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Project Identification Form (PIF) entry – Full Sized Project – GEF - 7

## Malawi-climate resilient and sustainable capture fisheries, aquaculture development and watershed management project

### Part I: Project Information

**GEF ID**

10411

**Project Type**

FSP

**Type of Trust Fund**

LDCF

**CBIT/NGI** CBIT NGI**Project Title**

Malawi-climate resilient and sustainable capture fisheries, aquaculture development and watershed management project

**Countries**

Malawi

**Agency(ies)**

AfDB

**Other Executing Partner(s)**

Ministry of Agriculture Irrigation and Water Development (MoAIWD)

**Executing Partner Type**

Government

**GEF Focal Area**

Climate Change

**Taxonomy**

Sustainable Land Management, Land Degradation, Focal Areas, Community-Based Natural Resource Management, Improved Soil and Water Management Techniques, Sustainable Livelihoods, Income Generating Activities, Food Security, Sustainable Development Goals, Freshwater, International Waters, Lake Basin, River Basin, Aquifer, Biomes, Constructed Wetlands, Aquaculture, Fisheries, Climate Change, United Nations Framework Convention on Climate Change, Nationally Determined Contribution, Paris Agreement, Climate Change Adaptation, Climate information, Climate resilience, Livelihoods, Innovation, Community-based adaptation, Complementarity, Mainstreaming adaptation, Least Developed Countries, Private sector, National Adaptation Plan, Biodiversity, Lakes, Wetlands, Rivers, Invasive Alien Species, Species, Mainstreaming, Agriculture and agrobiodiversity, Demonstrate innovative approaches, Influencing models, Stakeholders, Private Sector, Individuals/Entrepreneurs, Communications, Awareness Raising, Beneficiaries, Local Communities, Civil Society, Community Based Organization, Type of Engagement, Participation, Information Dissemination, Consultation, Partnership, Gender Equality, Knowledge Generation and Exchange, Gender results areas, Capacity Development, Gender Mainstreaming, Women groups, Gender-sensitive indicators, Food Security in Sub-Saharan Africa, Integrated Programs, Resilience to climate and shocks, Integrated Land and Water Management, Gender Dimensions, Agroecosystems, Food Systems, Land Use and Restoration, Sustainable Food Systems, Food Value Chains, Capacity, Knowledge and Research, Knowledge Exchange, Knowledge Generation, Training, Adaptive management, Learning

**Rio Markers****Climate Change Mitigation**

Climate Change Mitigation 0

**Climate Change Adaptation**

Climate Change Adaptation 2

**Duration**

60 In Months

**Agency Fee(\$)**

419,540

**Submission Date**

10/11/2019

## A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCA-1	LDCF	2,716,210	6,448,456
CCA-2	LDCF	1,700,000	7,948,097
	<b>Total Project Cost (\$)</b>	<b>4,416,210</b>	<b>14,396,553</b>

## B. Indicative Project description summary

### Project Objective

To improve the sustainability of fisheries in Malawi lakes through improved community led and climate smart catchment management.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Strengthening the capacity of Beach Village Committees (BVCs) for climate resilient, watershed planning and management for lake protection.	Technical Assistance	<p>Outcome 1.1: Strengthened capability of BVCs for climate resilient watershed planning and management for lake protection.</p> <p>Outcome 1.2: Improved communication in watershed management and lake protection.</p>	<p>1.1.1 At least 1300 Beach village committees (BVCs) are trained in climate resilient lake protection and watershed planning and management</p> <p>1.1.2 Community awareness and capacity for climate-sensitive catchment management is improved</p> <p>1.1.3 At least 7 Gender sensitive and climate smart community-based watershed management plans are prepared (1 per catchment).</p> <p>1.1.4 Climate sensitivity of the Lake is reduced through community led</p>	LDC F	800,000	4,676,153

protection of river channels and riverbanks

1.2.1 Local language communication tools produced.

1.2.2 Impact Infor grams shared bi-annually

1.2.3 Pamphlet on indigenous knowledge prepared and distributed.

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Strengthening the capacity of Local Government institutions for watershed planning and management and lake protection.	Technical Assistance	<p>Outcome 2.1: Developed institutional Capacity for climate sensitive Ecosystem based watershed planning and monitoring (including development of 3 climate-sensitive watershed management plans for Chirwa, Zomba, and Lower Shire basin)</p> <p>Outcome 2.2: Improved fisheries and watershed management through knowledge generation about climate risks and vulnerability in the fisheries sector at district level.</p>	<p>2.1.1 Priority watersheds are identified and mapped based on climate risk assessment(s) in the fisheries sector</p> <p>2.1.2 Detailed vulnerability assessment of fish farmers and small-scale fishermen along Lake Malawi</p> <p>2.1.3 District Council Staff trained in climate sensitive lake protection and watershed management including climate change preparedness and resilience building</p>	LDC F	900,000	3,271,944
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2.1.4 District level Watershed Management Plans prepared which incorporate fisheries and aquaculture climate risks as well as adaptation measures for the Chirwa, Zomba, and Lower Shire basin

2.1.5 Climate Change is mainstreamed in National or sub-national policies around watershed and fisheries management.

2.2.1 Fish capture records improved and maintained at district level.

Aquatic ecosystems, especially wetland areas, riverbanks and other key habitats rehabilitated with climate-sensitive measures for improved lake protection and resilient community livelihood	Investment	Outcome 3.1: Pilot community-based soil and water conservation and improved fallow and agroforestry in the Lake Chilwa catchment (with Chambo Restoration Plans), the lower Shire River, Bua River and the Nkhata Bay river basins.	3.1.1 Over 2000 ha of community woodlots established in "priority" watersheds. 3.1.2 Agroforestry and conservation farming practices implemented in 3 000 ha of farming areas. 3.1.3 "Priority sub-watersheds" rehabilitated.	LDC F	2,005,914	4,226,261
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Outcome 3.2: Restoration of spawning grounds for capture fisheries. Including invasive aquatic weeds control (Songwe River, Bua River, Dwanga Rivers).

Outcome 3.3: Alternative and complementary rural livelihoods strengthened in selected watersheds

3.1.4 Conservation program for Lake Chilwa implemented

3.2.1 Fish breeding/spawning grounds restored.

3.2.2. Invasive weeds removed.

3.2.3 Over 100km of vegetation is planted for lake shoreline protection.

3.2.4 Water supply and sanitation services provided at fish landing sites.

3.3.1 Over 50 integrated household fish farming units developed.

3.3.2 Non-fisheries-based enterprises are promoted.

3.3.3 A plastic collection and disposal system is in place in at least 3 districts.

Improved Knowledge Management, M&E and access to climate information and early-warning systems at	Technical Assistance	Outcome 4.1: A Community based climate-sensitive Early Warning and disaster	4.1.1 Pilot weather and water quality observing network established.4.1.2 Climate change and	LDC F	500,000	1,502,368
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national, watershed and local levels.

preparedness System is developed and implemented.

Outcome 4.2: Lessons learned and best practices from pilot activities, capacity development initiatives and policy changes are disseminated.

fisheries monitoring datasets are compiled and shared with all stakeholders.

4.1.3 A participatory M&E plan is designed and implemented at all levels.

4.1.4 M&E project reports, briefs and other documents are shared with all stakeholders.

4.1.5 Project good practices and lessons learned documented and disseminated.

4.2.1 Annual community level lesson learning workshops organised.

2.2.2 Quarterly lesson learning workshops held at district level

4.2.3 Annual national "Lake protection and watershed management" symposia held.

4.2.4 Regional study tour organised for key national staff



	<b>Sub Total (\$)</b>	<b>4,205,914</b>	<b>13,676,726</b>
<b>Project Management Cost (PMC)</b>			
	LDCF	210,296	719,827
	<b>Sub Total(\$)</b>	<b>210,296</b>	<b>719,827</b>
	<b>Total Project Cost(\$)</b>	<b>4,416,210</b>	<b>14,396,553</b>

**C. Indicative sources of Co-financing for the Project by name and by type**

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
GEF Agency	AfDB	Loans	Investment mobilized	9,556,803
GEF Agency	AfDB	Grant	Investment mobilized	4,839,750
			<b>Total Project Cost(\$)</b>	<b>14,396,553</b>

**Describe how any "Investment Mobilized" was identified**

The investment mobilized was identified from a baseline project undertaken by the AfDB titled "Malawi-Sustainable Fisheries, Aquaculture Development and Watershed Management Project".

## D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
AfDB	LDCF	Malawi	Climate Change	NA	4,416,210	419,540	4,835,750
<b>Total GEF Resources(\$)</b>					<b>4,416,210</b>	<b>419,540</b>	<b>4,835,750</b>

## E. Project Preparation Grant (PPG)

PPG Amount (\$)

150,000

PPG Agency Fee (\$)

14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
AfDB	LDCF	Malawi	Climate Change	NA	150,000	14,250	<b>164,250</b>
<b>Total Project Costs(\$)</b>					<b>150,000</b>	<b>14,250</b>	<b>164,250</b>

## Core Indicators

### Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female				
Male				
<b>Total</b>	0	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Concerning indicator 11 on the number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment, to avoid any double counting, it was left blank since the CCA core indicator and metadata Excel sheet was already filled and attached to this submission. Numbers were estimated based on the 2018 population census.

## Part II. Project Justification

### 1a. Project Description

I

#### *1-1: Adaptation problems, root causes and barriers that need to be addressed*

##### Global environment

*Economy and Livelihoods:* The economy and livelihood of Malawi is largely dependent on its natural resources, either from the land (agriculture), biodiversity (agriculture, forestry, tourism) or water (agriculture, fisheries, energy, health) as well as on its climate (rain fed agriculture) for foreign currency, employment, food security and raw materials for industrial production. This dependence on natural resources, coupled with rapid population growth, makes Malawi particularly vulnerable to the impacts of climate change and variability. Climate change has also exacerbated systemic inequalities between women and men, given that they experience climate impacts differently based on their capacities and vulnerabilities. According to the National Climate Change Management Policy (2016), if Malawi does not start acting now, the direct overall costs due to climate change will be equivalent to losing at least 5% of the Gross Domestic Product (GDP) each year. Furthermore, the direct cost of droughts and floods is estimated at 1.7% of Malawi's GDP every year. Overall, agriculture suffers the greatest losses and the ensuing food shortages cause domestic grain prices to rise while grain imports increase rapidly to cover the gap. This impacts most negatively on the poor and vulnerable communities that rely on subsistence agriculture and fishing who will have to purchase food against a backdrop of reduced income. Improving climate change adaptation is therefore imperative for Malawi.

*Climate Risk and future projections:* Climate variability and change are already affecting Malawi, which has experienced greater incidences of dry spells and intense rainfall events over the last two decades. These changes have led to an increase in the frequency of floods, droughts, pest and disease outbreaks, with severe economic and social consequences. Historical observations indicate the average annual temperatures have risen by 0.9°C since 1960, with changes in patterns of El Niño and La Niña, thus increasing climate variability and uncertainty. Climate projections indicate an increase in average annual temperatures. Even with an estimated increase in total annual rainfall, the number of rainfall events is likely to decrease, with significant increases in the intensity of each episode. Frequency of droughts and floods is likely to increase under the projected scenarios.

National disasters have been declared around Lake Malawi in the last few decades, including droughts (1991-1992) and floods (2000-2001) notably in the Shire Valley in the southern part of the lake. These hazards increasingly contribute to malnutrition and hunger, as well as negatively affecting the agricultural, livestock and fisheries output upon which local communities rely on. This also leads to disruptions to both socio-economic and industrial activities which undermines the adaptive capacity and resilience of local households in the surrounding areas of the lake. In addition, future projections indicate that the mean annual temperature is likely rise by 1.1 to 3.0 degrees Celsius by 2060, and by 1.5 to 5.0 degrees Celsius by 2090.

The World Bank (2014) identifies floods and droughts as the leading cause of chronic food insecurity which is endemic in many parts of the country and estimates that droughts, on average, cause GDP losses of almost 1% every year with much greater losses for extreme droughts. In addition, Maplecroft (2012) notes that Malawi is among the countries most prone to the adverse effects of climate change ranked among 16 countries of 'extreme risks' to climate change impacts in the world. The Fifth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) also notes that climate change is beginning to impact freshwater ecosystems with elevated surface water temperatures evident in Lake Malawi.

*Importance of the fisheries sector.* This sector is of great importance to Malawi's economy as a source of employment, food, rural income, export, import substitution and biodiversity. The sector directly employs ~59,873 fishermen and indirectly over 500,000 people involved in fish processing, fish marketing, boat building and engine repair (Government of Malawi, Annual Economic Report, 2011)[1]. Nearly 1.6 million people in lakeshore communities derive their livelihoods from the fishing industry. Fish provides over 70% of the dietary animal protein intake of Malawians and 40 % of the total protein supply. It also provides vital vitamins, minerals and micronutrients. Much of the fish is consumed in rural areas, thereby contributing significantly to daily nutritional requirements to vulnerable groups.

*Fisheries and catchment management.* The sustainability of the fisheries resources invariably depends on the righteous management of catchment, land and water resources. Lake basins are associated with high population densities and growths. On average the rate of population growth in the countries in the Great Lakes region is between 3 to 4% compared to about 0.5% in many developed countries. For example, the total population of Malawi in 2014 was 17.4 million, with an annual growth rate of 3.33% (CIA World Factbook). 53% of that population, 9.2 million, resided in the Lake Malawi catchment giving a population density in the basin of 106 persons per km<sup>2</sup>. In addition, the population of livestock around the lakes is similar to that of humans (Bootsma and Hecky 1993). The high population results in economic activities in the catchment area of the lakes including crop agriculture, livestock, urban development, utilization of wetland resources and mining which in turn affect the health of the fish habitat and must be considered in lake management planning.

As the population increases, demand for food increases which leads to more intensive farming practices that require more water, use more fertilizers and pesticides. The settled area expands, and forested catchments and lakeshore wetlands are cleaned and drained to create more farmland. It has been found that fish stocks are dwindling due to overfishing on one hand, and climate change is exacerbating these practices in further damaging livelihoods. The deforestation results in accelerated soil erosion and increased runoff which washes silt and agrochemicals into the lakes disrupting the natural ecological balance in the lakes through eutrophication, thermal stratification and habitat loss. The impact is most pronounced in the shallower lakes, such as Lake Chilwa where wetlands play a vital role in maintaining the ecological balance. The wetlands buffer and regulate the quality of water entering the lakes and are critical habitats for fish and other biotic communities. The harvesting and burning of wetlands lead to changes in structural components in surface water (Balirwa, 1998; Hecky, 1993).

*Vulnerability of fisheries to climate change.* Malawi lake fisheries are vulnerable to climate change impacts (Allison et al., 2009). There are indications that the great lakes of Africa, including Lake Malawi, are warming, and the full consequences are as yet undefined (Vollmer et al., 2005). The impacts of climate change on deep tropical lakes are not well understood. However, research results for another deep African rift lake, Lake Tanganyika, suggest that warming climate has reduced internal nutrient loading and primary production (Verburg et al., 2003).

