# Green Climate Fund

## Climate-resilient food security for women and men smallholders in Mozambique through integrated risk management

## Annex 2 - Feasibility Report

### Context

#### 1.1 Brief country overview

Mozambique is located in the Southern Africa region and is bordered by Tanzania, Malawi and Zambia to the north, Zimbabwe to the west, South Africa and Swaziland to the south, and the Mozambique Channel of the Indian Ocean to the east. The topography of Mozambique is predominantly rugged highlands in the north-west and lowlands in the south and along the east coast (Figure 1). These topological regions are divided by the Zambezi River which enters the country from Zambia and flows to the Indian Ocean. Other key rivers include the Limpopo River in the south and the Ruvuma River in the north. Lakes are also a key feature of northern Mozambique.

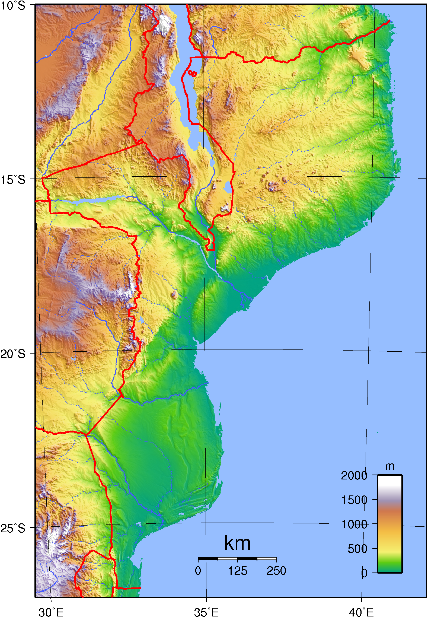


Figure 1– Topography of Mozambique. Source: <https://commons.wikimedia.org/wiki/File:Mozambique_Topography.png>,

Mozambique is a large country with great diversity. The country is divided into 11 provinces, 154 districts, and 407 administrative posts. In addition, there are 10 different agro-ecological zones, based on the varied topography, climate, biodiversity, and soil profile of the country. Building on the 10 agro-ecological zones, there are 26 livelihood zones defined by FEWSNET & SETSAN (2014). These are shown in Figure 2 below.

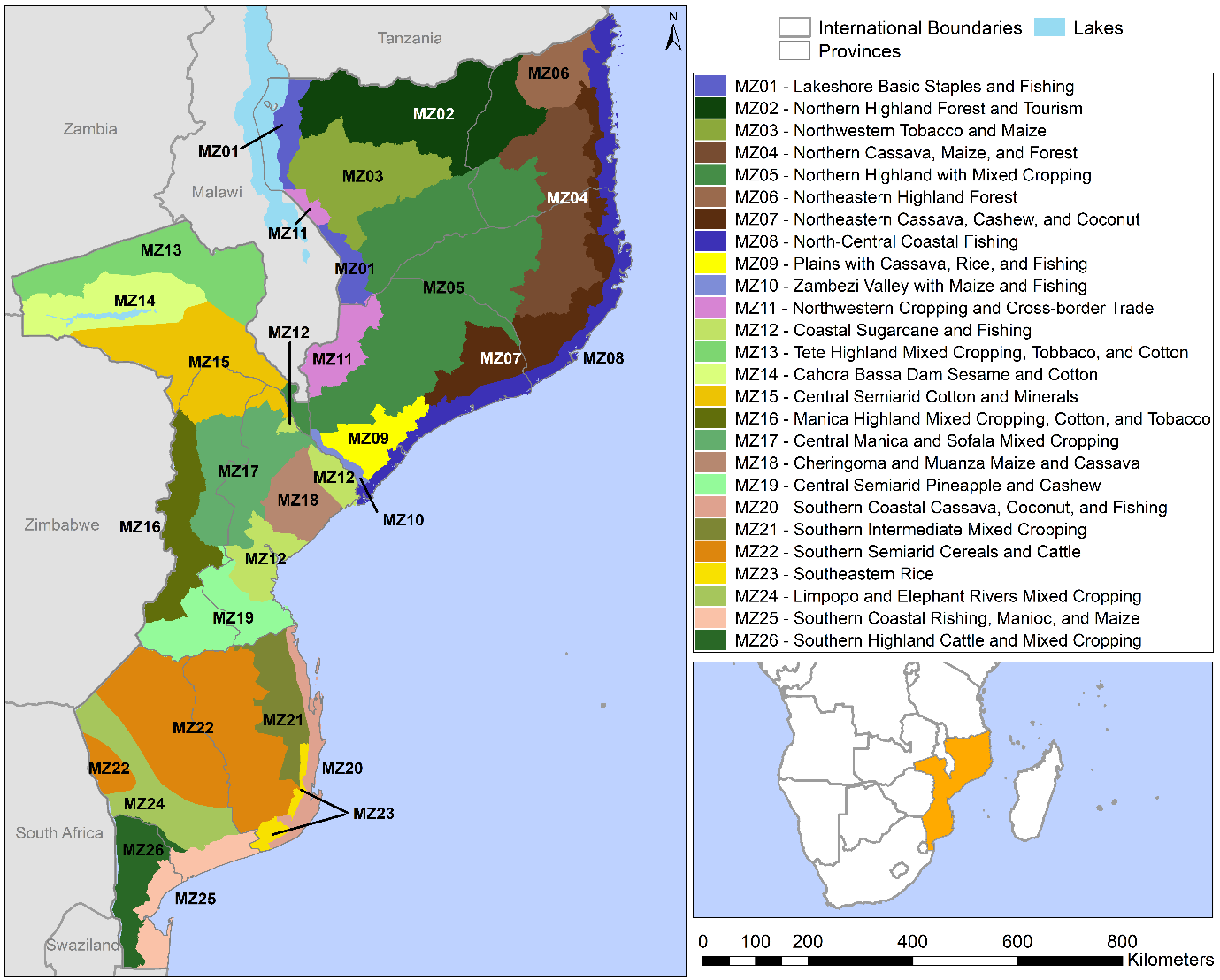


Figure 2 - Livelihood zones of Mozambique, as defined by the FEWS-NET and SETSAN Livelihood zoning anaysis (FEWS-NET & SETSAN, 2014).

Mozambique is ranked 178 among 186 countries in terms of the Human Development Index (HDI, 2014). The country has a high poverty intensity as demonstrated by marked deprivations across 65 percent of the indicators considered for the HDI calculation. Poverty constitutes 55 percent of the population, mainly in rural areas, who live below the national poverty line set at 18.40 Meticais per day (2011). Some progress has been made in terms of poverty reduction in recent years. The reduction was possible due to high economic growth rates (average between 7 and 8 percent), which translated to GDP per capita increasing by approximately 5 percent. However, evidence shows that the distribution of income is not equal, undermining the overall poverty reduction potential of the economic growth experienced.

##### Key sectors

The key sectors in Mozambique include agriculture, forestry, fisheries, and livestock. Altogether, these sectors constitute a quarter of Gross Domestic Product (GDP). **Agriculture** is the major contributor to incomes and the economy. 70 percent of the population lives in rural areas and practices agriculture as a main livelihood. The sector is mainly composed of smallholder farmers, growing roots, tubers (cassava), cereals (maize, millet, sorghum, and rice), groundnuts, and pulses. Maize and cassava are the main food crops grown, followed by pulses, roots, and tubers. These crops are mainly produced for local consumption, with the exception of maize in the northern region, which can be exported to the neighboring countries. Crops are grown in largely rain-fed systems, as the reach of irrigation systems in limited and concentrated in a few provinces, which are still underusing these resources (50 percent of the 120,000 hectares of irrigated land were used in 2010).

Mozambique is rich in **fisheries** resources, including inland and marine species, however, the sector contributes only to 2 percent of the GDP. In the period between 2008 and 2014, the small-scale sector constituted 90 percent of the sector and about one-third of the labor force. Industrial and semi-industrialized sectors make up the second largest contribution to the sector, with aquaculture being the smallest sector. In 2012, production reached 189 thousand tons. This compared to the national potential, shows an underutilization of the sector, especially the aquaculture sub-sector.

The **livestock** sector is crucial to the country, because it is used by households as a means of wealth accumulation, not just food security. Livestock production is practiced widely across the country. In 2008, the National Agricultural Survey showed that 88 percent of households across the country engage in the sector. The highest production levels are realized in the southern region. The numbers of livestock units show a steady upward trend, with significant decreases experienced during times of conflict (1981-1994). The sector comprises of cattle, goats, pigs, sheep, and chicken. Cattle is mainly concentrated in the southern and central regions, and goats in the central region. Chicken are the most predominant throughout. Livestock production is generally practiced by those who are also in crop production. Therefore, it is mainly a sedentary sector, not marked by pastoral trends.

**Forestry** is increasingly making larger contributions to the economy and local incomes. There are 34 million hectares of forest in the country, equivalent to 41 percent of the country. 8 million hectares of forestland has been lost since 1970. Challenges experienced in smallholder farming production have resulted in the greater exploitation of forest resources (65 percent of deforestation is attributed to agriculture). For example, to increase production of key crops, forest land is being converted to farming purposes. Similarly, forests are being increasingly explored to expand grazing potential for livestock production. Besides this, charcoal production is also adding pressure on the sector. Charcoal offers a viable source of income for rural households, who seek additional income to meet their basic needs, when crop fail. The large demand for charcoal originates from the lack of access to energy for the majority of the rural population.

##### Food and Nutrition Security

Food insecurity in Mozambique remains a key concern, while advances have been made in recent years. For example, food insecurity prevalence dropped from 56 percent of the population in 2003 to 24 percent of the population in 2015. This is a significant reduction of 32 percent in 17 years. Generally, food insecurity is chronic in nature. Food insecurity rises during the lean season (December to March generally, with some regional variations between North and South), when food stores from the previous harvest have been exhausted. With the high occurrence of climatic shocks, which affect food production, since it is mainly rain-fed, the harvest is further limited, meaning that the food stores are minimized and the lean season has been increasing. With shocks of this nature occurring with little time in between to allow households to recover, there has been a negative trend in terms of food security. This creates a complex relationship between chronic and acute food insecurity in the country.

Malnutrition is more pervasive in nature, when compared to food insecurity. For example, malnutrition prevalence has remained stagnant. From 2008 to 2015 the rate dropped only 6 percentage points from 48 to 43 percent. Based on the Demographic and Health Survey of 2011, Cabo Delgado and Nampula, in the north region of the country, have the highest prevalence with over 50 percent of the population experiencing chronic malnutrition. Zambezia, Niassa, Tete, and Manica have the second highest prevalence with over 45 percent of the population experiencing chronic malnutrition. It is also worth noting that 43 percent of the under 5 population overall are chronically malnourished, with a slight gender bias favoring males (difference of 4 percentage points). Key drivers of malnutrition are poverty and poor absorption due to infectious disease and parasitic disease. The key diseases of concern are malaria, HIV, and diarrheal disease.

Access to improved water sources is limited across the country, affecting food production, processing, and consumption. Just over half of the population, 51 percent, have access to improved water sources. The disparity between urban and rural settings is great. In urban areas, 84 percent of the population have access to improved water sources, compared to just 37 percent in rural settings. The main water sources in rural areas are unprotected wells, accounting for 42 percent, and surface water. A key challenge in rural settings is the lack of management of surface water. Mozambique has 104 major river basins which also channels water resources from other countries, however, this is not greatly used or stored.

Table 1 summarizes some of the key challenges across agricultural value chains that negatively affect food security and nutrition.

Table 1 – Drivers of food insecurity in Mozambique

|  |  |
| --- | --- |
| Production | * The country has 36 million hectares of arable land of which only approximately 15 percent is in use. * Food production is predominantly low-input and low-output, as it is mainly done by smallholder farmers in rainfed systems. * Poor access to extension support, irrigation, seeds, fertilizers, pesticides, fodder, veterinary services, grazing areas, and financing options for investment in production. * Production of food staples has increased since the end of the 20th century, but national per capita production has declined in recent years (except for cassava). For maize, productivity is approximately 800 kilograms per hectare which is less than half the average for the southern Africa region. * Aquaculture potential remains unexplored, with the bulk of the fishery sector done by smallholder actors. * Livestock is concentrated in few areas (Southern and central regions) where there is natural pasture for grazing. However, this concentration and dependence on natural pasture limit the growth of the sector. Limited access to veterinary services, also keep production low, and not readily suited for sale. |
| Harvesting and transport | * Overall post-harvest loss rate is unknown for the country. Estimates approximate the loss rate at 25 percent. * For maize specifically, loss rates in the northern and central regions is estimated at 12 percent and 18 percent for the southern region. The regional difference comes from the greater availability of storage facilities in the northern and central regions, when compared to the southern region. * For sorghum and millet, the loss rates are approximately 6 percent throughout the country, reflecting the lower susceptibility of sorghum to storage pests and the lower volumes stored. * For cassava, loss rates have been assumed to be 40%, 25% and 15% in the northern, central and southern regions, respectively. The losses (for cassava) are assumed to be mainly due to lack of harvesting and therefore higher figures are associated with high production areas where surpluses can most reasonably be expected. * Population density is low with 26 inhabitants per kilometer squared, which results in a need to travel long distances to reach markets for the sale of produce. * Besides the long distances, transport options are limited for smallholder farmers, who make up the bulk of the sector. * For both livestock and fishery sectors, the bulk of the production is for domestic consumption, since there are limited options for storing and transporting the produce under suited conditions for long distances. |
| Processing | * The limited production and high loss rates mean that little produce makes it to the processing stages. * Even the commodity that makes it to the processing stage, the quality may not be suited to allow for processing. * The financial capacity of processing entities, especially those in remote rural areas, is often limited, restricting their capacity to process high volumes of raw materials. * Processing of commodities is limited in range, focusing on a few select crops, and within basic levels of processing. Value addition activities, are therefore, few. * Limited processing opportunities act as a bottleneck for market outlets, especially for the export of meat and fish which require refrigeration or drying of the produce before being exported. |
| Distribution and sale | * Consumption outstrips national production for rice, wheat, vegetable oil, and meat. As a result, these products are imported. * Imported goods are subject to different terms (e.g. duties) which affect the price. * In some cases, prices of imported goods are far below the prices of local goods, which hinders the growth of the national sector. * In other cases, the prices are high (and variable) without a national substitute, restricting access to these goods. * The country is self-sufficient in terms of maize, cassava, beans, and pulses, but the fragmented markets make it hard to access these widely. * Market fragmentation is characterized by limited traders, low prices, big distances, lack of market information, among other factors. |

#### 1.2 Vulnerability to climate change

##### Country climate

Mozambique spans a large latitudinal range from 10°S to 27°S, with climate types that range from warm desert and semi-arid climate types in the south to tropical savannah and humid subtropical climate types in the north (Peel et al. 2007). Mozambique experiences hot, wet summers and cooler, dry winters. Annual average temperatures are relatively uniform across the country (Figure 4), ranging from daily maximum values of around 25°C during winter (June to August) to around 32°C during October to December (WFP, 2018). The warmest months coincide with the rainy season, which typically lasts from October to April.

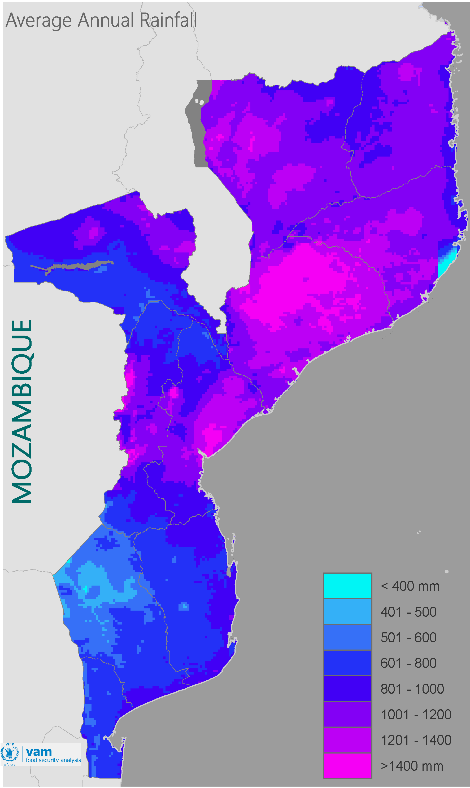
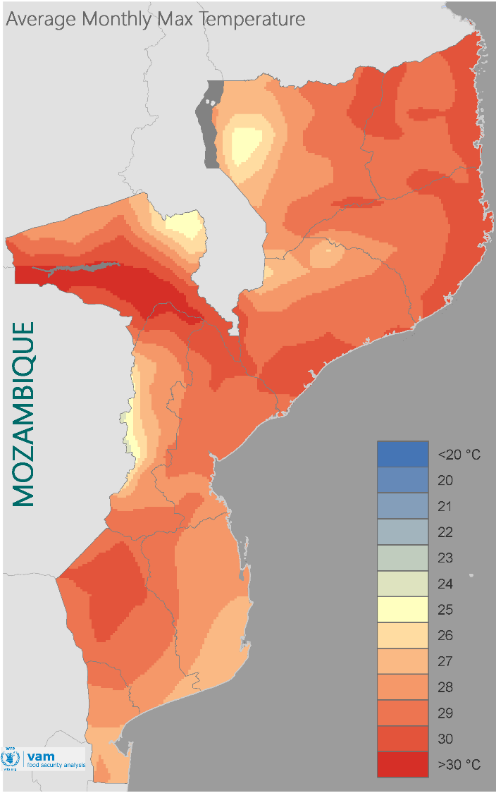
 

Figure 4 – Average annual temperature (left panel) and rainfall (right panel) from 1981 – 2017, taken from the recent climate analysis for Mozambique (WFP, 2018)

Rainfall is mainly driven by the Inter Tropical Convergence Zone (ITCZ); a band of convective rainfall which migrates either side of the equator throughout the year and reaches its southernmost extent in Mozambique during summer. This results in higher and more reliable rainfall amounts in the northern regions (around 1000-1500mm per year), and lower and more variable rainfall amounts in the southern regions (less than 500mm per year in some parts; Figure 4; WFP, 2018). The position and intensity of the ITCZ varies year-to-year as it is influenced by large-scale dynamics in the climate system, such as the El Niño Southern Oscillation (ENSO). The El Niño phase is often associated with drier conditions in the south and wetter conditions in the north during winter, whereas the La Niña phase brings wetter conditions in the south. Other regional climate processes influence year-to-year variability in rainfall over Mozambique, such as the Angola Low and the Sub-tropical Indian Ocean Dipole (SIOD); a positive SIOD event is often associated with increased rainfall over Mozambique.

##### Observed climate trends

Past trends in climate are difficult to assess due to the lack of reliable and consistent meteorological data. Trend analysis using both observed and reanalysis products (which blend observations and satellite data) from the latestIntergovernmental Panel on Climate Change Fifth Assessment report (IPCC AR5; IPCC, 2013; Niang et al., 2014) shows evidence of a continental warming trend over the 20th century, with increases of around 1°C over this period in Mozambique. Further detailed analysis for Mozambique for 1981-2017 indicates a warming of 0.1-0.25°C per decade in the southern part of the country (WFP, 2018).

Assessing trends in rainfall is more difficult due to the lack of available data, and the spatial variability in both the total amount and timing of rainfall. However, the available data does indicate that rainfall amounts are dominated by year-to-year variability with very little long-term trend observed at the national level (WFP, 2018). At the sub-national level there is an indication of a slight decrease in rainfall in the northern provinces of Niassa, Cabo Delgado and Nampula of around 2-5% per decade over 1981-2017, and a slight increase in the southern provinces of Inhambane and Manica of around 2-10% per decade (WFP, 2018). In addition, reductions in vegetation in the north and a shortening of the growing season in some localised areas have been observed (WFP, 2018).

At national level it has been reported by USAID that food availability was reduced by 15% during the 2015-2016 drought and was worsened again by the 2017 cyclone. An average increase in temperature is reported as 1 degrees Celsius in the next 20 years and have already increased by 1.5-2 degrees Celsius since 1961. Drought sensitive crops could be reduced as much as 45% by the next 40 years in Tete. In terms of agricultural GDP the loss could be 4.5-9.8% by 2050 average in Mozambique. The Zambezi river could be reduced by up to 15%, translating in into per capita water availability falling from about 1,900m3/capita/year in 2000 to about 500m3 by 2050 (the international water scarcity threshold is 1,000m³/capita/year).[[1]](#footnote-2)

##### Climate Sensitivities of Main Livelihoods in Mozambique

Key sources of vulnerability and impacts of observed climate trends across the four main livelihoods were identified through a consultative process with national stakeholders. These are summarized in Table 2 below. Vulnerability in this context is understood as the drivers of climate risks given the nature of the livelihood category. The impact focuses on the consequences when such a climate risk materializes and affects that particular livelihood category.

Table 2 – Table summarising climate sensitivities, key vulnerability factors and the observed impact on each of the main livelihoods in Mozambique.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sector** | **Current Vulnerability Factors** | **Climate sensitivity** | **Observed Impact** |
| Livestock | Dependence on open pasture and rain-fed model, without access to supplementary feeding or veterinarian services;  Livestock raised in drought-prone areas, where conditions are increasingly hotter and drier;  Low access to livestock support services and management practices are limited;  Large number of units by a small-scale farmer, which places great pressure on limited resources;  Limited market access and information to support the sale of livestock and related products. | High temperatures and dry conditions impact the availability of grazing areas and water for livestock. Farmers need to travel farther away for food and water, as supplementary feeding is not a wide practice. The stress on livestock, as a result of these changes, compromises the quality of meat, dairy, and other animal products. This, in turn, affects the price and bankability of livestock activities. Higher temperatures are also associated with an increase in disease, especially vector borne disease, which poses a considerable danger as access to veterinary services is limited. Marketing of livestock and related produce is constrained, given cultural preferences, but also lack of information and opportunities. | Hotter and drier conditions making it harder to access food and water for livestock, while competition across sectors is increased (crop farming or household consumption)  Increase in disease and mortality, affecting the quality and availability of livestock and related products, reduction in marketing opportunities.  Livestock is a way for households to save and invest, while also a means for liquidity, as needed, which is being jeopardized given reductions in quality and availability of stocks.  Livelihoods constrained, with poverty increasing as well as food insecurity, including diet diversity reductions. |
| Cropping | Dependence on low input-output, rainfed systems that are weather sensitive, with limited agricultural practices to optimize production.  Poor access to services that can assist with making agriculture more productive even in a changing climate, such as extension support, water and transport infrastructure, market and climate information, financial resources, and market opportunities (input and output)  Cultivation done in drought prone areas, which places both plants and soil under stress.  Emergence of disease and pests with limited capacities to manage these.  Crop varieties for hotter and drier conditions are few and not readily accessible to smallholder farmers, so there is a reliance on weather sensitive crops.  Postharvest losses are considerable with limited access and knowledge about the appropriate techniques and technologies to use. | The main food crops are maize and cassava, followed by pulses, roots, and tubers, which are mainly grown in subsistence and rainfed systems by smallholder farmers. This makes them highly sensitive to weather patterns. For Maize, the optimum temperature is 20°C and the maximum is 45°C, with water requirements of 500 to 800mm. For Cassava, the optimum temperature is between 25 and 29 °C, while its water requirements are just above 400 mm. The growing period for these crops varies according to the seed variety being grown. Hotter and drier conditions are negatively affecting the production of these crops, while also giving rise to pest and disease, most notably the fall army worm. Besides the plant stress this causes, it also affects the soil. Crusting and other types of soil erosion are increasing in prevalence, especially as periods of intense rain are followed by prolonged periods of dryness. This sort of rainfall variability in rainfed systems have been considerably hard to manage by smallholder farmers, who lack access to irrigation, extension support, quality inputs, financial resources, and climate information. Finally, with these challenges, the produce is mainly used for own consumption, there is limited capacity to generate a surplus for trade. However, when this is possible, there are limited post-harvest techniques and technologies available to preserve the produce, while also limited access to market opportunities, which also discourage farmers from trading. | Quantity and quality of crops being compromised as they are under a lot of stress during critical stages of crop growth.  Building on the above, the potential for surplus for processing and trade is diminishing, negatively affecting the profitability of farmers.  Soil fertility being lost, driving the intensification of negative practices in plots that are increasingly of smaller size, as farmers cannot afford inputs needed.  Duration of growing period, with optimal rain and temperatures, is reducing, negative affecting the seasonal calendar.  As the bulk of the sector is smallholder-based, the incidence of food and income insecurity is increasing, with many having to rely on limited incomes to ensure their basic needs are met. Poor nutrition is also being driven by this.  Existing water infrastructure also being degraded given the higher temperatures and drier conditions, further reducing their potential.  In terms of the natural water resources available, these are diminishing, and salinity is becoming increasingly an issue.  A positive impact is the diversification of crop types and varieties used by farmers as they try to adapt to the hotter and drier conditions. |
| Forestry | Growing need for income to meet basic household needs.  Forest products, especially for meeting fuel needs, are highly lucrative.  Low incentives and knowledge about the benefits of the forest to the overall productivity and stability of the ecosystem.  Forest management, including policies and practices, are limited in practices.  Prevailing hotter and drier conditions are being exacerbated by the loss of forests and forest resources.  High rates of deforestation already recorded, making the ecosystem vulnerable to external hazards, like drought or floods. | Forests provide protection from soil erosion and contribute to stabilizing temperatures and access to ground resources. As farmers experience reductions in their production and are pushed to depend on the market to meet their basic food needs, they are seeking alternative income sources. This has resulted in the exploitation of wood and non-wood forest products. With limited management practices, the forest resources are being diminished, affecting the overall ecosystem. Besides negatively impacting the productivity of the system, it makes this more vulnerable to disasters, which impacts crop, livestock, and fish livelihoods. The need for fuel is in particular driving the exploitation of forest resources. | Marked reduction in ecosystem health and diversity, affecting the productivity of production systems.  Reductions in resources for food and fuel, among other forest-based products, which is driving food, nutrition, and health issues.  Higher competition for resources, resulting in intensification of practices.  Mangroves are also being poorly managed affecting coastal zones, resulting in salt water infiltration and destabilization of nearby soil structures. |
| Fishery | Dependence on poor management and fishing practices that can negatively affect the ecosystem.  Some key fishing areas are located in high risk areas where there is a high incidence of climate hazards, such as cyclones and tropical storms.  Infrastructure and regulation implementation lacking to support enhanced practices for fisheries management.  Markets are underdeveloped and fishing communities have limited resources to invest in enhances practices. | The reduction in fish stocks compromises the overarching ecosystem. As such, when changes in weather and climate take place, the capacity of the system to cope with these is markedly reduced. In this context, variability has shown to have a greater impact on fish communities. With poor practices and limited resources, the largely artisanal sector is made more vulnerable to these variations, including considerable hazards such as cyclones and tropical storms. The results are further loss of species and ecosystem functions. Comprehensive management plans and infrastructure to protect the ecosystem is largely missing from the sector. | Reduced reproduction of fish stocks, resulting in negative impacts on trophic levels (loss of diversity), as well as the larger ecosystem.  Coping capacity of natural systems is further limited, resulting in reduction of fishing areas.  Fishing communities experience more food and income insecurity, while health hazards also possible as the health of the environment is also comprised. |

##### Projected climate trends and related impacts

Projections from latest iteration of the Coupled Model Inter-comparison Project (CMIP5; Taylor et al., 2012) used to inform the IPCC AR5 report indicate a substantial warming trend across Mozambique with projected temperature increases of between 1°C and 3°C in daily maximum temperature by the middle of the 21st century (Niang et al., 2014). In contrast, there is less agreement on projected changes in average annual rainfall amounts for the country. The majority of models project a slight drying over Mozambique, however some models indicate a slight increase in annual rainfall by the middle of the 21st century. The dominant feature of the future climate for Mozambique is the continued year-to-year variability in rainfall amounts.

