualifications and Selection criteria

- Higher degree related to resource management, agriculture or climate change science;
- At least five years working on climate change related issues in Mozambique;
- Experience working with local communities in the rangelands management sector in Mozambique;
- Previous experience working with international partners on related issues;
- Demonstrated commitment to participatory sustainable agriculture techniques; and
- English language skills preferential.

## **NATIONAL INVESTMENT PLANS AND LOCAL ADAPTATION STRATEGIES DEVELOPMENT EXPERT**

### 1. Scope

18 months of inputs spread over the entire Project (when actually employed).

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Tasks

- Support to the development of 15 LAP in the targeted districts;
- Support to implementation of 8 LAPs;
- Support to design of investment proposal for more effective extension strategies for scaling up CCA.

### 3. Qualifications

- An advanced degree in natural resources management and policy;
- Good knowledge of adaptation policies at local level;
- Experience with participatory policy preparation; and
- Ability to organize and facilitate workshops and meetings.

## **NATIONAL COMMUNICATION PUBLICATIONS EXPERT**

### 1. Scope

6 months spread over the entire Project (when actually employed).

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Tasks

The expert will be responsible, but not limited, to perform the following tasks and duties:

- Prepare FFS-based building strategy, and
- Prepare publications for dissemination.

### 3. Qualifications

- Higher degree in communication;
- At least two year experience in communication and publication;
- Familiar with rural development, agriculture and climate-change related challenges
- Fluency in English.

## **NATIONAL EXPERT ON SUPPORT TO RESILIENCE ASSESSMENT AT FIELD LEVEL**

### 1. Scope

This position is for 12 months spread over the entire project (when actually employed).

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Objective

Develop and help roll out the SHARP methodology.

### 3. Tasks

- Based on training received by international experts, support field level assessment of resilience actions to be undertaken in the establishment of FFS (assessment of FFS baseline situation, and development a community action plan) through the duration of the project;
- As necessary, review and modify the assessment methodology in order to (i) adapt to local circumstances (ii) provide information needed for GEF LDCF AMAT indicators;
- Report data from SHARP to the international expert, working in close collaboration with the FFS training expert, the local consultants, and the service providers;
- Support farmers in the undertaking of their self-assessment and the use of best practices based on their resilience self-assessment;
- Support FFS master trainers and facilitators in the use self-assessment information;
- Support community decision-making to change their activities and practices in response to self-assessment; and
- Support the design of FFS curricula including SHARP as appropriate based on project experience.

### 4. Qualifications and Selection criteria

- Higher degree related to agriculture or natural resources management;
- At least five years working on climate related issues in agriculture sector in Mozambique;
- A demonstrated understanding of the barriers to increasing climate resilience;
- Experience working with government agencies responsible for management of natural resources;
- Experience working with local communities in climate change in Mozambique;
- Previous experience working on with international partners on related issues;
- Demonstrated commitment to participatory agriculture or natural resource management techniques; and
- English language skills preferential.

## **NATIONAL EXPERT ON SOIL AND WATER MANAGEMENT PRACTICES**

### 1. Scope

12 months during the entire duration of the project.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Tasks

- Support all activities related to soil and water management practices under outputs 1.3, 1.4 and 2.1;
- Support the selection soil and water management technologies and small-scale infrastructures to be promoted (small scale water management infrastructures, small-scale irrigation infrastructures, growing crops suited to local conditions, nitrogen fixing trees, cover crops to retain soil moisture, agroforestry, water reservoirs, contour boundaries, semi-moon etc.);
- Support the implementation of resilient soil and water management practices pilots in FFS
- Undertake FFS training regarding soil and water management practices as appropriate;
- Support the participatory monitoring of soil and water management practices established and community ownership;

### 3. Qualifications and Selection criteria

- Advanced university degree in agriculture, agricultural economics, geography, rural development or natural resources.
- At least 5 year project management
- Experience in monitoring and evaluation
- Experience in soil and water management practices in Mozambique

-

## **NATIONAL EXPERT ON SEEDS**

### 1. Scope

42 months during the entire duration of the project.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Tasks

- Support all activities related to resilient seeds under output 1.5;
- Liaise and ensure smooth coordination with IIAM and MDG1c project;
- Support IIAM in the evaluation and release of climate resilient varieties and in variety maintenance and production of climate resistant pre-basic and basic seeds ;
- Liaise and ensure smooth coordination with CGIAR on activity 1.5.3;
- Support National Seed Dialogue Platform;
- Undertake training of extensionists in seed production practices and basic seed handling as appropriate;
- Support to local seed enterprises;
- Support to local seed production with small scale farmers; and
- Support the development of demonstration plots of improved climate resilient varieties.

### 3. Qualifications and Selection criteria

- Advanced university degree in agriculture, rural development or natural resources
- At least 5 year project management
- Strong scientific experience in developing resilient seeds
- Experience within the seed production system in Mozambique
- Experience in use of local and wild species
- English language skills preferential

## **INTERNATIONAL AGRO-METEOROLOGY EXPERT**

### 1. Scope

This position is full time for the first year of implementation of the project, and then 3 months for the remaining 3 years of project implementation.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

Internationally recruited

### 2. Objective

Due to the fact that there are currently no national staff or experts with agro-meteorological expertise in Mozambique, the project will recruit a full time Agro-Meteorological Expert during the initial year of project implementation. During this “start up” year the expert will play a very active role: guiding and supporting the startup of agro-meteorological activities under the project, until INAM staff complete their external training courses. He/she will work closely with all relevant national agencies and stakeholders on each island and provide direct support to INAM to guide the installation of equipment, establish maintenance and operational plans for equipment with INAM and to develop a work plan and budget for agro-meteorological staff for the following 5 years. During this initial year, the expert will support INAM to set the overall national institutional framework in place for the establishment of a basic agro-meteorological system in Mozambique. He/She will then gradually reduce his/her direct support to INAM (3-month assignment for years 2, 3 and 4) so that by the end of the project INAM staff will be able to operate the national agro-meteorological system independently and will be competent and confident to continue to strengthen the agro-meteorological system in Mozambique following the end of the project.

