Republic of Malawi

STRATEGIC PROGRAM FOR CLIMATE RESILIENCE: MALAWI

PILOT PROGRAM ON CLIMATE RESILIENCE (PPCR)

November 8, 2017

Forward

The Government of Malawi attaches great importance to climate change-related issues. Recently, climate change has emerged as a major development issue, whose impacts affect many sectors and people's livelihoods in the country. The most serious ones have been prolonged dry spells, seasonal droughts, intense rainfall and floods. As such, Government has formulated strategic frameworks and policies to address adverse effects of climate change.

Government in collaboration with the World Bank and African Development Bank has formulated this Strategic Program for Climate Resilience (SPCR) under the Pilot Programme for Climate Resilience (PPCR) to act as a framework for addressing the challenges of climate change that impact on the national economy and community livelihoods. The SPCR will build on the available enabling frameworks and efforts in climate resilience-building programmes as stipulated in the Malawi Growth and Development Strategy III, National Climate Change Management Policy (2016), National Agriculture Policy (2016), National Climate Change Investment Plan (2013), and Malawi's Nationally Determined Contribution under the UNFCCC (2015). It will address key identified barriers and constraints, in order to accelerate the transformative accumulation of benefits of climate resilience and sustainable socio-economic development in the targeted sectors and areas.

The overall objective of the SPCR is to ensure that all stakeholders address climate change impacts and their causes in a coordinated manner through application of appropriate measures, while promoting sustainable development and a green economy. The Strategy outlines significant investment projects, and will be leveraged to attract financial resources from the PPCR, the Green Climate Fund (GCF), national resources as well as other financing windows.

This SPCR has been formulated under the guidance of the Ministry of Finance, Economic Planning and Development and the Environmental Affairs Department in the Ministry of Natural Resources, Energy and Mining and has applied an extensive participatory process as required by Climate Investment Fund (CIF). A number of stakeholders were consulted throughout the country in order to solicit inputs and advance development of the SPCR. Individual consultations were also conducted with key individuals in relevant ministries and this was followed by a wide stakeholder consultation meeting where all relevant stakeholders were invited to provide inputs to the SPCR concept notes.

The SPCR will be implemented through the existing institutional framework which is elaborated in the National Climate Change Management Policy. The Ministry of Finance, Economic Planning and Development is the focal point while the Ministry of Natural Resources, Energy and Mining (MNREM) through the Environmental Affairs Department (EAD) is the technical focal point. The Ministries responsible for Agriculture, Fisheries and Transport will also play a crucial role in the implementation of the SPCR. Funds will be channelled through the World Bank and African Development Bank as agreed by Government.

AGGREY MASI, M.P.

MINISTER OF NATURAL RESOURCES, ENERGY AND MINING

Acknowledgements

The Ministry of Natural Resources, Energy and Mining would like to sincerely thank all stakeholders, Government agencies, public and private sectors, academia, Development Partners, Civil Society Organisation and Non-Governmental Organisations (NGOs) involved in the formulation of the Strategic Programme for Climate Resilience (SPCR) under the Pilot Programme for Climate Resilience (PPCR) for their valuable time and expertise. In particular, the Government of Malawi deeply appreciates the support from the Climate Investment Funds (CIF), the IBRD/World Bank (WB) and the African Development Bank (AfDB) for their invaluable guidance throughout the preparation of the SPCR.

We are indebted to the Malawi PPCR team that spearheaded the preparation of the SPCR. Further appreciation should go to participants in the various stakeholder consultative workshops for the input that they provided to make the SPCR process country driven and aligned to the national development agenda.

Special gratitude is extended to Government Ministries and Departments for their commitment, time and knowledge contributed during the development of this SPCR. The National Technical Committee on Climate Change is also recognised for their technical guidance. Lastly, we extend special gratitude to the PPCR Focal Point Mr. Nations Msowoya and Technical Focal Point Ms. Shamiso Najira for steering the process.

PATRICK MATANDA

SECRETARY FOR NATURAL RESOURCES, ENERGY AND MINING

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Cover photo: Fishermen on the Elephant Marshes, 2016. Photo credit: Ross Hughes.

Abbreviations and Acronyms

ACCE	Africa Carbon Credit Exchange
ADC	Area Development Committees
ADF	African Development Fund
AF	Additional Funding
BAU	Business as Usual
BVC	Beach Village Committees
CAS	Country Assistance Strategy
CBD	Convention on Biological Diversity
CCD	Convention to Combating Desertification
CEPA	Centre for Environmental Policy and Advocacy
CIF	Climate Investment Funds
CIG	Common Interest Group
CISONECC	Civil Society Network on Climate Change
COP	Congress of the Parties
CPC	Civil Protection Committees
CPS	Country Partnership Strategy
CSA	Climate Smart Agriculture
CSO	Civil Society Organisations
DCCMS	Department of Climate Change and Meteorological Services
DRM	Disaster Risk Management
EAD	Environmental Affairs Department
EMA	Environmental Management Act
ENSO	El Niño Southern Oscillation
EO	Earth Observation
ESMF	Environmental and Social Management Framework
EWG	Expert Working Groups
FAO	Food and Agriculture Organisation
FISP	Farm Inputs Subsidy Programme
FM	Financial Management
GCF	Green Climate Fund
GCM	Global Circulation Model
GDP	Gross Domestic Product
GEF	Global Environment Fund
GHG	Greenhouse gas
GII	Gender Inequality Index
GoM	Government of Malawi
GRS	Grievance Redress Service
HDI	Human Development Index
ICT	Information and Communication Technology
IDA	International Development Association
IMES	Implementation, Monitoring and Evaluation Strategy
INDC	Intended Nationally Determined Contribution
ISP	Implementation Support Plan
ITCZ	Inter-Tropical Convergence Zone
IWM	Integrated watershed management
LCDF	Least Developed Countries Fund