Beyond the middle of the 21st century, the future climate projections diverge depending on the scenario of greenhouse gas concentrations. A scenario of on-going and substantial increases in future global emissions of greenhouse gases (this scenario is known as RCP8.5; van Vuuren et al., 2011) is consistent with projections where temperatures continue to increase to the end of the 21st century, from mid-century level. In contrast, a scenario of rapid and sustained reduction in future global emissions of greenhouse gases (this scenario is known as RCP2.6; van Vuuren et al., 2011) is consistent with a stabilisation of climate conditions from the middle of the 21st century. Under both of these future greenhouse gas concentration scenarios the majority of climate models project a drying trend over Mozambique.

These long-term trends in daily temperatures and annual rainfall amounts will also impact the frequency and intensity of extreme events, such as droughts and flooding which Mozambique is already exposed to (WFP, 2017). These extremes are likely to increase in frequency and intensity, with more frequent and intense hot periods and more extreme rainfall events (IPCC, 2013). In addition, the intensity of tropical cyclones is projected to increase, though the overall number of cyclones is projected to remain about the same (IPCC, 2013).

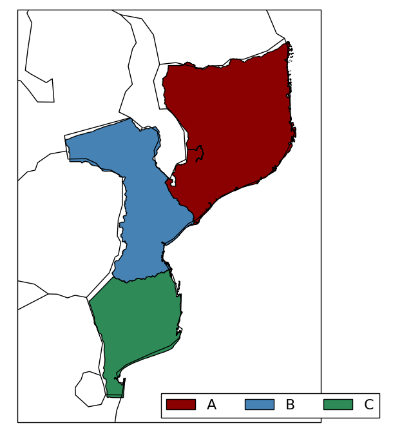
* Scenario 1 represents a future that is hotter and drier compared to the baseline climate. The increased temperatures mean higher levels of heat stress, more frequent and intense heatwaves, and an increase in evaporation. Less annual rainfall means a drier climate over most of the country, and combined with the higher evaporation rate can exacerbate water availability issues. The number of consecutive dry days is projected to increase, indicating higher drought risk in this scenario, particularly in drier years.
* Scenario 2 represents a future that is warmer than the baseline climate, slightly wetter on average and with more extreme rainfall events. The increased temperatures will also impact heat stress and increase evaporation, meaning that the small increases in annual rainfall are likely to be offset. The increase in frequency and intensity of extreme rainfall events can exacerbate current flooding and tropical cyclone risks, particularly in wetter years.

Figure 5 - Climate Zones A, B, C geographic distribution (WFP, UK-MO, 2018).

The specific values of the projected changes in average daily maximum temperature and average annual rainfall are given in Table 3. Summaries of the climate, livelihoods and food security outcomes for the baseline and future scenarios can be found in

Table 4. Figure 5 shows the geographic distribution of the climate zones to contextualize Tables 4 and 5.

Table 3 – Projected change in the baseline climatology values (± standard error) for the 2050s (2041-2070) under the two future climate scenarios.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Climate zone A | | Climate zone B | | Climate zone C | |
|  | Average annual rainfall | Average value of daily maximum temperature | Average annual rainfall | Average value of daily maximum temperature | Average annual rainfall | Average value of daily maximum temperature |
| Baseline | 1164.7 ± 29.2 mm | 29.7 ± 0.1 °C | 937.0 ± 33.8 mm | 29.9 ± 0.1 °C | 677.2 ± 30.0 mm | 30.0 ± 0.1 °C |
| Scenario 1 | -181.5 mm  (-15.6%) | +3.3 °C | -141.9 mm  (-15.1%) | +3.5 °C | +0.2 mm  (0%) | +2.8 °C |
| Scenario 2 | +171.7 mm (+14.7%) | +2.2 °C | +134.6 mm(+14.3%) | +2.2 °C | +29.2 mm(+4.3%) | +2.3 °C |

Table 4 – Summary of climate, livelihoods and food security for the baseline and each of the future scenarios

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | Climate zone A | Climate zone B | Climate zone C |
| Baseline | Climate:  - wettest climate zone; ~1200mm per year  - high tropical cyclone risk;  - high flood risk in Zambezi River basin  Livelihoods: agriculture, fishing, forestry  Food security: lowest, acute | | Climate:  - wet and dry regions; ~900mm per year  - high flood risk in river basins  - high drought risk in dry regions  Livelihoods: agriculture, fishing  Food security: high, acute and chronic | Climate:  - driest climate zone; ~700mm per year  - highest variability in annual rainfall  - high flood risk in south  - high drought risk in dry regions  Livelihoods: agriculture, livestock, fishing  Food security: high, acute and chronic |
| Scenario 1 | Scenario 1 represents a hotter and drier future compared to the baseline, with continued year-to-year variability resulting in more frequent and intense extreme events such as heatwaves and droughts. This climate will result in reduced water availability and increases in heat stress across the country, which will exacerbate the current water and heat stress impacts on crop and livestock production, particularly in drier areas. These conditions will also increase the risk of wildfires, which will negatively affect forestry-based livelihoods. Cropping and fishing livelihoods in coastal regions are at higher risk of storm damage and flooding from tropical cyclones, with damage to transport networks reducing market access and further increasing food security issues across the country. Inland flooding will continue to be a risk in flood prone areas. Chronic food insecurity is likely to increase in the absence of adaptation measures as a result of the long-term trend and slow onset extremes such as droughts. Furthermore, acute instances of food insecurity will also increase due to the continued and increased exposure to the impacts of extreme events such as tropical cyclones and flooding. | | | |
| Scenario 2 | Scenario 2 represents a warmer future with more extreme rainfall events. The key feature in this scenario is the increased risk of flooding associated with higher intensity rainfall. These flooding events can damage crop production and transport infrastructure, impacting cropping and fishing livelihoods in flood prone regions. As in scenario 1, similar impacts are experienced in coastal regions due to continued exposure to tropical cyclones but with higher intensity and increased coastal flooding associated with these events. Heat and water stress impacts on crop and livestock production are still a feature of this scenario, particularly in drier areas and in drier years, however to a lesser extent than in scenario 1. | | | |

#### 1.3 Project target area

WFP, working with partners, developed the Integrated Context Analysis (ICA) for Mozambique to explore the historical trends of food insecurity across the country (WFP, 2017), looking at interactions with exacerbating factors like natural hazards and land degradation. The ICA used the Food Security and Nutrition Baseline data from SETSAN for the years 2006, 2009, and 2013. In addition, the ICA used data from the Vulnerability Assessment from 2012 to 2016. The food security threshold was set at 20 percent of the population indicating that within the area of study (the district) at least one in five households was food insecure. By putting together this data, the ICA was able to capture both chronic and acute cases of food insecurity. The ICA output indicated that the most food insecure provinces in the country include Tete, Sofala, Manica, Inhambane, and Gaza (Figure 2). Notably, when considering also natural hazards, the ICA indicates that these highly food insecure locations also experience high exposure to natural hazards, including drought, floods, cyclones, and tropical storms.

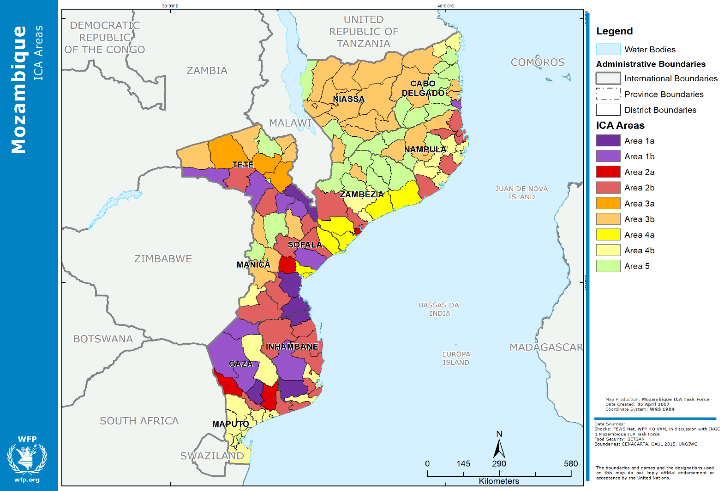
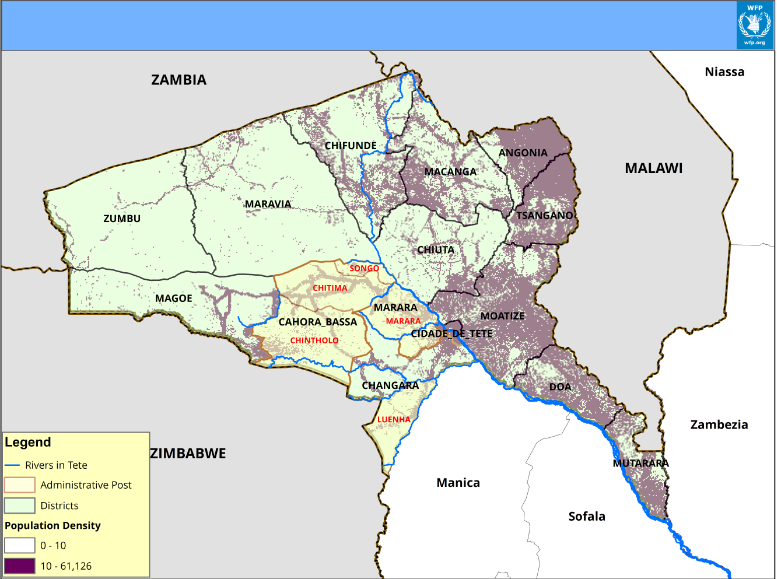




Figure 2 – Map of food insecurity instances from the ICA (WFP, 2017).

To prioritize the GCF investment, criteria has been developed to select the target location of the project, based on consultation with national and sub-national stakeholders. The key criteria include: incidence of food insecurity, exposure to disaster risk, observed trends of climate change, observed impacts of climate change, and considerable projected impacts of climate change on livelihoods and food security. Based on the analysis presented above, climate zone B was prioritized. In this zone, the province of Tete was identified, specifically the districts of Changara, Marara, and Cahora Bassa, shown in Figure 6.

Figure 6 – Map of Tete province showing the targeted districts of Changara, Marara, and Cahora Bassa



Changara, Marara, and Cahora Basa belong to the semi-arid livelihood zone category and are situated south of the Zambezi River and west of the Luenha River (FEWSNET, 2010). The zone’s savanna landscape is characterized by gentle hills, deciduous and fruit trees, and seasonal streams.

ICA indicates that in the targeted districts the risk of drought has historically been high, while the risk of food insecurity has been high in Changara and medium in Cahora-Bassa (Table 6). Notably, Cahora-Bassa and Marara used to be a single district. So, disaggregated, historical data is not available. Therefore, for this, the assumption is that the same risks are relevant to Cahora-Bassa and Marara.

Table 6 - ICA Historical food insecurity and exposure to drought - Changara and Cahora Basa[[2]](#footnote-3)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **District Name** | **ICA Area** | **ICA Category** | **Recurrence of Food Insecurity - Baseline** | **Recurrence of Food Insecurity - VAC** | **Combined Recurrence of Food Insecurity** | **INGC Drought Hazard** | **Final Drought Risk** | **Combined Natural Shock Risk Score** | **% of Deforested Area** |
| CHANGARA | Area 1b | Category 1 | Medium | High | High | High | High | Medium | 6 |
| CAHORA-BASSA/MARARA | Area 2b | Category 2 | High | Low | Medium | High | High | Medium | 3 |

The ICA output indicated that the most food insecure provinces in the country include Tete, Sofala, Manica, Inhambane, and Gaza. Notably, when considering also natural hazards, the ICA indicates that these highly food insecure locations also experience high exposure to natural hazards, including drought, floods, cyclones, and tropical storms.

To prioritize the GCF investment, these criteria have been used to select the target location of the project, based on consultation with national and sub-national stakeholders. The key criteria include: incidence of food insecurity, exposure to disaster risk, observed trends of climate change, observed impacts of climate change, and considerable projected impacts of climate change on livelihoods and food security. Based on the analysis presented above the province of Tete was identified, specifically the districts of Changara, Marara, and Cahora Bassa.

Changara, Marara, and Cahora Basa belong to the semi-arid livelihood zone category and are situated south of the Zambezi River and west of the Luenha River. The zone’s savanna landscape is characterized by gentle hills, deciduous and fruit trees, and seasonal streams.

ICA indicates that in the targeted districts the risk of drought has historically been high, while the risk of food insecurity has been high in Changara and medium in Cahora-Bassa and Marara. More details can be found in Annex 16.

A thorough follow up analysis of the target districts have been conducted through consultations at national and sub-national levels with representatives from the government, academia, practitioners, community members, and the private sector. A summary of the consultation process can be found in Section 6. Main findings of the analysis are presented below.

##### Food security

The Food Consumption Score (FCS) is a composite of dietary diversity and food frequency (referring to foods consumed over a seven-day period) and is used as a descriptor of household’s current food consumption status. Different foods and food groups are weighted based on their nutritional density. Households are classified as having either ‘poor’, ‘borderline’ or ‘acceptable’ FCS based. ‘Poor’ food consumption is generally regarded as a sign of extreme household food insecurity. Overall, 42 percent of households have a poor food consumption score and 43 percent have borderline food consumption. These numbers indicate high levels of food insecurity since only 15% of the population have acceptable food consumption levels. significantly more female-headed households have a poor food consumption score than male-headed households: 51% vs 33%. Similarly, significantly more male-headed households have an acceptable food consumption score than female-headed households: 20% vs 10%.

##### Livelihoods

The key food crops grown include maize, sorghum, millet, pulses, and groundnuts. Livestock is also kept, such as poultry, goats, pigs, and cattle. Wild foods are consumed by all households throughout the year, and the common types are baobab and tamarind.

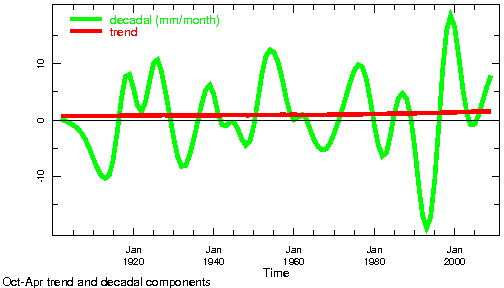
Maize is sold after the harvest in May until January. Livestock sales represent an important income source for all wealth groups. However, income earned is contingent on the type of livestock sold and the number of animals that households are capable of selling without negatively affecting herd sizes. Baobab is the most dominant wild food sold, usually by the poorer households in the zone. Baobabs are unhusked and the pulp, along with the seed, is placed in large sacks and sold along the main roads throughout the zone. Charcoal production is another source of income for poor households.

##### Climate trends and climate-related hazards

With regards to the observed trends of climate change (IFAD-WFP, 2018), the following have been identified:

1. high inter-annual rainfall variability and lowest seasonal rainfall as compared to the rest of the country (about 500mm per year),
2. an increase in maximum temperature during the growing season mainly in Oct-Nov and Feb-Mar (0.3C/10 years),
3. a negative monthly rainfall trend in Oct, Nov and Feb leading to shorter growing season,
4. high inter-annual variability (between 10 to 15 days) in the number of rain days (above 1 mm) year on year,
5. positive trend in seasonal rain days of no more than 2days/10 years, due to increase in rain days in Jan with no positive impact on dry spells or duration of the season,
6. average 10-15 dry spell days within the growing season that vary year-on-year between 4-6 days,
7. shortest growing season compared to other provinces lasting between 2-3 months (Dec to Feb),
8. decreasing vegetation in the early stages of the season (Nov), and
9. increase in the number of heavy rainfall days (20 mm) in Jan, causing flooding, soil erosion, and reducing soil quality.

Monthly mean precipitation data taken from CRU TS 3.1 in IRI’s maproom[[3]](#footnote-4) has shown that the overall decadal variance over the area (Tete) during the agricultural season (Oct-April) has become much stronger. In other words, rainfall variability in Tete has been more extreme both in dry and wet spells during the last couple decades than it was before.



Consultation at local and community level identified droughts and floods as main climate related hazards (Section 6 for list of consultations). Overall, there was agreement that rainfall events are becoming more variable, infrequent, and intense, driving up the incidence of drought or floods. A participatory ranking exercise of extreme weather events showed that overall, the incidence of good years has decreased, while the incidence and frequency of shock years increasing. Findings summarized in Table 7 below.

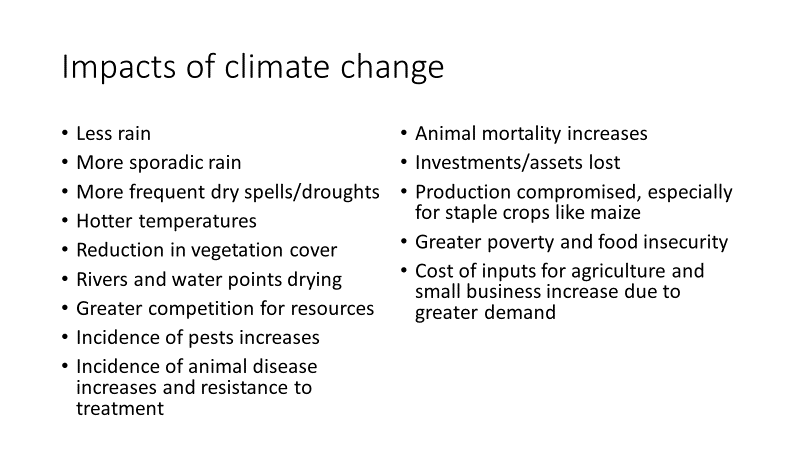
Table 7 – Ranking of extreme weather events in recent years

|  |  |
| --- | --- |
| Year | Type of year |
| 2017 | Good rains, resulting in a good harvest |
| 2016 | Poor rains, resulting in a failed harvest |
| 2015 | Good rains, resulting in a good harvest |
| 2014 | Normal year |
| 2013 | Normal year |
| 2012 | Normal year |
| 2011 | Drought event, resulting in a failed harvest |
| 2010 | Normal year |
| 2009 | Normal year |
| 2008 | Normal year |
| 2007 | Normal year |
| 2006 | Good rains, resulting in a good harvest |
| 2005 | Intense rainfall, resulting in flooding and the loss of livestock and crops |
| 2004 | Normal year |
| 2003 | Drought event, resulting in a failed harvest |
| 2002 | Normal year |
| 2001 | Intense rainfall, resulting in flooding and the loss of livestock and crops |
| 2000 | Good rains, resulting in a good harvest |

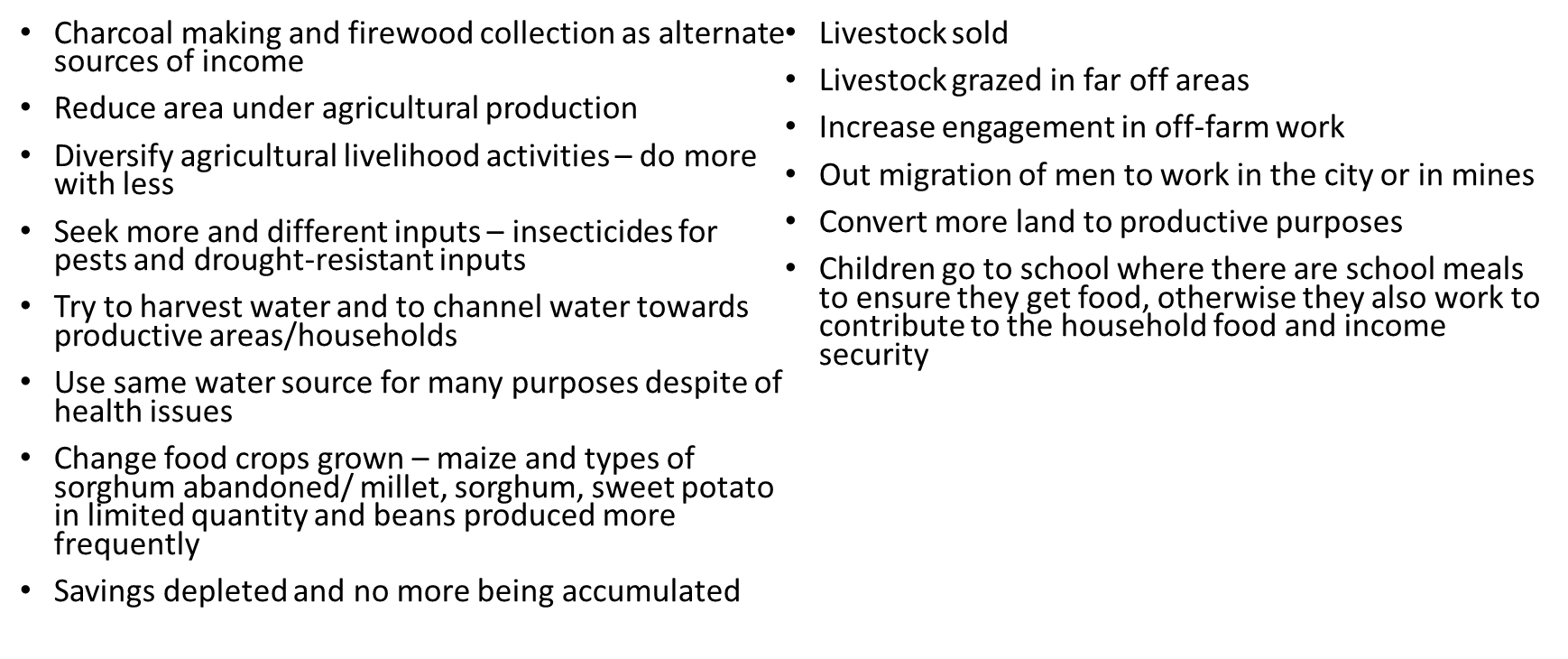
Future climate change trends (WFP, UK-MO, 2018), show:

* Temperature increases between 2.2 and 3.5°C
* High rainfall variability across seasons, but also within, with possible increases at +14.3% and decreases of -15.1%
* Drought risk exacerbated
* Flood risk prevails

Livelihoods and food security are and will continue to be affected by climate change given the dependence on rain-fed models. Communities, when asked about the impacts of climate change on livelihoods and food security, they identified the following, as of key concern.



Communities noted a lack of capacity to adapt and withstand the impacts of a changing climate. They also recognize that some of the coping strategies that they are adopting, and will likely continue to use, are having negative impacts on their wellbeing and that of the local environment. These coping strategies are noted below.



Communities also identified that there are differentiated capacities to adapt and withstand the impacts of a changing climate. They confirmed that not all households are equally vulnerable. Some of the key differences are captured in Table 8 below.

Table 8 – Vulnerability ranking by community

|  |  |
| --- | --- |
| **GROUP** | **DESCRIPTION** |
| Elderly | Because they have their family and resources/skills they developed over time, they are not considered highly vulnerable, even though they lack the labor capacity to adopt different coping strategies |
| Disabled | Because they have no resources, no labor capacity, and rely on others who have little or government support, they are considered highly vulnerable (top ranking) |
| Chronically ill | Because they do not have labor capacity or resources, but can rely on regular external aid especially from government/NGOs, they are vulnerable, but not top ranking |
| Single males with children | Because they have assets, skills, labor capacity, and influence within and beyond their household they are not as vulnerable as others |
| Single females with children | Because they have little assets, skills, labor, and time, they are considered vulnerable |
| Orphan/abandoned children | Because they have no resources, limited labor capacity, and rely on others who have little, they are considered highly vulnerable |
| Married couples with children | Because they have assets, skills, labor, and more time, they are vulnerable to the lesser extent  They have more chances than the other groups to diversify livelihoods, but their vulnerability depends very much on their access to reliable water sources for agricultural use. |

##### Vulnerabilities

Some of the key sources of vulnerabilities identified by the communities are discussed in detail in the section below, with support from additional research.