Results obtained from the General Circulation Models (GCMs) suggest that temperature will increase in the Lake Chilwa Basin by 2.6–4.72°C, with carbon dioxide doubling by the year 2075 (Chavula, 1999). In addition to warming temperatures, smaller lakes such as Chilwa and Malombe have exhibited fluctuating but declining water levels. In Lake Malombe, rainfall and runoff have been shown to contribute to lake productivity (van Zwieten et al., 2003). Decreasing water levels in the same lake have also been linked to disappearance of vegetation and reduction in breeding areas for fish. Lake Chilwa water levels fluctuate in response to rainfall and drought, and these fluctuations have a significant effect on stock levels (van Zwieten and Njaya, 2003; Njaya et al., 1999). High lake levels generally increase fish production by enhancing nutrient recycling in swampy areas of the lake, increasing lake volume and maintaining the swamp vegetation that fish depend on for breeding and refugia (Moss, 1979; Ryder, 1982). In shallow lakes such as Chilwa and Malombe, the climatic and hydrological fluctuations are mirrored by changes in fishing activity and catches (Allison et al., 2002). In response to this unpredictable environment related to high variability in the water supply to these lakes, communities have developed diversified, adaptable and mobile livelihoods. These include transfer to nearby Lakes and beaches in search of better fish catches, investing in petty trading and agriculture, bird trapping and weaving of commercial handicrafts such as carpets and baskets (Agnew and Chipeta, 1979; Allison et al., 2002).

*Vulnerability of fisheries dependent livelihoods:* It is generally accepted that rural communities in Malawi are predominantly poor and therefore lack the means to cope with the threat posed by climate change. In villages located along rivers and lakes, a significant livelihoods cluster are families who depend on capture fishing. For these families, vulnerabilities differ depending on the status of fisheries resources. A report by the Catholic Relief Services (2010) showed that where fisheries resources are abundant such families tend to be some of the well-off members of the communities but once the fisheries resources deteriorate, they become some of the poorest. The same report noted that fishing groups seem to be quite cohesive, even fishing together in groups of up to 50 fishermen and that where fishing provides a stable livelihood, such families do not usually engage in other food production or income-generating activities. Thus, once they are unable to meet food or income needs from fishing, they will be forced to engage in other activities including farming, small income-generating activities as well as the sale of labour (known as *ganyu* which is indicative of extreme poverty).

With climate change, and its impacts on lakes as described before there is a long-term risk already being seen in some areas where the decline of fishing resources is reported. Droughts, on the other hand, pushes hitherto farmers into fishing thereby increasing not only the competition on the fisheries resources but also conflicts between the new comers and the traditional fisher farmers. Climate change therefore does not only result in reduced fish stocks but disrupts community relations, making both fisher families and subsistence farmers vulnerable.

In most areas along the lakeshore fishing households are already food insecure, primarily because fish catches are declining. It is expected that even in places where fish catches remain decent, fisher households will eventually become food insecure because strategies for maintaining fish stocks are not being implemented. The conflicts with non-fisher households will only intensify. The Department of Fisheries has developed some strategies, but they do not have the resources to enforce these to protect fisheries resources. Also, most of these strategies focus primarily on the fish stock, e.g., fish season closure to allow for breeding, so do not address other critical issues such as integrated catchment management. Instituting holistic sustainable fisheries would therefore benefit both fisher households that are currently food insecure by restoring fish stocks and providing complementary livelihoods for those living further away from the lakeshore and depending primarily on subsistence farming.



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[1] UNDP Overcoming Poverty in Malawi through Sustainable Environment and Natural Resource Management Identifying Policy Options to Accelerate Poverty Reduction

### Climate Change Adaptation challenges in Malawi

As a Least Developed Country, Malawi produced a National Adaptation Plan of Action (NAPA) in 2006. The NAPA documents national circumstances, vulnerabilities, and expected impacts from climate change in Malawi, as well as identifying and prioritising responsive actions. The NAPA also outlines the consultation, resources and information that were used to prioritise adaptation interventions for Malawi.

The NAPA notes that Malawi relies on rain-fed agriculture and has already experienced the impacts of climatic hazards such as drought and floods leading to poor yields or total crop failure, thus exacerbating problems of food security and malnutrition. Climate change is also expected to impact directly on human health by increasing the incidence of disease such as malaria, cholera and diarrhoea due to droughts, floods and increasing temperatures. Cognisant of these challenges the NAPA has identified the urgent adaptation projects for Malawi as follows:

- a) Improving community resilience to climate change through the development of sustainable rural livelihoods;
- b) Restoring forests in the Upper and Lower Shire Valleys catchments to reduce siltation and associated water flow problems;
- c) Improving agricultural production under erratic rains and changing climatic conditions;
- d) Improving Malawi's preparedness to cope with droughts and floods; and
- e) Improving climate monitoring to enhance Malawi's early warning capability and decision making and sustainable utilization of Lake Malawi and lakeshore areas resources.

The Malawi Growth and development Strategy II review report 2016, on the other hand, acknowledges that Malawi is amongst countries with low capacity to adapt to climate change, and limited capacity to manage the country's environment and natural resources, which include land, forestry, fisheries and water. Key challenges and constraints which limit the capacity of the country to adapt to climate change and in managing the environment and natural resources include; (i) inadequate capacity and training at individual and institutional levels in the implementation of policies, rules and regulations; (ii) inadequate expertise and equipment to determine the quantity, quality of various kinds of natural resources; (iii) lack of enforceable measures to ensure maximum benefit for the common good; and (iv) inadequate capacity to mobilize investment and resources into environment and natural resources based industries. The outcome of these bottlenecks has been a plunder of natural resources through over-exploitation by near destitute communities and self-interested entrepreneurs.

Building on the NAPA consultations, the National Resilience Strategy, 2017 proposes to promote management systems and technologies that protect fragile land (river banks, dambo areas, steep slopes and hilly areas and water catchment areas). However, implementation on the ground remains weak and is generally the preserve of NGOs. Little effort is invested into coordinating and integrating climate change adaptation and mitigation actions in local government development planning process. In the cases that such efforts exist they are reported to be ad hoc, often triggered at the national level as a response to current disasters and rarely mainstreamed into local level planning. Thus, the implementation of agreed national programs for climate change adaptation (NAPA) is hindered by weak linkages between national level institutions working on climate change and local government stakeholders with the mandate to safeguard their local environment.

#### Adaptation challenges for fisheries and catchment management

**General.** Malawi is rich in water resources (lakes, rivers and aquifers). The country is divided into 17 Water Resources Areas, subdivided into 78 WRUs. The Lake Malawi and Chilwa basins are the major drainage systems in the country. The Lake Malawi system (part of the Zambezi River basin), dominates the country's hydrology. Major watershed management constraints that affect fisheries productivity include: (i) climate change and variability (ii) water resources degradation (iii) degradation and loss of wetlands (incl. spawning grounds) (iv) proliferation of the aquatic weeds in the Karonga area and Lake Chirwa.

*Fisheries-ecosystem habitat degradation.* Inland fisheries and aquaculture are impacted by a variety of factors such as air and water temperature, water levels fluctuation duration of floods, timing of the floods, regularity of flooding, fish migration and dry season refuges linked to climate variability and change impacts. In addition, there may be potential loss of species in capture fisheries and impacts on seed availability for aquaculture, thereby threatening livelihoods. A 2005 survey of artisanal and industrial fisheries of the Southern Lake Malawi recorded more than 200 species of fish from single fishing localities (Weyl et al. 2005). However, the species richness has declined over the last 20 years due to overharvesting, habitat degradation, and land use change and development within the upstream catchments (Duponchelle and Ribbink 2000, Maguza-Tembo 2004, Ngochera 2014). The area exhibiting the greatest loss during that time was Nkhata Bay, where researchers estimated that 40 local species have become extinct (Kanyumba, 2009)[1]. The rivers and tributaries flowing into Lake Malawi (Songwe, N. Rukuru, S. Rukuru, Bua, Linthipe as well as Chilwa) as well as the nearshore sandy and muddy substrates serve as important fish breeding habitats (Pereyra et al. 2004, Turner 2004). During the spawning season, which commences with the onset of the rainy season, Cyprinids (e.g., mpasa, kadyakolo, sanjika), and Clarias catfish species migrate upstream into Lake Malawi's tributaries (Weyl et al. 2010). The usipa, *Engraulicypris sardella*, tend to breed in 1-2 m deep water along the beach shore of the southwestern shorelines of Lake Malawi (Morioka & Kaunda 2005). Similarly, the Chambo (*Oreochromis* spp.) use the nearshore environment for spawning (Bell et al. 2012). Improving the resilience of spawning grounds will reduce their vulnerability to climate change. In addition, the short-term fluctuations in wind pattern that have become more variable in recent times due to climate change pose a challenge to fishers (NAPA 2006).

*Deforestation, Land Degradation and fisheries productivity.* The forest cover in Malawi has declined from 3.9 million ha in 1990 to 3.2 million ha in 2010, with an annual deforestation rate of almost 1% during the period 2005-2010[2]. Soil loss is estimated to average 20 tons/ha/year to 29tons/ha/year (Yaron et al., 2011). Decline in density of trees, coupled with heavier rainfall and high rates of runoff, result in sediment deposition in the breeding areas, with effects on fish breeding and early- stage development. Sediment loading in lakes like Chilwa and the Elephant marsh has substantial detrimental effects on fish population sizes, community composition, and biodiversity. It has the following adverse impacts on the lake ecosystem: (i) Higher water turbidity and lower light penetration, which reduces the photosynthetic rates of primary producers (ii) Loss of benthic habitat complexity and the smothering of important spawning

grounds and feeding habitats and (iii) Negative impacts on the reproductive behaviour of haplochromine cichlids that rely highly on visual cues for mate selection (Lévêque 1995, Munthali 1997, Bootsma and Hecky 1999, Weyl et al. 2010). Excessive amounts of Nitrogen and Phosphorus leads to eutrophication and changes in phytoplankton species composition, which adversely impact the higher trophic levels, by disrupting breeding habitats. To address sediment related issues, communities suggest actions such as tree planting on deforested areas—steep slopes and along riverbanks; implementing bylaws that prevent deforestation along riverbanks, strengthening natural resources conservation committees and providing loans to start small-scale businesses to reduce pressure on forestry.

*Conclusion on vulnerability to climate variability and change.* Malawi' has suffered from increases in the occurrence and severity of extreme weather events, including cyclones/strong winds, flood/storm surges, intense rains, extreme high temperatures and drought, which affect fisheries production. According to the ND GAIN index [1]report for 2015, Malawi is the 39th most vulnerable country and the 21st least prepared to address climate impacts. The high vulnerability score and low readiness score of Malawi implies that it has both a great need for investment and innovations to improve readiness and a great urgency for action. The key hazards for Malawi are droughts and floods and the vulnerability scores are higher on social economic impacts, increased inequality which also affects vulnerable groups with impacts on development and high dependency on Aid.[2]

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[1] The ND-GAIN Country Index, summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience

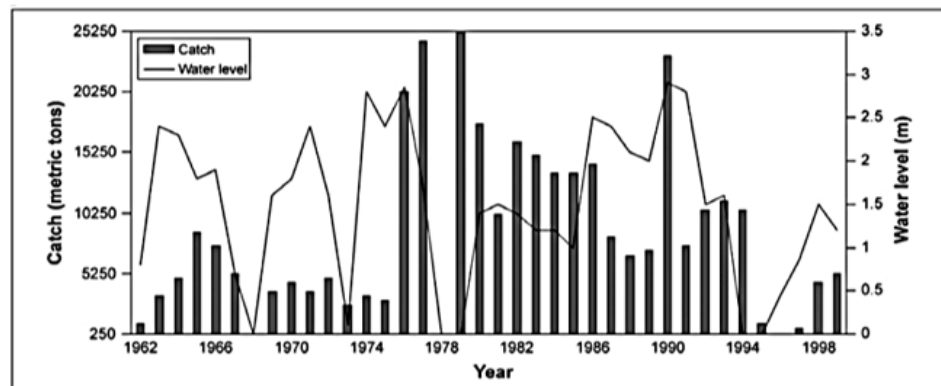
[2] Malawi Country Climate Risk Assessment Report; Irish Aid, Resilience and Economic Inclusion Team, Policy Unit January 2018

**Increasing exposure to floods and droughts.** Vulnerability to climate change in Malawi is related to exposure to water stress, extreme hydrological events, and the capacity to respond to variability. Extreme floods cause on average about 0.7% annual GDP loss (RMSI 2010). Between 1967 and 2003, the country experienced 6 major droughts and 18 flooding incidences, which heavily impacted smallholder farmers. The 2011-12 droughts had severe effects on food security in many districts, with approximately 2 million people affected, particularly in the southern districts. Irregular rainfall and the high annual evaporation rates that characterize areas like upper watersheds in Nkhatabay river basin, mean that ponds for aquaculture that are less than about 2 m in depth need to be replenished by groundwater supplies, otherwise they would dry out during droughts.

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[1] FISH (2015). Environmental Threats and Opportunities Assessment (ETOA) of Four Major Lakes in Malawi. USAID/FISH Project, Pact Publication, Lilongwe, Malawi: 250 pp.

**Falling lake water levels and effects on Fisheries production.** Lake Malawi as well as lake Chilwa are susceptible to water level variations as shown in the figure below.



Variation in fish catch in Lake Chilwa compared to changes in lake levels; Source: Macuiane et al. 2011. ¶

Records indicate that the water levels have dropped from 477 m above sea level in the 1980s to ~474.8 m in the last 3 decades (Kumambala et. al., 2010). Local communities maintain the drop in the lake's level reduces the shallow breeding and nursery grounds. The Lake Chilwa system (~ depth 5m) is source of approximately 25% of the fish production in the country. Due to a variety of contributing factors including climate change, this natural ecosystem's capacity to produce is endangered as it increasingly dries up in years of low rainfall. The lake completely dried up an estimated 11 times (1879, 1900, 1913-1916, 1922, 1934, 1943-44, 1967, 1973, 1975, 1995-96, and 2012) since 1879. In addition, lake level variability occurs on an annual basis (Njaya 2014). Increasing evaporation due to higher mean temperatures is expected to worsen with climate change. Nyaya et al. explain that in years of high water level the open water increases in area to 1,054 km<sup>2</sup> and this same area decreases to 678 km<sup>2</sup> during low water level conditions (2014). When lake levels drop, there are corresponding drops in fish catch that have a significant impact on the local economy<sup>[1]</sup>. The disappearance of some species, such as Mbuna, whose habitats are threatened by declining water levels and other environmental factors, is a real threat to the fishing industry both locally and nationally. If the current trends are not reversed, biodiversity loss will become irreversible (Malawi NAPA 2006, Project Profiles).