### 3. Tasks

- Defining a detailed work plan to cover the duration of the assignment and to be agreed with NCU and CTA;
- Coordinating, guiding, monitoring and supervising the implementation of all activities under output 2.5 and related outputs including the recruitment of national staff, consultants and development related Terms of Reference;
- Compiling and preparing the necessary documents for the procurement of services, goods and supplies under the project;
- Assisting in monitoring the financial and administrative management of output 2.5 of the project;
- Coordinating the identification of needs on meteorological and telecommunication equipment, hardware, procurement, provision, installation, inspection, put into operation and maintenance;
- Coordinating the establishment of technical and human capacity of the staff within the Agromet Units of INAM, IIAM and DNSA-DCAP;

- Assisting in the selection, installation and exploitation of appropriate software for data collection, archiving, processing and analysis for the three Agromet Units;
- Planning and coordinating all agro-meteorological activities of the three Agromet Units;
- Liaising with World Bank Mozambique's Strategic Program for Climate Resilience (SPCR): Transforming Hydrological and Meteorological Services Project in all meteorology-related activities;
- Preparing appropriate documents and organizing the regular workshops in the framework of the Farmers Field School (FFS) of the project;
- Coordinating the preparation of detailed manuals concerning the procedure for data collection, processing, analysis and dissemination, in collaboration with project staff and consultants;
- Coordinating the identification of training needs and related curricula for all required staff of the project and the elaboration of specific training programs with appropriate institutions;
- Coordinating the development and implementation of procedures and formats for disseminating climate and agro-meteorological information in the framework of Farmers Field School (FFS);
- Assisting in the on-the-job training in order to develop the national capacity to sustain the system beyond the end of the project;
- Ensuring the preparation of annual work plans and budget revisions are timely completed and submitted;
- Maintaining and developing the partnership with other ministries, departments and agencies for relevant inputs and outputs;
- Controlling expenditures and assure adequate management of resources concerning output 2.5 of the project;
- Providing support to the Project Steering Committee (PSC) to ensure their regular monitoring of the day-to-day implementation of the activities, review the achievements and plans of the project on a regular basis, facilitate the resolution of the problems met and advise the NPC and CTA on any matter relevant to project's activities;
- Providing progress reports and other technical reports according to FAO format and guidelines;
- Providing a detailed end-of-assignment report describing the work undertaken, progress towards achieving assignment objectives together with a detailed work plan concerning the activities to be performed by national staff during year 2 of the project;
- Undertake any other duties as may be required by the NPC and CTA.

#### 4. Qualifications

- Master's degree in agro-meteorology, meteorology, agronomy, environmental studies or closely related fields. Technical and practical knowledge of the impacts' assessment of climate variability and climate change on agriculture is critical.
- A minimum of 7 years of progressive and relevant experience in the field of operational agro-meteorology.
- Experience in agro-meteorology activities for agriculture and food security, particularly in developing countries.
- Experience in the use of specific agro-meteorological software for crop monitoring and yield forecasting.
- Experience in producing and disseminating agro-climate information for rural farming communities.

- Experience in the use of remote sensing products and GIS software for environmental monitoring.
- Excellent understanding of the linkages among agriculture, climate variability and climate change adaptation in rural farming communities.
- Past working experience in Southern Africa would be an asset.
- Excellent knowledge of English including writing and communication skills.
- Good knowledge of Portuguese, spoken and written

## **INTERNATIONAL EXPERT ON ASSESSING RESILIENCE TO CLIMATE CHANGE AND CLIMATE VULNERABILITY IN AGRO-PASTORAL AREAS (SHARP)**

### 1. Scope

13 months.

Under the supervision of: LTO, CTA, NPC

Reporting to: CTA, NPC and LTO

Internationally recruited.

### 2. Tasks

The Expert will be responsible, but not limited, to perform the following tasks and duties:

- Designing and developing the self-assessment methodology;
- Training national experts in the use of the self-assessment methodology;
- As possible, support farmers and pastoralists to self-assess resilience actions to be undertaken in the FFS including: assessment of FFS vulnerability to climate change and CCA needs;
- Support farmers in the understanding of their self-assessment to undertake ecosystem based adaptation practices, as appropriate;
- Ensure that self-assessment information feeds into community decision making in order to support changes in activities and practices;
- Support an analysis of local technologies and practices, to be carried in collaboration with members of FFS, and that can subsequently help inform the FFS curriculum on issues related to climate resilience; and
- Provide a database from which future governmental projects and programmes will be able to draw to meet local needs.