###### Agricultural practices poorly adapted

Maize and sorghum are the key crops grown. Maize is grown for sale, while sorghum is grown for own consumption. Maize requires 500 – 800 millimeters during the growing season, which could range from 80-110 days. Sorghum has lower water requirements at 450 – 650 millimeters during the growing season, which is also shorter than maize. This makes sorghum a more suited crop to the context, given the changing climate. This is demonstrated by the reducing yields of maize. Farmers have tried to adapt by using fast-maturing varieties. However, the relatively higher water requirements make it still hard to realize desirable yields. As maize is grown for income-generation, and investments are being made to use improved varieties, the reduction in yields directly translate to considerable income loss and constrained livelihoods. This has motivated households to produce and sell charcoal to supplement their income. Regarding sorghum, low yields are also reported at around 300 kilograms per hectare, which undermine household food security. Without inputs for sorghum available in the local market, like adapted seeds and fertilizers, households have difficulties to adapt. There was also a recognition that farming practices need to change as well. Specifically, community members reported applying slash and burn methods that contribute to reduction in soil quantities and qualities. At the same time, restorative practices are missing, which could help combat negative ones, like the application of mulching, compost, or manure. Many noted that poor access to extension support and information were key limitations and the reason why their practices were so vulnerable to the impacts of the changing climate.



Figure 6 - Slash and burn shifting agriculture, Marara Oct 2018.

###### Livestock loss

Livestock in these areas depend on natural vegetation for food. Given negative management practices and the changing climate, natural vegetation has not been enough to support the feeding needs. This is an issue especially in the height of the dry season. The same applies to the livestock water requirements, as it is also a largely rainfed system. Heat stress is also on the rise, given the lack of shading. Disease has also become more common in this context, affecting pigs, cows, and chickens. As a result, quality and quantity losses are experienced by smallholders, limiting their capacity to maintain their herds and to sell them for a profit, if needed. Cattle that is most often sold as a coping mechanism include pigs and goats. The former because they are prone to disease and require more care. The latter because the goats are plentiful, as they can reproduce more easily. Cows are hardly sold as they contribute to the labor force by helping with land preparation, carrying water and firewood, among other activities. In this context, chickens, ducks, and goats are preferred as they are deemed more resilient.

###### Untapped horticulture potential

Due to the decline in cereal production, communities reported that reliance on horticulture has increased. Vegetable gardens were visited as part of community consultation. Gardens are a source of income and diversified diet for the targeted population[[4]](#footnote-5). The communities report that the production is constrained by its high dependence on water availability, increased temperature, increased frequency of dry spells, and absence of post-harvest processing and storage. The transect walks also observed gardening technology and practices. Current vegetable growing practices are characterized by monoculture of rows of vegetables of limited variety, full tillage, a short growing season, limited in-situ soil management and water harvesting practices, absence of companion planting and intercropping with trees, shrubs for improved soil quality and shade, and absence of highly nutritious foods (e.g. moringa, fruit trees, orange flesh sweet potato). As a result of practices and climate risks a frequent watering is needed, leading to an increase in women's burden as due to dry wells and water demands they a walk longer distances and spend more time watering. Hand watering is practiced leading to run-off, water wastage, low vegetable production and shorter gardening season due to water loss. With regard to processing, current drying techniques are elementary: occasionally washed, the produce is sliced or diced raw and exposed to the sun on flat surfaces, for example, flattened or swept the ground or roofs. Open air sun drying is slow, does not protect the food from dirt, insects, fungus, mold, and animals. In addition, frequent damages caused by rodents, insects, and mites are common due to improper storage. Finally, access to the market is limited due to distance, transportation constraints, and perishable products.

###### Degraded watersheds and less productive assets

Degradation of watershed is caused by (i) increased dependence on charcoal production for income, (ii) lack of watershed use and management plans leading to overharvesting, expansion of agricultural land, and overgrazing, (iii) high dependence on forest products (baobab, Sahelian apple) for sale and consumption. Due to high vulnerability and lack of awareness and knowledge, vulnerable communities are caught in a cycle of unsustainable practices further exacerbating their climate vulnerabilities. Communities noted (i) a decrease in tree density results in strong winds and flash floods leading to erosion and poor soil quality, (ii) earlier drying of the wells and having to dig deeper to access the water, and (iii) shortage of water and biomass for animals. Continued degradation of the watershed under the scenario of increased climate risk exposure will likely result in exploitation beyond carrying capacity and further reducing the ability of watersheds to mitigate climate risks (i.e., heavy rains and winds, flash floods, heat, irregular rain days, water shortages).

###### Limited understanding of climate change risk, and access to climate and weather information

Only 7 out of 37 smallholders participating in the consultation meeting (Changara, June 2018) reported occasionally receiving rainfall and temperature information. The women did not report receiving the information. Government Extension Officers reported providing seasonal advisories (i.e., time for planting), however, reach is limited due to low staffing (2 to 5 Extension Officers per district) and lack of transport to reach communities. Smallholders reported that they do not act on the advice, as they do not consider it accurate. While smallholders are aware of the changes in weather patterns and seasonal calendar, they are not able to translate them into livelihoods decisions. The above is resulting in frequent loss or reduction in yield, livestock, and income. In addition, local Government institution confirmed that targeted district do not have Local Adaptation Plans (LAP)[[5]](#footnote-6) that would support identifying climate risks, vulnerabilities and short and long-term climate adaptation priorities.

The above was also verified through the consultation meetings with the National Institute for Meteorology (INAM) at province and national levels that revealed: limited observational network, poor data management systems, limited capacities to derive downscaled climate and weather information[[6]](#footnote-7), products not tailored to particular users, and dissemination channels limited.

###### Lack of access to rural financial services

Consultations and assessments show that rural financing services are missing in the targeted areas, especially tailored products that help climate adaptation and climate risk management, such as saving, credit, and insurance.

The findings of a feasibility assessment conducted by WFP in 2018 are the following:

* There is little experience with insurance in the country as a risk transfer tool in agriculture for smallholders. As regards index insurance, which has proven effective in other contexts to bridge this gap, only one pilot has been developed and tested for cotton farmers, which stopped shortly after. The status of regulation reflects the situation on the ground, with virtually no regulation or policies already developed for index insurance, a very flexible delivery channels approach and no indication regarding re-insurance terms or risk retention. The World Bank is currently involved in capacity building of Government agencies. The insurance company Hollard is the main company interested in this work.
* The 2015 macro-economic crisis resulted in restrictions in the financial markets. This has limited the growth and reach of financial institution. It also minimizes risk appetite, which further undermines financial opportunities for smallholder farmers in rural, vulnerable areas. Notwithstanding, there are a number of actors attempting to bridge this gap, which offers an opportunity. However, this has translated to heterogenous approaches and an uneven reach across the country, through different entities such as farmer associations, saving groups, and financial institutions.

Community consultations engaged with some of the noted local organizations that are trying to foster financial capacities and inclusion, including village saving and loan groups (VSL), as well as Farmer Associations (FA). With regard to VSLs groups, the top cited challenge is the group’s lack of capacity to establish mechanisms to properly manage their resources. Members of the VSLs indicated that they do not have access to regular trainings, monitoring, or support, which is needed to formalize their status to access formal financial resources. In addition, smallholders aggregated into Farmers Associations (FA) reported that formal registration is often a barrier to access formal financial services. This is because most of the associations are registered at the district level, but to access credit opportunities, province level registration is needed. Both VSL and FA members indicated that access to information about available products is needed on both credit and insurance, with accompanying education on how to make best use of these.

Adaptation challenges identified

1. Increased exposure of natural resources, food security, and livelihoods to climate risks

* Agricultural practices and extension support not adapted to climate sensitivities (present/future).
* Watershed management guidelines non-existent, and thus, principles not promoted nor employed.

1. Limited climate adaptation opportunities to transition to resilient livelihoods and food security

* Access to suited technologies limited because they are not readily available in the market, especially within the financial capacities of vulnerable smallholders.
* Limited financial services that are suited to the context, risks, and needs of vulnerable smallholders, including structured saving, loans, and insurance.

1. Limited awareness and information about the climate/weather for decision-making

* Limited institutional capacity to generate, translate, and disseminate climate/weather information for decision-making.
* Limited understanding of climate change, risks, and drivers of vulnerability, as well as no access to climate/weather information among smallholders, with women most affected.
* Local Adaptation Plans (LAPs) do not include information on climate trends (present/future), related impacts on livelihoods, and key vulnerabilities to identify suitable adaptation measures.

### The proposed project

#### 2.1. Project approach

The Project will address key climate risks, vulnerabilities, and socio-economic barriers to climate adaptation through an integrated approach that:

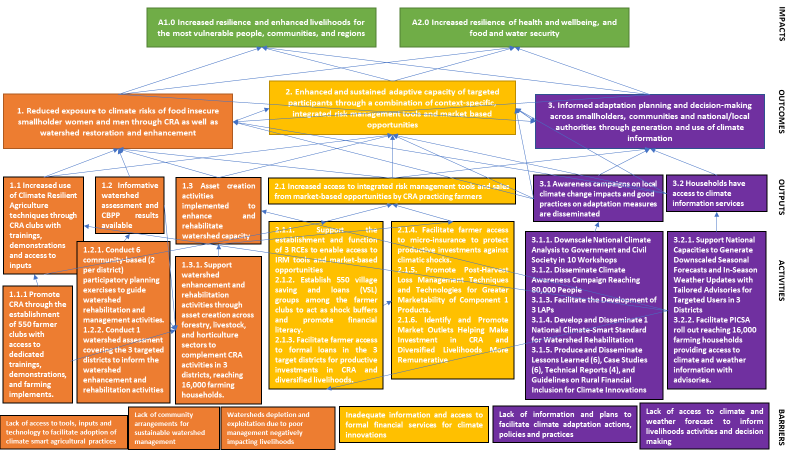
1. Reduced exposure to climate risks of food insecure smallholder women and men through CRA as well as watershed restoration and enhancement.
2. Enhanced and sustained adaptive capacity of targeted participants through a combination of context-specific, integrated risk management tools and market based opportunities.
3. Informed adaptation planning and decision-making across smallholders, communities and national/local authorities through generation and use of climate information.

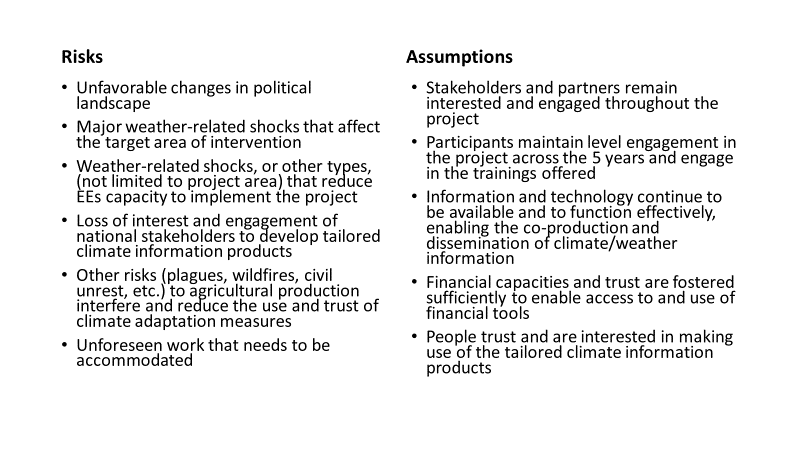
Components and activities proposed will be implemented at watershed, community, and household level targeting men and women smallholders, contributing to the following outcomes; 1) *Strengthened adaptive capacity and reduced exposure to climate risks* and 2) *Increased generation and use of climate information in decision-making*.

Integrated system-based approach to climate-risk management guided identification of components and activities, and project design. Components and activities proposed have been tested in Mozambique, or the region, are ready for scaling up and will be implemented at watershed, community, and household levels targeting men and women smallholders.

The project approach is based on the fact that currently livelihoods are highly vulnerable to disaster risk, which limit the achievement of greater food security, especially as there is little information and awareness about climate change and variability. Vulnerability to disaster risk will be mitigated by protecting and enhancing relevant environmental functions and improving agricultural practices. At the same time, adaptation will be promoted to disaster risks that cannot be mitigated. Adaptation and risk reduction work will take place at the household, community, and watershed levels. (Component 1). Adherence to these practices will be promoted through integrated risk management tools that help address evolving climate risks and market-based opportunities that remunerate climate-resilient practices adopted (Component 2). Recognizing that to effectively employ these adaptation and risk management strategies for greater food security, there is a need to grow awareness and understanding of the changing climate and weather and its impacts on livelihoods and food security, the project will also support the generation and dissemination of tailored information and advisories for communities and authorities (Component 3). As such, the three Components build on each other and together help achieve the project’s goal by overcoming the adaptation challenges identified. This thinking is shown in the theory of change below.

#### 2.2 Theory of Change



**

#### Detailed description of project activities

The above project design and components and activities were validated through, two consultation meetings held prior to the concept note submission with GCF Committee (Feb and Apr 2018) comprised of technical in-country experts. Verification with local Government and targeted communities took place in October 2018. In addition, national validation workshop was organized in December 2018. Additional assessments followed to strengthen the proposal in May 2019, mainly the environmental and social screening of the project.

#### Component 1

Under component 1, Vulnerability to disaster risk will be mitigated by protecting and enhancing relevant environmental functions and improving agricultural practices. At the same time, adaptation will be promoted to disaster risks that cannot be mitigated. Adaptation and risk reduction work will take place at the household, community, and watershed levels. This will be achieved through three inter-linked outputs.

OUTPUT 1.1. Increased use of Climate Resilient Agriculture techniques through CRA clubs with trainings, demonstrations and access to inputs

*ACTIVITY 1.1.1 Promote CRA through the establishment of 550 farmer clubs with access to dedicated trainings, demonstrations, and farming implements.*

The project will promote climate resilient agriculture (CRA) at the plot level to mitigate disaster risk, support climate adaptation of livelihoods, and contribute to greater productivity for food and income security. The need for CRA was identified through community interactions, whereby the project design team learned that a key source of vulnerability of the targeted productive systems is the lack of adequate and suited agricultural practices for the changing climate. Neither compost or mulch are typically applied. Inter-cropping for greater soil fertility is minimal, with maize as the predominant crop being grown. Water harvesting potential is also limited at the field level. Irrigation is by enlarge missing. These are all sources of vulnerability to climate risk and will be addressed through the promotion of CRA.

Farmers will be supported to do CRA through trainings, demonstrations, and the provision of some agricultural implements (i.e. tools) which are in line with the agricultural calendar and the local context. MASA provides an annual strategy to orient the agricultural campaign, including a list of suited inputs to use, as per the prevailing context, needs, and priorities. MASA also provides a list of certified retailers and input providers that have been government endorsed. The project will adhere to these guidelines. Notably, the guidelines are aligned to the stand of the government of Mozambique, which does not allow for the import of GMO seeds for commercial cultivation. Therefore, this project, by abiding with MASA guidelines will follow Government policies that delimit the use of GMOs. This is specified Annex 13 of this proposal.

Three (3) key principles will be promoted through CRA trainings, namely: Minimum Soil Disturbance, Retention of Crop Residues, and Crop Diversification and Intercropping. This will be complemented by a cross-cutting component on enhanced water access and management. These are described further as follows:

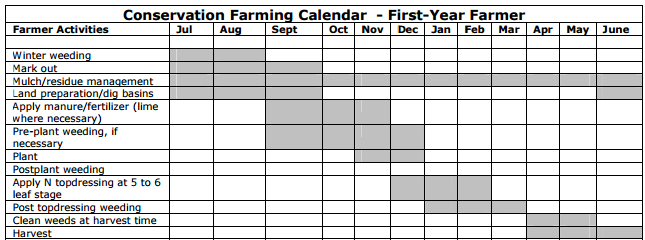
* Manual minimum tillage is characterized by planting stations (basins) that enable the farmer to plant the crop after the first effective rains when the basins have captured rainwater and drained naturally. Seeds are placed in each basin at the appropriate seeding rate and covered with clod-free soil. The advantage of using basins is that they allow to capture water as soon as the wet season starts and enable precision application of both organic and inorganic fertilizer directly into the pit rather than being broadcast. Hence, basins allow for water and nutrients to be collected/stored in vicinity of the roots and thus to be used in a more efficient way.
* Retention of crop residues is important to improve soil organic matter and soil structure. With increased amounts of soil organic matter, microbes that are responsible for nitrogen fixation can thrive and conduct processes that help improve soil fertility. As a result of this, the use of inorganic fertilizers is reduced over time. The same applies for herbicides through regular weeding, which together with mulching, progressively limits weed growth.
* Crop diversification and rotation that support soil fertility, diversified diets, and greater income sources will be promoted. This includes the promotion of inter-cropping within the productive field level (i.e. the main plot of the farmer) to grow a combination of roots/tubers, legumes, and cereals. Within these groups, farmers will have the choice of crops to grow, while being guided by the procurement needs of local School Meals Programs (SMP) (see table below), as well as guidance on agrometeorological conditions and nutritional advice (further enhanced by cooking and processing demonstrations). An additional benefit of diversification and rotation is its capacity to help with pest management, another key risk raised by farmers, by interrupting the infection chain between subsequent crops and making full use of the physical and chemical interactions between different plant species. To the extent that a new balance between the organisms of the farm-ecosystem, pests, crops and weeds, becomes established and the farmer learns to manage the system, the use of synthetic pesticides and mineral fertilizer tends to decline to a level below that of the original farming system, while allowing for improvements in the productivity of the system.
* Water access and management will be promoted through a combination on- and off- plot water harvesting and irrigation solutions. Trenches, swales, zai-pits, and contouring are example of on-site water harvesting techniques to be used by the project. This will be further supported by small-scale irrigation schemes that can enable access to additional water resources, be it available surface water, or additional rainwater through supplementary water harvesting structures, like small dams, tanks, and others. Efforts will also be made to re-store or enhance pre-existing water management structures.



Fig. 7 - List of food groups endorsed by the Ministry of Education which can be locally procured

The trainings will be administered by MASA through farmer clubs, as per the CRA calendar of activities (Table 9). Farmer clubs will be formed, consisting of lead farmers and follower farmers. There are typically 2 lead farmers, one woman and one man, and 30 to 40 follower farmers. Through these structures, the lead farmers are trained on CRA by extension officers and other project staff and subsequently supported to transmit these learnings to the follower farmers. The lead farmers will train follower farmers in demonstration gardens managed by the club, which are near to the individual farmer fields to enable replication. The lead farmers and locations for the community plots will be selected by the community. There are many proven benefits of following this approach, such as building solidarity structures that can replicate these good practices beyond the project cycle, overcoming challenges in terms of extension officer reach, and foster exchanges within and across the farmer club level for greater innovation and adaptation. These structures also establish a good vehicle for delivering assistance to the groups across other project components. MASA and WFP will jointly work on this activity across the three targeted districts, reaching 16,000 smallholder farmer households.

Table 9 – Calendar of CRA activities



*OUTPUT 1.2. Informative watershed assessment and CBPP results available*

*ACTIVITY 1.2.1. Conduct 6 community-based (2 per district) participatory planning exercises to guide watershed rehabilitation and management activities.*

Work on CRA will be complemented by activities that foster further disaster risk reduction and climate adaptation through sectors like livestock, horticulture, and forestry, which will be conducted via watershed restoration and enhancement for larger impact. To do so, each CRA farmer club will be eligible to engage in one or more of these sectors, through which they will benefit from tailored trainings, demonstration, and implements that will help establish assets across these sectors at the community and watershed levels. Community plans will be facilitated to ensure that the local context, priorities, and capacities are central to the definition of watershed activities. This will follow up on similar community engagement processes throughout the project design stage, and therefore, will also integrate learnings from those exercises.

WFP uses the Community-Based Participatory Planning (CBPP) methodology to guide its community-led planning. The CBPP is part of the Three-Pronged Approach (3PA) to resilience planning. The other two components include the ICA and the Seasonal Livelihood Planning (SLP) tool, the former helping with geographical targeting (as already presented above) and the latter with the prioritization of fitting activities and partnerships based on the seasonal calendar (more details in the LAP section). The CBPP further contextualizes the findings of the 3PA by bringing in the community perspective into the definition of project activities.

The CBPP has five key steps, which engage a representative sample of the community, considerate of the perspectives and involvement of different key vulnerability groups, like women, the elderly, and chronically ill. Firstly, the community altogether define their community and surrounding environment. This establishes the confines of the planning exercise, which is done through transect walks and participatory mapping activities. Next, the community identify the problems they face, considerate of different vulnerability profiles, trends, exposure to shock, and available coping strategies. Each of the problems are broken down to identify suited solutions. The third step is to use this problem-solution analysis to identify the assets that need to be created or rehabilitated (inclusive of soft skills, not limited to physical assets) under the watershed activities. Through this step, suited work norms as well as environmental and social standards are discussed with the community to identify ways to mitigate any project related risks when watershed activities are defined. For this step, it is critical to have the active participation of technical experts from MITADER and MASA to input into the discussions. Following this step, the experts with the community also identify the activities that are beyond the scope of the project (e.g. construction of community health clinics) and seek ways to establish partnerships that can help meet these needs. Finally, steps one through four are summarized in a Community Action Plan (CAP), which is used to guide asset creation under the watershed component.

WFP in Mozambique has been using the 3PA approach in its operations and has worked with MITADER on its roll out through institutional planning exercises. Through these efforts, national and sub-national capacities have been fostered that can help support the proposed Project. There are also best practices that have been identified that will be reproduced in the Project. For example, at the district level, while it is not efficient to develop a CAP for every singly community, similar communities can be grouped to run through the planning exercise. Typically, this has resulted in 2 CBPPs per district. This standard will be followed in the proposed Project, with room to do more, as needed, based on the contrasting characteristics of the communities being targeted.

*1.2.2. Conduct 1 watershed assessment covering the 3 targeted districts to inform the watershed enhancement and rehabilitation activities.*

The community plans need to be cross-referenced with the physical capacity of the watershed to establish the viability of the works planned. In addition, this needs to be checked against the future climate trends, based on model projections, to ensure that the planned works are fitting with the current and future context. To this end, a watershed assessment will be conducted in the target locations (covering the relevant watersheds), alongside the CBPP exercise.

A watershed is an area of land that feeds all the water running under it and draining off of it into a body of water. This also includes the rainwater that is realized in the area. Altogether, the watershed can combine a varied network of water ways, including rivers, streams, etc. As the topography defines how the water flows, it contributes to the demarcation of watershed boundaries. Accordingly, the watershed is a natural body, which does not follow administrative borders, typically used for planning. As such, the first step of the assessment will be to conduct the watershed demarcation, and thus, define the natural and physical features that will have to be evaluated and developed through the project.

Another key characteristic of the watershed is that it is not solely defined by its physical elements, but also the social dynamics that shape these. To understand this social dynamic, the watershed assessment needs to apply a systems-based approach, whereby the watershed is recognized as an open system that can be externally influenced. This will ensure that the watershed assessment accounts for both the natural and social dynamics that make up the system. The proposed project will follow this approach, with the understanding that the CBPP can provide insights into the social perspective, while the dedicated watershed assessment is intended to provide the natural perspective.

The assessment will serve multiple purposes. On the one hand, it will help establish a baseline of the natural capacity/state of the watershed, by exploring the current stocks of water, soil, trees, wildlife, and other sources of biomass. The assessment will also help develop future projections by considering current consumption and reproduction rates, as well as changing climate conditions. Together, these will help identify suited areas for intervention, focused on the three sectors under which watershed rehabilitation and enhancement work will be done, including forestry, livestock, and horticulture.

The watershed assessment and the CBPP are both inputs into the watershed activity design. Therefore, the two activities need to be done in close coordination. The recommendations of the two will form the foundation of the work plan for the component. As a highly technical piece, this will benefit from input across technical experts within MITADER, MASA, WFP, and others, as needed. This activity will also benefit from insights gathered through the hydrological study conducted in the targeted areas by IUCN.

*OUTPUT 1.3. Asset creation activities implemented to enhance and rehabilitate watershed capacity*

*Activity 1.3.1. Support watershed enhancement and rehabilitation activities through asset creation across forestry, livestock, and horticulture sectors to complement CRA activities in 3 districts, reaching 16,000 farming households.*

The improvement of the environment and its functions is intended to support with the reduction of disaster risk exposure. In addition, by working through targeted sectors, livelihood diversification for adaptation is pursued. Together these are meant to help communities better withstand and thrive in a context of increasing climate change and variability, expanding their coping strategies, asset base, skills, and income sources.

Based on the CBPP and the watershed assessment, work on watershed enhancement and rehabilitation will be done through asset creation across forestry, livestock, and horticulture sectors. The work will be done through the farmer clubs established. The clubs will be required to undertake work in at least one of the three sectors, while able to engage in all, if desired. Following the club structure and dynamic, the lead farmer will translate and disseminate learnings from extension officers (and other project staff) to the follower farmers. The MASA extension officers (and other project staff) will ensure that the farmer clubs apply these learnings and follow a schedule of activities. The activities will be sequenced mindful of the CRA calendar, allowing for farmers to focus fully in land preparations, leading up to planting. Should additional tools/equipment be needed for this work, they will be made available, considerate of the implements already provided under CRA. Notably, no transfers, food, cash, or vouchers, will be provided in exchange of participation in asset creation activities.