[1] FISH (2015). Environmental Threats and Opportunities Assessment (ETOA) of Four Major Lakes in Malawi. USAID/FISH Project, Pact Publication, Lilongwe, Malawi: 250 pp.

### Root causes of fisheries challenges

A number of issues can be identified as the main causes of deterioration of the fisheries sector in Malawi:

#### **Root Cause #1: High dependency on subsistence agriculture.**

Malawi's agriculture is predominantly led by smallholder farmers and largely relies on rainfall. This significantly exposes local communities to the vagaries of the weather which render their livelihood very vulnerable, especially for households with very few alternative sources of food and income in the event of poor rains. With climate change, droughts and floods were reported to have become more frequent, further exposing smallholder farmers and their dependents to

loss of income, food insecurity and poor nutrition which in turn increases poverty levels. In the face of unreliable agriculture the lakes become the only salvation and over fishing and fish habitat loss results.

**Root Cause #2: Weak adaptive capacity to climate change at community level.**

Several adaptation strategies have been devised, including changes in crops grown and changes in growing patterns, however, smallholder farmers have faced limitations in adapting to climate change because they lack capacity including knowledge, skills and financial resources to adapt. Rain fed smallholder agricultural production is responsible for 80% of food production but is largely dependent on rain-fed agriculture. As such escalating climate risks need to be addressed through climate adaptation investments by local people and/or authorities at household, watershed, and local agricultural system and sector/national levels.

**Root Cause #3: Deforestation and land degradation.**

Malawi is affected by other environmental challenges especially deforestation and land degradation. Deforestation and land degradation is both a cause and an effect resulting in a re-enforcing feed-back loop. The demand for land and forest resources tend to increase as these resources diminish creating competition among users and even further deteriorations as users seek to secure supplies.

As noted earlier, the forest cover in Malawi has declined from 3.9 million ha in 1990 to 3.2 million ha in 2010, with an annual deforestation rate of almost 1% during the period 2005-2010, making it one of the largest deforestation rate in the eastern half of Africa. This is because forest ecosystems in Malawi provide resources and services that are critical for the health and livelihoods of communities and for the greater economy. Forests have been negatively affected by decades of deforestation, which has been driven by conversion to farmland, slash and burn agriculture, charcoal burning, bush fires and harvesting of wood (for tobacco curing, smoking fish, timber, poles, etc.) The reduction in tree cover has localized impacts on the land's ability to absorb and slow water during floods. The reduction of forests in Malawi also reduces the safety net of many rural inhabitants, as many poor farmers in southern Malawi depend on forests as a source of food and income during food shortages and crop failure (USAID, 2012).

Soil degradation has also led to soil losses averaged 20 T/ha/year, which translated in a yield loss of 4% - 25% every year. Sedimentation rates in sediment cores recovered from southern Lake Malawi have increased two to three fold since 1970 (Otu et al., 2011). Although the full impacts of increased sediment discharge and runoff are not fully understood, available evidence from Malawi lakes indicate that altered river discharges and high sediment discharge in rivers impacts fish habitat, destroys spawning areas, and affects the feeding and breeding behaviour of fish (Tweddle, 1992; Munthali, 1997). For example, in Lake Chilwa, where recruitment and productivity of *Barbus* spp. is dependent on river discharge, river sediment yield and water levels, altered river discharge rates and high river sediment yield may be responsible for the absence of large cyprinids such as *L. mesops* in degraded river catchments (Delaney et al., 2007). Soil erosion and cultivation of river banks has been associated with declining catches of potadromous *O. microlepis* (Cohen et al., 1993). Similar observations have been made for mpasa in the Lake Malawi catchment (Msiska, 1990). Sediments have also impacted breeding grounds of tilapia in Lake Malawi where sand substrates that are required for chambo breeding are increasingly being silted, thereby reducing breeding areas. Increasing turbidity also reduces the ability of males to see breeding females and disrupts sexual selection (Seehausen et al., 2003). Results from Lake Victoria show that turbidity can also reduce visual reaction distance and can thus disrupt predator-prey dynamics (Seehausen et al., 2003), especially among haplochromine fishes which are highly dependent upon sight feeding. High turbidities in Lake Chilwa have been shown to sharply reduce food availability in benthic offshore zones, and restrict fishes to pelagic and inshore food resources (Bruton, 1985). Increasing turbidity of Lake Malawi due to increasing sediment load could therefore reduce fish productivity due to reduced food availability and disruption of breeding activities.

The effects of soil erosion and deforestation undermine further the livelihoods of rural communities and exacerbate the extent of food insecurity and rural poverty in Malawi. Loss of fertile soils also has several negative impacts on water cycle, biodiversity and supportive ecosystem services (Coulibaly, et al. 2015). In the absence of an integrated and coordinated natural resources management programme, and accelerated climate induced changes, the situation is likely to exacerbate.

#### Barriers to sustainable climate adaptation solutions:

The UNDP (2008) noted that resource and knowledge constraints are the two major barriers that limit the integration of climate change issues in national development plans in Malawi. The National Climate Change Response White Paper of 2012 further asserts that in Malawi, apart from being resource poverty, an understanding of climate change issues appears to be limited.

Deriving from these two broad barriers, the country faces adaptation challenges such as (i) low preparedness to cope with episodes of drought and floods, (ii) weak understanding of long term climate projections that define the range of future climate conditions, (iii) poor climatic monitoring to enhance early warning capabilities and decision making towards sustainable utilization of its water and land resources (iv) weak research, capacity development, and technology development, (v) poor disaster risk reduction in the short-term, and (vi) a lack of integrated resource and development planning in the medium- and long-term. Mainstreaming climate change and adaptation responses into sectoral plans also remains a challenge.

In response Malawi seeks to develop adaptation responses that address both short- and long-term development goals with a stronger specific local autonomous adaptation context that will promote conservation of natural resources, improve food security and rural livelihoods and create “green” jobs. This project builds on this focus whilst specifically addressing the interlinkages between fisheries and catchment management in the context of climate change.

In relation to fisheries and catchment management the following barriers can be identified the:

#### **Barrier # 1: Limited capacity for environmental and natural resources management.**

The Malawi Growth and development Strategy II review report 2016 acknowledges that Malawi is amongst countries with low capacity to adapt to climate change, and limited capacity to manage the country’s environment and natural resources, which include land, forestry, fisheries and water. Key challenges and constraints which limit the capacity of the country to adapt to climate change and in managing the environment and natural resources include; (i) inadequate capacity and training at individual and institutional levels in the implementation of policies, rules and regulations; (ii) inadequate expertise and equipment to determine the quantity, quality of various kinds of natural resources; (iii) lack of enforceable measures to ensure maximum benefit for the common good; and (iv) inadequate capacity to mobilize investment and resources into environment and natural resources based industries. The outcome of these bottlenecks has been a plunder of natural resources through over-exploitation by near destitute communities and self-interested entrepreneurs.

With respect to fisheries, the weak management and enforcement capacity has resulted in overfishing. Overfishing occurs when too many small fish are being harvested because of excessive effort and too small mesh sizes. As a result the fish are not given the time to grow to the size at which the maximum sustainable yield (MSY) would be obtained from the stock. In response, the government introduced a licensing system to limit the number of participants in the fisheries by fixing the number of licenses available to fish in a particular fishing area (GoM, 2000). While the system was able to limit entry of the large-scale operators its effectiveness on artisanal fishermen, who mostly come from the lakeshore communities, has largely been ineffectual. The problem arises from the fact that it is difficult to administer licensing in a dispersed and often mobile fishery fleet.

Another legislative tool used by the national government is the gazetting of protected fisheries areas. There are two types of protected fisheries areas used as management tools in Malawi, conservation reserves and harvest reserves. Conservation reserves offer a range of protection, from complete prohibitions against removal of any living creature, to other regulations such as seasonal closures or restrictions on the removal of specific species (Hall, 1998). Lake

Malawi National Park and the Liwonde National Park, which covers part of Lake Malombe, are the only gazetted freshwater protected areas in Malawi (Munthali, 1994). The protected area includes the headlands and islands themselves, as well as any aquatic zone extending 100 m from the shore. Other smaller scale protected areas have been set by local communities as part of co-management arrangements. These protected areas are semi-permanent or temporary, as is the case of fish sanctuaries established in Lake Chilwa affluent rivers during periods of lake recession (Njaya et al., 1999), or semi-permanent, where fishermen literally take control. However, protected areas have generally failed to gain the support of the local communities as they are perceived to be top down government directives. Both central and local government lack the resources to effectively monitor and enforce the national guidelines. As a result encroachment into protected fisheries areas remains rampant to the detriment of fisheries (Munthali, 1993). Bringing the communities into the management of fisheries areas and associated catchment level initiatives is therefore a first step in ensuring that gazetted legislation in relation to fisheries is effective. This option is realistic in as far as it allows the communities to police themselves. To achieve that state, information sharing, awareness raising and local organisation in the communities is crucial.

### **Barrier # 2. Weak institutional and coordinating mechanisms of climate change adaptation initiatives.**

The National Resilience Strategy, 2017 proposes to promote management systems and technologies that protect fragile land (river banks, dambo areas, steep slopes and hilly areas and water catchment areas). However, implementation on the ground remains weak and is generally the preserve of NGOs. Little effort is invested into coordinating and integrating climate change adaptation and mitigation actions in local government development planning process. In the cases that such efforts exist they are reported to be ad-hoc, often triggered at the national level as a response to current disasters and rarely are they mainstreamed into local level planning. Thus, the implementation of agreed national programs for climate change adaptation (NAPA) is hindered by weak linkages between national level institutions working on climate change and local government stakeholders with the mandate to safeguard their local environment.

In relation to fisheries, Njaya (2007) and Hara et al. (2002) report that fisheries policy and governance systems in Malawi have largely largely set by government officials. In particular, regulations have usually been formulated and imposed without the participation of fishermen or the broader lakeshore communities hence most fishermen and ordinary community members feel that they have no obligations towards fisheries department regulations. As the communities are not given a platform to advance their interest, air their grievances and share their experiences in co-management arrangements, generally low levels of participation and ownership have resulted. The current approach to coordination has therefore failed to prevent the over-exploitation of fisheries and has, instead, resulted in subsequent collapse of the fisheries, particularly the valuable chambo fish which is a flagship for Malawi (Banda et al., 2005; Dobson and Lynch, 2003; Hara, 2006; Sarch and Allison, 2000). It is therefore imperative to promote institutional arrangements that allow all stakeholders to play a greater role in the formulation and implementation of fisheries policies.

### **Barrier # 3: Limited economic choices for alternative livelihoods in communities.**

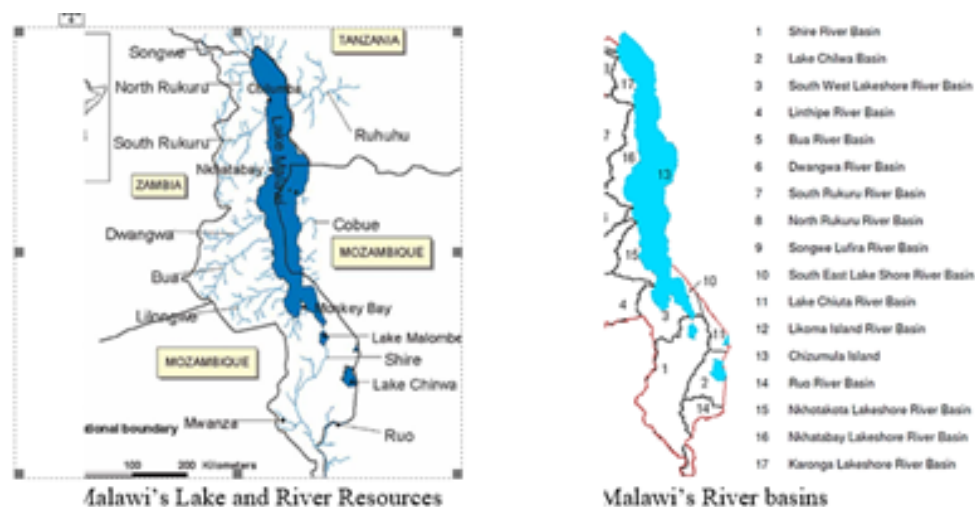
People at whatever level (policy, national, regional and local) make decisions and undertake actions on the basis of the knowledge and information they have and the constraints they face. Those decisions may aggravate, address, prevent or maintain the impacts of climate change on watersheds and the wider livelihoods of communities. This is certainly the case in much of Malawi where communities only know a limited array of livelihood options. For most livelihood knowledge does not extend beyond subsistence farming and fishing. It's therefore important to advance awareness on (i) alternative livelihood approaches and (ii) changes to the environment including climate change, if not to mitigate the effects of climate change, then at least to challenge long held beliefs that may impede social progress.

### **Barrier #4: Inadequate or unreliable climate change and hydro-meteorological information**

Due to climate change rainfall patterns have been, and will be, affected. With droughts water reservoirs will not get replenished and ground water levels will recede due to diminished recharge resulting in water stresses in a bigger proportion of the calendar year. The general appreciation of, and response to, such climate change induced changes in Malawi is hindered in part by low use of climate change and meteorological information. Considering that effective response to climate change are context specific and often best addressed at the local level, the key sectors utilizing the weather and climate services require timely, site specific and accurate information within reasonable and acceptable error margins. While the Malawi meteorological service sector has provided useful information, the sector is facing challenges such as fewer functional observational stations, shortage of trained personnel, vandalism of equipment, weak telecommunications support systems, and inadequate data processing and information dissemination facilities. These challenges compromise service delivery to meet local, national, regional and international benchmarks. The resultant data scarcity, and information deficiency, means that actors in climate sensitive sectors, including fisheries, cannot make informed decisions based on authoritative weather and climate information

1b. *Project Map and Coordinates.* Please provide geo-referenced information and map where the project interventions will take place.

The project will target priority sub-catchments in the following catchments and (districts) as illustrated in the map below. N. Rukuru (Karonga), S. Rukuru/Liwewa (Nkata Bay), Dwangwa/Bua (Nkotakota), Lilongwe (Salima), Lake Malombe (Mangochi), Lake Chilwa (Zomba, Machinga) and Lower Shire (Nsanje, Chikwawa, Thyolo)



### 1-2: *The baseline scenario and any associated baseline projects*

The Bank co-financing baseline project is titled: "**Sustainable Capture Fisheries, Aquaculture Development and Watershed Development Project**". The budget for the project is USD14.57 million. The project has been approved by the Bank Board and is planned to start in June 2020 for a period of 60 months.