LDC	Least Developed Country
LEDS	Low Emission Development Strategy
LULUCF	Land Use and Land Use Change and Forestry
M&E	Monitoring and Evaluation
MDB	Multilateral Development Bank
MGDS	Malawi Growth and Development Strategy
MoAIWD	Ministry of Agriculture, Irrigation and Water Development
MoFEPD	Ministry of Finance, Planning, and Economic Development
MoLG	Ministry of Local Government
MoNRMEM	Ministry of Natural Resources Management, Energy and Mining
MoTPW	Ministry of Transport and Public Works
MWK	Malawi Kwacha
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan or National Agricultural Policy
NAPA	National Adaptation Action Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCCIP	National Climate Change Investment Plan
NCCMP	National Climate Change Management Policy
NCCP	National Climate Change Programme
NCE	National Council for the Environment
NDC	Nationally Determined Contribution
NEMP	National Environmental Management Plan
NEP	National Environmental Policy
NGO	Non-government Organisation
NPF	New Procurement Framework
NSCCC	National Steering Committee on Climate Change
NTCCC	National Technical Committee on Climate Change
OPC	Office of the President and Cabinet
PDO	Project Development Objective
PPCR	Pilot Program for Climate Resilience
REDD+	Reducing emissions from deforestation and forest degradation
SADC	Southern Africa Development Community
SATTFP	Southern Africa Trade and Transport Facilitation Project
SDGs	Sustainable Development Goals
SESA	Strategic Environmental and Social Assessment
SPCR	Strategic Plan for Climate Resilience
SRBMP	Shire River Basin Management Programme
STEP	Systematic Tracking of Exchange in Procurement
SWG	Sector Working Group
TA	Technical Assistance
TLC	Total Land Care
ToR	Terms of Reference
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
VA	Vulnerability Assessment
VDC	Village Development Committees
WFP	World Food Program

Summary of Malawi SPCR

<table>
<tr><th colspan="3">PILOT PROGRAM FOR CLIMATE RESILIENCE

Summary of Strategic Program for Climate Resilience</th></tr>
<tr><td>1. Country/Region:</td><td colspan="2">Republic of Malawi</td></tr>
<tr><td>2. PPCR Funding Request (in US$ million):</td><td>GoM: US$ 3.7m</td><td>PPCR: US$ 50 m

Other sources of funding to be sought (indicative):

GCF: US$ 47 m
GEF: US$ 8 m
WB/IDA: US$ 30 m
AfDB: US$ 8 m
FAO: US$ 2 m
EU & others: US$ 10 m
Total: US$ 159 million</td></tr>
<tr><td>3. National PPCR Focal Point:</td><td colspan="2">Mr. Nations Msowya
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<tr><td>5. Involved MDB</td><td colspan="2">The World Bank Group (WBG)
The African Development Bank (AfDB)</td></tr>
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</table>

7. Description of SPCR:

(a) Key challenges related to vulnerability to climate change/variability:

Malawi is highly vulnerable to the impacts of climate change. This is due to:

- **High climate-sensitivity.** Most of Malawi's economy and livelihoods are directly dependent on rainfed agriculture. However, when climate variability impacts on soil health and land degradation, farm systems struggle to be productive. This can lead to an increase in poverty and food insecurity in rural populations and coping and resilience strategies are weakened.

- **Degraded natural resources.** Current climate variability (and future climate change) also has a greater impact due to high and increasing population densities, the growth of towns and cities, poor and unsustainable agricultural practice, increased deforestation, degraded ecosystems within watersheds, and the reclamation and degradation of wetlands, flood plains and protected areas. This puts Malawi's socio-economic well-being at greater risk.

- **Low institutional capacity.** Malawi does not have the institutional capacity to deal with the current or future climate risks it faces. This is made worse by inadequate databases, tools and information systems which are unable to factor the risks of climate change into the design of both the "hard" and "soft" infrastructural foundation.

(b) Areas of Intervention – sectors and themes

Because livelihoods of most Malawians depend on natural resources and food security, and because large portions of the population are vulnerable to the impacts of poverty and climate change, the SPCR has been designed to capture the need to build resilience in the critical sectors of **agriculture**, **fisheries** and **water resources**. The two investments focused on agriculture will strengthen the capacity of individual farmers and their community through famer-school investments at local level; and in parallel, strengthen economic value chains as broader market interventions at the macro level. Investing in fisheries, both through improved biomass monitoring and through strengthened economic value chains, similarly represents the role fisheries play in livelihoods - as a source of income as well as a source of nutrition. Improved watershed management and reduced land degradation, as proposed in the water sector investment, has strong linkages across productivity and resilience needs in both agricultural and fishery. Finally, by investing in **climate information services**, the SPCR will enable provision of critical underlying quality and availability of information that will help inform decision-making across the SPCR sectors and projects.