On forestry, there are opportunities to support afforestation and reforestation, while also purposely pursuing the production of non-timber forest products, such as baobab, amarula, honey, and moringa for sale. Communities also noted interest to pursue fruit tree production, principally banana and mango trees, in lieu with horticulture activities, where possible. For horticulture, improved and diversified production and processing will be promoted, with a focus on products for which there is a local demand. Activities will include the establishment of multi-level gardens, making use of natural (and artificial) shading, and irrigation schemes, supported by surface water and water harvesting. This is guided by the procurement needs of SMP in the area (see Group 4, specifically, with reference to figure 7 above). On livestock, activities are envisioned to help the establishment of fodder banks, training on production of supplementary feed for livestock using local by-products (e.g., baobab seeds), and the establishment of grazing lands, through enclosures, as needed. FAO expertise in the livestock sector will be leveraged through this component. As service provider, FAO will provide advice on all livestock-related activities. Water harvesting and management will be a cross-cutting element in all sectoral work, as it is integral to all the productive activities. Half-moons, waterway canals, cut off drains, checks, dams, trenches, swales and other small-scale assets will be pursued under the cross-cutting water work, which benefits also with soil stabilization and combatting soil erosion. Community-based, small-scale water harvesting and management structures have been prioritized as they are low risk (category C) and in line with the hydrological study conducted in the target areas by IUCN. Figure 8 illustrates how these all come together at the watershed and community levels.

In order to avoid any risk of increased inequality in access to productive gardens and to water resources, new gardens and water-related assets will be owned and managed by dedicated associations or by the entire community. Where possible, the association will secure land rights through a land use certificate (DUAT).

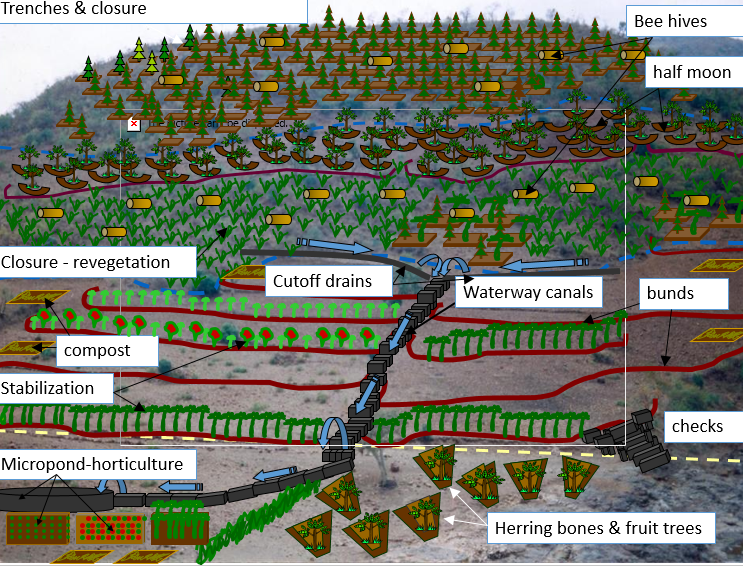


Figure 8 - Illustration of watershed rehabilitation through integration of physical and natural assets

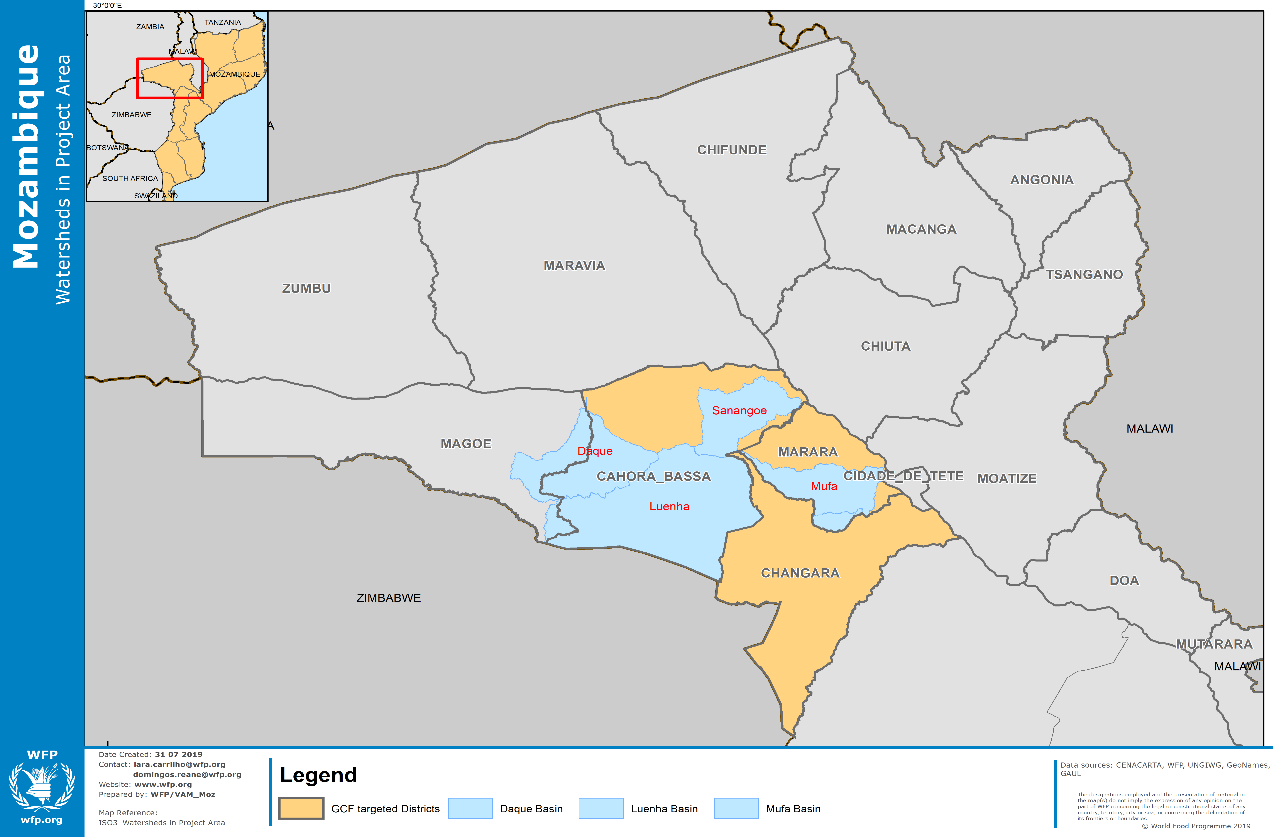


Figure 9 – Map of watersheds in the project area

Table 10 – Eligible activities under component 1 (activities 1.1.1 and 1.3.1)

|  |  |  |
| --- | --- | --- |
| **Eligible activities** | | |
| **Activity category** | **Description** | **Intervention level** |
| Project setup | Farmers' Clubs | Community |
| Project setup | Village Saving and Loan groups | Community |
| Agriculture | Conservation Agriculture techniques | Household/ Community |
| Agriculture | Preparation and application of compost | Household/ Community |
| Agriculture | Introduction of new cash crops or drought-resistant crops | Household/ Community |
| Agriculture | Creation of additional vegetable gardens at household level | Household |
| Agriculture | Creation of additional vegetable gardens at community level | Community |
| Agriculture | Construction of community post-harvest structures (surface<25m2) | Community |
| Agriculture | Training | Community |
| Forestry | Introduction of energy saving stoves | Household |
| Forestry | Introduction and cultivation of fruit trees | Household/ Community |
| Forestry | Reforestation with native vegetation | Community/watershed |
| Forestry | Production of green charcoal | Household |
| Forestry | Training | Community |
| Land reclamation | Stabilization of land with vetiver | Community/watershed |
| Land reclamation | Reclamation of gullies with Brush Check dam (height<2m) | Community/watershed |
| Land reclamation | Reclamation of gullies with sand bags, dry stone, or gabbions | Community/watershed |
| Land reclamation | Protection of river bank with sand bags, dry stone, or gabbions | Community/watershed |
| Land reclamation | Land demarcation | Community/watershed |
| Land reclamation | Training | Community |
| Water management | Community water ponds for irrigation/livestock use constructed (volume<1000m3) | Community |
| Water management | Water tanks for irrigation/livestock use (volume<20m3) | Community |
| Water management | Small-scale irrigation using river or stream diversion (withdrawal<100m3/day AND diversion<10% of water flow) | Community/watershed |
| Water management | Rock catchments or dams in gullies and small rivers (<2m in height) | Community/watershed |
| Water management | Hand-dug water wells for irrigation and/or livestock (depth<5m and withdrawal<100m3/day) | Community |
| Water management | Creation of *zai* and planting pits | Community/watershed |
| Water management | Training | Community |
| Livestock | Creation of forage and fodder production sites | Community |
| Livestock | Creation or rehabilitation of animal handling (cattle crush) facilities established | Community |
| Livestock | Creation of feed storage facilities (surface<20m2) | Community |
| Livestock | Training | Community |

#### Component 2.

OUTPUT 2.1. Increased access to integrated risk management tools and sales from market-based opportunities by CRA practicing farmers

Only those that meet the requirements of component 1, can transition to component 2. Access to the risk management tools and market opportunities of component 2 will function as incentives for farmers to employ CRA and diversify their livelihoods into alternative sectors under the watershed component. As such, component 2 rewards component 1 activities by offering means to grow them further, through investments, or market linkages, even in a context of increasing climate risk and variability. This helps sustain and enhance the adaptive capacity of participants begun to be fostered under component 1 activities.

*ACTIVITY 2.1.1. Support the establishment and function of 3 RCEs to enable access to IRM tools and market-based opportunities.*

Component 2 interventions will be channeled through the district Rural Center of Excellence (RCE). Through the establishment of RCEs, the Government of Mozambique intends to support the operationalization of the Strategic Plan for the Development of the Agrarian Sector (PEDSA 2011-2020). Since 2016, 77 RCEs were established nation-wide (Ministry of Agriculture, 2017), and in Tete, RCEs have been established in 5 out of 12 districts. This includes one RCE in Changara, which is in its initial set up phase. Marara and Cahora Bassa still require RCEs. By streamlining the provision of integrated risk management approaches (including micro-insurance, saving, credit) and market opportunities (trainings, input and output outlets), the project will support the function of the targeted RCEs and create a durable institution through which farmers can interact with the key service providers (public and private) they need for managing climate risks. Through these efforts, the RCEs become a one-stop shop for farmers to get access to the goods and services they need, vice versa RCEs act as a platform for public and private sector actors to interact with farmers.

RCE support is informed by an independent review (OMA, 2017) of these, which concluded that RCE sustainability was undermined by the following factors:

* lack of complementary services offered by the centers, such as credit, access to the market, technical support;
* focus on medium and large farmers rather than needs of smallholders; and
* lack of credit options (pay as you go; payments post-harvest, etc.) suitable for farmers to access services and technology.

The project activities pertaining to RCE have been designed to address the above challenges, ensuring that all activities are provided to farmers as part of an intergated and complementary package that can be accessible by smallholder farmers, including credit options tailored to the local context and capacities. Work will be done by MASA and WFP across the three dirsticts with a greater focus on Cahora-Bassa and Mara, through partnerships with the private sector, focused on those that can offer the integrated risk management package (insurance, saving, credit, and output outlets) of the project.

*ACTIVITY 2.1.2. Establish 550 village saving and loans (VSL) groups among the farmer clubs to act as shock buffers and promote financial literacy.*

Bank and microfinance institution (MFI) penetration tends to be low in rural areas, as already noted. Financial services tailored for these communities are often missing, and when they do exist, access to these is strained. Farmers and other rural populations also tend to have little knowledge and capacity to readily engage with these services. An initial strategy to overcome these challenges is to facilitate the creation of group savings. Group savings are a means to foster participant’s saving and investment capacities, making them more apt for formal financial services, and familiar with the ways these can be used for productive purposes aimed at building resilience and food security. Group savings hence have a dual purpose which include fostering financial capacities and knowledge, but also to add to the protection and promotion features of the integrated risk management approach which farmers use.

Smallholder farming households can face many shocks. While not all shocks are associated to their livelihoods, or the changing climate, when these materialize, they can deplete the overarching coping capacity of the household, rendering them more vulnerable to future shocks. In this context, savings are a good vehicle to expand the shock buffers households have. For example, in case of an illness within the household, savings can be used to cover related costs, whie not destablizing the overall household welbeing. These are idiosincratic shocks, which are specific to the individual household, and do not apply to the whole community, like covariate shocks.

Where there are no shocks, savings can grow and be used as sources for making small-scale, productive investments that support the transition and adherence to climate-resilient livelihood practices, as promoted under compnent 1 activities. The opportunity for these sorts of investments grow as groups pool their resources and use these to make loans to each other at low interests rates. The interest rates get acrued by the group and shared out the the end of the saving cycle (typically 6 months and aligned to the agricultural calendar), helping futher grow the financial resources and capacities of participants.

Awareness and understanding of saving, and other financial instruments, will be promoted through the VSL groups to ensure that they are making use of these in a way that helps them better manage the risks that they face, including those related to increasing climate change and variability.Therefore, support to VSLs will be focused on supporting financialy literacy, group formation (or revamping where these arleady exists), effective group dynamics, saving and small loan facilitation, as well as the planning for sharing out the group funds (including any gains made from making loans with small interests).

Notably, the VSL group do not need to follow the farmer club structure. This is because farmers may chose to let other people into the VSL groups to grow the resources they have available. It is important for farmers to have the choice in the membership of the group, as it its based on this consensus and trust that they will be able to pool and grow their resources effectively. In this context, where VSL groups already exists, these will be stregthened by the project, rather than creating new ones. New groups will only be formed where there are no other activite VSL groups. GAPI has been identified as a suitable partner for this component, as they currently suppot farmers in the target area with similar support.

*ACTIVITY 2.1.3. Facilitate farmer access to formal loans in the 3 target districts for productive investments in CRA and diversified livelihoods.*

The objectives of the credit component are to empower participants to take prudent risks and to develop livelihoods that are less exposed to increasing climate risks. Small farmers are often reluctant to invest land, labor, or capital in activities that are vulnerable to external shocks. They may thus prefer to stick to low input – low output production systems that guarantee a predictable, although low, income.

Investment is also limited by MFI’s reluctance to offer credit to farmers because of the perceived high risk of default in bad seasons. With increased food security and a stronger asset base, farmers in the project can increase their savings and stocks, using them along with insurance as collateral to obtain credit for investing in productive assets such as seeds, fertilizers and new technologies that increase productivity. Moreover, insured farmers are more confident to take out loans and invest in productive inputs and alternative livelihood activities, knowing that the risk of drought is covered.

The project will specifically try to leverage the credit component to remove the barriers related with the uptake of climate-resilient agriculture practices as well as diversified livelihoods (focus on forestry, livestock, and horticulture), which as noted by farmers include limited access to the technologies and inputs needed for this.

A strategic partnership with a MFI will be sought to help develop a tailored input loan package for project participants. Notably, the loans can be “targeted” for access to technologies/inputs needed for growing component 1 activities (e.g. tailored input package loan for CA) or can be “open” for other productive purposes (e.g. small-scale business loan). Experienced organizations like GAPI and farmer unions like UPCT (both in Tete) who leverage financial services in favor of rural populations will be explored as strategic partners for this activity (contributing also to the insurance distribution channel development).

*ACTIVITY 2.1.4. FACILITATE FARMER ACCESS TO MICRO-INSURANCE TO PROTECT PRODUCTIVE INVESTMENTS AGAINST CLIMATIC SHOCKS.*

Insurance is a risk transfer mechanism that is commonly used across the world. In developing countries, it is less prevalent and often limited to life or auto insurance. However, given the high levels of risk and vulnerability associated with the local models of agriculture and the hard-felt impacts of climate change, there is a great opportunity to leverage this mechanism for farmers in developing countries. In this context, insurance is sought by the project recognizing that weather-related shocks are due to persist, and that while efforts will be made to build resilience to these, there will be shock events that surpass the coping capacities of those affected.

The protection of the insurance and compensation when triggered can help households maintain their level of wellbeing. In shock-free years, insurance can act as an enabler for investments and diversification in livelihoods, as it provides a guarantee for credit and the security of compensation, if something does go wrong. Insurance, therefore, has a dual role of protecting and promoting diversified livelihoods, which in the context of climate change is key.

Weather-index insurance in particular has proven effective, as it is able to single out the risk of specific weather-related shocks and provide adequate protection against this. Specifically, when rainfall levels go below an established threshold, in weather index insurance, compensation is triggered to help farmers recover and adapt from the shock. This is, therefore, appropriate in contexts like Tete, where dry spells and drought are increasing in frequency and variability.

The index, which is monitored using satellite data, makes the weather index insurance scheme more time and cost effective. Less field visits are needed to set up the parameters of the insurance and to assess the damages for pay-outs. This unique feature makes it a fitting tool for those who have a limited income and are unable to access traditional insurance. It also makes it more effective in stimulating a timely recovery for stressed livelihoods, helping avoid the use of negative coping strategies with long-term impacts on wellbeing.

The project with national and sub-national actors across the public and private sectors will work to foster an enabling environment for the introduction of risk transfer tools like microinsurance while facilitating the development of a suitable index-based microinsurance product to be tested and promoted in Tete, through the following activities:

* **Promotion of suitable distribution channels:** Based on the feasibility assessment conducted for the introduction of micro-insurance, one of the main hurdles is the absence of an immediately apparent aggregator that can act as a policy holder. As a consequence, the distribution channel for the micro-insurance product cannot be readily identified. The project will work with local institutions with financial and legal capacities to act as aggregators (and policy holders), thereby, contributing to the establishment of viable and long-term distribution channels. Mobile money solutions, like MPESA, will be explored as tools to facilitate the set-up and function of the micro-insurance distribution channel. Partnerships with GAPI and UPCT (as mentioned) will be explored to support this sub-activity.
* **Index design with multi-peril considerations:** The Social Network for Index Insurance Design (SNIID) methodology used by WFP and the University of Columbia (International Research Institute for Climate and Society, IRI) will inform the design of the most suited index for the insurance product with the participation of smallholders. The SNIID approach has proven to be an effective index design tool and has marked benefits for increasing the awareness and understanding of farmers of insurance as a risk transfer mechanism. As such, it is a powerful tool to ensure the informed uptake of insurance among the targeted populations. The SNIID methodology will be further enhanced by historical climate analysis using ground and satellite data (rainfall estimates and/or vegetation indices), which when triangulated with farmer feedback, can be used for establishing the adequate triggers for the insurance product, as well as ground rainfall data, if available. Building on the insights gained from the weather index insurance (WII) design process, WFP will also explore the potential for introducing an area yield index insurance product, or a hybrid of this to be linked to the weather index insurance, which can be used to address additional risks faced by farmers, in order to better capture major shocks affecting smallholder farmers’ production.
* **Index testing and scale up:** The product developed through the SNIID process will be tested through a dry run. The purpose of the dry run is to test the effectiveness of the index to match the reality on the ground. Based on the outcome of the dry run, the product can be finetuned and introduced to the farmers in Tete. Given the high vulnerability profile of the farmers and the need to develop their capacity to pay for the premium, the premium will be covered by the project. The premium will be awarded to farmers that meet the conditionality to adopt component 1 activities. Over time, the project will reduce its contribution to the premium, with the aim of transitioning the payment fully to the farmers. This will be possible only by increasing income generation and saving capacities through other components.

The activity will establish a partnership with Hollard Insurance Company , and build on the index-based microinsurance product developed by MITADER.

WFP has been working on the promotion of micro-insurance as a risk transfer mechanism since 2011, across 6 different countries in the continent. This experience, leveraged through robust monitoring and evaluation, has provided great insights into the most effective and appropriate approaches to take when setting up a micro-insurance scheme, including the selection of partners, the design of the product, and processes to guide the scheme. The proposed project will make use of these to ensure that the project is successful in meeting its objectives. Section 6.7 provides more details on the choice of weather index micro-insurance as a suited and effective technology.

WFP leverages it longstanding experience in the continent to ensure that index insurance is effectively introduced as a risk transfer tool. To this end, WFP has developed strategies to address any risks related to the insurance product. The main risk associated with index-based insurance products is basis risk. Basis risk occurs when there is a mismatch between the ground reality and the index. Basis risk can occur due to many reasons, but these can generally be grouped into two type of situations, specifically where (1) design has been poor and (2) where the geography covered is too vast and different, not able to be covered by a single index. Basis risk can be minimized through robust product design and testing. To this end, WFP puts into place a basis risk strategy, which consists of a thorough monitoring and evaluation process that allows for refinement of the product with learnings gained from every agricultural campaign. WFP’s global basis risk strategy calls for each country operation to put into place the following: (1) agricultural practices monitoring to ensure farming practices are aligned with the product, (2) ground rainfall monitoring through rain gauges in each location to track the index (3) various satellite data sources used to triangulate points 1 and 2. Making use of this information, the basis risk committee meets to determine if basis risk took place and based on that determine how to proceed with claim settlements, if any. The basis risk committee of each country is not defined, as it can be contextualized, but generally it includes: WFP, IRI, insurance company, the insurance association, and other relevant partners.

*ACTIVITY 2.1.5. Promote Post-Havest Loss Management Techniques and Technologies for Greater Marketability of Component 1 Products.*

Climate risks have caused a reduction in production by farmers, especially under rainfed systems. Decreases in the production of maize have dropped in some cases between 30 and 45 percent. This means that farmers are less able to produce a surplus which can be marketed. Post-harvest losses exacerbate the problem and can prove to be detrimental to smallholder farmers. Post-harvest losses mean that farmers are less able to achieve a surplus that they can market for an income. This further limit investment and adaptation in the sectors, as farmers lack the financial resources needed. Under higher temperatures, driven by a changing climate, post-harvest losses are known to increase. Therefore, the proposed project will address the risk of post-harvest losses through adequate technologies and techniques to complement the project strategies that address climate risks to production.

Overall post-harvest loss rate is unknown for the country. Estimates approximate the loss rate at 25 percent. For maize specifically, loss rates in the northern and central regions (where Tete is located) is estimated at 12 percent. For sorghum and millet, the loss rates are approximately 6 percent throughout the country, reflecting the lower susceptibility of sorghum to storage pests and the lower volumes stored. For cassava, loss rates have been assumed to be 40 percent in the northern region. The losses (for cassava) are assumed to be mainly due to lack of harvesting, and therefore, higher figures are associated with high production areas where surpluses can most reasonably be expected. Altogether, these add up and make up a sizeable part of production, which could help meet the country’s food and nutrition needs.

Post-harvest loss management technologies and techniques will be promoted to address this challenge. The technologies and related trainings will be geared towards the farmer clubs through the RCEs. Through the RCEs, and additional extension support, the lead farmers can get access to hermetic bags, or silos, and trainings on how to use these. Specific demonstrations of the technologies will be done at the group level to raise awareness, understanding, and demand for the technologies.

Access to the technologies will be market-based. For the hermetic bags, ties to local producers have been made and through this the bags can be made accessible through the market at accessible prices (each bag around 100 MTZ, or 1.67 USD). While the project will support the provision of bags for demonstration purposes, farmers will be encouraged and supported (e.g. VSL) to buy their own bags, since it is part of developing a long-term demand for these. In respect to silos, in the latter stages of the project, when the clubs have higher levels of production, these will be promoted. Following the model for the hermetic bags, demonstrations will be done using subsidized silos, while encouraging farmer clubs to buy others, as needed. The silos will allow the storage of larger volumes, helping farmer clubs to aggregate their produce, keep it for longer, and ensure better quality, all of which enables them to market for better prices.

Additional technologies and techniques can be promoted to support not only storage but also safe processing of food for consumption and sale. While the specific activities will depend on the crops that are selected by the farmers for processing, there are technologies that can be easily leverage for this, including solar driers, fuel efficient cook stoves, among others. MASA and WFP through partnerships with the private sector established through the RCEs will lead this activity. This opportunity will be leveraged to deliver information about nutrition and food security, supported as well by messaging on water use and hygiene. The materials that will be used have been developed by the Government of Mozambique through a partnership between the Ministry of Health and WFP. The materials are used across the country to combat malnutrition. Leveraging the materials and information delivery platforms that the Ministry of Health has in the province, the project will support the messaging with the intent of ensuring that the production and processing practices promoted are integrated into local feeding practices for longer term sustainability.

*ACTIVITY 2.1.6. Identify and Promote Market Outlets Helping Make Investment in CRA and Diversified Livelihoods More Remunerative.*

Market outlets for the products generated under Component 1 will be identified and promoted to make climate-resilient livelihoods viable enterprises. As noted, the project will foster linkages to the national School Meals Programme operated by the Ministry of Education with support from WFP. Others will be sought to broaden the marketing options for participating households. Besides brokering connections between farmers and buyers, farmers will also be supported to have the capacities to identify through their own means beneficial market agreements. This will be done by enlarge through the promotion of SIMA, the Mozambican Information System for the Agricultural Market (*Sistema De Informação De Mercados Agrícolas De Moçambique*).

WFP is supporting the Ministry of Education to do local purchases of food for the School Meals Programme by identifying retailers in the area that can provide schools with the food supplies that they need. Building on this, schools are assisted to liaise with the retailers and conduct local procurement, as per their needs. Leveraging this system for the project, the intent is to also foster linkages between the farmers, through their clubs and associations of clubs, and the retailers. In this context, the project is simply enabling the entry of the farmers into that market. Notably, the retailers work to meet the needs of other buyers, so this opens the opportunity for farmers to sell to other entities. This interaction will be facilitated by the project, working with the retailers.

To support farmer interaction with retailers, they will be provided with market information generated by the Ministry of Agriculture through SIMA. Farmer clubs will be provided with radios (one each) to listen to the market information delivered through community radio. The farmer clubs will be supported to gather and discuss the information they receive and to develop strategies for integrating it into their livelihood plans. Accordingly, they will receive trainings to enhance their planning, especially with a focus on business development. The trainings will be done through the farmer clubs linked to activities on CRA, PHL, and financial literacy, as all of these are complementary.