### 3. Qualifications and Selection criteria

- Advanced university degree in engineering, agriculture, or natural resources;
- Level and relevance of experience regarding climate related environmental risk and farmers/pastoralists resilience, including the SHARP tool;
- Level and relevance of experience in assessment of FFS, with emphasis on APFS, in Africa;
- Recognized expert in participatory activities in Africa;
- Level of experience in training smallholders in self-assessment;
- Capacity to manage tasks in a systematic and efficient manner with judgment, analysis, independence and initiative;
- Capacity to communicate clearly both verbally and in writing;
- Demonstrated ability to establish good working relationship and team spirit both inside the Organization and with external partners such as government officers, UN partners, donors or NGOs; and
- Ability to use computer software such as MS Office and other project management software and database.
- Portuguese language skills preferential

## **INTERNATIONAL PESTICIDE RISK MANAGEMENT EXPERT**

### 1. Scope

3 months during the entire duration of the project.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Tasks

- Contribute to the improvement of FFS curricula with regards to Pesticide Risk Management;
- Identify and disseminate pesticide risk management practices for FFS located in urban areas of three provinces, namely Manica, Tete and Gaza;
- Undertake training of extensionists in pesticide risk management practices as appropriate; and
- Synthesise and collect best practices and lessons learned in disseminating pesticide risk management practices for FFS located in urban areas in Mozambique.

### 3. Qualifications and Selection criteria

- Advanced university degree in agriculture
- At least 5 year experience in project management
- Strong scientific experience in pesticide risk management
- Experience in pesticide risk management in Mozambique an asset
- Portuguese language skills preferential

## **INTERNATIONAL EXTENSION SERVICES EXPERT**

### 1. Scope

12 months during the entire duration of the project.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Tasks

- Support all activities under output 3.4. related to the Comparative assessments of the efficiency and cost-effectiveness of FFS and non FFS-based extension approaches for up-scaling CCA;
- Conduct a baseline study on existing FFS and non-FFS extension services in PY1;
- Carry out comparative assessments of efficiency and cost-effectiveness of FFS and non-FFS extension methods in at least 2 selected districts of each province in PY3; and
- Support the organization of a workshop at national level to present and disseminate the results and recommendations of the comparative assessment, and support the publication and dissemination of a report on the comparative assessment in PY4.

### 3. Qualifications and Selection criteria

- Advanced university degree in agriculture, rural development or natural resources
- At least 10 year project management
- Strong scientific expertise in extension services with proven experience in Eastern and Southern Africa
- Portuguese language skills preferential

## **CLIMASOFT SOFTWARE EXPERT**

### 1. Scope

This position is contract position for the duration of 3 months.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Objective

To ensure the implementation of Climasoft climate database management system in INAM's facilities

### 3. Tasks

- Installation of ClimaSoft Software; and
- Provide related training to national staff.

### 4. Qualifications

- Higher degree related to agro-meteorology;
- 5 years of experience in ClimaSoft software
- Demonstrated previous experience working with the field school approach to extension or with similar approaches;
- Previous experience working with international partners on related issues; and
- Portuguese language skills preferential.

## **AMESD SATELLITE SYSTEM EXPERT**

### 1. Scope

This position is contract position for the duration of 1 months.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Objective

To ensure the implementation of the AMESD satellite system at DNSA-DCAP.

### 3. Tasks

- Installation of AMESD System; and
- Provide related training to national staff.

### 4. Qualifications

- Higher degree related to agro-meteorology;
- 5 years of experience in AMESD Satellite Systems
- Previous experience working with international partners on related issues; and
- Portuguese language skills preferential.

## **FAO-ISIS SOFTWARE EXPERT**

### 1. Scope

This position is contract position for the duration of 1 months.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Objective

To ensure the implementation of FAO ISIS software.

### 3. Tasks

- Installation of FAO-ISIS Software; and
- Provide related training to national staff.

### 4. Qualifications

- Higher degree related to agro-meteorology;
- 5 years of experience in FAO-ISIS Software
- Previous experience working with international partners on related issues; and
- Portuguese language skills preferential.

## **EC-SRC-SPIRITS SOFTWARE EXPERT**

### 1. Scope

This position is contract position for the duration of 1 months.

Under the supervision of: CTA, NPC

Reporting to: CTA, NPC

### 2. Objective

To ensure the implementation of EC-SRC-SPIRITS Software in IIAM facilities

### 3. Tasks

- Installation of EC-SRC-SPIRITS Software; and
- Provide related training to national staff.

### 4. Qualifications

- Higher degree related to agro-meterology;
- 5 years of experience in EC-SRC-SPIRITS Software
- Previous experience working with international partners on related issues; and
- Portuguese language skills preferential.

## **EXTERNAL EVALUATION TEAM**

**(In case of mid-term evaluation and final evaluation)**

### 1. Scope

Under the supervision of: FAO Office of Evaluation

Reporting to: OED, FAO Office of Evaluation

Internationally recruited.

### 2. Tasks

Under the ultimate responsibility of FAO Office of Evaluation, in accordance with FAO evaluation procedures and taking into consideration evolving guidance from the GEF Evaluation Office and in close consultation with the Project Coordinator, FAO budget holder (FAO Mozambique), FAO Lead Technical Unit the external evaluation team will three months prior to the terminal review meeting of the project partners conduct an independent final evaluation. The final evaluation will review project impact, analyze sustainability of results and whether the project has achieved its adaptation objectives and benchmarks. The evaluation will furthermore provide recommendations for follow-up actions.

The evaluation will, inter alia:

- Review the effectiveness, efficiency and timeliness of project implementation;
- Analyze effectiveness of implementation and partnership arrangements;
- Identify issues requiring decisions and remedial actions to insure sustainability of project outcomes and outputs;
- Identify lessons learned about project design, implementation and management;
- Highlight technical achievements and lessons learned; and
- Prepare a final evaluation report.

Some critical issues to be evaluated in the midterm and final evaluations will be:

- Progress in improving grassland status and palatability;
- Functioning and effectiveness of the FFS network and of the inter-institutional coordination mechanism in developing and implementing integrated planning for CCA;
- Level of capacities and involvement of local staff in terms of improved management effectiveness and land management plan implementation capability; and
- Level of involvement of farmers and herders in land management models.