The baseline project's sector goal is to contribute to Government's poverty reduction efforts by improving management and utilization of fisheries resources along Lakes Malawi and Chilwa as well as Shire River System and developing aquaculture in a changing environment. The goal of the project itself is, to improve resilience of the fishing and fish farming communities to taking into account the prevalent climate variability as well as the risks associated with



longer-term climate change. The purpose of the project is to contribute towards poverty reduction through improved value addition and provision of infrastructure for increased fisheries productivity, strengthened nutritional security through value chains and build climate resilience in Malawi.

The baseline project components are summarised in the table below.

Component	Component description
<p><u>Component 1:</u> Sustainable Capture Fisheries &amp; Watershed Management</p>	<p><u>Sub-component 1:</u> <i>Capture Fisheries Management</i></p> <ul style="list-style-type: none"> <li>· Development of multispecies fisheries management plans;</li> <li>· Rehabilitation of selected fish landing sites;</li> <li>· Strengthening decentralization through capacity building of officials and BVCs for co-management;</li> <li>· Training of extension workers and reforming by-laws;</li> <li>· Stock assessment and fisheries management support;</li> <li>· Developing of a blue economy framework that has sectoral and cross-sectoral dimensions as well as partnership models.</li> </ul> <p><u>Sub-component 2:</u> <i>Ecosystem-based Fisheries &amp; Watershed Management</i></p> <ul style="list-style-type: none"> <li>· Develop Institutional Capacity for Ecosystem-based fisheries and watershed planning and monitoring (includes three watershed management plans for Chirwa, Zomba, and Lower Shire basin</li> <li>· Pilot community-based soil and water conservation and Improved fallow and agroforestry in the Lake Chilwa catchment (with Chambo Restoration Plans), the lower shire river, Bua River and the Nkhata Bay river basins</li> <li>· Restoration of spawning grounds for capture fisheries. Including invasive aquatic weeds control (Songwe, Bua, &amp; Dwanga Rivers)</li> <li>· Strengthened Community based Early Warning System (Fishermen in the Songwe District)</li> </ul>
<p><u>Component 2:</u> Aquaculture Development</p>	<ul style="list-style-type: none"> <li>· Production of fingerlings and feeds with support from NAC;</li> <li>· Piloting of Cage aquaculture in selected sites;</li> <li>· Fish genetic improvement research;</li> </ul>

	<ul style="list-style-type: none"> <li>· Creation and organization of fish farmer's cooperatives;</li> <li>· Site selection and viability assessments of cage cultures.</li> </ul>
<u>Component 3:</u> Fish Value Chain Promotion & Strengthening	<ul style="list-style-type: none"> <li>· Adopting innovative fish processing technologies (Solar drier, Cold Storage, refrigerated trucks, kilns) for scaling out production;</li> <li>· Reducing on PHL through training and cold chain storage;</li> <li>· Training and capacity development for business financing and community business models and instituting innovation hubs;</li> <li>· Promoting private sector partnership and infrastructure development with selected SMEs and cooperatives (and Fish Markets such as in Mzuzu);</li> <li>· Facilitating seafood processing zones and trade corridors in the SADC region (Zambia, Tanzania &amp; Mozambique).</li> </ul>
<u>Component 4:</u> Project Coordination, Monitoring & Evaluation	<ul style="list-style-type: none"> <li>· Day to day project management activities;</li> <li>· Development of sub project specific gender action plans;</li> <li>· Development and implementation of site specific ESMPs;</li> <li>· Development of web-based results framework for M&amp;E;</li> <li>· Procurement, disbursement, audit and financial management</li> <li>· Annual financial and technical audits;</li> <li>· Strengthening reforms and governance related studies including the Blue Economy Framework and multispecies management plans;</li> <li>· Procurement of vehicles, vessels, and ICT equipment;</li> <li>· Operation costs (staff salaries, office spaces, fuel, vehicle O &amp; M staff travel expenses, steering committee meetings etc.).</li> </ul>

In addition to the Bank co-financing baseline there are also institutional and policy baselines relevant for the proposed project. At the policy level, the government of Malawi has been putting in place a range of policy programs to address challenges associated with climate change adaptation in agriculture and development planning. The NAPA (2006) is one of the key climate-change policy documents used for this purpose. In the agricultural sector, the government of Malawi operationalized NAPA priorities through the Agriculture Sector Wide Approach (ASWAp) that identifies several strategies, including diversification, meant to increase the resilience of communities in rural areas to the adverse effects of climate change (Chinsinga, 2012). Through the ASWAp, the government increased its budget share for agriculture from 6.1% in the period 2000/05 to 15.9% for 2006/09, 20% in 2012/13 and about 24% in 2015/16.

However, subsequent macro-economic challenges in the country forced the government to scale down on such investments (Holden and Lunduka, 2012) and seek more sustainable means to improve livelihoods. The promotion of sustainable land management is one way identified to ease the financial pressure of subsidizing fertilizer.

With respect to fisheries the Fisheries Integration of Society and Habitats (FISH) project between the government of Malawi and USAID and implemented jointly with several non-governmental organisations is a flagship adaptation project based on the premise that if Malawian fisher folk and government are empowered to make informed co-management decisions about the fisheries, its governance and the sustainable use of the aquatic environment on which they depend, then the quality of life for Malawians will be improved. The proposed project seeks to compliment, and build on these policy and project baselines.

***1-3: the proposed alternative scenario with a brief description of expected outcomes and components of the project;***

The proposed LDCF project is titled "*Community led and climate smart watershed management for sustainable fisheries in Malawi.*". The project seeks to complement the baseline project by improving the management of the soil and water resources in the vicinity of the lake environs in order to protect the fisheries and ensure maximum utility is drawn from the investments made in the fisheries sector through the baseline project. Specifically, the LDCF project builds on sub-component 2 of component 1 of the baseline project.

The proposed LDCF project recognises that challenges related to sedimentation, pollution, and losses of aquatic biodiversity are better addressed through integrated lake basin planning and management. As noted by Kalk et al., (1979), there is need to integrate land, water, forestry, fisheries and wildlife practice and policy, and to coordinate the use of a range of policy and legislative instruments to achieve integrated management goals. This integration is important because most existing threats to lake management and fisheries resources, such as pollution, siltation/sedimentation, cultivation and grazing, occur outside of the lake ecosystem and are thus driven by factors exogeneous to the immediate lake environment.

Cognisant of the above rationale, and noting that efforts have already been made over the course of the past ten years to organise the communities, the proposed LDCF project seeks to use the community organisation, notably the beach village committees (BVCs) as the entry point for promoting sustainable catchment management around Malawi's lakes so as to protect the lake ecosystems and fish resources against the threats of both climate change and population growth.

The project objective is "*To improve the sustainability of fisheries in Malawi lakes through community led and climate smart catchment management*".

The project outcomes seek to address directly the national priority activities for urgent and immediate adaptation to climate change as outlined in the Malawi National Adaptation Programmes of Action (NAPA) first published in 2006.

The project components support directly the third Malawi Growth and Development Strategy (MGDS III) running from 2017 to 2022, particularly the key priority area (i) Agriculture, Water Development and Climate Change and builds on the objectives of the NAPA. The MGDS especially notes that "projects addressing climate change in agriculture and other sectors have tended to be small, fragmented and sometimes implemented on a one-off pilot basis" and calls for emphasis on a transition to a systemic approach. Thus, by integrating project activities in existing systems and building on previous initiatives the proposed LDCF project will enhance sustainability and encourage upscaling. The proposed project addresses the following key issues highlighted in the MGDS: (a) Climate variability; (b) Inadequate institutional capacity for managing climate change; (c) Inadequate mainstreaming of climate change issues; (d) Inadequate enforcement of climate relevant legislation; and (e) Increasing deforestation and unsustainable land use.

**COMPONENT 1: Strengthening the capacity of Beach Village Committees (BVCs) for climate resilient, watershed planning and management for lake protection.**

Component 1 seeks to address issue (b) of the MGDS: "Inadequate institutional capacity for managing climate change" by developing this capacity at the community level. The component deals with the issue of enforcement by encouraging self-policing by communities as led by the BVCs as well as shifting responsibility to the communities by sharing information on lake health. This component also addresses priority (a) of the NAPA: "Improving community resilience to climate change through the development of sustainable rural livelihoods" and specifically targets actions for improved capacity of the communities as well as raising and improving awareness. It is envisaged that where catchments classified as "priority" have no BVCs these will be established and trained in the same manner as for the long established ones.

*Outcome 1.1: Strengthened capability of BVCs for watershed planning and management for lake protection and climate resilience.*

1.1.1 Beach village committees (BVCs) are trained in climate resilient lake protection and watershed planning and management.

A Training of Trainers (ToT) approach will be adopted so that the BVC members are able to expand the training to ordinary community members. An NGO with the requisite experience will be commissioned to prepare materials relevant for Malawi and train the BVC members. The typical training course would cover topics such as land and soil conservation methods, aquatic buffers, wetland preservation, erosion and sediment control measures, agroforestry, forest reforestation, natural forest regeneration, stormwater management practices, rainwater harvesting, land use planning and community mobilisation. Emphasis should be placed on how all these actions relate to the fisheries sector and community livelihoods. The BVCs will also be trained in watershed infrastructure O&M, hydrological and water quality monitoring as well as record keeping.

1.1.2 Community awareness and capacity for climate-sensitive catchment management is improved.

Once the training of the BVCs has been completed they will organise community level meetings to share the knowledge and help in identifying local level adaptation actions. It is anticipated that the traditional leadership and other community based organisations are incorporated in these meetings to ensure complete buy-in at the local level.

1.1.3 At least 7 Gender sensitive and climate smart community-based watershed management plans are prepared (1 per catchment).

Once the trainings are completed and the awareness campaigns carried out for a given community the next task will be to use the newly acquired knowledge to develop catchment specific watershed management plans. Such plans will be developed in a participatory manner involving as many members of the community as possible, but with special consideration for women and youth who bear the brunt of climate change impacts. Key elements of the plans will include identification of the key challenges, community mapping of the problem areas, agreeing on solution approaches, assigning roles and responsibilities, and designing implementation schedules for agreed plans. The BVCs and community leadership are expected to take a lead in this with support from local NGOs and oversight from district level staff to ensure local and district plans are aligned.

1.1.4 Climate sensitivity of the Lake is reduced through community led protection of river channels and riverbanks.

Because rivers are the main conduit for sediment and pollutant loads, river channel and river bank protection will be given special attention in the project. However, as this tends to be a specialist activity, the ministry extension workers are expected to take the lead in guiding the communities on what measures to focus on. It is expected that two main approaches will be employed (1) application of national guidelines, e.g., not allowing cultivation within a specified distance from the river channel and (2) re-vegetation in which communities will be encouraged to plant and maintain vegetation on river channel embankments and within the flood plains. Only in special cases shall physical construction works in the channel be promoted. In such cases specialist services will be sought.

*Outcome 1.2: Improved communication in watershed management and lake protection.*

### 1.2.1 Local language communication tools produced.

Simplified guidelines and community training materials for watershed management and lake protection will be produced in Tumbuka, Chewa and Yao, the main languages in the Northern, Central and Southern regions of Malawi (National Census, 2018). The objective here is to capture as large an audience as possible than is otherwise possible if only English is used as the medium of communication.

### 1.2.2 Impact Infor grams shared bi-annually.

In order to increase awareness information on state and impact will be summarised and shared with communities. Such information will demonstrate the deterioration and/or increase in fish stocks in the lakes. The idea is to keep the communities motivated as they see the results of their actions. The district local government and the national level institutions will be responsible for preparing these infor grams.

### 1.2.3 Pamphlet on indigenous knowledge prepared and distributed.

Communities have long held cultural beliefs regarding watershed management and fisheries which could either be positive or negative. If such beliefs are documented and disseminated for discussion by the wider community it help transform mindsets and some livelihood practices. It is proposed that a local consultant is hired to compile such a pamphlet in both English and vernacular building on the knowledge of sector practitioners.

## **COMPONENT 2: Strengthening the capacity of Local Government institutions for watershed planning and management and lake protection.**

Component 2 seeks to address issues of the MGDS; (c) "Inadequate mainstreaming of climate change issues" and (d) "Inadequate enforcement of climate relevant legislation" by targeting the planning and organisational capacity of district administrations. The component places the District Councils at the centre of fisheries and catchment management. The component addresses priority (d) of the NAPA: "Improving Malawi's preparedness to cope with droughts and floods." It addresses the key actions: (1) Designing and testing appropriate strategies, policies and laws to facilitate urgent efforts in dealing with climate disasters, (2) Preparing drought and flood preparedness plans, and (3) Integrating climate change plans into land use planning.

*Outcome 2.1: Developed institutional Capacity for Ecosystem based watershed planning and monitoring (including development of 3 watershed management plans for Chirwa, Zomba, and Lower Shire basin).*

### 2.1.1 "Priority watersheds are identified and mapped based on climate risk assessment(s) in the fisheries sector.

The project will help district councils identify and map "priority watersheds" using community mapping and remote sensing data in Chirwa, Zomba, and Lower Shire basin. The project will build on on-going work, especially by FAO, to identify "priority" catchments, being those catchments that have degraded so much that urgent remedial action is needed. District climate change vulnerability maps will be produced showing degree of land degradation in the districts. The FAO database will be used to achieve this.

### 2.1.2 Detailed vulnerability assessment of fish farmers and small-scale fishermen along Lake Malawi

To date the exact number of families whose lives are at risk due to climate impacts on the lakes is not known. The project will therefore sponsor a study to come up with an indicative figure.

### 2.1.3 District Council Staff trained in climate sensitive lake protection and watershed management including climate change preparedness and resilience building.

The project will train District Council technical staff in climate sensitive lake protection and watershed planning and management. The technical content will be similar (but more detailed) to that offered to BVCs. In addition it will (i) capacity building of community based natural resources management committees in climate change preparedness and resilience building, (ii) sustainable land and water management technologies (iii) rainwater harvesting technologies and (vi) gender mainstreaming.

2.1.4 District level Watershed Management Plans which incorporate fisheries and aquaculture climate risks as well as adaptation measures are prepared for Chirwa, Zomba, and Lower Shire basin.

The trained district council staff, with support from national level, will lead the development 3 watershed based Fisheries management plans for Lake Chilwa, Nkhota Kota and Karonga. Key activities in developing the plans will include (i) Identification, characterisation and management of fisheries-sensitive micro watersheds and streams for their conservation, selecting the area for interventions – the size, number, location – based on appropriate criteria; (ii) identifying target beneficiaries; (iii) assessing the state and trends in the watershed (iv) assessment of climate vulnerabilities and risks as well as assessment of existing adaptive capacities (v) Identification of soil-water conservation measures to reduce erosive velocity of runoff, soil loss and sedimentation (vi) bringing together stakeholders to identify interventions giving priority to low-cost nature-based solutions to restore or improve ecosystem health (vii) developing micro-watershed management plans and (viii) developing the district-watershed management plans. The plans should also give guidance on setting up and equipping district level water quality and weather monitoring units in the three basins.