As part of this component, it is important to note that SIMA was developed within the scope of the Ministry of Agriculture and Food Security in the early 1990s. The objective of SIMA is to provide average prices of specific products in the agricultural market, as well as inform about the provenance of products available in a given region. The Department of Statistics from the Directorate of Planning and International Cooperation (*Direcção de Planificação e Cooperação Internacional – DPCI)* in Maputo is in charge of the overall coordination and the analysis and broadcasting of price information while its representation at province level, the Provincial Directorate of Agriculture and Food Security (*Direcção Provincial de Agricultura e Segurança Alimentar - DPASA*) and district level, the SDAE, collect and send the price and market data to the headquarters. The information is broadcasted weekly by 11 community radios, spread across the provinces of Manica, Maputo, Nampula, Sofala, Tete and Zambézia. The market data is also available at SIMA’s website and is also published in their weekly bulletin *Quente-Quente* and in the *Jornal Notícia*. SIMA’s main target audience consists of smallholder farmers, especially those living in remote rural areas.

WFP and MASA worked on improving SIMA under a previous initiative. The outcome of this work was the expansion of SIMA to 12 additional districts, thereby enabling SIMA reach to over 58 of Mozambique’s 143 districts. An evaluation of this work, noted that not all farmers, where SIMA was made available, have access to the information being provided. Where farmers do have access to this information, the evaluation shows that they have better incomes. The evaluation also concludes that with well-developed information systems, farmers are able to make better decisions on where the suitable markets are for their produce and thereby contribute to household food and nutrition security.

This project will leverage the achievements and lessons learned of the WFP and MASA partnership on SIMA for greater impact at the farmer level.

#### COMPONENT 3

OUTPUT 3.1. Awareness campaigns on local climate change impacts and good practices on adaptation measures are disseminated

*ACTIVITY 3.1.1. Downscale National Climate Analysis to Government and Civil Society in 10 Workshops*

National climate analysis (including historical analysis and future projections) developed by WFP in partnership with the Government of Mozambique to inform the GCF submission will be downscaled to produce province and district level specific maps and relevant district climate risks summaries. Workshops will be organized for the Government, the private sector, and civil society at the province, district, and communities to disseminate downscaled climate analysis, and climate projections. Through these workshops, the objective is to translate this information into clear and defined adaptation priorities that are included in the plans of the local government and its partners, considerate of the private and public sectors. This analysis will also be used in the project activities across all components, including the definition of asset to build, crops to grow, the inputs to promote, insurance to develop, and climate services to be generated for communities. MITADER with support from WFP will be responsible for this component, mainly the hosting of workshops and dialogues conducive to the objectives noted.

*ACTIVITY 3.1.2. Disseminate Climate Awareness Campaign Reaching 80,000 People*

Under the activity on climate awareness, critical messages related to climate change, adaptation, and food security and livelihoods will be disseminated. This will be informed by the downscaled climate analysis under activity 3.1.1. The approach for this campaign will be founded on the principles of social behavioral change communication. Social and behavior change communication (SBCC) is a collection of communications approaches, activities, and tools used to positively influence behaviors. SBCC is now globally recognized as one of the essential actions to change social norms and improve behaviors in any setting. As such, formative analysis will be conducted to ascertain the needs of the communities, and thus, inform the selection of suited messages, adequate messaging mechanisms, and feedback mechanisms. This can be leveraged to strengthen other strategic messaging through the other project activities that support adaptation for more resilient livelihoods and food security. These other project activities include messaging on market information (2.1.5), messaging on food security and nutrition (2.1.6), as well as the climate services component (3.2.1). MITADER with support from WFP will lead on this activity.

*ACTIVITY 3.1.3. Facilitate the Development of 3 LAPs*

Three Local Adaptation Plans (LAP) for Changara, Cahora Bassa, and Marara will be facilitated in partnership with MITADER incorporating historical climate information, climate model projections, and gender-specific challenges to inform the identification of suited climate adaptation initiatives.

The LAPs will support the development of the Strategic Plans for District Development (PEDD)[[7]](#footnote-8) and the District Economic and Social Plan (PESOD)[[8]](#footnote-9).

This will build on work done by WFP and MITADER across other provinces, like Gaza and Manica, which have focused on improving the LAP methodology to better address seasonal fluctuations (leveraging the SLP methodology), difference between shock-affected and shock-free years, as well as climate trends and impacts (past and future).

*ACTIVITY 3.1.4. Develop and Disseminate 1 National Climate-Smart Standard for Watershed Rehabilitation*

The project will develop climate-smart standards for watershed rehabilitation to inform scaling-up within and beyond the project. At present, there are no guidelines on watershed management in-country. However, there are multiple initiatives that through small, medium, and large assets, or infrastructure developments, aim to enhance the capacity of the watershed to mitigate disaster risk and grow the productive capacity of inclusive farming systems. To fill this gap, the project will develop these guidelines. The guidelines will aim to: summarize work done in-country and other entry points for this work; identify and recount lessons learned and best practices related to watershed management; seek out regional and global lessons learned and best practices that are fitting to the Mozambican context; and finally provide standards for the application of a coherent watershed rehabilitation, making sure this is climate-resilient. Once the climate-resilient standards for watershed rehabilitation are develop, validation and dissemination events will take place. MITADER with support from WFP will lead on this activity.

*ACTIVITY 3.1.5. Produce and Disseminate Lessons Learned (6), Case Studies (6), Technical Reports (4), and Guidelines on Rural Financial Inclusion for Climate Innovations*

With the intent to leverage findings and lessons learned from the project, to support replication and scale-up through nationally-driven initiatives, the project will use the monitoring, evaluation, and learning system to document and share technical and operational guidance. This technical and operational guidance is categorized into 6 lesson learned pieces, 6 case studies, 4 technical reports, and one set of guidelines on rural financial inclusion for climate innovations. The lesson learned pieces are more anecdotal in nature and will be theme-specific, sharing insights into the project operations. The case studies are more technical in nature and will explore in detail specific themes. The case studies will complement the technical reports that will look at the project as a whole. The guidelines are intended to support the interactions between farmers and financial service providers in a structured and safe way. This should, to the extent possible, build on national initiatives to better regulate and enable microfinance services in the rural, agricultural sector. A dedicated knowledge management project staff will be responsible for the development of these pieces, including also their dissemination through relevant national and sub-national fora. MITADER, MASA, and WFP will all contribute to orient the work on knowledge management.

*OUTPUT 3.2.* Households have access to climate information services

*ACTIVITY 3.2.1. Support National Capacities to Generate Downscaled Seasonal Forecasts and In-Season Weather Updates with Tailored Advisories for Targeted Users in 3 Districts (Changara, Marara, Cahora-Bassa)*

The meteorological entity in the country is INAM. They are responsible for the seasonal forecast and weather updates. Currently, the seasonal forecast is based on the SARCOF findings, which is contextualized to Mozambique, but does not offer sub-national, detailed information. With a focus on drought, the project will center on the forecasting and monitoring of rainfall in Tete province, and further to the three targeted districts (capacities that can be leveraged for other parts of the country).

At present, the rainfall observational network in country is limited in reach. In addition, the transmission of this data from the districts up to the provinces and thru to the capital for aggregation and analysis is weak. As a result, there is no clear picture for the country in terms of rainfall patterns within the agricultural season. Given these shortcomings, historical rainfall records are minimal, unable to support the generation of forecasts, which can be used for planning.

To overcome these challenges, and help address these, the project proposes the following interventions:

1. Expansion of rain gauge network (as needed also automated weather stations) across the targeted districts, contributing to the country’s observational network;

The proposal is to ensure that at least one rain gauge is in use for each district. The first step will be to map out the existing rain gauge network. Verifications will be done at random to ensure that the reported is in line with the ground reality. Where there is a need to establish new rain gauges, procurement of these will be conducted. Plans will also be drafted for their installation and their management. This will also include the training of responsible staff on the accurate and regular collection of this data. If needed, automated weather stations can also be considered to enhance the observational capacity. The same rain gauges will be used to monitor the performance of the insurance product, contributing to other project outputs.

1. Establishment of systems to enable the regular transmission of the rainfall observational data to INAM in Maputo;

To complement the data collection network, work will be done on enabling the aggregation and storage of this data for analysis. This will include the use of mobile technology for the daily reporting from rain gauges by the locally trained staff, who manage the equipment. The mobile technology (i.e. smart phones) will be procured and provided to the staff, while the software for data collection will be open-source and tailored to the context, enabling for the uptake and sustainability of the system. In INAM Maputo, dedicated computer equipment will be made available for the housing and processing of the data. INAM will commit staff time and resources to ensure that the system is managed, and accordingly, an agreement will be signed to formalize this arrangement.

1. Enhancement of data interpretation for monitoring by blending of observational data with high-resolution, high-frequency satellite data;

Using WFP’s data visualization platform and VAM capacity, the observational data, will be blended for greater accuracy. The data visualization platform can be accessed [here](http://dataviz.vam.wfp.org/seasonal_explorer/rainfall_vegetation/visualizations). The data on rainfall is updated every 10 days at a high resolution (250 meters), which can enable for detailed monitoring of drought events. The observed data will be fed to the system following this 10-day cycle for consistency and better outcomes. WFP will provide training to enable the uploading of observational data and the manipulation of the platform by INAM staff for tailored monitoring and reporting processes. The data visualization platform is open access and open source, therefore, it is a free and sustainable platform to use. Besides being of use to INAM, this can be of use to strategic partners, like MASA and MITADER, so they will also be able to access this information freely.

1. Inclusion of other relevant satellite data to inform drought monitoring, such as vegetation, temperature, and water satisfaction requirements;

Through the data visualization platform, other satellite data sources can be observed in real time and in great resolution to further inform the monitoring of drought events, such as vegetation index, temperature, and water satisfaction requirements. This will enhance the level of analysis and interpretation that can be done in terms of the plausible impact of the rainfall patterns being observed, especially in terms of crop production. INAM capacity will be enhanced through trainings in this regard.

1. Production of in-season updates with advisories to help inform relevant stakeholders on the observed weather trends;

Given that the rainfall observation data will be available every 10 days, in season updates can be provided with high regularity. With the added parameters of temperature, vegetation, and others, the updates can also be elaborated to provide some insights into possible impacts of the observed trends. This can be further enhanced with advisories that help address the situation. While INAM will be supported to generate these, other stakeholders like MASA, could also input into these, especially on the interpretation of impacts and advisories related to their fields. For this sort of more detailed reporting, the frequency could be reduced to once every other month.

1. Production of seasonal forecasts (downscaled to the extent possible/desirable) to be combined with the thresholds and monitoring;

With an enhanced monitoring system, analysis scheme, and reporting mechanisms, INAM will be better positioned to develop a downscaled seasonal forecast. Tailored trainings on the generation of downscaled seasonal forecasts will be delivered to dedicated INAM staff. The trainings will be tailored and delivered in response to a capacity needs assessment conducted by WFP. INAM will also be supported to develop the tools and systems needed to regularly produce and disseminate the forecast. Schedules, standard templates, and procedures are among the tools that will be generated.

*ACTIVITY 3.2.2. FACILITATE PICSA ROLL OUT REACHING 16,000 FARMING HOUSEHOLDS PROVIDING ACCESSS TO CLIMATE AND WEATHER INFORMATION WITH ADVISORIES.*

Livelihood decision-making by farmers is plagued by uncertainty. Without knowledge about the upcoming season, it is difficult to establish the types and quantities of input needed, the right type of practices, the suitable market to target, and thus, the investments needed to successfully harvest for both consumption and profit. Climate services are intended to support with this process of decision-making by providing farmers with information on the upcoming season accompanied by advisories for their livelihood decision-making. Climate services, therefore, marry weather and agricultural information to help inform farmers’ actions. Besides working on the basis of a seasonal forecast, which provides an overview of the upcoming agricultural season, in-season updates are provided to further inform the farmers. The in-season forecasts are provided every 10 days.

To optimize the use of the climate information in decision-making, the provision of climate services is married to the extension support offered at the district level. In this context, extension officers are trained to collect, interpret, and disseminate climate services. The training of extension officers is based on the methodology developed by the University of Reading called the Participatory Integrated Climate Services for Agriculture (PICSA). The PICSA approach aims to facilitate farmers to make informed decisions based on accurate, location specific, climate and weather information; locally relevant crop, livestock and livelihood options; and with the use of participatory planning tools to aid their decision making. PICSA can be adapted to the local livelihood profile, and thus, can be used to guide decision-making even in mixed-livelihood context. PICSA creates farmer demand for adaptation strategies such as those introduced in Components 1 and 2 of the project.

To support the roll out of PICSA the following will be done:

* District level baselines assessments – Assessments will be conducted to identify differentiated community needs in terms of weather and climate information and services, adapted to their livelihoods, and delivered through the most appropriate mechanisms – paying particular attention to gender-specific needs.
* Extension worker training: through the Training of Trainers (ToTs) methodology, approximately 200 intermediaries (government and NGO extension workers) will be trained to better analyze and utilize climate and weather information using PICSA. This will form a pool of national experts that can be leveraged for PICSA roll out under other initiatives by the government or other interested stakeholders, like IFAD and FAO.
* Set up of content creation committees: Upon release of the annual seasonal forecast, the intermediaries, INAM, MASA, University/research centers, and community members will convene for a Planning and Review (P&R) workshop to collectively interpret the seasonal climate forecasts; discuss response options and scenario planning against forecasted risks; and review evidence and build capacity for longer term adaptation planning. This will serve as the basis for the advisories offered. Community feedback mechanism will be operationalized to allow the content to be adapted to the needs of the farmers.
* Exploration of other communication channels and approaches: Using the district level baseline assessments, other dissemination channels and approaches will be pursued that are fitting with the needs and demands of the targeted population. This can include SMS, radio, community meetings.

#### Beneficiary targeting

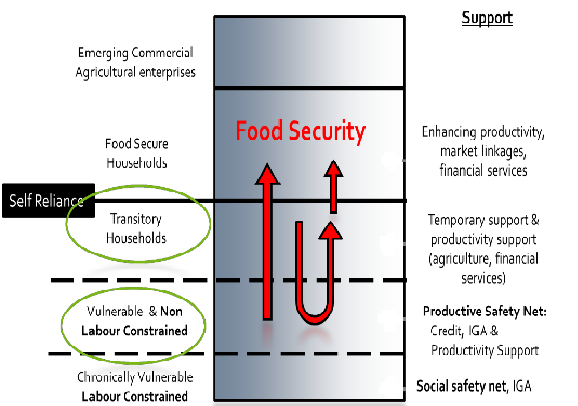
Given the focus on food security and nutrition, as well as building resilient and productive livelihoods in the face of a changing climate, this project’s principal target group are smallholder farmers, both women and men, who experience periodic food gaps based on the seasonality of their livelihoods. These are also farmers that in the face of a climatic shock may experience longer periods of hunger. Therefore, these farmers, while vulnerable, are abled-bodied and able to engage in productive activities to enhance the resilience of their livelihoods for greater food and nutrition security.

Indirectly, the project can also target different individuals, such as the chronically vulnerable, without labor capacity. This can be achieved by offering access to the risk reserves and climate information components of the integrated risk management package of the project. It also includes the indirect benefits from the work done at the watershed and community levels on risk reduction that render benefits to all.

Finally, the project can also target better off households by offering access to the prudent risk taking and risk transfer components through cash payment modalities, which also contribute to growing the schemes used by the project, and thus, helping establish them at scale and in a more sustainable manner.

This is demonstrated in the diagram below, with the principal target groups highlighted in green:

Figure109 – Beneficiary targeting diagram



On the field targeting will be done as follows:

* Government will recommend communities within the target districts to work with that fit the project criteria.
* The project team will meet with the community leaders to verify the suitability of the community.
* Upon verification, community meetings will be held to explain the beneficiary profile for the project.
* The communities will self-target beneficiaries[[9]](#footnote-10) for the project with the community leader and district project staff there to validate the selection, or suggest changes.
* Once the community, local government, community leader, and project staff reach agreement on the targeted beneficiaries, the process will conclude.
* Through the project Complaint and Feedback Mechanism (CFM), issues regarding exclusion/inclusion will be captured, helping refine the beneficiary list.

The project will also work to enhance the capacity of national and sub-national authorities to generate, disseminate, and use climate services to support climate adaptation and more resilient livelihoods, including policy/decision-maker, government staff, extension officers, as well as local non-governmental organizations who function as intermediaries between communities and government programs.

The planned project caseload breakdown by component and district is shown below.



### Project-level log frame

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Expected Result** | **Indicator** | **Means of Verification (MoV)** | **Baseline[[10]](#footnote-11)** | **Target[[11]](#footnote-12)** | | **Assumptions** |
| Mid-term | Final |
| **Fund-level impacts** | | | | | | |
| *A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions* | Number of males and females benefitting from the adoption of diversified, climate-resilient livelihood options | Quantitative Surveys at household level conducted on  bi-annual basis will collect data on WFP’s corporate Asset Benefit Indicator[[12]](#footnote-13) (ABI) and Livelihood Coping Strategy Index[[13]](#footnote-14) (LCSI).  This will be reported in monitoring reports, as well as the formative  mid-term and final evaluation reports which are verified by third party sources | 0 people in targeted areas benefit from adoption of diversified, climate-resilient livelihood options | 32.000 people in targeted areas benefit from adoption of diversified, climate-resilient livelihood options (50% women, 50% men) | 48.000 people in targeted areas benefit from adoption of diversified, climate-resilient livelihood options (50% women, 50% men) | Targeted households are interested in the project and engage continuously through the 5-years of programming across the different interventions  EEs are able to sustain the timely, adequate, and reliable provision of support  There will be no major weather-related shocks that affect the target area of intervention during the length of the program  No weather-related shocks, or other types, (not limited to project area) that reduce EEs capacity to implement the project |
| *A2.0 Increased resilience of health and well-being, and food and water security* | Number of food secure HH in areas at risk of climate change impacts (reduced food gap) disaggregated by sex of household head | **Quantitative Surveys at household level conducted on**  **bi-annual basis will collect data on: Consolidated Approach to Reporting Indicators of Food Security[[14]](#footnote-15) (CARI)** and on the Food Consumption Score - Nutrition[[15]](#footnote-16) (FCS-N) disaggregated by sex of household head. | 2,400 HH at risk of climate change impacts are food secure | 4,800 HH at risk of climate change impacts are food secure (33% female headed; 67% male headed) | 9,600 HH at risk of climate change impacts are food secure (33% female headed; 67% male headed) |
| **Project**  **outcomes** | **Outcomes that contribute to Fund-level impacts** | | | | | |
| *A6.0 Increased generation and use of climate information in decision-making* | Use of climate information services in decision-making in climate-sensitive sectors | Quantitative Surveys at household level conducted on  bi-annual basis | 0 HHs in the targeted communities using climate information services for decision-making in agricultural related planning and actions. | 6.400 HHs in the targeted communities using climate information services for decision-making in agricultural related planning and actions. (33% female headed; 67% male headed) | 9.600 HH in the targeted communities using climate information services for decision-making in agricultural related planning and actions. (33% female headed; 67% male headed) | Information and technology continue to be available and to function effectively, enabling the co-production and dissemination of climate/weather information  Other risks (plagues, wildfires, civil unrest, etc.) to agricultural production do not interfere and reduce the use and trust of climate information services |
| *A7.0 Strengthened adaptive capacity and reduced exposure to climate risks* | Use by vulnerable households of Fund-supported tools, instruments, strategies and activities to respond to climate change and variability | Quantitative Surveys at household level conducted on bi-annual basis. | 0 vulnerable HHs in the targeted communities use at least three fund-supported strategies to respond to climate change and variability[[16]](#footnote-17) | 4.800 vulnerable HHs in the targeted communities use at least three fund-supported strategies to respond to climate change and variability (33% female headed; 67% male headed) | 9.600 vulnerable HHs in the targeted communities use at least three fund-supported strategies to respond to climate change and variability (33% female headed; 67% male headed) | Insurance continues to be possible based on technology, information, and distribution channels, as assessed  Financial capacities and trust are fostered sufficiently to enable access to and use of financial tools |
| **Project outputs** | **Outputs that contribute to outcomes** | | | | | |
| *1.1. Increased use of Climate Resilient Agriculture techniques through CRA clubs with trainings, demonstrations and access to inputs* | Number of people practicing CRA through clubs (disaggregated by sex) | Quantitative Surveys at household level conducted on bi-annual basis. | 0 people practicing CRA through clubs | 7,000 people practicing CRA through clubs (50% women, 50% men) | 16,000 people practicing CRA through clubs (50% women, 50% men) | Farmers are interested and engage in the trainings offered |
| *1.2 Informative watershed assessment and CBPP results available* | Number of watershed assessments and conducted CBPPs used to inform asset creation decisions | Quantitative Surveys at household level conducted on bi-annual basis. | 0 watershed assessments and 0 CBPPs inform asset creation decisions | 1 watershed assessment and 6 conducted CBPPs inform asset creation decisions | 1 watershed assessment and 6 conducted CBPPs inform asset creation decisions | Inputs received from the CBPP and the assessment are useful for asset creation decision making |
| *1.3 Asset creation activities implemented to enhance and rehabilitate watershed capacity* | Number and type of assets created/rehabilitated by targeted households | Quantitative Surveys at household level conducted on bi-annual basis. | 0 assets[[17]](#footnote-18) created/rehabilitated by targeted households (disaggregated by type) | 600 assets created/rehabilitated by targeted households (disaggregated by type) | 800 assets created/rehabilitated by targeted households (disaggregated by type) | Farmers see the benefit of the assets created and undertake asset creation activities |
| *2.1. Increased access to integrated risk management tools and sales from market-based opportunities by CRA practicing farmers* | Number of households that access financial instruments  Increase in income from increased crop production and sales amongst CRA practicing farmers | Quantitative Surveys at household level conducted on bi-annual basis. | 0 households access financial instruments  0% Increase in income from increased crop production and sales amongst CRA practicing farmers | 4.800 households access financial instruments (33% female headed; 67% male headed)  5% Increase in income from increased crop production and sales amongst CRA practicing farmers | 9.600 households access financial instruments (33% female headed; 67% male headed)  15% Increase in income from increased crop production and sales amongst CRA practicing farmers | Farmers benefiting from 1.1. also join 2.1  Farmers sign up for financial activities and maintain these activities  Enhanced production from project-supported activities (assets and trainings) is not countered by other shocks |
| *3.1. Awareness campaigns on local climate change impacts and good practices on adaptation measures are disseminated* | Number of people aware of local climate change impacts (disaggregated by sex)  Number of representatives of local government and civil society aware of how to access the knowledge products created by the project for operations/planning to mitigate climate impacts (disaggregated by sex) | Surveys at end of campaigns and knowledge products | 0 people aware of local climate change impacts    0 representatives of local government and civil society aware of how to access the knowledge products created by the project for operations/planning to mitigate climate impacts | 70,000 people aware of local climate change impacts (50% women, 50% men)  150 representatives of local government and civil society aware of how to access the knowledge products created by the project for operations/planning to mitigate climate impacts (50% women, 50% men) | 80,000 people aware of local climate change impacts (50% women, 50% men)  300 representatives of local government and civil society aware of how to access the knowledge products created by the project for operations/planning to mitigate climate impacts (50% women, 50% men) | People are interested, trust and will actively listen to the information.  Sufficient women represent the local government and civil society and are sent to achieve the targeted gender balance |
| *3.2 Households have access to climate information services* | The number of HHs in the targeted communities receive climate information services to make agricultural related planning and actions related decisions disaggregated by sex of household head. | Quantitative Surveys at household level conducted on bi-annual basis. | 0 HH receive climate services to make agricultural related planning and actions related decisions | 12,000 HH receive climate services to make agricultural related planning and actions related decisions  (33% female headed; 67% male headed) | 16,000 HH receive climate services to make agricultural related planning and actions related decisions (33% female headed; 67% male headed) | Sustained interest and engagement of national stakeholders to develop tailored climate information products  People trust and are interested in making use of the tailored climate information products |
| **Activities** | | **Description** | | | **Inputs** | |
| 1.1.1. Promote CRA through the establishment of 550 farmer clubs (targeting 16,000 farming households, across 3 districts) with access to dedicated trainings, demonstrations, and farming implements. | | Set up farmer clubs with lead and follower farmers through which trainings, demonstrations, and farming implements are channeled. These are regularly monitored for adherence to adapted agricultural practices. | | | Trainers, technical experts and farming implements. | |
| 1.2.1. Conduct 6 community-based (2 per district) participatory planning exercises to guide watershed rehabilitation and management activities. | | Communities in targeted districts mobilized to participate in a representative manner in the planning for the watershed enhancement and rehabilitation activities, resulting in the prioritization of assets that will be developed across livestock, horticulture, and forestry sectors. 2 community-based planning exercises will be conducted by district for a total of 6 plans. | | | Facilitators, planning workshops, community mobilization. | |
| 1.2.2. Conduct 1 watershed assessment covering the 3 targeted districts to inform watershed enhancement and rehabilitation activities. | | Natural assessment of the physical characteristic and capacities of the watershed to inform the participatory planning exercise, particularly the selection of assets to be created/rehabilitated. | | | Technical experts and terms of reference for the assessment. | |
| 1.3.1. Support watershed enhancement and rehabilitation activities through asset creation across forestry, livestock, and horticulture sectors to complement CRA activities in 3 districts, reaching 16,000 farming households. | | Creation/rehabilitation of assets at the watershed and community levels across forestry, livestock, and horticulture sectors as per technical assessment and community-based planning outcomes, which are supported by trainings, demonstrations, and provision of tools, as needed. | | | Construction material, equipment, engineering and agricultural extension officers, trainers, technical experts, district/community workshops | |
| 2.1.1. Support the establishment and function of 3 RCEs (1 per district) to enable access to IRM tools and market-based opportunities. | | Support MASA’s efforts with the creation and/or management of RCEs, while also fostering linkages between private/public service providers and farmers on key IRM approaches and market opportunities. | | | Pre-existing RCE network and capacities | |
| 2.1.2. Establish 550 Village Savings and Loans (VSL) groups among the farmer clubs to act as shock buffers and promote financial literacy. | | Map out existing VSL groups and gaps and use this to carry out VSL activities, including support of saving and loan activities, as well a financial literacy training provision. | | | Community awareness, community/VSL groups, and trainers, | |
| 2.1.3. Facilitate farmer access to formal loans in the 3 target districts for productive investments in CRA and diversified livelihoods. | | Identify microfinance service providers and products that are fitting with the local context and needs, while working to ensure farmers have access to these products, should their financial capacities allow | | | Gross margins analysis, product design, and marketing of products | |
| 2.1.4. Facilitate farmer access to micro-insurance to protect productive investments against climate shocks. | | Design index based micro-insurance product against climate shocks leveraging agro-climatic data (satellite and ground data) as well as farmer input, which is made accessible through compliance with Component 1 activities. | | | Historical climate and weather data as well as agricultural historical records | |
| 2.1.5. Promote post-harvest loss management techniques and technologies for greater marketability of Component 1 products. | | Through trainings, demonstrations, and facilitated access to technologies support post-harvest loss management activities among targeted households. | | | Trainers, technical experts, funding | |
| 2.1.6. Identify and promote market outlets helping making investment in CRA and diversified livelihoods more remunerative. | | Identify market outlets, like local school meals programs, and marketing options that enable farmer sales of project supported products under Component 1 | | | Crop and market assessments available through the national agricultural survey | |
| 3.1.1. Downscale national climate analysis to government and civil society in 10 workshops | | Extract from available climate analysis the profile for the targeted provinces and districts, which are made available through workshops | | | Historical climate and weather data as well as agricultural historical records | |
| 3.1.2. Conduct climate awareness campaign reaching 80,000 people | | Based on the downscaled climate analysis generate key messages that can be disseminated through different channels to raise awareness on climate change and its impacts on food security, nutrition, and livelihoods. | | | Climate information, technical experts, and funding | |
| 3.1.3. Facilitate development of 3 LAPs | | Support MITADER efforts to develop LAPs for the 3 targeted districts using the climate evidence generated | | | Trainers, technical experts, facilitators, funding | |
| 3.1.4. Develop and disseminate 1 national climate-smart standard for watershed rehabilitation | | Consolidate best practices in-country and globally to produce climate-smart standards for watershed rehabilitation | | | Technical experts, facilitators, funding | |
| 3.1.5. Produce and disseminate lessons learned (6), case studies (6) and technical reports (4) and guidelines on rural financial inclusion for climate innovations | | Document project achievements and lessons learned and use this to generate case studies, technical reports and guidelines on financial inclusion and climate innovations | | | Technical experts, funding | |
| 3.2.1. Support national capacities to generate downscaled seasonal forecasts and in-season weather updates with tailored advisories for target users in 3 districts | | Support to data collection, management, analysis, and processing to enable the generation of downscaled seasonal forecasts and in season weather updates which can be complemented with advisories of use for target users through co-production approaches | | | Trainers, technical experts, funding | |
| 3.2.2. Facilitate PICSA roll out reaching 16,000 farming households providing access to climate and weather information with advisories. | | Create pool of experts to be trained in PICSA. Leverage pool of experts to train extension officers and other intermediaries on PICSA approaches. Support intermediaries in the roll out of PICSA and conduct planning and review sessions to improve PICSA implementation. | | | Trainers, technical experts, funding | |