### 3. Qualification and Selection Criteria

- The team should include professionals specialized in sustainable agriculture and natural resources management;
- demonstrated experience in project evaluation;
- 10 years of professional experience in the field.
- Previous working experience in the region
- Experience in project coordination with international bodies, will be especially valuable; and

- Fluency in English and Portuguese preferential.

## APPENDIX 6: COFINANCING LETTERS



Cofinancing\_Letter\_FA  
O\_Signed.pdf



Cofinancing\_Letter\_M  
ASA\_Signed.pdf



Cofinancing\_Letter\_MI  
TADER\_Signed.pdf

## **APPENDIX 7: BASELINE ANALYSIS OF THE SOIL AND PLANT NUTRITION LABORATORY OF THE INSTITUTO SUPERIOR POLITECNICO DE MANICA**

The elements provided below were collected in November 2014 in collaboration with the Instituto Superior Politécnico de Manica.

### **Installed Capacity**

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- a) SAN<sup>++</sup> Continuous flow analyser from SKALAR: it testes Nitrate and nitrite (NO<sub>3</sub>+NO<sub>2</sub>), ammonium (NH<sub>4</sub>), Total-N, phosphate (P), potassium (K), sodium (Na), calcium (Ca) and magnesium (Mg) in soil, plant and fertilizer extracts. The SAN<sup>++</sup> has an initial capacity for processing 100 samples per cycle of analysis that takes around three hours. Considering a normal working day the lab would have an installed capacity to conduct 300-500 tests per nutrient a day. The Skalar CFA that we have it's the last generation of its kind and can be upgraded to include extra elements through the purchase of additional modules. This equipment has been acquired through a grant from USAID through AgriFUTURO.
- b) Recently a module holder for the analysis of iron (Fe), copper (Cu), zinc (Zn) and boron (B) in soil, plant and fertilizer extracts was added to the Skalar SAN<sup>++</sup>.
- c) A Seal Analytical block digestion unit (BD50) for the analysis of total Kjeldhal nitrogen (TKN) and total phosphorus. The BD50 has a racket with a 50 digestion tubes per cycle.
- d) Furnace for soil carbon (SOC) analysis. The equipment for the SOC has been acquired through a collaborative research grants south-north with the University College of Leuven in Belgium and was funded by VLIR-UOS.
- e) Set the pH, electrical conductivity and total dissolved salt in soil and water.
- f) Two ovens used mainly in analysis of dry matter content and moisture on soil and plant samples.
- g) A wide range of soil and plant sampling equipment's.

### **Operational Costs**

The soil and plant nutrition lab at ISPM has an annual operational cost of 68700 USD split between the payment of a labour cost, lab supplies, and services and finally to cover research and extension costs. Because this is a newly established laboratory plans for a further expansion of the existing capacity are in place to double its capacity in the medium and long term. These costs will be covered by the Government budget during project implementation and will therefore not be charged to the GEF project.

<b>Category</b>	<b>Nature of the expenses</b>	<b>US</b>	
		<b>Dollars</b>	<b>MZM</b>
Personnel	Pay salary for a lab technician and part time labour	12500	400000

Lab supplies	Purchase of reagents, consumables, spare lab ware	25000	800000
Services	Water, electricity, internet and courier cost	5000	160000
Travel	local (fuel and vehicle maintenance cost)	8350	267200
Research and Extension	Training and PCM meetings, field trials and student placement	17850	571200
<b>Total annual operational costs</b>		<b>68700</b>	<b>2198400</b>
<b>Future Investments and Training - Lab expansion and personnel training</b>		<b>75000</b>	<b>2400000</b>

### **Additional Services**

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Apart from the soil and plant testing services, the laboratory provides the following services:

1. Lab related services:

- The lab provides soil sampling in cases where the interested part do not have the right skills and knowledge to collect and pre-handle the samples prior to their postage to the lab. This is an important service in order to avoid sample contamination and guarantee a good quality results. This service is mostly directed to individual local farmer organizations and individual smallholder farmers.
- Provide interpretation of soil analysis results and develop site specific soil fertility management plans;

2. Research and Extension:

- Training to local farmer organizations: as part of the agricultural advisory services, the lab has been working closely with farmer organization in conducting model assisted participatory crop season planning workshops (PCM). The PCM workshops are an interactive process to generate information that can be timely feedback to farmers and help them improve their management practices. Here, we feed climate, soil and management data to the Agricultural Production System Models (APSIM) and develop tentative management changes proposed by farmers to see how these changes can help improve their ability to manage agricultural risk and consequently yield.
- Soil characterization and resource use maps: in order to improve the availability of soil fertility data and management practices among smallholder farmer organizations. At request, the lab conducts soil characterization and develop soil fertility maps and soil fertility management plans for local farmer organization. The soil characterization profiles developed are with the resource allocation maps, and weather data an

important input data to support the modelling work and the participatory crop season planning workshops.

- As part of a partnership with AFAP and DNSA, the lab is part of the national fertilizer quality assurance network. The quality fertilizer quality assurance service is part of the operationalization of the Mozambican Soil Fertility Consortium.

## APPENDIX 8: RESPONSES TO COMMENTS RECEIVED AT PIF APPROVAL

	<b>Comments received from GEF Sec</b>	<b>Action/reference (references refer to FAO Project Document)</b>
1	By CEO Endorsement, the role of local and national CSOs could be further explored.	Section 1.4 presents the key stakeholders who will be involved in the project, including those at the provincial and district levels. Civil Society Organizations that have been identified as potential implementation partners during the inception workshop in Maputo have also been listed here.