The thematic strategic pillars of the Malawi SPCR are:

SP1. Building resilience in natural-resources dependent livelihoods
SP2. Strengthening sectoral governance of climate change adaptation
SP3. Addressing food insecurity and poverty, from household to national levels

(c) Expected Outcomes from the Implementation of the SPCR

- More resilient communities in the Shire River basin through sustainable watershed management practices that protect local ecosystems and increase livelihood options, especially for women.
- More resilient rural agricultural livelihoods through: adoption of climate smart agricultural practices in the production processes and incorporating climate smart agro-processing, marketing and transportation; improved incorporation of meteorological information in crop production, processing, marketing and transportation; and, climate smart agribusiness systems to enhance competitiveness and market access for smallholder farmers while building resilience to climate change.
- Enhanced resilience in the fisheries sector through: improved management of catchments and ecosystems of Lakes Malawi, Chilwa and Malombe by conserving and sustainably managing immediate lake catchments, shoreline ecosystems and fish breeding grounds; carrying out climate change research and linking to aquatic habitat and the fisheries sector; and, incorporating climate smart fish processing and fish preservation systems into the fisheries value chains.
- Increased resilience of smallholder farmers and related livelihoods and thereby better food and nutrition security impacts through: facilitation of farmer adoption of transformative technologies and practices that lead to increased agricultural productivity and income whilst increasing resilience to climate change (based on scaling up of Farmers Field School approach developed by UN FAO); and support smallholder farmers engagement in agribusiness and value chains (in particular female farmers).
- Improved provision of relevant, user-friendly, timely weather, water and climate information together with, and for stakeholders across vulnerable sectors through strengthening the integration and final output of Malawi's national climate services through the establishment of an operational Malawi Climate Services Center.

7. Expected Key results from the Implementation of the Investment Strategy (consistent with PPCR Results Framework):

Result	Success Indicator(s)
SPCR programmatic level	
(a) A.1 Increased resilience of households, communities, businesses, sectors and society to climate variability and climate change	A1.3/ Core indicator 5. # of people supported by PPCR to cope with CC/CR
(b) A.2 Strengthened climate responsive development planning	A2.1/ Core indicator 1. Degree of integration of CC in national including sector planning
B. Adaptive capacities strengthened	B1/ Core indicator 4. Extent to which vulnerable households, communities, businesses & public sector use improved PPCR supported tools

B. Institutional framework improved	B2/ Core indicator 2. Evidence of strengthened government capacity & coordinated mechanisms to mainstream CR
B. Climate responsive investment approaches identified and implemented	B5/ Core indicator 3. Quality of & extent to which climate responsive instruments/investments models are developed & tested
Result	**Success Indicator(s)**
Project level	
SPCR Strategic Pillar 1: Building resilience in natural-resources dependent livelihoods	
Increased economically viable and environmentally sustainable livelihood options with a strong focus on integrating women's specific needs and reducing vulnerability to increased climate variability	Household income increased through improved land and water management practices, aggregated and by gender and location
Improved community/famer level knowledge on available options for climate resilience farming	# of farmers applying new knowledge in agricultural practices that resulted in more resilient farming
SPCR Strategic Pillar 2: Strengthening sectoral governance of climate change adaptation	
Tailored climate information products available to users in agriculture and disaster risk management, perceived relevant to the individual needs for information	# of seasonal forecasts with high-quality and location-specific climate data used in decision-making in farming and contingency planning
Lake catchment environment and aquatic ecosystems improved to improve the supply of fish resources	Improved fisheries management through formation and strengthening of fisheries co-operative societies (enhancing the capacity of fishermen and women to access markets and fishing materials such as the BVCs to manage fisheries resources as cooperative)
SPCR Strategic Pillar 3: Food insecurity and poverty, from household to national levels	
B. Climate resilient agriculture and food security promoted	Value of agricultural products in the selected value chains increased and market access enhanced % increase in food production at household and community level in target locations
Fisheries value chains improved	Value of fisheries value chains and market access enhanced

8. Project and Program Concepts under the SPCR:

Project/Program Concept Title	MDB	Requested potential PPCR Amount ($)			Expected co-financing ($)	Preparation grant request ($)	Potential MDB Fee
		TOTAL	Grant	Loan			
Climate Resilient Integrated Watershed Management	30 m	25 m	25 m		29 m	0.3 m (WBG)	0.50 m
Building climate resilience in selected agricultural value chains	5 m	10 m	10 m		11 m	0.1 m (AfDB)	0.42 m
Sustainable Fisheries Sector and Fisheries Value Chain in Malawi through Improved Climate Resilient Lake Ecosystem Conservation and Management	3 m	10 m	10 m		5.2 m	0.1 m (AfDB)	0.42 m

Strengthening Climate Resilience of Smallholder Farmers in Malawi	-	-	-		13.5 m		
Operationalising Malawi's climate services centre	-	5 m	5 m		12.3 m	0.1 m (WBG)	0.40 m
	TOTAL	50 m	50 m		109 m	0.6 m	1.74 m

9. **Timeframe** (tentative) – Milestones

- Submission to CIF: December 2017
- Submission to other financiers: January 2017 onwards
- Start implementation: Q3 2018
- Completion of project implementation: 2023

10. **Key national stakeholder Groups involved in SPCR design**:

Ministries
Ministry of Finance, Economic Planning and Development
Ministry of Agriculture, Irrigation and Water Development
Ministries of Transport and Public Works
(including: Environmental Affairs Department, Land Resources and Conservation Department Fisheries Department, Roads Authority, Department of Climate Change and Meteorological Services, Water Resources Department, Department of Water Affairs, Department of Forestry, Department of Surveys, National Statistics Office, Department of Disaster Management Affairs, Treasury, Shire River Basin Organisation)

Agencies
Development Fund of Norway
United Nations Development Programme
United States Agency for International Development
European Space Agency

Academia:
Lilongwe University of Agriculture and Natural Resources (LUANAR)
UNIMA Polytechnic, Chancellor College
Geography Department, Chancellor College

Civil Society Organisations:
LEAD, Care Malawi, Evangelic Association of Malawi, Save the Children, Association of Environment Journalist Community, Centre for Environmental Policy & Advocacy (CEPA), CISONECC, CISANET, Global Hope, Network of Youth Development, CADECOM, Total Land Care, ICRAF, Maldeco Fisheries (see annex 2).