### Project Timeline

### Implementation arrangements

#### 5.1 Roles and responsibilities

WFP will act as both AE and co-EE with MASA and MITADER. Co-EEs will be responsible for the day-to-day project execution functions ensuring that the objectives and outcomes of the project are delivered effectively. EEs will not be equally responsible for all activities. Responsibility is based on the comparative advantage of each EE. Responsibility of EEs by activity summarized below.

Figure 11 – EE responsibility by activity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **Description of each activity** | **EEs** | **Beneficiary eligibility criteria** | **Legal agreement with EEs** | **Beneficiary** | **Co-financing** |
| 1.1.1 Promote CRA through the establishment of 550 farmer clubs with access to dedicated trainings, demonstrations, and farming implements. | CRA promoted using international and regional guidance through the establishment of farmer clubs (with lead and follower farmers) that are provided with trainings, demonstrations, and farming implements through MASA extension officers supported by service providers hired by WFP | WFP and MASA  MASA already promoting CRA but at a limited scale, WFP through R4 in Zambia has regional relevant experience | **Criteria for the selection of activities:**   * be in the “eligible activities list” provided in Annex 13 (ESS) * be of low environmental and social risk (this will be confirmed and ensured by the activity-level E&S screening to be done after CBPP, once the exact activities are identified) * be in line with MASA CRA principles and relevant international/regional standards   **Principal criteria for the selection of beneficiaries**:   * Chronically food insecure * Practices rainfed agriculture * Affected by climate hazards, mainly drought * Non-labor constrained * Over 18 years of age   **Additional criteria for consideration**:   * households with high (5 or more) family size * households who have members with disability or illness * households with pregnant women, adolescent girls, and children under two years of age * Women-headed households | Memorandum of Understanding (MOU) | 16,000 farmers in the farmer clubs | Government of Flanders (FICA) |
| 1.2.1. Conduct 6 community-based (2 per district) participatory planning exercises to guide watershed rehabilitation and management activities. | MITADER and WFP facilitate a community-based participatory planning (CBPP) exercise as per established [WFP methods](https://documents.wfp.org/stellent/groups/public/documents/communications/wfp264473.pdf) to select the asset rehabilitation and creation activities to be done by the communities in each location based on their priorities and needs | WFP and MITADER  WFP as per its corporate Resilience Policy has to apply the CBPP and applies this worldwide, working with the Government, as has been in the case of MITADER in Mozambique. | None. All community members welcomed to participate in the CBPP | MOU | Community members | Not applicable (N/A) |
| 1.2.2. Conduct 1 watershed assessment covering the 3 targeted districts to inform the watershed enhancement and rehabilitation activities. | WFP to hire and orient with MITADER a consultant to conduct a watershed assessment for the 3 targeted districts to complement the CBPP in the selection of asset rehabilitation and creation activities, based on the physical and social dynamics of the watershed, considering future climate trends | WFP and MITADER  WFP in the context of R4 Malawi led efforts with national stakeholders to conduct watershed assessments to help the design and planning of asset creation and rehabilitation work. MITADER provides technical advice on water and land management in all government projects. | None. All community members welcomed to input into the assessment | MOU | Community | N/A |
| 1.3.1. Support watershed enhancement and rehabilitation activities through asset creation across forestry, livestock, and horticulture sectors to complement CRA activities in 3 districts, reaching 16,000 farming households. | WFP to hire and orient with MITADER a service provider to provide trainings, demonstrations, and implements for the creation and/or rehabilitation of assets. FAO will provide technical support to the component of livestock and will do so as a service provider through a UN to UN agreement. | WFP and MITADER  WFP in the context of R4 Malawi led efforts with national stakeholders to support watershed enhancement and rehabilitation through asset creation. This is further informed by WFP’s work in Ethiopia specifically in the MERET project. | 1.1.1 farmer clubs  **Criteria for the selection of activities:**   * be in the “eligible activities list” provided in Annex 13 (ESS) * be of low environmental and social risk (this will be confirmed and ensured by the activity-level E&S screening to be done after CBPP, once the exact activities are identified) * be in line with the results and recommendations from the watershed assessment (activity 1.2.2) * be identified as priority by the community during the CBPP exercise (activity 1.2.1) | MOU | 16,000 farmers in the farmer clubs | FICA |
| 2.1.1. Support the establishment and function of 3 RCEs to enable access to IRM tools and market-based opportunities. | Set up RCEs as a one-stop-shop for farmers to access the goods and services they need through market-based approaches with WFP supporting on climate risk management good and services and MASA as the technical and operational lead of RCEs | WFP and MASA  MASA has been supporting RCEs nation-wide | All farmers in the 3 districts will have access to the RCEs. Project subsidized goods and services, such as the insurance, will only be available to farmers who participate fully in activities 1.1.1 and 1.3.1. | MOU | All farmers in the 3 districts, especially the 16,000 targeted farmers from 1.1.1 and 1.3.1. | N/A |
| 2.1.2. Establish 550 village saving and loans (VSL) groups among the farmer clubs to act as shock buffers and promote financial literacy. | WFP to map VSL groups in targeted areas and based on this either create or revamp groups that are supported by a service provider to save and make internal loans informed by financial literacy and management skills provided | WFP  WFP through R4 has been doing this work since 2011 in countries like Ethiopia, Senegal, Malawi, Zambia, Kenya and Zimbabwe. WFP has also started this work in Mozambique through FICA support. | Farmers who participate fully in activities 1.1.1 and 1.3.1. | N/A | VSL group members, especially the 16,000 targeted farmers from 1.1.1 and 1.3.1. | FICA |
| 2.1.3. Facilitate farmer access to formal loans in the 3 target districts for productive investments in CRA and diversified livelihoods. | WFP to map out and select service providers (micro-finance institutions, MFIs) and loan products that are suited to the targeted farmers | WFP  WFP through R4 has been doing this work since 2011 in countries like Ethiopia, Senegal, Malawi, Zambia, Kenya and Zimbabwe. WFP has also started this work in Mozambique through FICA support. | Farmers who participate fully in activities 1.1.1 and 1.3.1. | N/A | Loan recipient, especially the 16,000 targeted farmers from 1.1.1 and 1.3.1. | N/A |
| 2.1.4. Facilitate farmer access to micro-insurance to protect productive investments against climatic shocks. | WFP and select service providers (Hollard Insurance and IRI) to design and provide farmers with access to weather-index micro-insurance | WFP  WFP through R4 has been doing this work since 2011 in countries like Ethiopia, Senegal, Malawi, Zambia, Kenya and Zimbabwe. WFP has also started this work in Mozambique through FICA support. | Farmers who participate fully in activities 1.1.1 and 1.3.1. | N/A | Insurance recipient, especially the 12,000 targeted farmers from 1.1.1 and 1.3.1. | FICA |
| 2.1.5. Promote Post-Havest Loss Management Techniques and Technologies for Greater Marketability of Component 1 Products. | WFP will train and facilitate MASA extension officers to promote PHL management techniques and technologies among farmers | WFP and MASA  WFP has a Global Post Harvest Knowledge & Operations Centre (KNOC) that orients the work WFP does worldwide on PHL, including the work in Mozambique, which already piloted this approach through funding from the Cartier Foundation. | Farmers who participate fully in activities 1.1.1 and 1.3.1. | MOU | The 16,000 targeted farmers from 1.1.1 and 1.3.1. | Cartier Foundation |
| 2.1.6. Identify and Promote Market Outlets Helping Make Investment in CRA and Diversified Livelihoods More Remunerative. | MASA will be technical and operational co-lead to create and disseminate market information using their established SIMA system. WFP to support technically and operationally to ensure that the information reaches farmers, as well as to broker linkages to output markets | WFP and MASA  WFP and MASA have been supporting this work through the project called “Accelerate progress towards MDG 1 c in Mozambique”. However, this work has so far focused on other parts of the country. | Farmers who participate fully in activities 1.1.1 and 1.3.1. | MOU | The 16,000 targeted farmers from 1.1.1 and 1.3.1. | N/A |
| 3.1.1. Downscale National Climate Analysis to Government and Civil Society in 10 Workshops | WFP to generate downscaled climate analysis and MITADER to host workshops for dissemination, with WFP support as needed | WFP and MITADER  WFP generated the climate analysis for the country and is the only one in the position to downscale this to the province level. | None. Individuals across the province, especially from the 3 targeted districts. | MOU | 80,000 individuals across the province, especially from the 3 targeted districts. | FICA |
| 3.1.2. Disseminate Climate Awareness Campaign Reaching 80,000 People | WFP to co-disseminate with MITADER a climate awareness campaign informed by climate and weather information historical, present, and future | WFP and MITADER  WFP with the Government of Mozambique lead one of the largest awareness campaigns on malnutrition, this experience is leveraged for this project and adapted to the project objectives. | None. Individuals across the province, especially from the 3 targeted districts. | MOU | 80,000 individuals across the province, especially from the 3 targeted districts. | N/A |
| 3.1.3. Facilitate the Development of 3 LAPs | MITADER will be responsible with support from WFP to host the LAP planning exercise consisting of primary and data collection regarding the adaptation priorities for each district based on broad stakeholder consultation | WFP and MITADER  MITADER for the last year has been working on the LAPs for the country and WFP has assisted in these efforts for other provinces. | None. Individuals across the 3 targeted districts | MOU | 80,000 individuals across the province, especially from the 3 targeted districts. | N/A |
| 3.1.4. Develop and Disseminate 1 National Climate-Smart Standard for Watershed Rehabilitation | WFP to lead through the procurement of consultancy services and by supporting technically in the content creation and dissemination. MITADER to input technically into the content and operationally its dissemination. Standards to be based on a scan of successful practices in-country and abroad and the identification of set steps to follow and requirements to meet for climate-smart, watershed rehabilitation | WFP and MITADER  WFP in many country contexts has helped with watershed guidelines, much like this one, based on the own corporate guidance that WFP has, and in-country implementation experience acquired by working with the Government, like was the case of R4 Malawi | None. | MOU | National stakeholders | N/A |
| 3.1.5. Produce and Disseminate Lessons Learned (6), Case Studies (6), Technical Reports (4), and Guidelines on Rural Financial Inclusion for Climate Innovations | WFP will hire a consultant dedicated to knowledge management that will generate this content, engaging MITADER and MASA technically | WFP, MASA, and MITADER  WFP through the R4 WFP through R4 has been doing this work since 2011 in countries like Ethiopia, Senegal, Malawi, Zambia, Kenya and Zimbabwe. | None | MOU | National stakeholders | N/A |
| 3.2.1. Support National Capacities to Generate Downscaled Seasonal Forecasts and In-Season Weather Updates with Tailored Advisories for Targeted Users in 3 Districts (Changara, Marara, Cahora-Bassa) | WFP will support technically national capacities (targeting the National Meteorological Institute, INAM) to generate downscaled forecasts through dedicated trainings, support to enhance the observational network, and streamlined systems for data management | WFP  WFP through the Global Framework for Climate Services of the World Meteorological Organization started implementation of PICSA in Tanzania and Malawi, based on the good results this has been scaled up in these countries, and others like Zimbabwe, through WFP support. This work included the generation of downscaled seasonal forecasts. | None | N/A | INAM and 80,000 individuals across the province, especially from the 3 targeted districts. | N/A |
| 3.2.2. Facilitate PICSA roll out reaching 16,000 farming households providing access to climate and weather information with advisories. | Service Provider (UoR) procured by WFP will support MASA with PICSA roll out, while WFP will also support help host trainings for MASA staff on PICSA. MASA will provide technical inputs into the climate services generation and facilitate role out through extension officers. | WFP and MASA  WFP through the Global Framework for Climate Services of the World Meteorological Organization started implementation of PICSA in Tanzania and Malawi, based on the good results this has been scaled up in these countries, and others like Zimbabwe, through WFP support. | Farmers who participate fully in activities 1.1.1 and 1.3.1. | MOU | The 16,000 targeted farmers from 1.1.1 and 1.3.1. | FICA |

WFP, through its Johannesburg Regional Bureau and Rome HQ units, will perform the AE functions including project supervision, financial oversight, reporting and evaluation. WFP, through its Mozambique Country Office, will also act as a co-Executing Entity (EE) with MASA and MITADER.WFP will be the ultimate entity responsible for financial management and reporting to the GCF, as well as the ultimate entity responsible for monitoring, evaluation, and reporting on project results and achievements. WFP will be the technical and operational lead on implementation of all components, will manage partnership at national, provincial, and district levels. All procurement and financial flows will be managed by WFP through its GCF-approved procurement rules and procedures.

MASA holds the mandate to promote food security and poverty reduction by fostering the agricultural sector. MASA will be technical and operational co-lead on activities related to CRA, horticulture, livestock, post-harvest loss management, and market access, specifically market information, and will provide technical inputs for the implementation of activities related to climate services and index insurance. In this capacity, MASA will support project implementation and oversight across national, provincial, and district levels. At national level, MASA will provide technical guidance to the project through its National Agrarian Research Institute (IIAM) and National Directions. At provincial level, the Agricultural Directorate will coordinate technical and operational input into project activities leveraging the extension officer network. At district level, the Directorate of Agrarian Extension Services (DNEA) will provide trainings, technical assistance, and practical advice to the implementation team and targeted communities. MASA will be also responsible for the embedding of GCF project activities into MASA policies, strategies, and approaches.

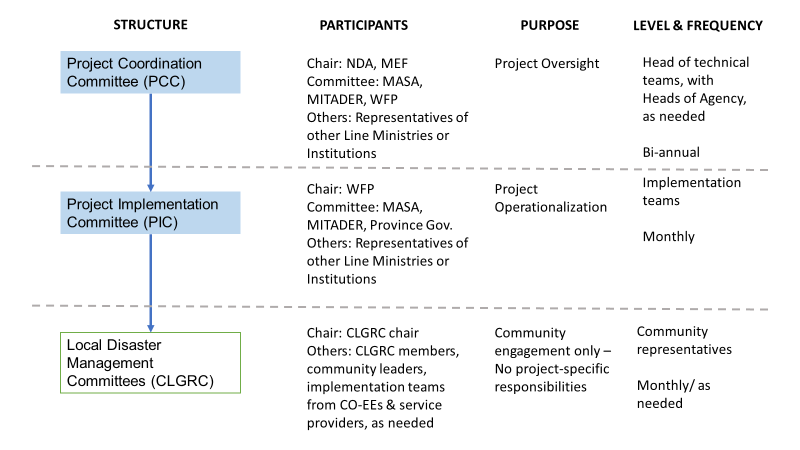
MITADER holds the mandate to promote sustainable development. MITADER will be technical and operational co-lead on activities related to water and soil management, as well as forestry, under the watershed component. As the national entity responsible for the development of Local Adaptation Plans, MITADER will be responsible for this output, as well as climate awareness raising campaigns, with support from WFP. MITADER will contribute through technical inputs and services to the implementation of activities related to climate services and index insurance. MITADER will contribute to project oversight and implementation at national, provincial, and district levels. At national level, this includes the provision of technical guidance to the project and the promotion of synergies to MITADER’s project SUSTENTA, which offers market support to farmers. At provincial level, the Directorate will support multi-stakeholder coordination through the facilitation of planning including the LAPs. MITADER at provincial level also plays a critical role in guaranteeing that the environmental and social risks of the project are well managed and mitigated, through technical oversight. At the district level, the Services of Economic Activities (SDAE), responsible for natural resources management, will lead community planning activities and coordination efforts through the District Consultative Councils and the Natural Resource Management Councils at the community level, including also input into technical trainings and project reporting. MIDATER will be also responsible for the embedding of GCF project activities into MITADER policies, strategies, and approaches.

Together, MASA, MITADER, and WFP, under the guidance of the National Designated Authority (NDA) the Ministry of Finance, will have a Project Coordination Committee (PCC) at the national level to provide technical and operational oversight to the project, develop operational plans and tools for effective implementation, and ensure collaboration and coordination all aimed at guaranteeing that the project is successful in meeting its objectives. This will meet bi-annually and will benefit from provincial level representation. A project implementation committee (PIC) comprised of the same co-EEs and contractors/service providers will meet on a monthly basis to coordinate the implementation of operational plans. The Co-EE will have equal decision-making power and will make joint decisions for the overall Project implementation within the PIC. This means that MASA, MITADER and WFP will jointly agree on annual workplans and budgets and input into reporting processes, including the Annual Performance Reports (APRs). WFP will in its capacity as AE, review and provide a no-objection to the Annual Work Plan (AWP). In case of disputes, the PCC will be asked for advice, though as AE, WFP will have the final say. Subsidiary agreements, in the form of Memorandums of Understanding (MOU) between WFP and each of the co-EEs will be signed to formalize and establish these implementation arrangements. These will be legally binding agreements.

WFP will also enter into an UN-to-UN agreement with FAO, that will act as service provider who will provide advice on activities related to the livestock sector under component 1.

At the community level, leveraging on the Local Disaster Management Committees (CLGRC), the committees will be engaged to act as intermediaries between the communities and the Project Team. The committees will accordingly assist with tasks such as community mobilization, planning, targeting, and will also offer a structure for building community ownership of the project even beyond the implementation cycle. Whole implementation structure depicted below.

Figure 12 – Project coordination structures



Related to financial flows, WFP assumes sole responsibility for effective management of project funds, including financial disbursement, oversight, and reporting (annual, mid-term, and final evaluations/audits). Funds channeled from GCF to WFP will be disbursed to co-EEs and service providers/contractors based on successful capacity assessments and workplans within established agreements, which will be closely monitored to ensure compliance and fulfilment of responsibilities. Flow of funds detailed below.

Figure 13 - Illustration of funding flows

The other Executing Entities will not be administrating project funds but will maintain a crucial execution role in coordinating the government actors involved in the project, in decision-making regarding execution of project activities and mainstreaming approach in national systems (including the emerging social protection system). Doing so ensures more efficient cash flows and lower risks.

Specific roles and responsibilities of each Co-EE by component are outlined below.