	<b>Comments received from US Government</b>	<b>Action/reference (references refer to FAO Project Document)</b>
1	With a view toward further strengthening this PIF, we would like to request FAO, as it prepares the draft final project document for CEO endorsement, to provide more information regarding the effectiveness of the current FFS program and how the additional activities funded by the LDCF will increase its effectiveness. In other words, how effective has the delivery of agricultural techniques or technology been thus far?	The overall approach to FFS is discussed in Section 2.1.1, which integrates a section specifically on FFS in Mozambique. Section 1.5 on lessons learned also describes the effectiveness of the FFS approach, based on scientific literature. Furthermore, the additionality section clearly demonstrates how the activities funded by the LDCF will be a cost-effective measure to integrate CCA in current FFS projects in Mozambique. Further explanations on the FFS approach and its effectiveness are provided for Comment # 2 (below) and in particular for the STAP Comment # 6.
2	Clarify how users will be involved in program design. We note the importance of building understanding of the value of changing practices to incorporate adaptation strategies. Engaging users in the development of the program can be critical for achieving this objective. What plans are in place to ensure that farmers are engaged in shaping the program and how will FAO additionally work with the farmers to ensure they successfully implement the practices learned through FFS?	During the PPG, 2 workshops were organized in Maputo, gathering the views and input from a large variety of stakeholders including direct beneficiaries. These initial consultation meetings should ensure that users are (i) aware of the project's overall objective, and

		<p>(ii) that their views were comprehensively covered in the initial project design. Various provincial and district level workshops and trainings are planned through Component 1 and Component 2 to make sure that all stakeholders are engaged all along the project implementation.</p> <p>Moreover, the project design recognizes that cultural values (e.g. linked to food preparation/preferences) and traditions (such as agricultural production methods) in a rural set-ups hardly change unless farmers see an intermediate need for a change. In order to ensure social acceptance by targeted groups, and eventual wide-scale sustainable adoption of improved crops, as well as climate change adapted tools and practices, the project will use participatory approaches such as the FFS and SHARP. These approaches will make sure that farmers firstly receive all necessary information based on their own knowledge and experience (e.g. changing climate and expected impact on crops and livelihood), and secondly that all the interventions will meet, not only the norm of the social system, but also the different needs of women and men. In this way it will be the farmers having a direct impact on the detailed project design along the process of implementation according to their priorities and needs.</p>
3	<p>Provide more information on how women will be included in the benefits of this project, beyond the statements that women are affected by climate change. This could include what efforts are already in place to ensure that women participate in FFS programs and what will be added to ensure that their needs are reflected in the new curriculum and that they have access to the expanded FFS resources</p>	<p>The involvement and inclusion of women is discussed in Section 1.2.3: <i>Additionality</i>. At present, FFS are tailored for men and women needs. Different FFS curricula are designed for different farming systems and crops. These different FFS modules allow for a distinct set of activities focusing on</p>

		<p>crops that are traditionally grown by men and women. However, no FFS in place takes into consideration CC.</p> <p>More specifically, in the present project Component 2 aims at securing a high participation of women in the FFS training provided by the updated curricula with clear targets (30%, see Outcome indicators 2.1 and 2.2).</p> <p>Technologies and approaches will be tailored for men and women's needs and traditions throughout the implementation of the project. Also, gender tools such as Participatory Rural Appraisals (PRA) will be applied.</p>
4	Describe how it will work with organizations like ACMAD and AGRYHMET to characterize climate risks to inform when adaptation strategies should be applied	<p>INAM will be the service provider for the dissemination of agro-meteorological data. The proposed project will build on the work of ACMAD and AGRYHMET on meteorology and on climate modelling, forecasting, and prediction. INAM and other national stakeholders will continue collaborating with ACMAD and AGRYHMET (although AGRYHMET does not directly work in Mozambique) throughout the project's lifetime in order to facilitate the flow of accurate information. This will improve the quality of agro-meteorological data available to farmers and pastoralists. The agro-meteorological information will be tailored to suit the needs of agro-pastoralists to enable a better understanding of climate variability and climate change in their region, and highlight risk levels, thereby improving their decision-making ability in terms of agricultural risk management.</p> <p>Furthermore, some training will be organised at ACMAD, as discussed</p>

		in Section 2.4, under Component 2, focusing on training opportunities in agro-meteorology.
5	Expand on what plans are in place to ensure the continuation of the climate adaptation education beyond the time line of the proposal, particularly if there is a lack of capital investment and positive incentives for sustainable rural development (pg. 6)	The efficiency and sustainability of the FFS approach is explained in more details in Section 1.5 on lessons learned and Section 5 on sustainability. As discussed in the FFS approach section, the bottom-up approach of FFS is aimed at ensuring sustainability of the project, by providing training opportunities and training of trainers. The FFS is based on a network of local facilitators that will ensure sustainability of climate change adaptation education. Furthermore, Component 3 of the project aims at integrating CCA strategies (which include the FFS as effective extension system) in policies as a means to ensure sustainability..