2.1.5 Climate Change is mainstreamed in National or sub-national policies around watershed and fisheries management.

Currently, there appears to be no policy or guideline in Malawi on mainstreaming climate change in fisheries and catchment management in an integrated way. Equally, there are no national guidelines on the involvement of women in watershed management. The proposed project endeavour to contribute to the development of such guidelines as part of its mainstreaming thrust. The project will national government to review and revise the National Water Development Program, National Fisheries Policy, Health Sector Strategic Plan, National Education Sector Plan, Disaster Risk Reduction Plans, Poverty Reduction Strategy, National Biodiversity Strategy and Action Plan, Urban Planning and the Agriculture Sector Wide Approach to ensure that they incorporate climate change adaptation approaches. The same will be done with district level plans.

*Outcome 2.2: Improved fisheries and watershed management record keeping at the district level.*

2.2.1 Fish capture records improved and maintained at district level.

The district councils will monitor the implementation of the district plans and maintain records of fish capture in the district. These records will act as verification for national and other records as well as promote a culture of process monitoring currently lacking in the councils. The councils will also be encouraged to set-up a district level databases for all stakeholders involved in fisheries and watershed management.

**COMPONENT 3: Aquatic ecosystems, especially wetland areas, river banks and other key habitats rehabilitated with climate-resilient measures for improved lake protection and community livelihoods.**

Component 3 addresses issue (e) of the MGDS; “Increasing deforestation and unsustainable land use” by promoting reforestation efforts as well as demonstrating alternative and complimentary livelihoods to traditional approaches. The component will focus on community-based soil and water conservation. Building on the awareness campaigns and capacity building of component 1. Communities are already developing wood lots for their energy needs. This will be expanded and augmented and new methods of farming promoted based on the developed catchment management plans. The component also addresses priority (b) of the NAPA: “Restoring forests in the Upper, Middle and Lower Shire Valleys catchments to reduce siltation and the associated water flow problems.” in which the main focus is in planting fast growing tree species in catchments and building the capacity of rural communities.

*Outcome 3.1: Pilot community-based soil and water conservation and improved fallow and agroforestry in the Lake Chilwa catchment (with Chambo Restoration Plans), the lower Shire River, Bua River and the Nkhata Bay river basins.*

#### 3.1.1 Over 2000 ha of community woodlots established in "priority" watersheds.

Communities will be encouraged to establish communal woodlots for household energy needs so as to reduce their reliance on the natural forest resources for firewood and other domestic uses. This community led afforestation/reforestation initiative will aim to plant an approximately 2 000 ha of selected forest land for biomass energy and other uses in "priority" watersheds. The size of each woodlot will correlate to the size of community and its needs. In general a woodlot is expected to be between 1 and 2 ha in size. Thus about 1000 communities will be targeted in the "priority" catchments. Communities will be supplied with seedlings and general training in reforestation. The BVCs will mobilise the communities in this activity.

#### 3.1.2 Agroforestry and conservation farming practices implemented in 3 000 ha of farming areas.

Community support for agroforestry practices to an estimated 3 000 ha in farming areas starting in the "priority" watersheds. National extension services will be engaged for these activities. The activities will centre around revegetation of pastures and forest areas within farming areas based on agreed catchment plans. Activities will build on the BVCs led trainings and will include: (i) support to community nurseries to provide seedlings (species selection is important, and will vary by location depending on agro-climatic conditions, markets, and farmer experience) (ii) establishing fodder banks (iii) planting trees on existing progressive terraces; planting trees within crops (non-fruit trees) (iv); on-farm training for farmers on gender-responsive CSA technologies and (v) extension services to introduce profitable new cropping systems and conservation measures.

#### 3.1.3 "Priority sub-watersheds" rehabilitated.

Based on the vulnerability maps produced in 2.1.1 priority sub-watersheds will be identified and rehabilitated to reduce further degradation and improve livelihoods. Soil conservation and water harvesting infrastructure will be developed. Main activities will include: (i) labour based construction of erosion control infrastructure such as gabions, rock ripraps and and check dams along streams, and (ii) training of selected community members iin the maintenance of installed instructure.

#### 3.1.4 Conservation program for Lake Chilwa implemented.

Because Lake Chilwa is a shallow closed lake, the accumulation of silt, fertilizer pollution and other toxic substances remain the greatest threat to fisheries and the lake biodiversity. The control of flows (quantity and quality) into the lake is threfore crucial. The project, building on and in suport of on-going initiatives, will seek to develop a Lake Chilwa consrvation program. Activities will include (i) protection of the surrounding swamps and/or floodplains, (ii) promotion of farming practices that minimize surface run-off and subsequent silt load into the lake, (ii) tree plantation campaign and (iv) formulation of bye-laws for regulating fertilizer and pesticides use.

*Outcome 3.2: Restoration of spawning grounds for capture fisheries. Including invasive aquatic weeds control (Songwe River, Bua River, Dwanga Rivers).*

#### 3.2.1 Fish breeding/spawning grounds restored.

The project will help identify and restore specific fish breeding/spawning grounds in selected lake areas. Main activities will involve (i) delineation of the critical fisheries spawning grounds (ii) community based monitoring of the gazetted breeding areas conducting (iii) establishing fish breeding facilities on Lake Malawi to help restock the fish in the lake and rivers

#### 3.2.2. Invasive weeds removed.

The project will identify and remove invasive weeds at selected locations along the lake shores and along main river courses. The removal of invasive will allow native species to be re-established and ecosystems to be restored. Main activities will include (i) awareness campaigns on aquatic weed problems and (ii) community led manual removal, and destruction, of aquatic weeds.

### 3.2.3 Over 100km of vegetation is planted for lake shore line protection

Provide shore line protection by planting specifically recommended vegetation at selected sites. A considerable amount of infrastructure originally built for shore line protection such as gabions, flow channels and embankments are in a state of disrepair. To rehabilitate them would require a considerable financial investment. To arrest further deterioration it is proposed to plant suitable vegetation along the high lake water level as barrier against both wind, wave and stream flood on the lake beaches.

### 3.2.4 Water supply and sanitation services provided at fish landing sites.

The project will provide adequate water supply and sanitation services at selected fish landing sites to address shoreline pollution and lake eutrophication and diseases proliferation. Key activities will include (i) identification of sites at high risk, (ii) construction of WASH facilities and (iii) carrying out hygiene campaigns among fisherman and general lake users.

## *Outcome 3.3: Alternative and complementary rural livelihoods strengthened in selected watersheds.*

### 3.3.1 Over 50 integrated household fish farming units developed.

Whilst farmers practice mixed farming system including cropping, fisheries and livestock these sub-systems are usually independent of each other. The project will seek to promote fish-livestock production at the household level in combination with planted crops on pond dykes in an integrated system. Such ideas are already being discussed in Malalwi but not enough demonstration sites have been provided for communities to see the benefits first hand. The national extension services and selected NGOs are to lead in this. Activities will include (i) awareness raising in which the BVCs will lead, (ii) selection of suitable household sites in selected watersheds, (iii) construction of units and (iv) training of beneficiaries in the operation and maintenance of the installed systems.

### 3.3.2 Non-fisheries based enterprises are promoted

The project will promote and support development of non-fisheries based enterprises such as orchards and honey production in selected watersheds. This will be area-specific and include: (i) market demand and value chain support studies; (ii) development and start-up support for commercially viable income-generating proposals, and (iii) capacity building and mentoring to build business capacities.

### 3.3.3 A plastic collection and disposal system is in place in at least 3 districts.

The lakeshore is littered with plastic waste posing a threat to both land and aquatic animals that often consume the plastic. The project will institute a waste plastics collection and marketing program to be managed by district councils together with private sector players. The objective will be to create a market for the plastic waste by supporting local entrepreneurs who convert the plastic to useful products.

**COMPONENT 4: Improved Knowledge Management, M&E and access to climate information and early-warning systems at national, watershed and local levels.**



Component 4 is cross cutting in relation to MGDS issues and primarily seeks to facilitate lesson learning and sharing. The component involves the implementation of a participatory M&E system to monitor effects of the project on the investments and livelihoods. It is in line with NAPA project 5. The project will promote and enhance climate change education, public awareness and capacity development through communication, training, information and knowledge management. Especially, Peer-to-peer learning program targeting fishers and fish farmers implemented to provide access to improved knowledge on climate variability, climate impacts, and adaptation options. This will be facilitated through World fish/University networks strengthened for CCA; Lessons learned developed and published and Peer-to-peer/community-to-community exchanges organized.

*Outcome 4.1: Strengthened Community based Early Warning and disaster preparedness System*

4.1.1 Pilot weather and water quality observing network established

To address the challenge of data scarcity it is proposed that hydro-meteorological systems for early warning are installed and that communities are made custodians of these installations to address issues of vandalism, operation and maintenance, low usage and timely communication. The data/information on rainfall, stream flow and water quality in the lakes will help stakeholders to plan as well as respond to any climate induced changes that affect fisheries and livelihoods in general. In addition to collecting data and forwarding to the meteorological services for processing, trained local fishermen and BVC members will use simple equipment, e.g. mobile phones, to link to the national forecast system regarding potential extreme weather on the Lakes and lake environs. In this manner the project will institute and operate a communication and dissemination system to inform local residents of impending threats as well as allow for disaster response teams at higher levels to prepare and mitigate against impending climate threats.

The project will establish pilot weather and climate observing network (installation of 20+ meteorological monitoring stations with archiving and data processing facilities) at selected sites in "priority catchments" to facilitate data collection for early warning system (EWS) on climate change and lakes water quality. Activities will include (i) Identifying potential sites to install early warning systems in collaboration with the local fishing communities and other stakeholders and (ii) installation of equipment and training for community based early warning systems in the "priority catchments" and (iii) training of selected locals in the collection, manipulation, interpretation and dissemination of meteorological and water quality data by national hydrology officials.

Selected BVC members and fishermen will act as observers after receiving training. They will use simple equipment to link to the national forecast system regarding potential extreme weather on the catchments and Lakes, and operate a communication /dissemination system to inform local residents of impending threats. If effective the proposed EWS will allow for disaster response teams to prepare and mitigate climate change impacts.

4.1.2 Climate change and fisheries monitoring datasets are compiled and shared with all stakeholders.

IN order to raise awareness on climate change issues the project seek to compile and regularly publish stakeholder digestible datasets showing the state and movements in key indicators over time.

4.1.3 A participatory M&E plan is designed and implemented at all levels.

The project will seek to engage all stakeholders in its monitoring activities. a purpose designed tracker will be developed for this purpose. The progress indicators will be agreed with the key stakeholders.

4.1.4 M&E project reports, briefs and other documents are shared with all stakeholders.

All projects reports will be availed to stakeholders in both hard and electronic forms.

4.1.5 Project good practices and lessons learned documented and disseminated.

The lessons learned during implementation and those presented by project beneficiaries will be compiled, synthesized and distributed.

*Outcome 4.2: Lessons learned and best practices from pilot activities, capacity development initiatives and policy changes are disseminated.*

The second part is to share knowledge and experiences. Knowledge and experience of the approaches applied in the project will help Malawi to better cope with similar fisheries, Aquaculture and watershed management challenges. Dissemination and replication of good practices and successful approaches would be essential in facilitating adoption of climate resilient fisheries and watershed management technologies.

#### 4.2.1 Annual community level lesson learning workshops organised

The project will support annual community level lesson learning workshops where BVCs and communities present progress, challenges faced and lessons learnt. Those with the best "stories of change" will be assisted to attend and make presentations at the district workshops and national symposia proposed under the project.

#### 4.2.2 Quarterly lesson learning workshops held at district level

The project will help the District Councils organise quarterly district level lesson learning workshops where BVCs and stakeholders present progress, challenges faced and lessons learnt.

#### 4.2.3 Annual national "Lake protection and watershed management" symposia held.

The project will support the Ministry of Agriculture Irrigation and Water Development (MoAIWD) organise an annual national "Lake protection and watershed management" symposia where stakeholders in watershed management and fisheries management will make presentations. Field visits to selected successful pilot sites from the project will also be organised. It is proposed that the symposium is held in a different city each year to facilitate for intra-country learning and sharing. At least four such symposia will be organised.

#### 4.2.4 Regional study tour organised for key national staff.

In addition to knowledge generated internally in Malawi, the stakeholders have expressed a desire to learn from beyond their borders where similar problems as in Malawi are tackled. Provision is made to allow for a lesson learning tour to at least one neighbouring country. The project will organise a study tour for national and district level staff throughout the country and to a neighbouring country dealing with similar challenges either of Zambia, Mozambique and Tanzania.

### ***1-4: alignment with GEF focal area and/or Impact Program strategies***

The project outcomes are consistent with intended outcomes of the LDCF Adaptation Strategy, namely (i) developing and implementing adaptation practices to respond to climate change-induced stresses in vulnerable ecosystems and (ii) enhanced climate resilience of relevant development sectors and natural resources. The project fits the GEF Result-Based Management Framework for Adaptation to Climate Change as follows:

1. CCA-1: Reducing the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change.

This will be mainly through (i) capacity building of community based organisations and district level local government staff, (ii) community led afforestation and reforestation (iii) promotion of soil and water conservation/agro forestry/conservation agriculture and (iii) setting up hydrometeorological and water quality monitoring networks in "priority sub-catchments".

## 2. CCA-2: Mainstream Climate Change Adaptation and Resilience for Systemic Impact.

This will be mainly through development and dissemination of knowledge and learning materials on climate change, improved watershed management through piloting measures and organisation of information sharing platforms.

### *1-5: incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing;*

The LDCF project is designed to accommodate the additional adaptation costs of priority actions identified in the Malawi NAPA and build on the AfDB financed baseline project. The relevance of the co-financing to the proposed LDCF project is outlined below and will be further elaborated on during the project preparation phase.

As stated earlier, the goal of the baseline project is to improve resilience of the fishing and fish farming communities to taking into account the prevalent climate variability as well as the risks associated with longer-term climate change. The project will contribute to poverty reduction through improved value addition and provision of infrastructure for increased fisheries productivity, strengthened nutritional security through value chains and build climate resilience in Malawi.

To ensure sustainability of the investments from the baseline project in the fisheries sector, there is need to improve the resilience of the communities in the watersheds bordering the lakes from hence the degrading impacts on the lakes originate. The hypothesis is that if the root causes for lake degradation and the barriers to retification are addressed the lake integrity will be maintained and fisheries sustained. The best way to achieve this is to involve, and place the habitants of the catchments, at the centre of catchment management and fisheries management in a holistic ecosystems approach. This will provide the fisheries sector with consistency, integration, and synergy with the local level livelihood activities within the lake environs.

Below is a summary of the incremental cost reasoning for the proposed LDCF project when compared to the Bank co-financing baseline project.