Figure 14 - Implementation arrangements for component 1

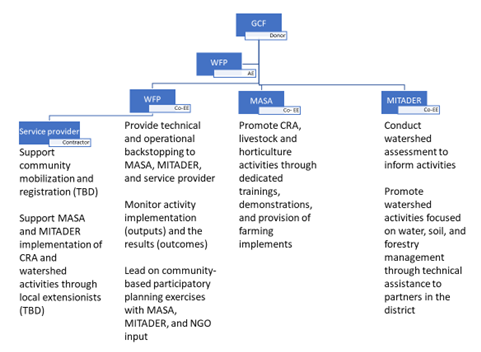


Figure 15 - Implementation arrangements for component 2

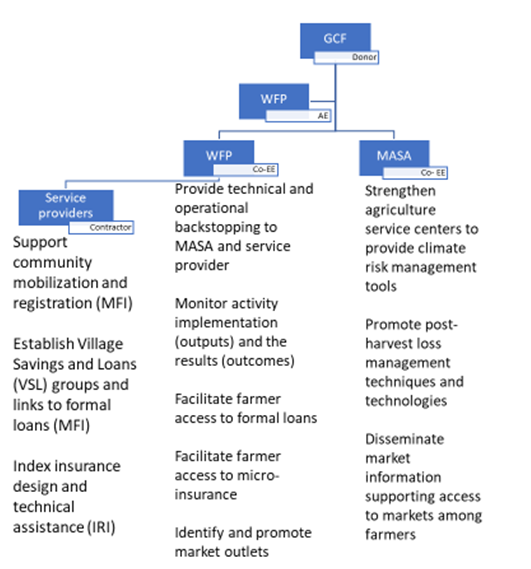


Figure 16 - Implementation arrangements for component 3

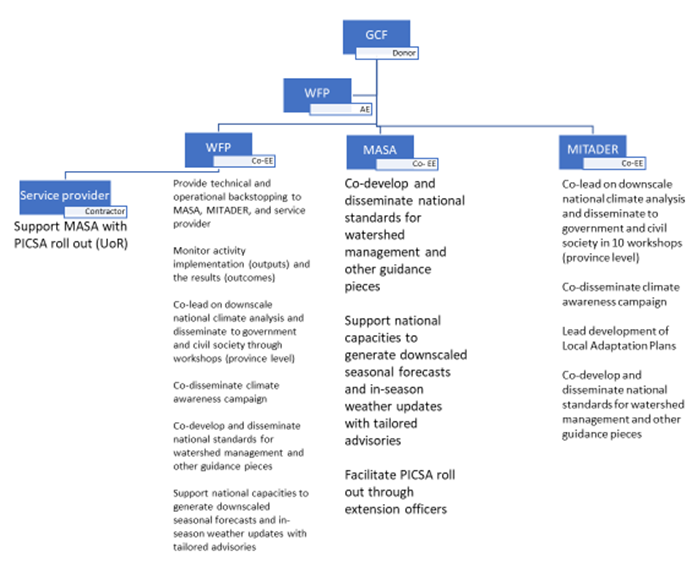


Table 11 - Implementation arrangements summary

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Output** | **Activities** | **Entity(ies) in Charge** | **Scope** | | | **Beneficiaries** | **Beneficiary Selection** |
| **National** | **Provincial** | **District** |  |  |
| 1.1. Increased use of Climate Resilient Agriculture techniques through CRA clubs with trainings, demonstrations and access to inputs | *ACTIVITY 1.1.1 Promote CRA through the establishment of 550 farmer clubs with access to dedicated trainings, demonstrations, and farming implements.* | MASA will be technical and operational co-lead | x | x | x | 16,000 farmers | Principal criteria for consideration:   * Chronically food insecure * Practices rainfed agriculture * Affected by climate hazards, mainly drought * Non-labor constrained * Over 18 years of age   Additional criteria for consideration:   * household with high (5 or more) family size * household with members who have disabilities or illnesses * household with pregnant women, adolescent girls, and children under two years of age   Women-headed households |
| Service provider procured by WFP will support MASA. WFP will manage all procurement of farming implements. | x | x | x |
| 1.2 Informative watershed assessment and CBPP results available | *1.2.1. Conduct 6 community-based (2 per district) participatory planning exercises to guide watershed rehabilitation and management activities.* | WFP will lead technically and operationally | x | x | x | Whole community | All community members welcomed to participate in the CBPP |
| MITADER will provide technical support |  | x |  |
| *1.2.2. Conduct 1 watershed assessment covering the 3 targeted districts to inform the watershed enhancement and rehabilitation activities.* | MITADER will be technical co-lead |  | x |  | Whole community | All community members welcomed to participate in the assessment |
| Consultant hired by WFP will support, while WFP offers both technical and operational leadership |  | x | x |
| 1.3 Asset creation activities implemented to enhance and rehabilitate watershed capacity | *1.3.1. Support watershed enhancement and rehabilitation activities through asset creation across forestry, livestock, and horticulture sectors to complement CRA activities in 3 districts, reaching 16,000 farming households.* | Service provider procured by WFP will support on the implementation through local extensionist | x | x | x | 16,000 farmers | Participants from 1.1.1 farmer clubs |
| MITADER will be technical co-lead |  | x |  |
| 2.1. Increased access to integrated risk management tools and sales from market-based opportunities by CRA practicing farmers | *ACTIVITY 2.1.1. Support the establishment and function of 3 RCEs to enable access to IRM tools and market-based opportunities.* | WFP to identify goods and services to channel through RCEs and support MASA set these up, as needed | x | x | x | All farmers in the 3 districts will have access to the RCEs. Project subsidized goods and services, such as the insurance, will only be available to farmers who participate fully in activities 1.1.1 and 1.3.1. | All farmers in the 3 districts, especially the 16,000 targeted farmers from 1.1.1 and 1.3.1. |
| MASA will be technical and operational co-lead, establishing and strengthening RCEs by channeling their extension and input support through these | x | x | x |
| *ACTIVITY 2.1.2. Establish 550 village saving and loans (VSL) groups among the farmer clubs to act as shock buffers and promote financial literacy.* | Service Provider (MFI) to be procured through WFP that will establish the groups | x | x | x | VSL group members, especially the 16,000 targeted farmers from 1.1.1 and 1.3.1. | Farmers who participate fully in activities 1.1.1 and 1.3.1. |
| *ACTIVITY 2.1.3. Facilitate farmer access to formal loans in the 3 target districts for productive investments in CRA and diversified livelihoods.* | Service Provider (MFI) procured through WFP will provide loans, which WFP screens for suitability | x | x | x | Loan recipient, especially the 16,000 targeted farmers | Farmers who participate fully in activities 1.1.1 and 1.3.1. |
| *ACTIVITY 2.1.4. Facilitate farmer access to micro-insurance to protect productive investments against climatic shocks.* | Service Provider (IRI) procured through WFP will design the product and WFP will facilitate farmer access to micro insurance | x | x | x | Insurance recipient, especially the 12,000 targeted farmers from 1.1.1 and 1.3.1. | Farmers who participate fully in activities 1.1.1 and 1.3.1. |
| *ACTIVITY 2.1.5. Promote Post-Havest Loss Management Techniques and Technologies for Greater Marketability of Component 1 Products.* | MASA will be technical and operational co-lead to promote post-harvest management by conducting trainings and demonstrations | x | x | x | The 16,000 targeted farmers in clubs from 1.1.1 and 1.3.1. | Farmers who participate fully in activities 1.1.1 and 1.3.1. |
| WFP will train and facilitate MASA extension officers to promote PHL techniques and technologies among farmers | x | x | x |
| *ACTIVITY 2.1.6. Identify and Promote Market Outlets Helping Make Investment in CRA and Diversified Livelihoods More Remunerative.* | MASA will be technical and operational co-lead to create and disseminate market information using their established SIMA system | x | x | x | The 16,000 targeted farmers in clubs from 1.1.1 and 1.3.1. | Farmers who participate fully in activities 1.1.1 and 1.3.1. |
| WFP to support technically and operationally to ensure that the information reaches farmers | x | x | x |
| 3.1. Awareness campaigns on local climate change impacts and good practices on adaptation measures are disseminated | *ACTIVITY 3.1.1. Downscale National Climate Analysis to Government and Civil Society in 10 Workshops* | WFP to generate downscaled climate analysis | x | x |  | 80,000 individuals across the province, especially from the 3 targeted districts. | None |
| MITADER to host workshops for dissemination, with WFP support as needed | x | x |  |
| *ACTIVITY 3.1.2. Disseminate Climate Awareness Campaign Reaching 80,000 People* | WFP to co-disseminate with MITADER a climate awareness campaign | x | x |  | 80,000 individuals across the province, especially from the 3 targeted districts. | None |
| *ACTIVITY 3.1.3. Facilitate the Development of 3 LAPs* | MITADER will be responsible with support from WFP | x | x |  | 80,000 individuals across the province, especially from the 3 targeted districts. | None |
| *ACTIVITY 3.1.4. Develop and Disseminate 1 National Climate-Smart Standard for Watershed Rehabilitation* | WFP to lead through the procurement of consultancy services and by supporting technically in the content creation and dissemination | x |  |  | National stakeholders | None |
| MITADER to input technically into the content and operationally its dissemination | x | x |  |
| *ACTIVITY 3.1.5. Produce and Disseminate Lessons Learned (6), Case Studies (6), Technical Reports (4), and Guidelines on Rural Financial Inclusion for Climate Innovations* | WFP will hire a consultant dedicated to knowledge management that will generate this content, engaging MITADER and MASA technically | x |  |  | National stakeholders | None |
| 3.2 Households have access to climate information services | *ACTIVITY 3.2.1. Support National Capacities to Generate Downscaled Seasonal Forecasts and In-Season Weather Updates with Tailored Advisories for Targeted Users in 3 Districts (Changara, Marara, Cahora-Bassa)* | WFP will support technically national capacities to generate downscaled forecasts through dedicated trainings, support to enhance the observational network, and streamlined systems for data management | x |  |  | INAM and 80,000 individuals across the province, especially from the 3 targeted districts. | None |
| *ACTIVITY 3.2.2. Facilitate picsa roll out reaching 16,000 farming households providing accesss to climate and weather information with advisories.* | Service Provider (UoR) procured by WFP will support MASA with PICSA roll out, while WFP will also support help host trainings for MASA staff on PICSA | x | x | x | The 16,000 targeted farmers in clubs from 1.1.1 and 1.3.1. | Farmers who participate fully in activities 1.1.1 and 1.3.1. |
| MASA will provide technical inputs into the climate services generation and facilitate role out through extension officers | x | x | x |
| Note : | WFP as EA has the following contractual arrangements to support project implementation:   * Memorandums of Understanding with CO-EEs (MASA and MITADER); legally binding * Contracts through procurement with service providers   UN to UN agreement with UN partners, limited to FAO for this project (activity 1.3.1 only) | | | | | | |

#### 5.2 Co-financing arrangements

MITADER, MASA, and WFP have successfully managed to mobilize two sources of co-financing for the project. These include financial contributions from the Cartier Foundation and the Government of Flanders. The contribution from the Cartier Foundation is valued at 100,000 USD, for the 2020 implementation cycle, and reaches the three target districts of Changara, Marara, and Cahora Bassa. On the other hand, the contribution from the Government of Flanders is valued at 600,000 USD, covers the period of 2020 to 2022, and reaches the targeted district of Changara.

Funding from the Government of Flanders will be focused on the district of Changara, and will be provided through the project (*Climate-resilient food security for women and men smallholders in Mozambique through integrated climate risk management*). The project will start implementation in 2019 and will allow for the testing of many of the tools and systems needed for GCF implementation. The lessons learned and successful approaches will be carried through for subsequent years of programming in Changara, as well as for Cahora Bassa and Marara. FICA will cover the initial piloting across the 2019/2020 agricultural season, as the GCF contribution is expected to trigger later in 2020/2021. The testing will be focused on activities pertaining to risk finance, climate services, climate resilient agriculture, and watershed management. Starting from 2020/2021 and up to 2021/2022, the Flanders contribution and the GCF contribution will allow for the expansion of activities geographically and in scope. Geographically, GCF funds will allow for work in Cahora Bassa and Marara, as well as Changara itself. In addition, GCF will cover components of the project not financed by FICA, such as the PHL and other market access activities. Upon the conclusion of the FICA supported-project, the GCF contribution will be used to allow for continuity.

Funding from the Cartier Foundation reaches all targeted districts but is limited to activities on post-harvest loss management techniques and technologies. The funds are being used to train agricultural officers at provincial level and extension officers at the district level to promote the use of hermetic bags, specifically. Subsidized bags are also being made available to targeted farmers for them to practice using the technology and see the benefits for continued use. This is intended to also generate broader demand for the technologies for subsequent years. As such, as the Cartier project ends in 2020, this sets the foundation for GCF to scale up this initial work. Through the GCF, re-fresher trainings can be held for extension officers, new technologies and techniques can be introduced (mainly silos for larger storage capacity), and efforts can be scaled up to make sure these technologies are locally available through the market. This will reach all targeted districts and will take place starting from the 2020/2021 agricultural season.

The Table 12 below aims to summarize the above points, regarding interactions of financing across years and funding sources.

Table 12 – Co-financing arrangements summarized

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Donor | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 - onwards |
| Government of Flanders | Changara | Changara | Changara | N/A |
| Cartier Foundation | Changara, Marara, Cahora Basa | Changara, Marara, Cahora Basa *(partly not covering 2021)* | N/A | N/A |
| Green Climate Fund | N/A | Changara (more communities and activities), Marara, Cahora Basa | Changara (more communities and activities), Marara, Cahora Basa | Changara (whole), Marara, Cahora Basa |

#### 5.3 Monitoring and evaluation

Project monitoring and evaluation (M&E) will be carried out in accordance with WFP procedures, under WFP supervision, and in coordination with MITADER. WFP will assume financial oversight of the project and provide information on a regular basis in conformance with GCF operational regulations. To facilitate coordination on outcome monitoring and evaluation, project management team meetings will take place at least twice per year.

Several workshops will bring together all stakeholders for project implementation. Through these workshops, stakeholders will build project ownership and identify priorities for the first year of implementation. Clear workplans and with the division of responsibilities will be developed as a result of such workshops.

WFP will compile the relevant information, including inputs from participative monitoring (questionnaires, surveys and group discussions) in annual performance reports (APRs) to be submitted to the GCF Secretariat at the end of each implementation year, for a total of four APRs. The first APR will be submitted one year after funds disbursement date, with the last report submitted six months after the end of project implementation. Each APR will be submitted by February 28 covering the year before. APRs will include: a narrative report on implementation progress based on the logical framework presented above, including gender-disaggregated indicators (aligned to the GCF RMF and PMF for adaptation); and a financial management report specifying dates and amounts disbursed for each project activity.

In addition to this, WFP will also submit an independent mid-term evaluation report six month after the end of the second year of project implementation and an independent final evaluation no later than nine months after the completion of the project. These reports will assess progress towards the project’s outcomes and impacts defined in the logical framework as well as the overall project performance against the six GCF investment criteria. Final evaluation will include information on challenges and lessons learnt. The final evaluation will use panel data from households (both treatment and control) surveyed at the baseline and bi-annual outcome monitoring exercises and will use this and other quantitative and qualitative assessments carried out by a third party source to determine progress towards the project’s outcomes and impacts (through independent significance tests).

### Feasibility assessment

#### 6.1 Stakeholder consultations and engagement plan

To elaborate the proposal, consultations at national and sub-national levels took place. The consultations were held with representatives from the government, academia, practitioners, community members, and the private sector. Consultations followed both quantitative and qualitative approaches. The quantitative approaches made use of household and market surveys to gather data on key wellbeing indicators in the targeted areas. The qualitative approaches made use of focus group discussion, key informant interviews, as well as consultation workshops. The two methods were used simultaneously, following a snowball approach, whereby queries were first explored with a small group, and then, taken up with a broader group.

* Consultation meeting to present concept note (Feb. 2018) organized by NDA and attended by in-country experts from Ministry of Finance (MEF), National Directorate for Agricultural Extension (DNEA), Ministry of Agriculture and Food Security (MASA), Ministry of Land, Environment and Rural Development (MITADER), Fundo Nacional de Desenvolviment Sustantavel, and Ministerio das Obras Publicas Habitacao Recursos Hidricos (DNGRH);
* Consultation meetings with scientists at the Institute of Agricultural Research of Mozambique (IIAM-MASA), and National Institute for Irrigation (INIR-MASA) to verify the feasibility of the proposed components and activities (Feb-Apr. 2018);
* WFP-led integrated risk management feasability study (Apr. 2018) that included focus group discussions with local communities and consultations with microinsurance providers, NGOs, Government, and other stakeholders to inform the rural financial inclusion strategy;
* Second consultation meetings with NDA and GCF Committee (April 2018) for feedback on GCF concept note before proceeding to issuing the non-objection letter;
* Consultation meetings at province, district and local communities, to inform geographical and beneficiary targeting and identifying vulnerabilities, barriers to adoption and possible adaptation priorities;
* Tete validation meeting for the project proposal with implementing partners (Dec 2018); and Maputo validation meeting for the project proposal with the GCF Technical Committee, NDA, and implementing partners. (Dec 2018)
* Additional follow up consultations to assess possible environmental and social risks (May 2019), which included weetings with national and provicial level institutions and community consultations.

Consultations allowed a deep understanding of the context, target beneficiaries and needs, as well as discussions on the suited interventions, leveraging existing capacities and partnerships. Findings of consultations have helps shaping Section 1.3 above on project target areas.

WFP will continue to engage with stakeholders throughout the implementation phase. A stakeholder engagement plan has been prepared and can be found in Annex 13. A stakeholder and community consultations overview table is found below.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **GCF SUB-NATIONAL CONSULTATIONS** | | | | | | | |  |
| **DISTRICTS** | **DATES** | **LOCATION** | **STAKEHOLDER** | **N° PARTICIPANTS** | | **PURPOSE** | **PROJECT PROPOSAL** | **NOTES** |
| Tete | 05/06/  2019 | Tete | DPATDR (MITADER) / DPASA (MASA) | **F** | **M** | Kick-start planning for provincial and district consultations. Present outcome of national level consultations and general project framework for their input and endorsement. | The endorsement of project framework and activities based on their feedback. |  |
| 2 | 2 |
| Tete | 22/10/  2018 | Tete | UPCT/INAM/GAPI | 2 | 2 | Present project framework. Inquire about their activities in the target areas. Explore synergies and partnerships, as fitting. | Mapping of stakeholders and potential partnerships. |  |
| Cahora Bassa | 23/10/  2018 | Chitima | ADPP/Dzua microcredito | 3 | 2 | Present project framework. Inquire about their activities in the target areas. Explore synergies and partnerships, as fitting. | Mapping of stakeholders and potential partnerships. |  |
| Moatize | 21/03/  2018 | Canguedza | Community | 6 | 8 | Consultations held with youth, women, men, and elderly. Communities outlined: key livelihood activities, how these have changed over time, natural resource constraints, perceptions and understanding of climate change, key climate risks, adapation practices being implemented and needed, and specific activities/interventions desired | The components and activities of the project were each validated by the communities offering insights for different members of the community. | All consultations held by WFP, MASA, and MITADER. Moatize not targeted but offered a good perspective of the challenges throughout. |
| Marara | 05/11/  2019 | Marara centro | Community | 5 | 5 |
| Changara | 19/03/  2019 | Changara sede | ADEMUCHA/Associacao de futuras mulheres | 5 | 5 | Present project framework. Inquire about their activities in the target areas. Explore synergies and partnerships, as fitting. | Mapping of stakeholders and potential partnerships. |  |
| Changara | 21/06/  2018 | Carata | Community | 6 | 3 | Consultations held with youth, women, men, and elderly. Communities outlined: key livelihood activities, how these have changed over time, natural resource constraints, perceptions and understanding of climate change, key climate risks, adaptation practices being implemented and needed, and specific activities/interventions desired | The components and activities of the project were each validated by the communities offering insights for different members of the community. | All consultations held by WFP, MASA, and MITADER |
| 21/06/  2018 | Chicomphende | Community | 6 | 8 |
| 21/06/  2018 | Cancune | Community | 5 | 7 |
| Marara | 19-20/07/  2018 | Cachembe | Community | 6 | 24 | Consultations held with youth, women, men, and elderly. Communities outlined: key livelihood activities, how these have changed over time, natural resource constraints, perceptions and understanding of climate change, key climate risks, adaptation practices being implemented and needed, and specific activities/interventions desired | The components and activities of the project were each validated by the communities offering insights for different members of the community. | All consultations held by WFP, MASA, and MITADER |
| 19-20/07/  2018 | Mufa Caconde | Community | 3 | 7 |
| 19-20/07/  2018 | Nhaapende | Community | 2 | 4 |
| Cahora Bassa | 16-17/07/  2018 | Candodo | Community | 8 | 6 | Consultations held with youth, women, men, and elderly. Communities outlined: key livelihood activities, how these have changed over time, natural resource constraints, perceptions and understanding of climate change, key climate risks, adaptation practices being implemented and needed, and specific activities/interventions desired | The components and activities of the project were each validated by the communities offering insights for different members of the community. | All consultations held by WFP, MASA, and MITADER |
| 16-17/07/  2018 | Caho | Community | 4 | 11 |
| 16-17/07/  2018 | Cawira B | Community | 12 | 3 |
| **GRAND TOTAL** | | | | 75 | 97 |  | | |

#### 6.2 Alignment with national priorities for climate change adaptation

The Project targeting vulnerable districts in the southern Tete province will make a significant contribution to the national adaptation and mitigation efforts. The text below shows the project alignment with national climate change adaptation and mitigation policies and programmes, disaster risk reduction strategy, and gender and agricultural priorities.

***Initial National Communication to UNFCCC (2003)[[18]](#footnote-19).***

Adaptation priorities for Agriculture and food security sector *is the p*romotion of cultural practices that contribute to the reposition and conservation of soils fertility and avoid its salinization and erosion, and intensive production and improvement of irrigation techniques, the sustainable use of the natural resources. Forestry sector calls for the provision of improved stoves, and promotion of other sources of energy for urban and fuel then wood and charcoal to reduce deforestation. Under mitigation priorities, promotion of the reforestation and protection of forests and promoting measures to adapt to styles of life that are compatible with the environment and use of renewable energies are called for.

***National Climate Change Adaptation and Mitigation Strategy 2013 – 2025 (NCCAMS) (MICOA, 2012).***

As one of the national priority, the resilience of communities, reduction of climate risk, promotion of low carbon development through the integration of adaptation and mitigation in sectorial and local planning is stated in its mission, priority activities under adaptation include - increase capacity to manage water resources, increase access and capacity to capture, store, treat and distribute water, increase the resilience of agriculture and livestock, guarantee adequate levels of food security and nutrition, increase the adaptive capacity of vulnerable people, promote mechanisms for the planting of trees, and establish forests for local use. Under its priority mitigation activities, these linked to the project are the following: develop low-carbon agricultural practices, reduce deforestation and the occurrence of wildfires, plan and manage biodiversity. Both priority mitigation and adaptation activities as identified in the NCCAMS are supported by the interventions proposed. The document identifies eight strategic areas for intervention, among which five are also targeted through the proposed interventions, namely; reducing climate risk, water resources management, sustainable agriculture, and food security and nutrition (SAN), biodiversity conservation and maintain ecosystem functioning, reducing deforestation.

***National Adaptation Programme of Action (MICOA, NAPA 2007).***

With the purpose to increase a national capacity to cope with the adverse effects of climate change, the specific objectives, directly supported through proposed interventions include; i) strengthen the capacities of family farmers to dealing with the adverse effects of climate change; ii) promote actions that will contribute to the mitigation of Greenhouse Gases (GHG). Specific activities identified directly supported through the project include building infrastructure for the collection and conservation of rainwater for subsequent use in the drought season, installing small-scale sustainable irrigation systems, exploring the use of renewable energy to power the agricultural systems disseminate and encourage the use of drought-tolerant crops. Under long-term results, NAPA prioritizes reduction of degradation of soils due to inappropriate agricultural practices and under specific activities envisioned promotion of conservation agriculture, community reforestation activities using native species aimed at producing biomass for energy and community activities for erosion management, also promoted through proposed interventions.

***Intended Nationally Determined Contribution (INDC) to UNFCCC.***

The document acknowledges challenges with meeting the goals of NCCAMM under adaptation by 2014; the country will update and implement its NAP for short (2015 to 2019), medium (2020 to 2024) and long (2025 to 2030) term. The strategic actions, identified in the NAP are fully aligned with proposed interventions and include; i) improving the capacity for integrated water resource management including climate resilient hydraulic infrastructures, ii) increase the resilience of agriculture to guarantee the adequate levels of food security and nutrition, iii) increase the adaptive capacity of the most vulnerable groups; iv) ensure biodiversity protection, v) reduce soil degradation and promote planting of trees for local use and vi) promote the transfer and adoption of clean and climate change resilient technologies. In addition, necessary to establish climate insurances to implement the INDC.

***The strategy of Gender, Environment and Climate Change (2010).***

The plan aims to improve women’s and poor communities’ participation in climate change mitigation and adaptation interventions, but also foster their engagement in environment management; with the aim of ensuring equality between women and men, and boys and girls, to access and control of natural resources, technologies for climate change adaptation and mitigation, and to benefits and opportunities for development, through sustainable use of natural resources for the combat of poverty.

***Reducing Emissions from Deforestation and Forest Degradation (REDD+) Policy and Strategy (MITADER, 2016).***

The strategy aims to conserve Mozambique’s wooded areas, promote sustainable development, reduce deforestation with an integrated approach to rural development, and increase carbon stocks by reducing emissions of the 170MtCO2/per year until 2030.

***The Strategic Plan for the Development of the Agricultural Sector 2011-2020 (PEDSA****).*

Incorporating the priorities of the Five-Year Government Plan 2014-2019 (PQG) and based on the principles of the Green Revolution Strategy and the vision of Agenda 2025, the PEDSA is the main 10-year perspective and guiding document for the development of the agricultural sector (MINAG, 2011). The government has, therefore, introduced the concept of sustainability in its new strategy. Its vision for the agricultural sector is now one ‘that is prosperous, competitive and sustainable, capable of offering sustainable responses to the challenges of national food and nutrition security and global agricultural market targets’ (MINAG, 2011). Implementation priority is given to areas that have agricultural potential or that have comparative advantages for productivity, and to the areas that have high chronic malnutrition and food insecurity and where increased yield and job creation will contribute to poverty reduction (MINAG, 2011). The Government effort under the strategy pertaining to (i) increase the availability of food through growth in smallholder producer productivity and emergency response capacity; and (ii) enlarge the area of land under sustainable management, and the number of reliable water management systems will be directly supported through this initiative.

***The National Investment Plan for the Agricultural Sector 2014-2018 (PINSA)***

This plan was developed in 2013 to operationalize the PEDSA. Components of the PNISA call for increasing production and productivity, improved management of natural resources and areas under sustainable land management and irrigation. Sustainable production systems, as formulated in the PNISA, depend on the efficient use of natural resources should have site-specific applications, and integrate natural biological cycles and controls, PNISA also expects that sustainable production systems will enhance the quality of life for farmers and society (Cammaer, 2016).

#### Alignment to climate adaptation initiatives

In addition, through consultations with key stakeholders, past experiences and ongoing projects on climate adaptation were mapped out. Desk based review of projects was also conducted. As part of these efforts, besides looking at achievements and best practices, there was also a review of activities that were not effective. For the latter, the intent was to also learn from these experiences and seek ways to build upon these. The following are some key initiatives that were mapped out through this process:

* Integrated Resource and Agriculture Management Project (SUSTENTA) is a project being implemented by MITADER through its National Fund for Sustainable Development (referred to as FNDS), which aims to promote sustainable resource management and strengthened rural livelihoods through integrated approaches, making use of strategies on watershed and weather index insurance. [ongoing]
* Inclusive Agri-Food Value Chain Development Programme (PRO-CAVA) is a project being implemented by IFAD through MASA, which aims to enhance the resilience and productivity of three value chains, namely horticulture, cassava, and red meats, targeting investments in drought-resistant technologies and infrastructure, as well as techniques, which are supported by climate information and awareness. [ongoing]
* Rural Enterprise Financing Project (REFP) is a project being implemented by IFAD through the Directorate of Treasury of the Ministry of Economy and Finance to enhance access to rural finance by providing a stimulus to financial institutions in the form of finance, capacity strengthening, and others, which would allow for alternative financial products to be made available to the rural market. [ongoing]
* Drought Recovery and Agriculture Resilience Project (DRARP) is a project being implemented by the African Development Bank through different Ministries to strengthen the capacity of rural communities to address the inter-linked challenges of climate change, rural poverty, food insecurity, and land degradation, through the provision of water harvesting infrastructure and support to food production and marketing. [ongoing]
* The Innovation for Agri-business Project (INOVAGRO) by the Swiss Development Cooperation (SDC) promotes the development of inclusive and sustainable market systems, with a focus on facilitating access to quality seeds and inputs. [ongoing]
* UC Davis with Hollard Insurance Company and CIMYTT conducted a pilot offering farmers access to index insurance against drought through seed purchases. [ended]
* AgDevCo Pilot with Hollard Insurance Company insured farmers against drought and excess rain with a focus on maize production in Manica. [ended]
* Global Environmental Facility (GEF) funded projects in Gaza, Zambezia, and Tete implemented by FAO on areas related to biodiversity, climate change adaptation, renewable energy, among others.