	<b>Comments received from UK Government</b>	<b>Action/reference (references refer to FAO Project Document)</b>
1	The proposal needs to be clearer on how this will support implementation of the new national climate change strategy (this is mentioned but then not discussed as a key policy document) and in particular how indicators can be aligned with the national M&E framework for the strategy (currently under discussion between ministries - and with support of WB, DFID and GIZ)	The new Gender, Environment, and Climate Change Strategy and Action Plan is presented in Section 1.2.1 as part of the baseline information required in the project document.  Several project activities will be linked to this strategy and action plan as described in the project strategy, especially under Output 1.2 and 1.3.
2	Mention should also be made that the World Bank's Development Policy Operation (DPO) includes a policy action series to support the scale-up of climate resilient agriculture. It is important that FAO coordinates closely with World Bank on this issue.	See comment below
3	The discussion of the SPCR and PPCR are inaccurate in places, this also points a need for much closer coordination with World Bank e.g. the PPCR is not 'sponsored' by the World Bank - it is a multi-donor TF that is administered by WB, the names of PPCR-	The project will closely collaborate with the World Bank SPCR and PPCR as elaborated on in Section 4.1.2 on coordination and collaborations with other projects

	supported pilots are also wrong.	and as a result of Output 2.5.
4	The Ministry of Agriculture's department of extension services do not appear to be aware of this document (perhaps they were involved in initial discussions but not since?) and we would therefore urge the proponents to share this document and provide sufficient time for their review and inputs before this proceeds further. Their inputs will be crucial for ensuring that this support is harmonised with Government policy and emerging efforts to scale-up climate resilient agriculture.	Indeed, the role of MASA has been altered since the PIF and is now playing the lead role on the implementation of the project. MASA and the National Directorate for Agriculture Extension (DNEA) are presented in the Stakeholder Analysis Section, as well as the section on Institutional Arrangements. DNEA will be a lead department in the implementation of the project. MASA officers were consulted and were involved in planning meetings, and co-organised the project validation workshop held in November 2014.
5	Overall though, we are very pleased to see FAO coming in behind climate resilient agriculture but better coordination should be strongly encouraged	Since the PIF, the roles and responsibilities of all key stakeholders have been discussed and more clearly defined. An organizational chart is presented in Section 4.2.4 which demonstrates the institutional arrangements for the implementation of the project among all the key stakeholders.

	<b>Comments received from German Government</b>	<b>Action/reference (references refer to FAO Project Document)</b>
1	Germany welcomes the proposed project and its integration into activities and efforts of several national programmes and interventions by other donors. Germany would like to recommend that experiences made within the mainstreaming activities of component 1 and 3, as well as the knowledge resulting from the best practices research and piloting climate resilient crops and varieties, are managed in order to make them accessible to others. This will serve upscaling activities and could also feed in the revision of the 'Strategic Plan for Development of the Agricultural Sector' (PEDSA) and the 'National Investment Program for the Agricultural Sector' (PNISA).	The results, experiences, best practices, and lessons learned of the project will be available and discussed through a variety of forums, such as publications and presentations for all to benefit. Component 3 of the project is solely based on mainstreaming CCA strategies into agricultural sector policies and programs with emphasis on rural-extension/outreach strategies and plans. Therefore, knowledge and experiences gained through the implementation of the project will indeed feed into the revision of the PEDSA and the PNISA.

		Output 1.5 focuses on producing and disseminating climate resilient crops and seeds. The knowledge resulting from the best practices research and piloting climate resilient crop and varieties will be accessible to a wide range of stakeholders, since it will be developed in direct collaboration with IIAM, local smallholder farmers, extension officers and local seed companies.
2	In addition, Germany suggests that the proposed project considers experiences currently being made in the project ‘Adaptation to climate change in rural and urban areas of Mozambique’ (ACC RUA) financed by the German Federal Ministry for Economic Cooperation and Development (BMZ). This project implements early warning systems on a demonstration basis and raises awareness at the local level in rural areas as well as in informal settlements in the city of Beira. It further strengthens the capacity of provincial and district administrations, committees, cooperatives and non-governmental organizations to enable them to implement adaptation measures with target groups. At the national level ACC RUA supports the ‘National Disaster Reduction Institute’ (INGC) in integrating gender issues and using the monitoring of adaptation activities to manage interventions strategically. It further supports the ‘Ministry of Environment’ in its adaptation mainstreaming activities and the climate proofing of land use planning.	Meetings were held during PPG with the GIZ coordinator in Maputo and linkages were discussed. The GIZ coordinator was also invited to the validation workshop.  The vast majority of activities, which will be implemented through this LDCF projects, complement the ones implemented by ACC RUA. CCA capacities and awareness of district and provincial administration, especially extension services, will be strengthened. Support will also be provided to INGC CERUM to build their capacities in CCA monitoring and to provide support to monitor progress towards more climate-proof production systems. MITADER will also be supported in developing Local Adaptation Plans for the 15 targeted districts based on its own existing methodology.

	<b>Comments received from STAP</b>	<b>Action/reference (references refer to FAO Project Document)</b>
1	It would be useful to express more succinctly the project objective, so the adaptation objectives are explicit. Currently, the objectives are not clearly worded.	The objectives have been revised accordingly.
2	STAP recommends specifying further the expected outputs and outcomes by identifying indicators on what will be measured (example: percentage of soil, water, and crop management	The project aims to build capacity, thus most measurable indicators are with regards to the number of participants trained, the percentage of women benefiting from the trainings, the percentage of