11. **Development Partners**

The World Bank Group
African Development Bank
Food and Agriculture Organisation of the United Nations (FAO)
Climate Investment Funds
The United Nations Development Programme (UNDP)
United States Agency for International Development (USAID)

Executive Summary

1. **In 2015, the Government of Malawi submitted an expression of interest to participate in the Pilot Program for Climate Resilience (PPCR).** This was accepted by the Climate Investment Funds (CIF) and, since March 2016, the Government of Malawi (GoM) has been preparing this Strategic Program for Climate Resilience (SPCR) through a consultative process. The GoM's SPCR process has been supported by the World Bank and the African Development Bank. The process has included four missions and a range of stakeholder consultations. Key government departments have been closely involved in developing and refining investment concept notes.

2. **The Malawi SPCR describes Malawi's climate vulnerabilities, relevant government institutions and policies, and the investment projects proposed for support through PPCR finance.** It describes the transformational benefits of the programmatic approach that PPCR financing permits and how the proposed investments link to GoM's priorities and existing initiatives. This SPCR is fully aligned with existing governmental institutional, policy and planning frameworks and will contribute to the PPCR objective to *"integrate climate risk and resilience into core development planning, whilst complementing other ongoing activities"*[1].

3. Malawi is highly vulnerable to the impacts of climate change. This is due to:

- **High climate-sensitivity.** Most of Malawi's economy and livelihoods are directly dependent on rainfed agriculture. However, when climate variability impacts on soil health and land degradation, farm systems struggle to be productive. This can lead to an increase in poverty and food insecurity in rural populations and coping and resilience strategies are weakened.
- **Degraded natural resources.** Current climate variability (and future climate change) also has a greater impact due to high and increasing population densities, the growth of towns and cities, poor and unsustainable agricultural practice, increased deforestation, degraded ecosystems within watersheds, and the reclamation and degradation of wetlands, flood plains and protected areas. This puts Malawi's socio-economic well-being at greater risk.
- **Low institutional capacity.** Malawi does not have the institutional capacity to deal with the current or future climate risks it faces. This is made worse by inadequate databases, tools and information systems which are unable to factor the risks of climate change into the design of both the "hard" and "soft" infrastructural foundation.

4. **Climate change will invariably heighten risks and vulnerabilities to existing levels of variability of temperature and rainfall.** Even with the levels of uncertainty linked to climate modelling, all recent studies of Malawi's future climate broadly agree that over the next decades: (i) temperatures will rise, causing higher evaporation and consequent water stress; and (ii) high levels of rainfall variability will remain. There is less confidence in the exact future patterns of extremes, but there is higher likelihood of dry spells and higher likelihood of intense rainfall events (associated with floods).

5. **Malawi is already experiencing some of the effects of climate change with observed rising temperatures and changes in the variability of rainfall.** Adverse impacts have already resulted in considerable damage, disrupted economic activity and adversely affected the lives

[1] CIF, 2011, The Pilot Program for Climate Resilience Fund under the Strategic Climate Fund.

of large number of people, particularly the poor who are the most vulnerable to weather related shocks of all kinds.

Photo: Floodplain rice fields, near Liwonde, Upper Shire Valley.

6. **GoM has a range of strategies and policies that seek to tackle the challenges of current climate variability, shocks and future climate change.** These include high-level strategies, such as: Malawi's' Vision 2020, the Malawi Growth and Development Strategy III (MGDS III), the National Disaster Risk Management (NDRM) Policy, the National Climate Change Investment Plan, the National Agricultural Policy and the (draft) National Resilience Strategy - all of which recognise the importance of addressing climate change impacts. Other climate change-focused policies include Malawi's Intended National Determined Contribution (INDC); the Climate Change Management Policy; and associated Climate Change Investment Plan. Several sectoral policies also seek to address climate impacts. GoM has also established a set of institutional arrangements specifically designed to facilitate implementing the climate change aspects of these strategies and policies. GoM is in consultation with all the key economic sectors and with local development planning to ensure prioritisation of short and medium-term climate resilience programmes and activities. There is strong support from a range of development partners.

7. **This SPCR aligns fully with these national and relevant sectoral development goals and priorities and will build on existing climate resilience activities in Malawi.** Resilience can be defined as, "the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change"[2]. The SPCR identifies

[2] IPCC, 2007: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press.

and addresses the main barriers and constraints to existing efforts in improving climate resilience in Malawi. It will strengthen adaptation capacity in targeted sectors and areas, both at local and central government levels, by supporting more effective integration of climate resilience into planning and implementation structures and scaling up existing programmes. Knowledge sharing will also be implemented between programmes and stakeholders including the generation of new knowledge.

8. **Malawi's institutional and socio-economic capacity to address climate change will be strengthened allowing for more resilient development.** The quality and accessibility of hydro-meteorological and climate information will improve increasing climate-risk preparedness and reducing risk. Improved market access and business opportunities for agricultural and fisheries products will strengthen the ability of rural households to a build resilience to the adverse impacts of changes in weather and climate by improving the returns to key livelihood strategies, as well as ensuring that they are aware of, and can use, climate smart production methods. Improved land and water management will build the resilience of local ecosystems and the communities that live in them and rely on them for their livelihood. In time, these investments will lead to greater awareness in the private sector and of the need to change behaviour and to invest in adaptation and risk prevention measures. These changes will make it easier for the citizens of Malawi to better withstand climate-induced shocks.