The project will have various synergies with these initiatives, as follows:

* Agreement was reached with SUSTENTA to ensure complementary geographic distribution, targeting different areas. In addition, specific to the insurance and work on integrated resource management, the two projects will look to meet regularly to share lessons learned and experiences. In terms of generating national guidance and thought pieces, the two will also seek to collaborate on this.
* Discussions are ongoing with PROCAVA and REFP to ensure that the projects collocate with the intent of seeking complementary implementation. Where IFAD will invest in large scale infrastructure and in the financial institutions in the area, the GCF project will work more at the grassroots level promoting within the communities the understanding and techniques to take advantage of these investments. The project will also help inform IFAD’s approach to insurance and climate services, which they are considering as part of PROCAVA.
* DRARP follows a similar approach to PROCAVA and so the discussions with AFDB have been along the same lines, but rather focused on creating the enabling environment at the community level for the investments they will make in terms of water infrastructure.
* Agreement was reached with INOVAGRO that elements of the integrated risk management packaged promoted through the GCF project, including insurance and climate services, will be embedded into INOVAGRO, which will allow for the risk management package to be reproduced in other contexts.
* Regarding the past insurance pilots, the GCF project has integrated the key learnings from these by engaging and partnering with the stakeholder who were previously engaged in the trials, so as to build on their knowledge and experience. Key partners include the World Bank, the International Finance Cooperation, the national regulator, Hollard Insurance Company, among others. Both MASA and MITADER had engaged with these past pilots and also have experience to build upon.

#### Scalability

Besides national alignment, a centerpiece of the scalability of the project is based on leveraging WFP’s regional experience on climate risk management. Comprehensive and integrated climate risk management through risk transfer (insurance), risk reduction (assets creation, watershed and livelihoods strengthening and diversification), and prudent risk-taking and reserves (access to inputs, awareness, capacity building, microcredit, savings and loans) has been piloted in Malawi and Zambia. The approach proved to be successful in building sustainability by addressing key challenges for smallholder men and women to the adoption of climate resilient practices, including lack of financial services, aversion to risks and lack of capacity. In addition, proposed activities relevant to tackle climate change risks have been tested in Mozambique and/or region (watershed rehabilitation, climate-resilient gardens, PICSA approach, micro insurance, smokeless stoves, briquette and oil production), and lessons learned and research evidence will inform scaling-up these activities.

The co-financing of the GCF project is another way that scalability will be pursued. The Cartier Foundation has invested in making post-harvest loss techniques and technologies available to vulnerable farmers to protect their production. Farmers have recorded avoided food losses, helping increase their food security and resilience to shocks. The GCF will consolidate and grow this successful experience, while also integrating this further into other risk management instruments that contribute to greater resilience. The contribution from the Government of Flanders offers the potential for scalability as it not only allows for the initial testing of the approach in Changara, before scaling it up to other parts of the province, but it also allows for some testing to be done in the Province of Gaza, which is another semi-arid area of the country highly affected by climate change and variability. In addition, while it is not considered co-financing, the scoping work that will be done for INOVAGRO, SDC will pay for this, allowing for the insights and learnings from the GCF project to be taken to other regions of the country, namely the provinces of Zambezia and Nampula.

#### Additionality

Through these processes, the project additionality was also scoped and achieved. This is summarized in the table below.

Table 13 – Component description of additionality

|  |  |  |
| --- | --- | --- |
| **Component** | **Baseline** | **Approach** |
| Reduced exposure to climate risks of food insecure smallholder women and men through CRA as well as watershed restoration and enhancement | * MASA has a National Investment Plan and a Development Strategy for the Sector that focus on enhancing production and productivity in the country for enhanced food security. * The actions that stem from the MASA Plan and Strategy are focused on addressing many of the structural issues with agriculture in the country. * MITADER has adopted an integrated landscape management approach that works across sectors, like agriculture and forestry. * In both cases, the chronic issues pertaining to poor resource management and low production and productivity are being tackled. However, there is a need to better adapt these to the changing climate. | * Promote climate resilient agriculture to support the productivity and climate adaptation of local agricultural practices. * Bolster the technical and operational capacity of extension officers to support climate adaptation through the promotion of climate resilient agriculture. * Strengthen the RCEs and their capacity to provide access to drought-tolerant inputs/technologies, as well as climate risk management services, like insurance. * Local community and government plans integrate climate information to enhance their capacity to guide climate adaptation efforts. * Support disaster risk reduction through the application of watershed asset creation and rehabilitation activities. * Foster diversification of livelihoods through the promotion of other productive sectors, which helps reduce vulnerability to climate risks. * Enhance the technical and operational capacity of MITADER provincial staff to support watershed management approaches, as a means to support climate adaptation. |
| Enhanced and sustained adaptive capacity of targeted participants through a combination of context-specific, integrated risk management tools and market-based opportunities | * Only one RCE in place with little capacity to support the needs of farmers, especially on the adaptation of agricultural practices * VSL groups are present in the communities, but are performing sub-optimally to crate buffers to climate shocks, as the groups lack the financial capacities * MFIs/service providers have a limited reach and diversity of services in target areas to help farmers manage climate risks * Farmers are failing to market their produce, and thus, are not investing in their livelihoods, helping make them more climate-resilient | * Work with MASA to establish RCEs and channel support through these to help farmers access good and services that enable them to better manage climate risks and adapt their livelihoods to these * Establish VSL groups to build their financial capacities and link these to MFIs, so they are better able to act as buffers to climate shocks, and stores for investments in climate-resilient agriculture * Insurance developed and made accessible to vulnerable farmers to help protect them against climate shocks, beyond their capacity to manage, making use of the other project-supported strategies. * Marketable surplus achieved and market linkages established to help support the adherence to climate resilient agricultural practices and support further investment into these. * Project guidance (technical and operational) created and disseminated to support replication and scale up |
| Informed adaptation planning and decision-making across smallholders, communities and national/local authorities through generation and use of climate information | * INAM capacity to generate climate information to inform decision-making limited * Farmers do not have access to climate information to support their livelihood planning * General awareness about climate change and ways to adapt is low * LAPs and other community development plans are produced but do not integrated climate information | * Technical skills fostered and observational/analytical instruments expanded for INAM to produce quality climate information * PICSA pool of experts created to help train extension officers on the provision of climate information as part of their extension support * PICSA promoted in other national schemes * LAPs facilitated making use of climate evidence * Project guidance (technical and operational) created and disseminated to support replication and scale up |

#### Cost effectiveness

Cost efficiency by the project is defined by the capacity to produce more in relation to the inputs invested. The following elements will ensure that the project is cost-effective.

* Leveraging existing expertise

The project will leverage existing expertise across MITADER, MASA, and WFP to implement the project, building on each of the institution’s comparative advantage. By following this approach, less resources are spent on preparing the teams for the delivery of the project and implementation can begin more easily.

* Leveraging existing infrastructure

MITADER, MASA, and WFP have an established presence at the national, provincial, and district levels, which will be used and built upon for project delivery. This ensures that the project does not inquire great costs for starting up implementation, which could also undermine the overarching sustainability of the initiative after the project cycle.

* Collaborating with others

MITADER, MASA, and WFP have done extensive assessments in the targeted areas. This has generated substantial information including the identification of entry points for collaboration. Collaboration is sought in recognition that there are many underlying drivers of food insecurity and poverty, while there are emerging climate risks that are exacerbating this. Hence, there is a need for different interventions across different types of partners/assistance types to help counter these issues. By distributing the work in this way, it helps maintain a more manageable workload, based on individual comparative advantages, and thus, contributes to maintaining costs of implementation low.

* Layer in assistance

MITADER, MASA, and WFP will target their assistance across the different project components to the same households to achieve greater impact. By phasing in the introduction of interventions at the household level, each component is able to pave the way for the other. For example, the saving and loan activities in groups, help develop the know-how for them to benefit from formal credit opportunities fostered subsequently by the project. These synergies help streamline investments, because it avoids having separate implementation approaches with associated, fragmented costs. Besides this being cost-saving, this helps with the achievement of greater outcomes, and consolidating these gains.

* Innovative approaches

The use of innovative approaches like weather index insurance is intended to bring down the implementation costs, while optimizing the reaching and impact of the risk transfer tool. Unlike, traditional insurance that requires costly ground verification, the weather index approach can be verified through remote sensing technologies at a fraction of the cost.

#### 6.7 Technical assessment and best practices

The project will make use of best practices for all its components. In particular, it will build on the following technical solutions:

Component 1

The project intends to promote techniques and technologies that are sustainable considering social, economic, and environmental parameters. The table below shows the assessments done to this end. The environmental and social screening of the project also contributed to these efforts. For more details on the screening, please see Annex 13.

Table 14 – Component description of additionality

|  |  |  |  |
| --- | --- | --- | --- |
| **Issues** | **Technologies explored** | **Selected** | **Rationale** |
| Limited access and availability of water | Boreholes | No | Associated social and environmental risks were deemed high and requiring of technical and financial investments not in line with the project |
| Wells | Yes | Only where the context allows, wells can be dug and reinforced, especially near existing water points to enhance the reach of the water source, with minimal social, environmental, and financial risks. |
| Ponds/Cisterns | Yes | These are seen as water capture options that can be easily done by the community and that have minimal social, environmental |
| Pumps – manual, solar, gas, electric | Yes | Manual and solar pumps will be explored. Relative to gas and electric options these are less efficient, but they do not have associated environmental risks and financial costs like the others. |
| Dams | No | These are common practice in the region, as there are many riverways. However, the project design team visited many of these and very few were successfully sustained in the long run. Most of these had become silted and only contributed to the drying up of riverways. So, the project decided against building new dams. Where possible, existing dams can be rehabilitated through community works on desilting, stabilization of river banks, creating sandbag barriers to direct water flow, etc. |
| In-situ water capture – trenches, zai pits, etc. | Yes | These are low tech and low risk activities, as they do not require large investment and have a limited reach (nature of in situ techniques). However, they have great potential to optimize water capture in productive areas and helping maintain soil moisture. As these are not techniques commonly applied, they have an even greater potential, with minimal inputs required. |
| Poor agricultural practices and soil fertility | Seeds – improved varieties, cuttings, multiplication | Yes | The project will facilitate access to improved varied through certified retailers and centers, especially for millet, cassava, sorghum, and cow peas. Where possible, seed multiplication will be promoted as an economic alternative. In addition, in the case of horticulture, cuttings for different produce will be promoted, such as sweet potato, which the communities can also multiplicate. Having multiple options, in a context where access to seeds has been so limited, will be key. |
| Fertilizers | No | Chemical fertilizers will not be promoted. Many farmers and even extension officers are not accustomed to use fertilizers and therefore they lack the capacities to use it in a safe manner. Fertilizers may also add to the water requirements, which places a greater burden on farmers practicing rain-fed agriculture under a changing climate. Alternatively, organic fertilizers will be promoted, including manure application (taking advantage of the livestock in the communities) as well as compost making (using organic matter readily available). |
| Insecticides/  Pesticides | No | While pests have been noted to be an issue, especially attacking maize, like fertilizers, due to the lack of awareness and understanding on how to use these chemicals in a safe way, the project will not promote this technology. Instead, biological measures will be provided, including the type of crops to grow together and organic solutions that can be applied. |
| Machinery | No | Machinery is seen as a way to open new fields and to facilitate land preparation. This very invasive process undermines soil fertility, where this is already a big issue. In addition, it further promotes the shifting agriculture pattern, which limits investment in improved soil fertility. In this context, invasive machinery will not be used in the project for land preparation. As part of the principles of climate-resilient agriculture, minimum tillage and soil disruption will be adhered to. |
| Shading – nets/natural fencing/ built fencing | Yes | Due to high temperatures and low rainfall levels, evaporation is a big concern. Shading in this context can help reduce water loss this way. Few farmers were using natural fencing to mark their plots and gardens. In addition, a handful of farmers were using the natural fencing to do natural roofing for shading too. This was deemed a fitting strategy to support shading over nets that needed to be bought by the farmer, or built fencing that typically made use of wood cut from nearby forests. This way the economic, social, and environmental risks would be negligible. |
| Post-harvest losses | Hermetic bags  Plastic silos  Gorongoza silos | Yes | Hermetic bags and plastic silos are increasingly available through local markets. In addition, they are being made to last for multiple harvests. The way they are treated are also safe for regular use and contribute to having enhanced storage conditions. Gorongoza silos, or built silos, either metal or from bricks, do not always meet the quality standards and can compromise the storage conditions, as well as the durability of the silo. In this context, hermetic bags and silos will be promoted through market-based approaches, seeming to be the more sustainable option. |
| Limited food processing | Solar driers  Fuel efficient cook stoves  Fuel alternatives for cooking | Yes | Food processing can be enabled by having more appropriate technologies to do this work. Solar driers will be promoted as they are easy to maintain and suited to the local context. Fuel efficient stoves and fuel alternatives will be promoted to reduce the dependency on charcoal and firewood, which has a negative impact the environment and human health. Fuel efficient cookstove and briquette making will be promoted to this end, allowing the communities to use locally available resources to undertake this activity, without much additional costs. |

Component 2

WFP also applies the best available technology and practices for agricultural insurance products. This is why WFP uses weather-index insurance (WII) for its climate risk management approach.

The essential feature of WII is that the insurance contract responds to an objective parameter (e.g. measurement of rainfall or temperature through satellite data) during an agreed time period. The parameters of the contract are set so as to correlate, as accurately as possible, with the loss of a specific crop type suffered by the policyholder. All policyholders within a defined area receive payouts based on the same contract and measurement at the same station, eliminating the need for in-field assessment. This minimizes the need for costly, and sometime not feasible, loss/damage assessments, that make insurance expensive and out of reach of those who need it most.

Compared to traditional crop insurance, WII has the following advantages:

* Transparency. Index insurance contracts usually allow the policyholder direct access to the information on which the payouts will be calculated. Trust is strengthened by transparency.
* No on-farm loss adjustment. This is a primary advantage of index insurance, as on-farm loss adjustment is quite complex and costly and may not be credible in many low-income countries.
* Lack of adverse selection. Adverse selection occurs when potential insured parties have hidden information about their risk exposure that is not available to the insurer, who then becomes more likely to erroneously assess the risk of the insured. Traditional insurance encourages high-risk producers to insure, while risk and premium are calculated on the average producer. Index insurance requires that all insured farmers within the defined area have the same insurance payout conditions, regardless of their specific risk exposure. Hence, insurers and clients benefit from reduced adverse selection.
* Lack of moral hazard. Moral hazard occurs when individuals engage in hidden activities that increase their exposure to risk as a result of purchasing insurance, or attempt to influence the claims outcome. These hidden activities can leave the insurer exposed to higher levels of risk than had been anticipated when premium rates were established. With WII, there is no benefit in individual producers trying to influence claims. All producers in the defined area are treated equally.
* Addresses correlated risks. Index products work best where there are correlated risks. With traditional products, perils such as drought are challenging to insure.
* Low operational and transaction costs. Index insurance requires limited individual underwriting (client assessment). It can be distributed, and claims can be settled, at relatively lower cost. Education on the product remains important, both prior to product launch and as an ongoing process.
* Rapid payout. Measurement of weather station data, with no field loss adjustment, allows rapid payouts.

Component 3

The project will facilitate access to climate services through the Participatory Integrated Climate Services for Agriculture (PICSA) approach. This decision-driven and science-informed approach has been used by several leading organizations such as CCAFS, SEI, the University of Reading as well as WFP as a last mile approach to reach the end user and seek their feedback.

#### 3.8 Sustainability and Exit Strategy

Sustainability is pursued at all stages of the project cycle. For planning, multi-stakeholder, participatory planning processes have been followed to ensure consensus-building and buy-in at national, provincial, and community levels. This was further informed by climate and weather information to ensure that the project is fitting with current and future climate trends. On implementation, joint implementation is sought with the government and local partner to ensure they have the tools, capacities, and systems to continue with the initiative beyond the project cycle. The PCC and PIC will be the key vehicles for this. On monitoring, the project will implement a rigorous system from which insights will be gained to inform the development of a strategy to scale up and handover. Finally, institutionalization will be pursued. An Operations and Maintenance Plan for the project has been developed and included as Annex 14. The imperative will be to embed the project in national commitments and policies. This is done through ensuring project alignment to national priorities. To this end, the proposed project is aligned to: (i) Initial National Communication to UNFCCC, (ii) National Climate Change Adaptation and Mitigation Strategy, (iii) National Adaptation Programme of Action and (iv) Nationally Determined Contribution Plan. Component 3 will also contribute to this through the support to the LAP process. RCEs and CLGRCs at community level will also have a key role, ensuring institutionalization within the communities. Finally, dedicated trainings and handover strategies will be implemented to clarify and strengthen the roles of local stakeholders (public and private) by Component.

The table below shows in greater detail the sustainability approach by component.

Table 15 – Sustainability arrangements by component

|  |  |  |
| --- | --- | --- |
| **Component** | **Objective** | **Approach** |
| Reduced exposure to climate risks of food insecure smallholder women and men through CRA as well as watershed restoration and enhancement | * CRA and watershed management done by communities beyond project * Extension officers with enhanced capacities to support CRA and watershed management | * Establish farmer clubs, which will carry over project activities beyond the 5-year implementation cycle * Community plans and assessments done to ensure CRA and watershed activities are suited to the local context and communities have ownership over these * Strengthen RCEs and their capacities to meet the needs of farmers (component 2) * Enhanced LAP planning integrating suited adaptation measures, like these (component 3) * Provision of technical and operational guidance to continue CRA and watershed activities at the institutional level (component 3) * Project guidance (technical and operational) created and disseminated to support replication and scale up |
| Enhanced and sustained adaptive capacity of targeted participants through a combination of context-specific, integrated risk management tools and market-based opportunities | * RCEs in place and functioning * VSL in place and functioning * MFIs/service providers extend their network of services to targeted areas * Farmers have enhanced financial capacities to engage with MFIs/service providers * Farmers marketing their produce under Component 1 | * Work with MASA to establish RCEs and channel support through these * Establish VSLs and link these MFIs * Support the growth of incomes, savings, and assets to support continued investment in Component 1 and 2 activities * SIMA extended and made accessible to all farmers, supporting sales * Project guidance (technical and operational) created and disseminated to support replication and scale up |
| Informed adaptation planning and decision-making across smallholders, communities and national/local authorities through generation and use of climate information | * INAM capacity enhanced * Content creation committee established * PICSA embedded in extension officer curricula and national initiatives (government and other stakeholders) * Climate/weather data accessible to all through established mechanisms * LAPs developed and implemented | * Technical skills fostered and observational/analytical instruments expanded * Creation and engagement of content creation committees within the project and linked to other national initiatives * PICSA pool of experts created to help train extension officers * PICSA promoted in other national schemes * Assessments done to inform the selection of information delivery channels suited to local needs/context * LAPs facilitated making use of climate evidence * Project guidance (technical and operational) created and disseminated to support replication and scale up |

1. <https://www.climatelinks.org/sites/default/files/asset/document/2018_USAID-ATLAS-Project_Climate-Risk-Profile-Mozambique.pdf> [↑](#footnote-ref-2)
2. Recurrence of high food insecurity is ranked as high, medium, and low. High recurrence is where over 20 percent of the population is food insecure across 3-5 years of the study. Medium recurrence is where over 20 percent of the population is food insecure across 2 years of the study. Low recurrence is where over 20 percent of the population is food insecure across 0-1 years of the study. [↑](#footnote-ref-3)
3. [http://iridl.ldeo.columbia.edu/maproom/Global/Time\_Scales/precipitation.html?bbox=bb%3A30.1934%3A-17.4960%3A35.0382%3A-15.0504%3Abb&region=bb%3A30.1934%3A-17.4960%3A35.0382%3A-15.0504%3Abb&timeAnal=Standard%20Deviation&seasonStart=Oct&seasonEnd=Apr#tabs-2](https://eur03.safelinks.protection.outlook.com/?url=http%3A%2F%2Firidl.ldeo.columbia.edu%2Fmaproom%2FGlobal%2FTime_Scales%2Fprecipitation.html%3Fbbox%3Dbb%253A30.1934%253A-17.4960%253A35.0382%253A-15.0504%253Abb%26region%3Dbb%253A30.1934%253A-17.4960%253A35.0382%253A-15.0504%253Abb%26timeAnal%3DStandard%2520Deviation%26seasonStart%3DOct%26seasonEnd%3DApr%23tabs-2&data=02%7C01%7CMartijn.reus%40wfp.org%7Cedd2205a75a6491671b408d71662199e%7C462ad9aed7d94206b87471b1e079776f%7C0%7C1%7C637002482916267878&sdata=lfSGy1zFjz00hujhwAKvU0cD2l1guGu%2FCMQ0BU%2FSLUk%3D&reserved=0) [↑](#footnote-ref-4)
4. Fill the Nutrient Gap (FNG) Mozambique (WFP,2017) WFP examined impact of gardening to meet nutrient needs of the rural population and concluded that gardening is most effective livelihood activity to meet nutrient needs of rural population in Mozambique. [↑](#footnote-ref-5)
5. LAPs are being developed to implement activities under the [National Strategy for Climate Change Adaptation and Mitigation](http://www.cgcmc.gov.mz/en/policy-and-strategies/148-national-adaptation-and-mitigation-of-climate-change-strategy) with the aim of building the medium- and long-term adaptive capacity of local communities. The LAPs support the Strategic Plans for District Development (SDDS), in partnership with local government (district and provincial) and development partners. In the plans, districts and communities put forward their vision of development in the context of climate change and outline the interventions needed. [↑](#footnote-ref-6)
6. Currently, INAM provides daily weather forecasts (twice a day) to the public and INGC. The South African regional, seasonal forecast is downscaled to national and province level losing the accuracy and validity. [↑](#footnote-ref-7)
7. Plano Estratégico de Desenvolvimento do Distrito (PEDD) – District Strategic Development Plan (PEDD) presents vision for the integral development of the district over 10 years horizon. The plan analyses soci-economic district context and problems, and prioritizes the most essential solutions to reduce poverty as result of consultation and dialogue. [↑](#footnote-ref-8)
8. Plano Económico e Social (Social and Economic Plan) is an annual plan developed based on the available resources from the State Budget and priorities outlined in PEED. [↑](#footnote-ref-9)
9. The project team presents the project criteria to the community leader for endorsement, backed by an explanation of the project. Subsequently, a community committee is formed with representatives from different socio-economic profiles. The representatives are proposed and endorsed by the community at large. The committee supports the project team in presenting the project and project criteria to the community. Then, the committee receives the nominations of the households into the project. The households will nominate themselves, should they deem themselves to be fitting for the project based on the criteria and should they desire to participate in the project. The committee consolidates the list of nominations and reviews the list. The committee, based on their knowledge of the context, is able to endorse, or not, the participation of each household into the project. The validated list is presented to the community leader and subsequently to the community for endorsement. The project then targets those who are in the final endorsed list of participating households. [↑](#footnote-ref-10)
10. The baseline for the project has not been conducted. This will be done closer to the start of the project to allow for the baseline to be fully representative of the context prior to the start of the project activities. The baseline will be done in quarter 1 of year 1, 3 months prior to the start of activities. All the baseline values shown here are purely indicative and will be revised based on the baseline findings from quarter 1 of year 1. Currently, the baseline figures are informed by prevailing assessments from the target area. [↑](#footnote-ref-11)
11. As the baseline of the project has not been conducted and this will only be done 3 months prior to the start of the project, the target values shown here are purely indicative and will be revised based on the baseline findings from quarter 1 of year 1. The targets are informed by prevailing assessments of the context and trends of similar interventions. [↑](#footnote-ref-12)
12. The number of people in targeted areas reporting benefits from an enhanced livelihood asset base (including enhanced practices) disaggregated by sex [↑](#footnote-ref-13)
13. The Livelihoods-based Coping Strategies Index (LCSI) indicator measures the different types of livelihood-related coping strategies that households apply to ensure their food needs are met. It ranks these coping mechanisms by how costly it may be to their livelihoods and ability to cope with shocks in the future. Strategies are classified into three broad groups namely: 1.Stress strategies: such as borrowing money or spending savings, are those which indicate a reduced ability to deal with future shocks due to a current reduction in resources or increase in debts; 2.Crisis strategies: such as selling productive assets, directly reduce future productivity, including human capital formation; 3.Emergency strategies: such as selling one's land, affect future productivity, but are more difficult to reverse, or more dramatic in nature. [↑](#footnote-ref-14)
14. This is a combination of all/some: Food Consumption Score + Food Energy Shortfall + Food expenditure share + Poverty status + Livelihood coping strategy categories. Some of these were previously mentioned. [↑](#footnote-ref-15)
15. FCS-Nutrition (FSC-N) is calculated in a similar way as the FCS, but it zooms in on the consumption of three essential food groups: Vitamin A, Protein, and Iron. The FCS-categories for the FCS-N scores can be interpreted as following: when FCS-N is “acceptable”, it means the household consumes the nutrient daily (7 days per week). When FCS-N is “borderline”, it means the household consumes the nutrient sometimes (1-6 days a week). When FCS-N is “poor”, it means the household did not consume the nutrient at all (0 days a week). [↑](#footnote-ref-16)
16. The fund-supported strategies include: CRA, Asset creation, saving, credit, insurance, PHL, market access and climate information services. Through the surveys, making use of a list, the HH will be asked to note how many of these they access and practice. [↑](#footnote-ref-17)
17. Type cannot be defined at present and will be determined during the CBPP during Q1 and Q2 of the project. Also are numbers an estimation based on previous asset creation experiences and might be updated during the CBPP, depending on type and number of assets selected by the communities. [↑](#footnote-ref-18)
18. Second National Communication, not submitted (in process of being submitted). [↑](#footnote-ref-19)