	practices adopted by farmers (sub-activity 1.1.5)). Doing so, will help measure the intended effect of each intervention. Also, it appears as if some outputs are outcomes, and vice-versa. The project developers may wish to review the project framework in this regard.	targeted groups adopting adaptation technologies and the percentage of target groups that have access to agro-meteorological techniques (see outcome indicators 1.2, 2.1 and 2.2). These indicators relate to GEF/LDCF AMAT indicators.  The project framework has been revised and updated to make it more consistent.
3	Although the concept of farmer field schools is widely known in the agricultural field, STAP suggests defining what is meant by the "farmer field schools methodology", and how it has proven (or intends) to increase agricultural productivity and improve farmers' livelihoods. The concept appears not to be defined in the proposal, and the evidence of farmer field schools could be detailed further by drawing from sources (example: unpublished rigorous studies, published documents). More importantly, the proposal needs to assess the farmer field schools approach with regards to climate change adaptation and climate resilience. This information appears absent in the proposal.	Section 2.1.1 presents the FFS approach, as well as its weakness and benefits, while also discussing how CCA has been integrated. This is followed by a description of the FFS approach in Mozambique and its current successes in the training of farmers and the application of new agricultural approaches.  The project will also use the SHARP tool for the establishment of FFS as participatory community analysis of climate resilience.  Additional elements responding to this comment are also provided in the answer to STAP Comment #6 below.
4	Component 1, 2 and 3 seek to involve different individuals (and institution) potentially with distinct preferences and needs on mainstreaming climate resilience and development strategies across different levels at the community, district, and national levels. Understanding the inter-linkages between how farmers perceive and address climate resilience amidst other on-going adaptation efforts stemming from baseline projects, district and national attempts, is imperative to formulating appropriate adaptation responses and policies. This notion is detailed further in the following paper that provides a useful framework for working across multiple institutional scales on climate change adaptation in Mozambique. FAO may wish to draw upon this literature to strengthen the role of multiple engagements (institutions) across the components, given the number of stakeholders involved and the intended outcomes: Osbahr, H. et al "Effective livelihood adaptation to climate change disturbance: Scale dimensions of practice in Mozambique". Geoforum 39, page 1951-1964. 2008.	The article is referenced in Section 4.2.1 in a footnote. It has been read and taken into consideration in the development of the institutional arrangements in the project document.
5	In component 2, STAP recommends defining further the climate-resilient agricultural practices the project will strengthen. Currently,	The climate-resilient agricultural practices are detailed under Activity 1.3.2 and 2.1.1 as follows: Use of soil analysis, conservation agriculture practices, use of

	<p>agricultural practices are only broadly defined in the proposal in component 2. Additionally, it appears the proposal does not identify the livestock management practices for example, will these include mixed crop-livestock approaches? It also would be valuable to detail further how climate vulnerability is expected to influence the agro-ecological conditions in each of the target areas, and how each proposed practice/technology intends to reduce farmers and pastoralists vulnerability to climate change. The project developers may wish to refer to the following paper that analyzes the determinants of adaptation measures in agricultural, and livestock systems: Bryan, E. et al. "Adapting agriculture to climate change in Kenya: Household strategies and determinants". Journal of Environmental Management. (2013). Pages, 26-35.</p>	<p>compost, IPPM, erosion control measures, reforestation, integration of crop-livestock productions, use of fodder and forages into crop rotation, use of adapted seeds of major crops and seeds adapted to animal use, introduction of perennial crops and agroforestry, agro-ecology use of cover crops with nitrogen fixing species, and mitigation options for pesticides-induced risks.</p> <p>The potential list of practices does include mixed crop-livestock production practices.</p> <p>The project will not analyze climate vulnerability as such. However, appropriate agro-meteorological decision support tools will help farmers to take informed decisions on the technologies to be applied. Also, the project will analyze initial farmers' and herders' resilience to climate change through the use of SHARP. Although not focusing in climate vulnerability, the tool allows analyzing the pros and cons of the present agricultural techniques, and will help farmers and herders to rank their priority interventions for climate resilience.</p> <p>As stated in the article Bryan, E. et al. "Adapting agriculture to climate change in Kenya: Household strategies and determinants", even though few households were able to make productive investment in their farming operation to adapt to climate change, effective policy lever exists to support the adoption of adaptation strategies. Access to extension services and climate information is for instance deemed effective to incentivize farmers to adopt adaptation practices. Participants in the study also considered that off-farm investments, such as increasing human and organizational capacity and technical trainings could play an important role in the adoption of new technologies. It can therefore be foreseen that the proposed project will introduce significant changes, since it will provide many of the above mentioned determinants to change. Collective work and raising awareness on the efficiency of the practices promoted is also considered as an important means of creating change in farming practices, which is at the heart of the FFS approach and the proposed project.</p>
6	<p>As noted above, STAP is pleased that FAO will draw upon its experiences on farmer field schools, including FAO/GEF projects relying on the methodology. Thus, STAP suggests for FAO to draw-upon its recommendations on GEF project #4270 (Angola). These recommendations include the following:</p> <p>i. Based on experiences from East Africa, the literature suggests the evidence base for</p>	<p>(i) The article that was mentioned, proposes measurements that are mostly related to farm participation, as well as crop and livestock production. As a result, the article demonstrates the effectiveness of farmer groups in enhancing access to rural services, and improved income and productivity. However, at the same time there are significant differences in effectiveness due to country, poverty, gender, fertility, and literacy rate levels. FAO East Africa is adopting</p>