9. **In alignment with its commitment to the Paris Agreement, Malawi's SPCR will help to create an economy with higher levels of climate resilience and support the development of a long-term strategy for water, agriculture and fisheries sectors**. It is critical that this programme is 'owned' and driven by both the Ministry of Finance, Economic Planning and Development (MoFEPD) and the Ministry of Ministry of Natural Resources, Energy and Mining (MoNREM). This means that MDBs, under the CIF, and international donors must look to both MoFEPD and MoNREM as the drivers of climate-resilience activities and reinforcing capacity building throughout and across the PPCR investments[3].

10. **The SPCR provides a strong 'business case' for investment projects.** A strong business case will help attract significant financial resources from the PPCR as well as from other financing avenues including MDB's concessional financing sources (notably IDA and the African Development Fund), development partners, and the Global Environment Facility (GEF). It is also expected to catalyse and increase domestic budgetary allocation towards climate change action by providing practical examples of how investments can support and strengthen resilience. GoM will also use the SPCR to help prioritise and leverage support from the Green Climate Fund (GCF) and private sector, although it should be noted that accessing funding from GCF will likely require a lengthy engagement process with uncertain outcomes.

11. **During the SCPR preparation process, several consultations and workshops were organised by the Government's PPCR Focal Points with support from the MDBs and through cross-ministerial engagement and collaboration.** Consultations took place in Lilongwe and during field visits during the period of December 2016 through to workshops

[3] The SPCR preparation process, alongside several sector studies on adaptation in Malawi, highlight the need for building institutional and technical capacity in climate change and resilience at ministerial and departmental levels. The need for capacity building has informed the preliminary investments concepts as well as the opportunity of the SPCR to link capacity building activities across the projects and ministries, and from departmental up to ministerial levels. The exact methods and focus of capacity building and training will be dependent on the specific needs and the final scale of financing of the projects. These will be further explored and determined at the detailed project design phase.

held June 12-16, July 21, and 22-23 August 2017 (coinciding with the MDBs technical missions).

12. **Participants of the consultation events and workshops represented agencies from across government, civil society and the international development agencies present in Malawi**. These agencies included ministries and departments (from agriculture through to meteorology and health), NGOs and other civil-society organisations (such as LEAD and the media), development partners and academia (such as the Lilongwe University). In total, 122 people participated in the consultations of which 31 were women and 91 were men. Annex 2 provides details on consultations and the participants, and includes the proposed approach for inclusion of gender considerations in the investment design and implementation phases, and in M&E.

13. **Investment priorities are guided by the broad adaptation priorities established by the INDC and the Malawi Growth and Development Strategy (MGDS III).** The INDC adaptation priorities include agriculture, water, forestry, fisheries and have gender as a cross-cutting theme. Specific actions identified in the INDC in each of these areas that will be covered by the investment projects are shown in Table 1. Malawi has extremely limited finance for adaptation and the INDC makes a clear case for the need for additional external investment support to drive forward adaptation priorities. The PPCR's programmatic approach allows for a substantive and interlinked set of investments to provide a significant step forward in implementing INDC priorities. MGDS III prioritises climate change and identified a range of climate change related outcomes. MGDS III is the GoM's most recent and key strategic document that reflects current development priorities. The key climate change priorities from MGDS III are shown in Table 2 and the SPCR investments have been chosen because of their coherence and alignment with these.

Table 1. Key priorities in INDC

INDC PRIORITIES	
Adaptation	Priority sectors and thematic areas: agriculture (crops, livestock, fisheries), water resources, health, infrastructure, land-use planning, transport, population and human settlements, disaster risk management, forestry (wildlife), energy and gender.
Mitigation	Main sectors contributing to GHG emissions are; energy, industrial processes and product use (IPPU), agriculture, forestry and other land use (AFOLU), and waste. Between 2015 and 2040, total annual greenhouse gas (GHG) emissions are expected to increase from the current level of approximately 29,000 Gg CO_2 equivalent to approximately 42,000 Gg CO_2 equivalent, approximately a 38% rise.
M&E	A monitoring and evaluation framework that covers all government programmes and projects implemented in the country. M&E activities are undertaken by MFEPD in collaboration with sectoral ministries, MNREM and other sectoral ministries. External technical and financial support will be needed to establish an INDC tracking system to monitor short, medium and long-term implementation.

Source: GoM, 2015 (a), Intended Nationally Determined Contribution

Table 2. MGDS III outcomes relevant to building climate change resilience

KEY AREA	OUTCOME
Agriculture	• Increased land under irrigation • Increased agricultural diversification • Enhanced agricultural risk management

Climate Change	• Improved weather and climate monitoring, prediction, information and knowledge management systems • Strengthened policy operating environment for climate change and meteorological services • Enhanced community resilience to climate change impacts • Enhanced climate change research and technology development
Water Resources Development, Utilisation and Management	• Increased access to water resources • Enhanced integrated water resources management at all levels
Vulnerability and Disaster Management	• Developed and strengthened people-centered early warning system • Improved preparedness for response to and recovery from disasters
Environmental Sustainability	• Strengthened environmental management • Enhanced environmental degradation preventive measures

Based on: MGDS III, GoM, 2017

14. **Five investment projects have been identified through the SPCR process** Analytical studies financed by the SPCR Preparation Grant and the Project Preparation Grants will assist refining the focus and priorities of these investments:

1. Climate Resilient Integrated Watershed Management *(Total: US$ 84 million, of which the requested contribution from the PPCR is US$ 25 million);*
2. Building Climate Change Resilience in Selected Agricultural Value Chains in Malawi *(Total: US$ 26 million, of which the requested contribution from the PPCR is US$ 10 million);*
3. Sustainable Fisheries Sector and Fisheries Value Chain in Malawi through Improved Climate Resilient Lake Ecosystem Conservation and Management (*Total: US$ 18.2 million, of which the requested contribution from the PPCR is US$ 10 million);*
4. Strengthening Climate Resilience of Smallholder Farmers in Malawi[4] *(Total: US$ 13.5 million);*
5. Operationalising Malawi's Climate Services Centre *(Total: US$ 17.3 million, of which the requested contribution from the PPCR is US$ 5 million).*

15. **Climate Resilient Integrated Watershed Management.** In Malawi's INDC, integrated catchment management is specified as a priority in the face of climate uncertainty. The GoM expressed its ambition to scale-up integrated catchment management to the national level as a cross-cutting approach to managing several sectors and environmental resources at risk to climate uncertainty, including food productivity, forestry, flooding, drought, rural energy access, and the management of waterways, siltation and ecosystem services. The scaling up will build on positive outcomes from ongoing activities in the Shire River basin. As part of the Shire River Basin Management Programme (SRBMP), interventions have been implemented in four sub-catchments. The approach has successfully engaged villages and communities through local level adaptation planning and investments, including the use of a small-scale financing mechanism. There is now important momentum and opportunity to expand the approach used to achieve impact at scale and across several vulnerable basins.

[4] This investment is led by FAO and does not request PPCR finance. It is included in the SPCR investments to support leveraging further external funding that will add value to the PPCR's programmatic approach.

Subject to agreement between the Ministry of Finance, Economic Planning and Development and the World Bank on the inclusion of a second phase of the SRBMP, this will provide a mechanism for programming additional PPCR funds. A component of the PPCR's water resource management investment will also be used to develop a national integrated catchment management strategy that would cover catchments in the country at the national level, and draw on the method of approach and lessons learned from the first phase of SRBMP support.

16. **Building Climate Change Resilience in Selected Agricultural Value Chains in Malawi.** This investment will improve agricultural production and productivity in the value chains of high value and drought tolerant crops through incorporation of climate smart agricultural production systems, managing key agricultural risks including weather and climate change through scaling up climate resilient technologies. The project will: (i) build resilience of agricultural livelihoods of communities through adoption of climate smart agricultural practices in the production processes and incorporating climate smart agro-processing, marketing and transportation to minimise adverse effects of changes in climatic and weather conditions; (ii) support agro-meteorological information collection, analysis and management in relation to crop production, processing, marketing and transportation; (iii) promote climate smart agribusiness systems to enhance competitiveness and market access for smallholder farmers while building resilience to climate change; and, (iv) ensure inclusivity of gender inclusion, vulnerable groups and the youth in order to build resilience through increased farm incomes of the vulnerable groups through the selected crop value chains. Analytical studies using the preparatory grant will assess specific climate/weather risks for each targeted crop value chain. The analytical studies will improve designing the investment so that it will enhance climate change resilience in the identified crop value chains. Efforts will be aimed to support the development of the key resilience pillars for adaptation: (i) adaptation measures that could bring large incremental gains and changes, including technical interventions, governance, policy frameworks, and institutions; (ii) effective adaptation and transformation of agriculture in Malawi conditional on addressing current knowledge and capacity gaps. The programme will incorporate the establishment of mechanisms for collecting and analysing climate and weather-related data as part of the overall agricultural production and management system, building strong linkages with the proposed investment in the Malawi Climate Services Centre (concept number five).

17. **Sustainable Fisheries Sector and Fisheries Value Chain in Malawi through Improved Climate Resilient Lake Ecosystem Conservation and Management.** This investment will focus on ensuring sustainable management of fisheries resources and communities against the impacts of climate change through conserving and sustainably managing immediate lake catchments and shoreline ecosystems. The geographic area covered will be Lakes Malawi, Chilwa and Malombe. The project is expected to enhance resilience in the fisheries sector to climate change impacts, improved fisheries management and improved livelihoods for communities and other stakeholders along the value chains. The following areas will be addressed: (i) building sustainable fisheries management of the three lakes by enhancing conservation in the immediate catchments of the lakes; (ii) protecting and sustainably managing the shorelines and fish breeding grounds; (iii) carrying out climate information research and linking this to the fisheries sector by developing a water quality, weather and climate variability monitoring system that could be used to monitor fish responses to weather and climate patterns in the three lakes; (iv) incorporating and improving climate smart fish processing and fish preservation systems into the fisheries value chains and integrating the value chains into the global fish value chains through enhancing the participation of the private sector and supporting branding; (v) to improve fisheries resources governance, infrastructure development and value addition processes.

18. **Strengthening Climate Resilience of Smallholder Farmers in Malawi.** This investment's objective is to increase resilience of smallholder farmers and related livelihoods to the effects of climate change and thereby enhance food and nutrition security and contribute to poverty reduction in rural areas of Malawi under a changing climate. This will be attained through the overall empowerment of the farmers to address the various climate change impacts through facilitation of farmers adoption of transformative technologies and practices that lead to increased agricultural productivity and income while also increasing resilience to climate change (including piloting of promising practices and technologies and provision of inputs to farmers to adopt these practices). It will be based on scaling up of Farmers Field School (FFS) approach developed by UN FAO and successfully implemented in 10 agricultural districts in Malawi; (ii) support to smallholder farmers engagement in agribusiness and value chains; and (iii) improving agricultural climate information systems. An ongoing phase of support in specific districts is already underway with support from the European Commission. Although PPCR funding for the current phase is not being requested, this investment has been included in the SPCR programme with a view to scaling-up the current and ongoing programme of support for smallholder, climate resilient agriculture.