GEF Project Outcome	Baseline & Gaps	GEF-LDCF alternative	Additional adaptation cost (US\$)
Outcome 1.1: Strengthened capability of BVCs for climate resilient watershed planning and management for lake protection.	<p>Baseline addresses capture fisheries management focussing on fisheries management plans, rehabilitation of landing sites, stock assessments and related by-laws and capacity building of officials and BVCs for co-management.</p> <p>The baseline capacity building does not extend beyond the lake waters/shoreline to tackle those issues that affect the fisheries they seek to manage.</p>	The proposed alternative takes a holistic approach and proposes to capacitate BVCs to tackle the problem at source, i.e., to enable them to think beyond the immediate lakeshores and appreciate the inter-connectivity between fisheries and catchment management.	400,000

<p>Outcome 1.2: Improved communication in watershed management and lake protection.</p>	<p>The baseline focusses on training of BVCs and extension workers but is silent on direct community engagement. This is the usual approach in the public sector which has proven ineffective in solving developmental challenges as it leaves out the community as a key stakeholder in development, in this case fisheries.</p>	<p>The proposed approach seeks to communicate directly to the community and make it the change agent by (i) using local language to reach a wider audience and, (ii) share information on the state of the environment and knowledge systems so as to raise awareness and also trigger community led responses to common challenges.</p>	<p>400,000</p>
<p>Outcome 2.1: Developed institutional Capacity for climate sensitive Ecosystem based watershed planning and monitoring (including development of 3 climate-sensitive watershed management plans for Chirwa, Zomba, and Lower Shire basin).</p>	<p>The baseline specifically calls for the “development of multispecies fisheries management plans” by the districts. It therefore focuses exclusively on fisheries. As a result, those tasked with maintaining lake health are not being sufficiently equipped to deal directly with the fisheries problems caused by sources exogenous to the lakes. When problems from such sources are not addressed, the fisheries challenges have a higher probability of recurrence.</p>	<p>The alternative project allows for a more holistic approach to dealing fisheries challenges by capacitating the district authorities to prepare plans that treat the lakes and catchments as a single system in which the main problem areas have to be identified and targeted for redress in district planning. By building capacity to tackle the problem at source, and within the climate change context, the alternative project ensures that the costs of maintaining lake health will be reduced in the long run as the pollutant loads will eventually decrease.</p>	<p>450,000</p>
<p>Outcome 2.2: Improved fisheries and watershed management through knowledge generation about climate risks and vulnerability in the fisheries.</p>	<p>The baseline is strong on the production side – focussing on the production of fingerlings, piloting aquaculture, fish genetics, cage cultures and organisation of fish farmers’ cooperatives – but is silent on tracking the performance and impacts of these activities at the district level. This means</p>	<p>By monitoring the system and keeping records at the local level it is believed data is likely to more accurate and what is then fed into national level is more reflective of developments on the ground. Subsequently, authorities will be able to make more evidence-based decisions regarding fisheries a</p>	<p>450,000</p>

	<p>s the lakeshore districts will have to rely on national level data even though the national level has limited capacity to collect this data. The result is that data used for fisheries management is, and will remain, highly speculative.</p>	<p>nd catchments as well as be able to design responses and policies that are specific to local conditions. The national datasets on fisheries and catchments will correspondingly improve.</p>	
<p>Outcome 3.1: Pilot community-based soil and water conservation and improved fallow and agroforestry in the Lake Chilwa catchment (with Chambo Restoration Plans), the lower Shire River, Bua River and the Nkhata Bay river basins.</p>	<p>The baseline project scope is confined to shoreline management activities. It therefore touches on a very narrow strip of the catchment, i.e., the interface between the lake waters and the catchment land mass. The problems affecting fisheries go beyond this narrow band. The bulk of the runoff that brings pollutants to the lakes is generated upstream not at the lakeshore. To address this problem there is need to demonstrate and scale up climate resilient measures and practices in those upper parts of catchments.</p>	<p>The alternative project funded by GEF-LDCF will focus on climate smart activities in the upper catchments. By demonstrating various approaches over a broader area the project widens the opportunity for uptake and upscaling.</p>	668,638
<p>Outcome 3.2: Restoration of spawning grounds for capture fisheries. Including invasive aquatic weeds control (Songwe River, Bua River, Dwanga Rivers).</p>	<p>The practice of aquaculture has contributed to the insertion of invasive species (e.g. Nile tilapia, etc.) with significant after-impacts on the ecology by undermining the ecosystem's balance which sustainably regulates population numbers of economically important fishes (especially so in the case of indigenous species).</p> <p>The baseline project focuses on fish landing sites and areas adjacent to such sites. This leaves those remote areas where fishing activities may not be intense but</p>	<p>The baseline project will target areas away from the main fishing activities by mapping "priority sites" and instituting restoration activities in these.</p> <p>The LDCF financing will contribute to the restoration of important breeding sites and spawning grounds for native species of fish at risk of extinction, notably through the removal of invasive weeds and the plantation of climate resilient vegetation to protect and sust</p>	668,638

	<p>activities may not be intense but degradation remains prevalent. This usually the case as we move further upstream. Another are on which the baseline is silent on is water and sanitation services and the issue of diseases proliferation around the lake areas, especially bilharzia. These diseases are associated with open defecation in the lake waters or immediate environs.</p>	<p>ainably maintain these fish habitats, including in the face of climate change.</p>	
<p>Outcome 3.3: Alternative and complementary rural livelihoods strengthened in selected watersheds.</p>	<p>The baseline focuses on the demand side of fisheries particularly fish processing and supply chains including provision of solar driers, cold storage, business financing, establishing fish markets and processing zones. All these activities assume that the fish stock is sufficient and in good health. The baseline outputs are therefore likely to fail if fish stocks and/or fish quality deteriorate since the baseline project neither addresses the threat posed by over-fishing nor the reduction in fish stocks due to climate induced change in the lakes. The baseline project also does not address the issue of soft plastics which is an immediate hazard for fisheries.</p>	<p>The alternative project seeks to address the supply side of fisheries by promoting household fish farms so as to reduce over-fishing in the lakes and promoting climate smart, non-fisheries-based enterprises that provide alternative livelihoods for communities in the catchments. The alternative livelihoods will reduce dependency on fisheries and allow fish stocks to recover. When combined with wider climate smart catchment measures the lake health is likely to improve significantly. The alternative projects offers an opportunity for local private sector to handle the plastic menace thus removing an immediate existential hazard for fisheries and other lake fauna.</p>	<p>668,638</p>
<p>Outcome 4.1: Strengthened Community based Early Warning and disaster preparedness System.</p>	<p>The baseline addresses the needs of an early warning system (EWS) only in one district, Songwe and for only one segment of the community, the fishermen. This i</p>	<p>The baseline project expands the scope of EWS to include weather monitoring in the catchments and quality monitoring in the lake.</p>	<p>250,000</p>

	s therefore a fisheries specific piloting that does not take the need for a wider monitoring system beyond the lake in view of climate change. Such an EWS will be of limited use in the case of extreme events such as flooding that have impacts beyond the lakes.	The project also enhances communication between the local area and national establishments for disaster risk reduction.	
Outcome 4.2: Lessons learned and best practices from pilot activities, capacity development initiatives and policy changes are disseminated.	The baseline focuses on strengthening reforms and governance related studies and management plans as well as M&E plans for fisheries. Such actions only target official structures. There is no provision for sharing the lessons learned with a wider stakeholder community.	The alternative project focuses on stakeholder platforms that allow lessons learned at different levels to be shared systematically. It proposes not only a project implementation M&E system but the holding of workshops/symposia at national, district and community levels.	250,000

***1-6: global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF);***

Watershed management measures like river bank protection will contribute towards: decrease of erosion and loss of arable lands; decrease of flooding events; decreasing of sediments load in rivers and silting of river beds, and river storage and adaptation to forecast increase of extreme events and flooding. Adaptation benefits will include: stream bank stabilization and decreasing siltation in the water streams and water storage, water tower conservation, recreation and ecotourism development, spiritual and aesthetic values of plantation of native species. Agroforestry and tree crops will increase resilience of local communities by providing a diversity of fruits, nuts, medicines, fuel, timber, nitrogen-fixation services, fodder, and habitat. These economically useful trees will reduce soil erosion and maintain higher levels of biomass than annually tilled crops (through extended growth periods and root systems), also storing carbon.

The project proposes to "green" at least 8,000 hectares with an assortment of vegetation as pilot demonstrations in selected degraded "priority sub-catchments". This will include minimum 2,000 ha of afforestation/reforestation efforts; 3,000 ha community support for agroforestry practices; 3,000 ha of community support for conservation agriculture. These figures are preliminary and will be fully determined in the preparation phase of the project.

The afforestation sub project will play an important role in adapting the communities in the watersheds to climate change. Tree planting/afforestation, conservation agriculture and wetland management) has potential to contribute to broader adaptation to climate change. Conservation agriculture is a strong argument towards reducing the vulnerability through improvement of soil moisture during longer periods. Increased crop diversity is also a resource against climate change.

In terms of capacity building and service to the communities, the project expects to train at least 1,300 BVC members of whom 870 will be women. The population to be served is estimated to be 5,737,000 being the resident population of the catchments in the districts bordering the main lakes as deduced from the Malawi national census of 2018. The census estimate for the number of women stands at 2,954,000. The population figure assumes that the community engagement will reach all households in the catchments. The exact numbers will be determined during the project preparation phase. (Core Indicator and Meta Data sheet is attached).

### ***1-7: innovation, sustainability and potential for scaling up;***

The main innovation of this project is placing the communities at the centre of managing their natural resources. The project presents to the communities integrated livelihoods thinking so they do not view farming, forestry and fishing as different enterprises but one single interconnected livelihood chain in which poor performance in one section will impact negatively on the entire chain. If this new mindset takes hold the project will have set in motion a system in which communities develop innovative and integrated approaches for watershed management without external influence. The project is therefore transformative in scope. By strengthening the capacity of BVCs and district councils as lead players in watershed management and fisheries the project makes the local level players the key drivers of change.

The novel aspect of this proposal is the integration between land use in the upland watersheds and in the lake shorelines. Most often these are viewed as separate and unrelated systems. The project seeks to reverse this notion.

On the issue of technology transfer the proposed project is mindful that overloading communities with too many new technologies at the same time risks low uptake. The project is therefore proposing to introduce only one "foreign" technology especially targeting communities living in the wetlands and on the edge of the shallower lakes such as Lakes Chirwa and Malombe. The project aims to adopt and experiment with "floating agriculture" as practised in Bangladesh. This climate-smart system is similar to hydroponics, in which plants derive their nutrients not from soil but from water. With the aid of an NGO, the farmers will be trained to make floating beds, which they will use to cultivate vegetables. The floating beds or "bio-land" will comprise of water hyacinth, aquatic algae, or other waterborne creepers, along with straws and herbs or plant residues that are endogenous to the lake and wetlands. Typical bed dimensions could be 20m long by 3m wide and 0.5m thick with size, shape and materials adjusted according to local circumstances.

The floating agriculture technique represents a novel climate change adaptation measure whereby in the case of flooding over the flood prone zones around the Lake in case of excessive rainfall, the floating plot can rise and fall with the water level and then can remain in position once anchored to the floor with a stake. The beds are constructed from local, biodegradable, and low-cost material. The farming, with very low usage of agro-chemicals for plant nutrition and pest control, is environmentally friendly with minimal GHG emissions and would represent an alternative sustainable source of income and/or livelihood on top of fishing and other possible income generating activities. This climate smart technique has not been practised in the region. It is hoped by adopting it, the farmers will be discouraged from clearing more land for agriculture and will be more able to live with lake fluctuations than when they are reliant on traditional land-based systems. Furthermore, the energy required for irrigation in the land-based systems will be preserved for other chores which will benefit women most. The BVCs and government extension workers will be trained in this new technology and the Department of Fisheries resourced to monitor its performance with a view to adopt it as a national adaptation measure for Malawi.

Dissemination and replication of good practices and successful approaches would be essential in facilitating adoption of climate smart agricultural practices in Malawi. On the ground results of agroforestry techniques combined with the improved training and extension services will help farmers in planning with longer-term perspectives. This will reduce pressure on the fisheries and provide a window to boost the fish stocks.



By focussing mainly on “priority sub-catchments” the project aims to spread the pilots across a wider geographical space rather than limit it to a few concentrated administrative districts. This approach has the effect of bringing demonstrations to a wider audience and therefore enhances the chances of replication of the successful pilots throughout the country.