<p>success in using the farmer field schools (FFS) model is somewhat limited, particularly on the impact on agricultural production and income (see Davis, K. et al "Impact of Farmer Field Schools on Agricultural Productivity and Poverty in East Africa". World Development, 40, 402-413. 2012). STAP urges the proponents to adopt a more experimental and learning-centered approach to FFS to identify the model that best suits Mozambique's socio-economic and agricultural/livestock systems.</p> <p>ii. FAO also may wish to consider building experimental design into the proposal, given their significant experience with farmer field schools in Africa. By doing so, FAO would help strengthen evidence on the impact of farmer field schools on agricultural and rangeland management, and the socioeconomic conditions of small-herders and farmers. For further consultation on how to include experimental design in GEF projects, FAO may wish to consult STAP's advisory document "Experimental Project Designs in the Global Environment Facility: Designing projects to create evidence and catalyze investments to secure global environmental benefits, 2011".</p>	<p>an M&amp;E scheme depicting a wider spectrum of livelihood indicators that are not taken into consideration by the article. We consider FFS to be an experimental and learning-centered approach that bases its own success on community involvement through validation, adaptation and adoption of technologies and approaches. The disagreement in monitoring processes depends on the great differences existing between FFS approaches. For this we thank STAP for highlighting the importance of a more centered learning approach. Findings from the article "Farmer Field Schools in rural Kenya: A transformative learning experience" (Duveskog et al., 2010) revealed significant impacts demonstrated by a personal transformation; changes in gender roles and relations, customs and traditions, community relations, and an increase in the economic development of households. Friis-Hansen et al., 2012, also suggested that the most significant impact of FFS could be viewed in terms of building the capacity of local people to make choices and make decisions that ultimately lead to an increased uptake of agricultural innovations, access to services and market access, as well as collective action. A major conclusion of the study is that agricultural development programs should focus more on the processes of empowering farmers as opposed to technical solutions that characterize most programs, in order to create an appropriate mix of technological and social advancements for a development process that is sustainable in the nature. The recent publication, "Supporting communities in building resilience through APFS" (<a href="http://www.fao.org/docrep/019/i3512e/i3512e.pdf">http://www.fao.org/docrep/019/i3512e/i3512e.pdf</a>), explores potentials for Uganda's success story to be converted to a framework for policy recommendations. Tola (Ethiopia) reports that, the APFS became a community managed learning platform that shows a remarkable achievement from the pilot stage.</p> <p>With the aim of discussing the impacts of FFS at a global arena and to confront opinions in future development of FFS, FAO organized a FFS global review (<a href="https://dgroups.org/fao/ffs-eforum2">https://dgroups.org/fao/ffs-eforum2</a>). The results will soon be published, reflecting a global consensus on the FFS success stories. The focus was not on "production" as the forum widely discussed the shift in the FFS's concept to other expected impacts. One central comment describes that "A field school lies in the methodology of delivery for which there might be certain uniformity despite the subject in focus. This is characterizing the ongoing shift that FFS have taken from IPM/IPPM FFS, to poultry FFS, forestry FFS, climate change FFS, CMDRR FFS,</p>
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	<p>pastoral FS. [...] Integration and holistic planning is the issue here”. That is to deal with the success of ecosystem management, that can only be achieved through involving a wide range of stakeholders. In fact, while certain actions can only be handled by the communities, others require the government, local leaders and indigenous groups to be actively involved in the process to realize success and achieve wider impacts. Also, certain actions may require specialized institutions to tap into the cohesive strength of the FFS. For this, the method also has to build the capacities of different stakeholders to support certain activities. The kind of information/training passed on to the different levels of stakeholders is different. What is appropriate and relevant to the farmer will differ from what is appropriate and relevant to government officials. With this expanded APFS concept, a forum member from Kenya reported that “livelihood improvement for the beneficiaries is enormous and sustainability aspects have been ensured while commercialization of most activities was achieved as farmers understood the science associated with each technology”. A comment from a post-socialist country, Kyrgyzstan, explains that the “FFS served the goal of facilitating the change from collectivity-based to private farming. However, when visiting FFS training programmes at that time, one got the distinct impression that they were of considerable value to farmers in increasing their self-confidence and self-reliance in coping with the new challenges”. This expanded FFS system is based on endogenous farmers’ and herders’ knowledge. It supports expanded community and decision makers’ capacity building, and harmonizes various approaches into a single tool and will be the foundation leading to the success of the present project.</p> <p>(ii) It would be valuable to strengthen the evidence of the impact that FFSs have on agriculture and rangeland. Nonetheless, we think there is not the possibility to apply an experimental design in view of the various M&amp;E suggestions which are present in many of the STAP comments (see Comment 7). During the development of similar GEF projects, FAO was requested to decrease the quantity of knowledge related activities, as well as to reduce the amount of GEF funds for soft activities. FAO was also requested to assign more resources to activities on the ground. In this framework, the use of an elaborate monitoring scheme diverts resources and risks going against GEF reviewer requests.</p>
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7	<p>It appears that a significant proportion of small-holder farmers are women in Mozambique (<a href="http://www.wfp.org/purchase-progress/blog/mozambique-%E2%80%93-un-agencies-combine-efforts-help-farmers">http://www.wfp.org/purchase-progress/blog/mozambique-%E2%80%93-un-agencies-combine-efforts-help-farmers</a>) If the same gender distribution characterizes the agricultural, or livestock, sector in the target areas, STAP highly encourages FAO to further delineate the proposed farmer field schools by gender. The reference cited above (Davis, K et al), also provides compelling evidence on the impact of farmer field schools on female-headed households ("At the project level, per capita agricultural (crop and livestock) income of female headed households increased by 187 % while the equivalent income for male-headed households did not change significantly at 10% level".)</p>	<p>Promoted technologies will be specifically targeting both men and women, as explained in the project strategy.</p> <p>Most indicators set-out for monitoring results are gender disaggregated and will contribute to measure the impact of FFS on female headed household incomes. 30% of direct beneficiaries will target specifically women.</p>
8	<p>In the full proposal, STAP recommends defining more explicitly the adaptation benefits, and identifying indicators for each one. This will help estimate and monitor the adaptation outcomes, and strengthen the additional cost reasoning.</p>	<p>Adaptation benefits have been defined in the project strategy (outcomes and outputs) and specific monitoring indicators have been developed to measure adaptation outcomes. This is detailed in Section 2.3.</p>