19. **Operationalising Malawi's Climate Services Centre.** This investment aims to establish and operationalise a Climate Services Centre for Malawi and improve management of climate data at the national level. Climate Services in Malawi are in urgent need of consolidation and strengthening. Alongside investments in water and weather monitoring, there are two major challenges to the government's efforts to strengthen the services. These are: (i) generating and integrating multiple streams of validated climate data; and (ii) the production and delivery of sector-specific information products. Addressing these challenges will strengthen the development of a National Framework for Climate Service under the auspices of the World Meteorological Organisation and the capacity to provide improved short, medium and long-term climate information to the public. During the SPCR process, stakeholders prioritised the establishment of a cooperative centre for climate services. This is also the recommendation from research and MDB technical missions. The centre will build on the mandates of the Department for Climate Change and Meteorological Services (DCCMS) and the Department for Water Affairs (DWA), integrate successful outputs of related projects, and provide tailored training and information products in partnership with multi-sectoral stakeholders.

20. **During the SPCR preparation process, the proposed PPCR investments have been conceptualised and framed to ensure they reinforce, and avoid duplication of, parallel non-PPCR investments that address critical climate change challenges.** This has influenced the design and consultation of the PPCR investment concepts and their scope. Some potential investment areas have not been included because these are already attracting considerable investment through other financing arrangements. In the case of building the resilience of infrastructure across sectors, which is a significant and prioritised challenge in Malawi, there are ongoing projects providing significant support. For example, the World Bank's Malawi Drought Recovery and Resilience Project and the Malawi Floods Emergency Recovery Project (IDA, US$104 million and US$80 million respectively) have large investments in climate proofing infrastructures such as roads and bridges. This is similarly the case with resilience investments in other areas of infrastructure, such as schools and transport. In addition, SPCR Preparation Grant funds will be used finance support for the on-going development of Malawi's Transport Master Plan to ensure that climate resilience measures are fully integrated. Once completed, this plan will be the basis of future investments in transport infrastructure.

21. **The PPCR's programmatic approach integrates these individual investments.** The investments have strong interlinkages. Investment projects 1 (watershed management), 4 (resilience of smallholder farmers) and 5 (climate services) could be integrated into a single investment programme in the south of the country[5]. Investment project 2 (agriculture value chains) will focus on the centre and north of the country to avoid duplicating an agricultural value chain component of the Shire Valley Transformation Project which is just starting. Investment project 2 and 3 (agriculture and fisheries value chains) will provide opportunities to share experiences and lessons on building climate resilience through a value chain approach. Investment 5 (climate services) has relevance to all the other four investments and, correspondingly, each of these will provide opportunities for learning how climate services can provide useful information to various formats to different stakeholders. Adopting a programmatic approach increases the opportunities to ensure synergies, complementarities and linkages are capitalised on during implementation. The process of selecting investments during SPCR preparation included recognition of the benefits of ensuring that individual investments offered linkages that will support and strengthen each other.

Photo: Members of a forest co-management group, adjacent to Mangochi Forest Reserve.

[5] No decision has been made on integrating these investments. This will be explored during detailed project design.

PART 1

1. INTRODUCTION

22. **The Strategic Program for Climate Resilience (SPCR) is an investment plan to address the effects of climate variability and climate change in Malawi.** Preparation of the plan was funded by the Pilot Program for Climate Resilience (PPCR), one of four windows of the Climate Investment Funds (CIF). The Government of Malawi (GoM) has prepared their SPCR as a strategic framework to prioritise transformative investments for addressing the impacts of climate change on the national economy with a focus on building the resilience of vulnerable communities. The plan follows from the GoM's Expression of Interest in PPCR funding submitted to the CIF in 2015. This was followed by a scoping mission and two joint missions undertaken in 2016 and 2017 by combined World Bank (WB) and African Development Bank (AfDB) teams. These worked with the GoM to identify the broad scope for investments through engagement with different ministries and other stakeholders in the country. The priorities for investment included in this plan have been elaborated, refined and prioritised in consultation with a wide group of government and non-government stakeholders during two subsequent joint missions and a technical mission. These include civil society organisations, universities and research organisations, and development partners.

23. **The SPCR will support the Government of Malawi's efforts to achieve its strategic vision** (Vision 2020)[6] to implement the National Climate Change Management Policy[7] and the Malawi Growth and Development Strategy (MGDS III)[8] and Intended Nationally Determined Contribution (INDC)[9]. The SPCR will help ensure a coordinated approach towards a climate-resilient and low-carbon development path in Malawi.

24. **The SPCR aims to ensure that climate change impacts are addressed appropriately and promote sustainable development pathways.** The investment priorities identified as part of the SPCR process address the following main themes as highlighted in Malawi's Nationally Determined Contributions submission to the UNFCC:

i. Enhance climate resilient agricultural production, fisheries, food security and nutrition.

ii. Strengthen climate resilience of communities in rural areas through integrated and sustainable management of major watersheds through improved catchment protection, and water supply, storage and utilisation.

iii. Enhance institutional capacity in climate change coordination and mainstreaming.

Box 1. Resilience definition

Resilience: The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change.