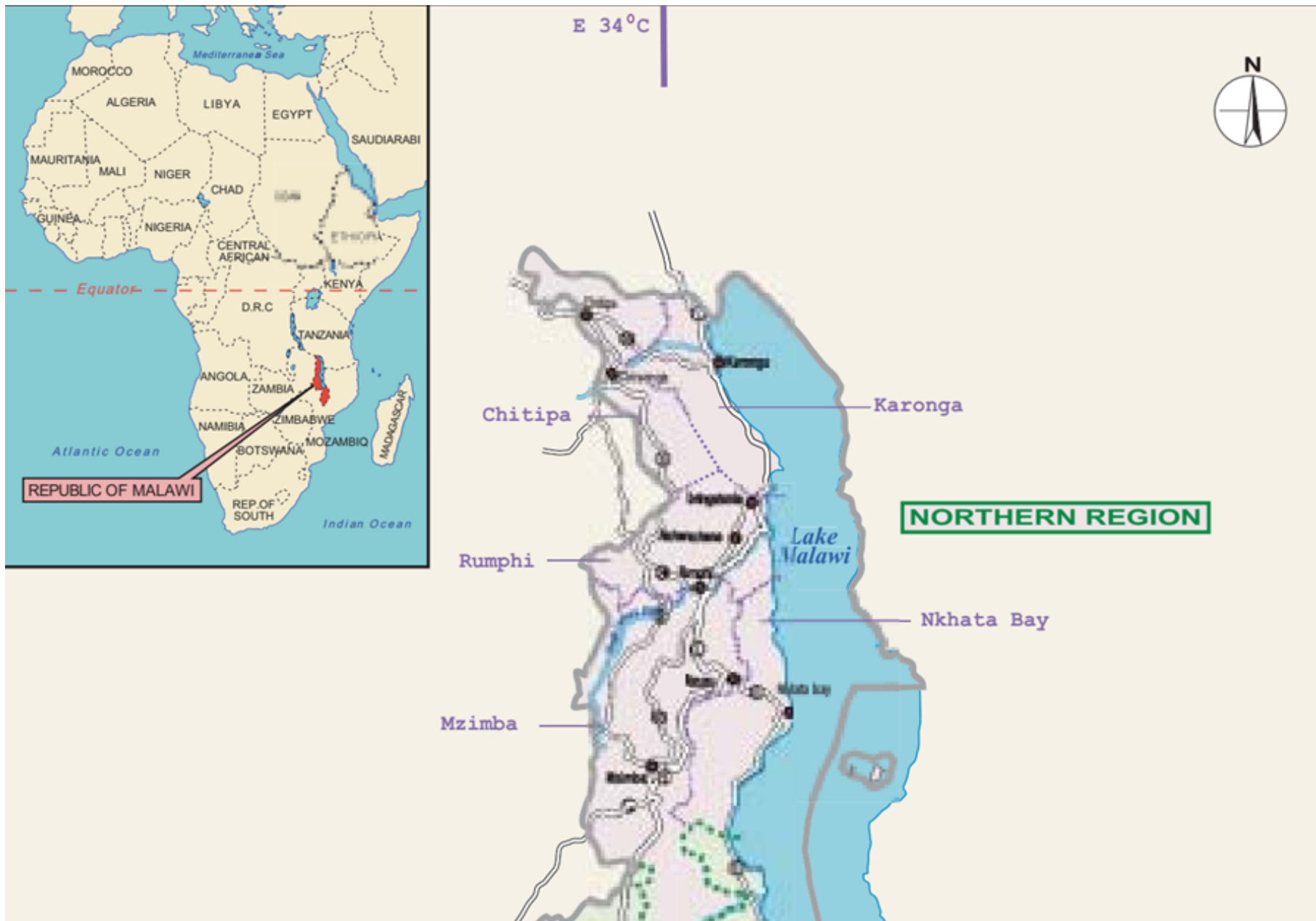
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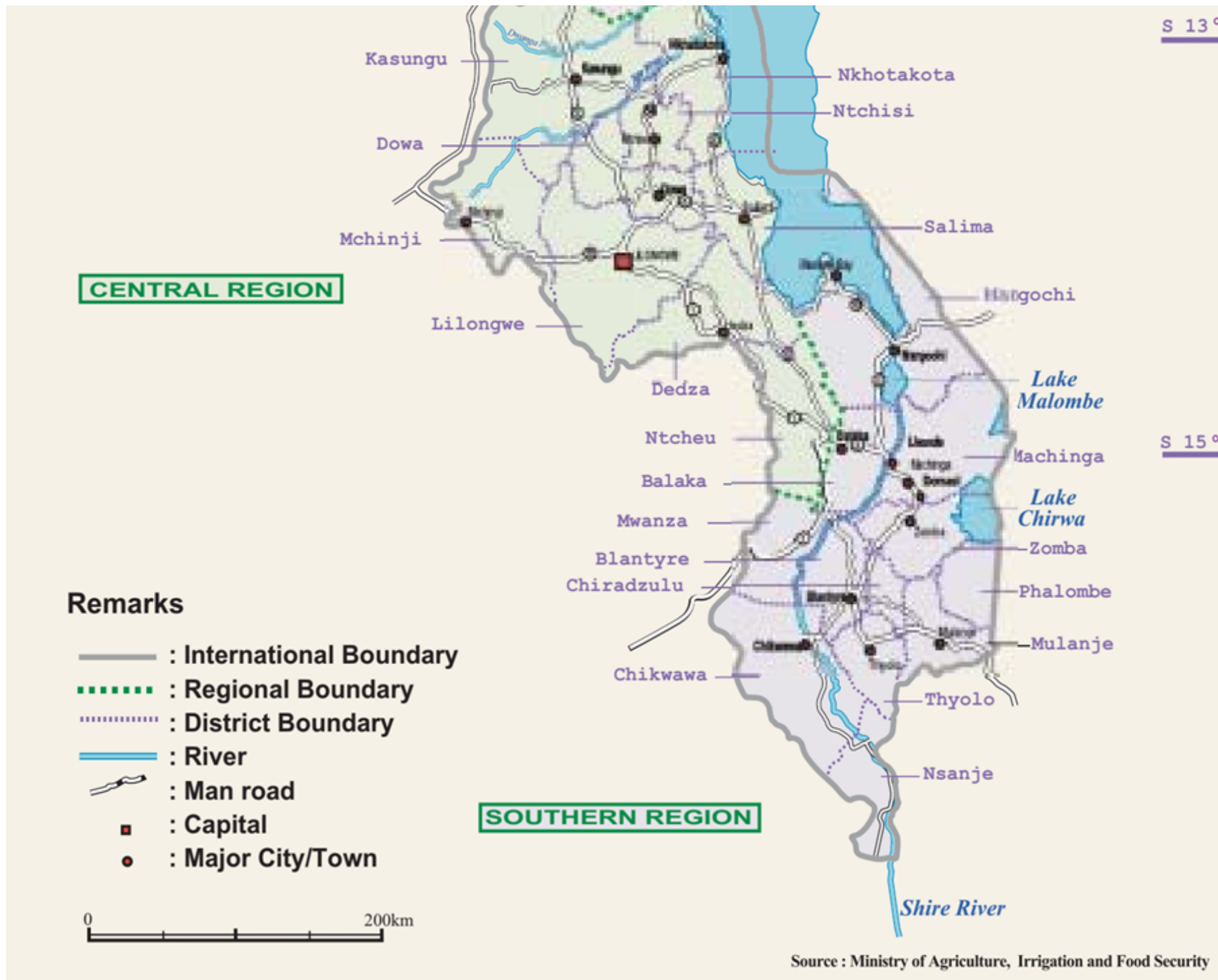
[1][1] FISH (2015). Environmental Threats and Opportunities Assessment (ETOA) of Four Major Lakes in Malawi. USAID/FISH Project, Pact Publication, Lilongwe, Malawi: 250 pp.

[2] Malawi Country Climate Risk Assessment Report; Irish Aid, Resilience and Economic Inclusion Team, Policy Unit January 2018

### 1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.





## 2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities Yes

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above, please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

### Stakeholders for project preparation

The primary beneficiaries of the project will be the communities in the watersheds and stakeholders in the fisheries sector. The project will seek direct involvement of these players in the project preparation phase so as to strengthen project ownership. The project preparation will therefore be a participatory and inclusive process involving consultation with key stakeholders in the agricultural, water and environment sectors including the private sector, government officials, development partners and civil society representatives. The table below summarises the main interveners and their expected roles in project preparation.

Stakeholder	Expected role(s) in project preparation (for GEF CEO endorsement)
Ministry of Agriculture Irrigation and Water Development (MoAIWD)  <b>Department of Fisheries (DoF)</b>	The MoAIWD, through the DoF is the executing agency for the baseline project. For easy of implementation they will likely assume the same role for the LDCF project. The MoAIWD will coordinate the project preparation process, facilitate the participation of all stakeholders' participation and organise all meetings for the project preparation process. Key staff from the department are expected to provide technical input in the Project Preparation Documents.
Ministry of Agriculture Irrigation and Water Development (MoAIWD)  <b>Department of Land Resource and Conservation (DoLRC)</b>	The department will (i) lead in identification of best practices in land and water management, (ii) creating awareness on catchment management practices and (iii) designing and supervising implementation of measures for catchment rehabilitation.
Ministry of Agriculture Irrigation and Water Development (MoAIWD)  <b>Department of Agriculture Extension Services (DoAES)</b>	The Department is responsible for all matters related to the agriculture. It is expected to lead the technical input into conservation agriculture, agroforest and all agriculture related aspects of the project preparation.

<p>Ministry of the Ministry of Natural Resources, Energy and Environment</p> <p><b>Department of Environmental Affairs (DoEA)</b></p>	<p>The Department is responsible for all matters related to the environment. It will ensure national environmental policy guidelines are followed in designing the project.</p>
<p>Ministry of the Ministry of Natural Resources, Energy and Environment</p> <p><b>Department of Forestry (DoF)</b></p>	<p>The Department handles all matters to do with Malawi's Forest reserves. It will take the lead in the design and later supervision of all afforestation/reforestation aspects of the project. The DoF will be key in planning and procuring the seedlings and supervision of the development of woodlots.</p>
<p>Ministry of the Ministry of Natural Resources, Energy and Environment</p> <p><b>Department of Climate Change and Meteorological Services (DoCCMS)</b></p>	<p>The Department is responsible for all matters to do with climate change and meteorological services. The DoCCMS will contribute technically during project preparation on matters relating to (i) NAPA implementation, (ii) CC sectoral guidelines, (iii) development of catchment plans.</p>
<p>Ministry of Local Government and Rural Development (MoLGRD)</p>	<p>This is the parent ministry for district councils. It will ensure national plans are mainstreamed in district plans and that proper government protocol is followed during project preparation.</p>
<p>Community organisations, NGOs, Civil Society</p>	<p>The BVCs are central to the success of this project. The BVCs and other CSOs will (i) participate in all stakeholders' consultations and (ii) participate in all preparatory and support trainings and (iii) contribute in the designing of Project documents.</p>
<p>Technical partners, programs and projects</p>	<p>As the project builds on on-going work partners are expected to (i) share their (ii) create synergy with their on-going programs and (iii) contribute to the preparation of project preparation documents.</p>
<p>Private sector and community groups</p>	<p>Contribution towards definition of requirements for training, demonstration and extension to other farmers</p>

### 3. Gender Equality and Women's Empowerment

**Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).**

According to the Malawi Country Strategy Paper (2016-2022) Malawi ranks 170 out of 188 countries on the UN's Gender Inequality Index. This prompted the country to develop the Nation Gender Policy of 2016. The policy recognises that women are hardest hit by effects of environmental mismanagement because of the gender roles they play in resource utilization. Deforestation, desertification and decreasing water availability are noted to affect women most through compromising their economic and social status.

With respect to watershed development projects, D'Souza (2009) observed that wherever these have been implemented the bulk of the labour force constituted women (even up to 70 % in most cases), while the women are hardly represented in the decision-making processes relating to organization and implementation. With respect to fisheries in Malawi MacPherson et al. (2012) noted that men dominate the selling of larger, fresher and more profitable fish because they have better access to capital whilst women are dominant in the drying and processing of smaller fish, which requires smaller capital but also provides smaller profits. In this gendered division of labour, men are able to make larger profits and dominate the means of production and women have to negotiate access to fish through men. These power imbalances can increase both women and men's vulnerability to HIV as sex is often traded for exclusive rights to fish and/or transport. Furthermore, women's participation and representation in decision making in Malawi is rated at 23% on average.

The proposed LDCF project will take a proactive approach to address gender issues such as outlined above. The project will prepare a gender action plan in line with Malawi National Gender Policy of 2016, the GEF gender equality action plan and the Bank Group's Strategy 2013–2022. The plan will ensure that gender perspectives are reflected in all climate change risk management solutions by (i) undertaking a gender analysis in assessments of vulnerability; (ii) promoting livelihood options that specifically address women's adaptation needs; and (iii) the inclusion of women's perspectives at project development and implementation. In addition, the project M&E system will have Gender indicators specifically targeting, and agreed, with women. The training of BVCs will specify a gender ratio in favour of women. The project will also deliberately consider outcomes that enable opportunities for women's empowerment, including (i) targeting women's participation and/or access to project/program benefits, (ii) formation of, and support to, women dominated beneficiary groups such as water user associations, savings clubs, etc., (iii) advocating for women representatives in project committees or local associations and (iv) recruiting a higher number of female staff in project operations.

The project further recognises that in Malawi the enrolment of girls in school may not be a problem but retaining them in school is a serious issue as few girls proceed to, or complete, their secondary education. The project will take deliberate measures to ensure secondary school going girls are given prominent roles in project activities so as to create role-models at community level and challenge traditionally held cultural beliefs on the role of the girl child.

**Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes**

**closing gender gaps in access to and control over natural resources; Yes**

**improving women's participation and decision-making; and/or** Yes

**generating socio-economic benefits or services for women.** Yes

**Will the project's results framework or logical framework include gender-sensitive indicators?**

TBD

#### 4. Private sector engagement

**Will there be private sector engagement in the project?**

Yes

**Please briefly explain the rationale behind your answer.**

The baseline project is aimed at strengthening the Fish Value Chain approach in fisheries and aquaculture in order to advance towards the development of resilient and inclusive Value Chain market and skills for men, women and youth in the fisheries and aquaculture sector. The LDCF project will not only support this approach but will provide alternatives for communities by promoting enterprises that complement the fish value chain as proposed in component 3 in which alternative livelihoods, such as bee keeping and orchards, will be promoted. The proposal to deal with plastic pollution is an enterprise specifically geared for the involvement of the private sector.

While attention will initially focus on promoting the informal sector and existing small and medium entrepreneurs (SMEs) that operate in the catchments the intention is to have these potentially graduate to medium or large-scale private sector driven, enterprises as the catchments are better climate proofed and the fisheries sector grows and becomes more sustainable.



## 5. Risks

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Some risks can be identified for the project. However, with adequate mitigation none of these is so severe as to derail the project. Below is a summary of the anticipated risks and proposed mitigation measures.

No	Risk	Level of Occurrence	Mitigation
1	BVCs might be set in their ways that they may be unwilling to take on expanded roles in catchment management.	Medium	The training on catchment management will emphasise that fisheries and catchment management are inter-connected and need to be viewed holistically.
2	If awareness raising and training in communities is not immediately accompanied by practical actions the communities might lose interest in the project.	Medium	The project design should aim to complete the cycle of training and implementation per catchment instead of having separate phases for training and implementation for the project.
3	Communities may be unwilling to take up new farming methods in support of catchment management (agroforestry, conservation farming) in favour of their "tried and tested" traditional subsistence farming approaches.	High	The project should identify champions at the community level who will be helped to set up the new methods as demonstration sites before uptake by the wider community.
4	Catchment management actions take long to deliver results and benefits leading to diminished enthusiasm by the communities.	High	The project should prioritise the "low hanging fruits" per catchment, e.g. gully reclamation, as the early activities for the project to boost community morale and enhance project ownership at project onset.
5	Individual households may prefer household woodlots to communal woodlots resulting in low participation on communal woodlots activities.	Medium	The project will tie extension service support for individuals to participation in communal activities. This way the communal woodlots will be used as training grounds for individual replication at household level.
6	The Department of Fisheries is the lead Executing agency for the baseline project but may not be the appropriate department to lead in catchment management for which the Department of Land Resource and Conservation (DoLRC) is more suited.	Medium	The main advantage is that both departments fall under the same parent ministry, the Ministry of Agriculture Irrigation and Water Development (MoAIWD). Therefore, an internal MoA will be signed to guide the implementation of the LDCF project vis a vis the baseline project. The MoA will specify the roles of each department, as well as other government departments, in the two projects.
7	The local government structure lacks adequately qualified staff to take on the proposed	Medium	The project design includes specific training for council staff. The idea of peer learning will also assist

	roles under the project, e.g., drafting and monitoring district development plans that mainstream catchment management and fisheries.		t in on-the-job skills training. Lessons learnt from similar past and on-going projects will also be disseminated (and direct communication with project proponents encouraged where feasible).
8	The water and sanitation facilities newly constructed at fish landing sites may not be used as the local community continues with its "open defecation" practices.	Medium	Regular hygiene promotion sessions will need to be held in the affected communities. Disease prevalence and vector transmission information will be shared as part of the regular health promotion.
9	Plans prepared by BVCs are not validated by government for future implementation.  Mitigation	Low	The project will be embedded in the Malawi local government system in which all development activities are endorsed by the traditional leadership and coordinated at the district level and supervised by parent ministries.
10	Internal governance challenges at the local level impede how BVCs make participatory decisions.	Low	
11	Entrenched traditional and cultural beliefs may hamper the uptake of new initiatives.	Low	The project proposes to prepare pamphlets on these beliefs in vernacular for free discussion by the communities with the view to change mindsets.

## 6. Coordination

**Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.**

Institutional structure : Implementation will be through a partnership between GoM and communities. Malawi operates a hereditary traditional authority (TA) system in the rural areas. Within the traditional leadership structure each village has a group village headman, selected by the village headmen and responsible for five or more villages. A sub-chief has responsibility for a number of TAs, with the senior chief having authority over all sub-chiefs in the district. All community-based work in the rural areas has to be sanctioned by the traditional authority. The BVCs, like all other community-based organisations, operate under this framework. Furthermore, the TAs and sub-TAs within each local government area are ex-officio members of the councils and the district councils are responsible for the overall development of their areas and are required by law to engage local communities and other interest groups such as the private sector and NGOs in the preparation of their three-year rolling district development plans. As such all community-based work is reported to, sanctioned and supervised by the district councils through the TAs. The councils fall under the ministry of Local Government and Rural Development but can communicate directly with sector ministries on policy issues and reports. In addition, the government of Malawi through its National Decentralization Policy has instituted area development committees (ADCs) to improve community participation and enhance demand driven development. These ADCs provide a platform for all local actors and national government structures to interact and accelerate development. The proposed project will follow these established communication and reporting channels.

At the national level, the DFO will collaborate with the Department of Land Resources Conservation for supervision. The Department of Forestry will have functional roles in planning and implementation of agroforestry interventions. The District Councils will play a lead role with coordination of line departments, although the District Agricultural Development Officer would have technical leadership for field level implementation in close collaboration with Forestry Officers and the Director of Planning and Development. The council, through the District Executive Committee would have a strong role in harmonization of watershed plans with other district development plans. However, implementation will be done jointly with BVCs and other community-based organisations.

Implementation Arrangements: The executing agency will be the MoAIWD through the Department of Land Resources Conservation (DoLRC). As such whoever will be tasked with implementation of the project will report directly to the Principal Secretary, Ministry of Agriculture Irrigation and Water Development. The actual implementation arrangements will be defined during the project preparation phase. The project will also rely on a co-management arrangement (i.e. partnership or similar) whereby local level representative institutions called Beach Village Committees (BVCs) (with local leaders as their advisors) and the Department of Fisheries (DoF) are considered key partners and jointly make decisions. These entities will sit on a project steering committee to ensure that the decision making process is participatory. The actual implementation arrangements will be defined during the project preparation phase to ensure that conflicts over authority between the traditional leaders and BVCs are minimized (or even avoided) during the execution of the project. In addition, the project will rely on lessons learnt from the Participatory Fisheries Management Programme (PFMP) for Lake Malombe (along with management arrangements for Lakes Chiuta and Chilwa) to further design, implement and rely on co-management arrangements as part of this project. Key issues to be addressed then will include (i) should an independent project implementation unit (PIU) comprising of a team of experts be set up or should in-line staff in the department run the project, (ii) if a PIU is preferred what staff should it constitute of, (iii) given the multi-sectoral nature of the project how should the different departments be coordinated in implementing the project? (iv) should a Project Steering Committee (PSC) be set up for the duration of the project or should existing arrangements be used for continuity and sustainability reasons, (v) which other ministries should be part of the project and what role should each play, (vi) how should other cooperating partners and the private sector be incorporated in the project?

Coordination with other initiatives: The proposed LDCF project recognises past and on-going work related to catchment management and fisheries from which it can benefit from (1) lessons learnt in implementation, (2) build on the established systems and achievements, (3) facilitate upscaling. The key projects from which synergies are evident are herein summarised.

Project Title	Fisheries Integration of Society and Habitats project (FISH)
Location	Lake Malawi shoreline and immediate environments
Period	September 2014 to September 2019
Funder	United States Agency for International Development (USAID)
Partners	Pact, (an international NGO), the University of Rhode Island (URI), Christian Aid (CA), the Community Initiative for Self-Reliance (CISER), the Centre for Environmental Policy and Advocacy (CEPA) and the Wildlife and Environment Society of Malawi (WESM)
Description	<p>The project seeks to promote an “Ecosystems Approach” to achieve healthy ecosystems, resilience to climate change, economic development and biodiversity conservation by working at community level to build the knowledge and capacity of both communities and district government workers in promoting collaborative management practices and giving community members the agency to select and maintain interventions aimed at limiting threats to their livelihoods and environment. Building on earlier similar initiatives, the project helped communities plan their own conservation goals and encouraged active, community-driven and participatory fisheries management policies that coincide with Malawi’s process to institutionalize community-government co-management in the fisheries sector.</p> <p>A key result of the project was the establishment of Beach Village Committees (BVCs) in the communities along the Lake Malawi. The BVCs are trained to understand the lake ecosystem, establish fish sanctuaries, restore fish habitats, inform communities about the closed season for fishing and reduce the use of illegal fishing gear. Armed with this knowledge the BVCs now help regulate fishing practices, safeguard natural resources and enforce newly established by-laws. The BVCs represent their communities and work together with Traditional Authorities and government officials to sustainably manage natural resources.</p>

Project Title	Fisheries Resilience for Malawi - Building Climate Change Resilience in the Fisheries Sector in Malawi (FiRM)
Location	Mangochi District, Lake Malombe
Period	The project commenced in 2017 is running till 2021
Funder	United States Agency for International Development (USAID)
Collaborating partners	Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP).
Description	This project aims to build resilience in the fisheries sector especially among riparian communities of Lake Malombe by strengthening national climate change responses through collaboration with government partners. The project components are: (1) Strengthening access to information and knowledge regarding climate change and its implications, (2) Creating a favourable enabling environment of policies, plans, regulatory instruments and capacities for the promotion of climate change resilience among fishing communities, (3) Strengthening of capacities at local level to increase the resilience of fishing communities to climate change (4) Monitoring and Evaluation (M&E) and Adaptation Learning.

Project Title	Climate Change Adaptation for Sustainable Water Supply in Malawi
Location	Rumphi, Nkhotakota, Ntcheu, Mangochi and Phalombe districts
Period	The project commenced in 2019 is running till 2023
Funder & budget	African Development Bank (AfDB) and The Global Environmental Facility (GEF, LDCF)
Description	The project is aimed at enhancing the sustainability of the water supply in the river courses and climate proofing the water resources outputs of the baseline investment in five districts. The project supports the implementation of alternative options for ensuring adequate water supply and sanitation services for rural communities given the is inconsistent, erratic and uneven distribution of rainfall in Malawi which leaves the country prone to hydrological droughts.

Project Title	Private Public Sector Partnership on Capacity Building for Sustainable Land Management in the Shire River Basin.
Location	Middle and lower Shire River Basin (Balaka, Blantyre, Mwanza and Neno districts)
Period	2012 to 2018
Funder	Global Environmental Facility (GEF)
Partners	United Nations Development Programme (UNDP)
Description	The project aims at reducing land degradation in the Shire River Basin through improved institutional, policy and payment for ecosystem services (PES) arrangements. It focusses on economic development, food security and sustainable livelihoods while restoring the ecological integrity of the River Shire Basin. It has dual impacts (1) to improve Malawi's power generation; and (2) to enhance the livelihoods of heavily land-dependent communities around the Shire River basin. The project covers over 800,000 hectares of land while an additional 1,000,000 hectares will be impacted by up-scaling.

Project Title	Planning for climate change - Promoting skills to mitigate and adapt to climate change impacts (PCC)
Location	Neno, Phalombe, Blantyre and Zomba districts
Period	June 2015 and December 2017
Funder	EU Global Climate Change Alliance (EU-GCCA)
Partners	United Nations Food and Agricultural Organisation (UN FAO)
Description	The project had the overall objective to alleviate poverty through enhancing the resilience to climate change risks and impacts of Malawian institutions and communities at national and local level. It specifically sought to build capacity in climate change planning, mainstreaming and responsiveness within the Department of Irrigation at the national, divisional and district level as well as in Water User's Associations. It supported the four District Authorities update their Development Strategies to factor in the impact of climate change on natural resources, agriculture and forestry. The project had two components. Component 1 focussed on Mainstreaming whilst Component 2 targeted Community Resilience.

7. Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes /no ). If yes, which ones and how:

Capacity Development: In the Malawi Growth and Development Strategy II: 2011 – 2016, the Government of Malawi recognized the need to develop capacity at all levels for successful implementation of its development programmes. The government pledged to reorient and expand existing investment in infrastructure and equipment as well as provide a conducive environment for the development of skills and knowledge to respond to the needs of the economy. The key strategies expounded then, and still being pursued in MGDS III, include developing and strengthening human and institutional capacities, mainstreaming capacity development in all sectors and promoting effective performance management systems.

Climate Change Policy: The country's overall climate change planning framework is guided by the United National Framework Convention on Climate Change (UNFCCC) and specified in the Intended National Contribution (INC), and National Adaptation Programmes of Action (NAPA). Malawi published its National Climate Change Management Policy (NCCMP) in 2016. The NCCMP seeks to guide programming of interventions for reduction of greenhouse gas emissions in the atmosphere, as well as adapting to the adverse effects of climate change and climate variability. The Policy's overall goal is stated as: "To promote climate change adaptation, mitigation, technology transfer and capacity building for sustainable livelihoods through Green Economy measures for Malawi".

As such Malawi has taken significant strides towards addressing climate change. Through the National Adaptation Programmes of Action (NAPA), Malawi has identified sectors that are affected by climate change and these include agriculture, human health, energy, fisheries, wildlife, water, forestry and gender.

Malawi Growth and Development Strategy (MGDS III): The strategy which runs from 2017 to 2022 has the motto "Building a Productive, Competitive and Resilient Nation". The MGDS III lists five Key Priority areas being: i) Agriculture, Water Development and Climate Change Management; ii) Education and Skills Development; iii) Energy, Industry and Tourism Development; iv) Transport and ICT Infrastructure and; v) Health and Population. This builds on the MGDS II which recognized that natural resources form a principal source of social wellbeing and economic development in Malawi and identified the following issues that needed urgent attention: (a) Climate variability; (b) Inadequate institutional capacity for managing climate change; (c) Inadequate mainstreaming of climate change issues; (d) Inadequate enforcement of climate relevant legislation; and (e) Increasing deforestation and unsustainable land use.

## 7. Consistency with National Priorities

### Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

**Capacity Development:** In the Malawi Growth and Development Strategy II: 2011 – 2016, the Government of Malawi recognized the need to develop capacity at all levels for successful implementation of its development programmes. The government pledged to reorient and expand existing investment in infrastructure and equipment as well as provide a conducive environment for the development of skills and knowledge to respond to the needs of the economy. The key strategies expounded then, and still being pursued in MGDS III, include developing and strengthening human and institutional capacities, mainstreaming capacity development in all sectors and promoting effective performance management systems.

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**The Malawi National Land Policy** approved in 2016 provides a sound institutional framework for land management and introduces, among others, much needed procedures for more effective land-based investment selection, land market transactions and management of development at all levels.



Besides ensuring security of tenure and equitable access to land, the goal of the Policy is also to facilitate the attainment of social harmony and broad based social and economic development through optimum and ecologically balanced use of land and land-based resources. It thus sets forth, as a national guideline for action, the desirable principles of land use and management, effective civic education and broad public appreciation of the constraints and trade-offs that need to be made. The Policy also discusses land use planning and development control requirements, and the issues that pertain to community management of land resources, conservation and environmental management, habitat preservation and land degradation.

**Other national policies:** Key developmental issues in Malawi are captured in the National Environmental Policy (1996), National Forest Policy (1996), National Fisheries and Aquaculture Policy (1999), Fisheries Conservation and Management Act (1997), National Water Policy (2005), National Irrigation Policy (2000), Natural Land Resources Management Policy and Strategy (2000), National Wildlife Policy (2000), National Energy Policy (2003), Decentralization Policy (1998). For this cross-cutting issue the Office of the President and Cabinet (OPC) plays a lead role in coordination and strategy development, while various Departments under Ministry of Natural Resource and Environmental Management, as well as other ministries play a key implementation role. The strategies are summarized in the National Climate Change Investment Plan (NCCIP).

## 8. Knowledge Management

**Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.**

Knowledge and experience of the approaches applied in the project will help Malawi to better cope with similar fisheries, Aquaculture and watershed management challenges. Dissemination and replication of good practices and successful approaches would be essential in facilitating adoption of climate resilient fisheries and watershed management technologies. As part of knowledge management, in addition to the specific adaptation interventions, the project will encourage the government of Malawi to promote and enhance climate change education, public awareness and capacity development through communication, training and information sharing through its governance structures. Specifically, the implementing agency, is expected to report via its parent ministry, to the National Technical Committee on Climate Change (NTCCC) and receive feed back on both project implementation and mainstreaming requirements. Furthermore, during project preparation, emphasis will be placed on developing a climate change and fisheries specific knowledge base from the available local, national and global datasets. A dissemination strategy will also be developed as part of the project preparation.

The fourth component of the proposed LDCF project involves the implementation of a participatory M&E system to monitor effects of the project on the investments and livelihoods. Knowledge management will be an integral part of the project, enabling institutional appropriation, promoting learning and continuous improvement, generating documents for dissemination and awareness raising and up-scaling of lessons and best practices. Specific knowledge management activities are incorporated under component 4 and will be carried out in an integrated way, targeted to different audiences and in support of the various capacity building and training actions under the different components. Activities under this component will be guided by a communication strategy to be developed during full project preparation.

To ensure that the project is managed and implemented effectively and that project benefits are maximized and reach target groups, a participatory M&E plan will be put in place. The plan will involve all key stakeholders, including the beneficiaries themselves. Purpose designed data collection forms and reporting templates will be prepared. The M&E process will also help in pursuing timely corrections to improve resource efficiency, benefits, outcomes, and impacts. Indicators to be monitored will be formulated during the project preparation and will include project physical progress, gender disaggregated data of beneficiaries, no of women involved in project tasks and in decision-making for the CBOs, etc.

**Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)**

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

<b>Name</b>	<b>Position</b>	<b>Ministry</b>	<b>Date</b>
Ms Shamiso Banda Najira	Deputy Director	Ministry of Agriculture Irrigation and Water Development (MoAIWD)	11/1/2019
CCA Core Indicators and Metadata			11/1/2019

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place