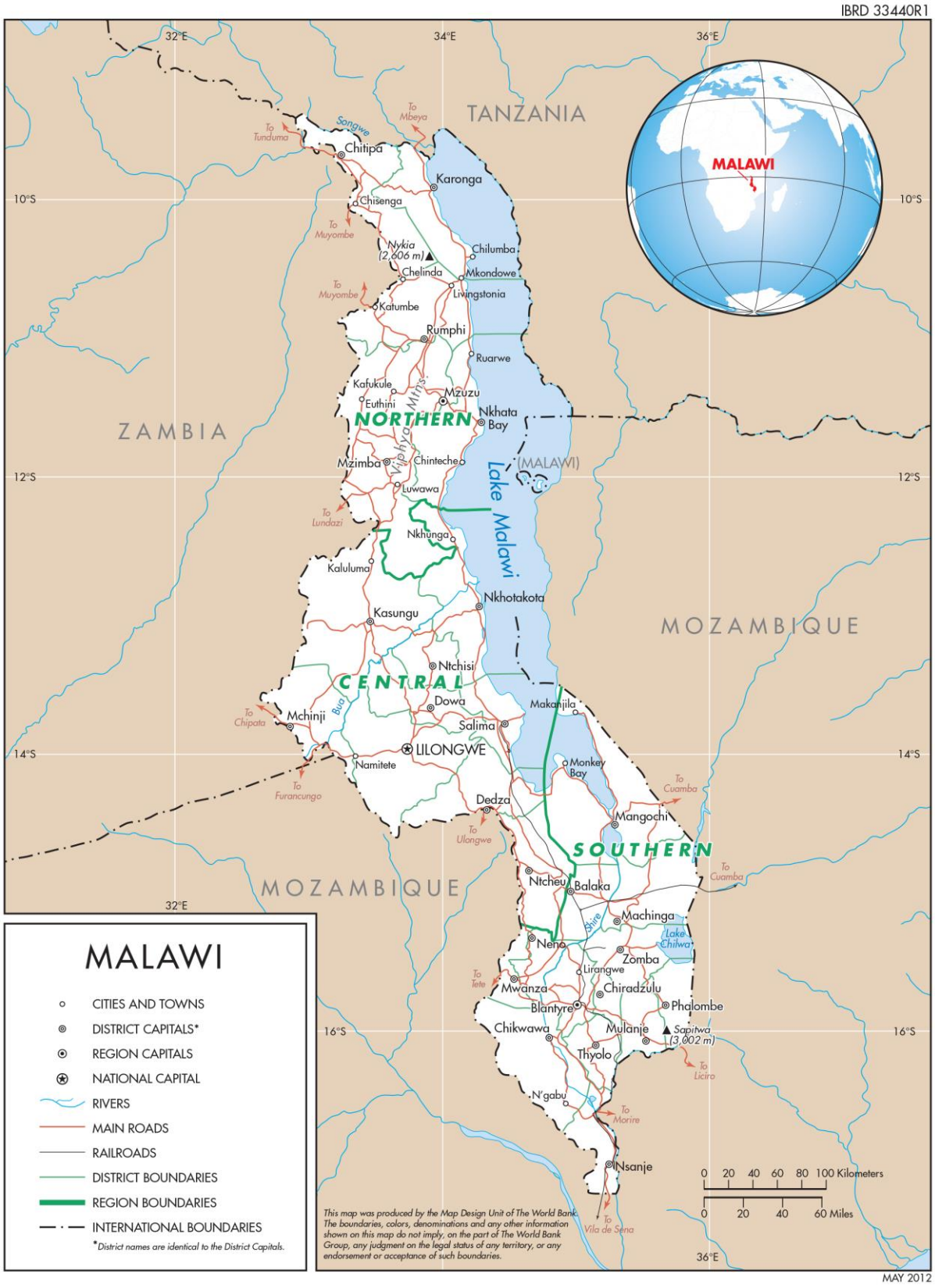
Source: IPCC, 2007.

[6] NEC, 1998, Vision 2020: The National Long-Term Development Perspective, National Economic Council, Lilongwe.
[7] GoM, 2012, National Climate Change Policy.
[8] GoM, 2017, The Malawi Growth and Development Strategy (MGDS) III.
[9] GoM, 2015 (a), Intended Nationally Determined Contribution.

25. **Malawi's SPCR builds on existing efforts to strengthen climate resilience and to address key developmental constraints**. It describes a set of investment programmes with potential for scale-up that could achieve 'transformative' impacts for climate resilience and sustainable socio-economic development. The SPCR sets-out priority investments, with a business case for each of these investment programmes. Table 9 (page 75) proposes leveraging based on discussions with financing partners. These include potential leveraging of resources from resources from MDB (concessional financing sources notably IDA and the African Development Fund), development partners, and the Global Environment Facility (GEF). GoM will also use the SPCR to help prioritise and leverage support from the Green Climate Fund (GCF) and the private sector, although it should be noted that accessing funding from GCF will likely require a lengthy engagement process with uncertain outcomes.

26. **This SPCR has been developed through a consultative process led by the Government of Malawi.** In 2015, GoM submitted an Expression of Interest to the CIF for PPCR finance. This was accepted and in March/April 2016, and the GoM hosted an initial scoping mission by the World Bank and African Development Bank. During this mission, initial consultations took place with various stakeholders from GoM, civil society, academia, and development partners and this process identified broad areas of focus for PPCR-supported investments. A roadmap for developing the SPCR was agreed by the GoM and the MDBs. The GoM requested the WB to be the 'lead' MDB to support them develop the SPCR. Further GoM/MDB missions took place in December 2016 (1st Joint mission), June 2017 (Technical Mission) and August 2017 (2nd Joint Mission). During each mission, consultations with stakeholders within and outside government refined the SPCR investment planning process. In early August 2017, GoM stakeholders held an internal consultation to further refine the draft investment concept notes before presenting these again to a wider national audience for comment and review at a two-day consultation workshop held during the 2nd Joint Mission in Lilongwe. Drafts of the SPCR document have also been circulated and made available publicly for comment.

Figure 1. Map of Malawi

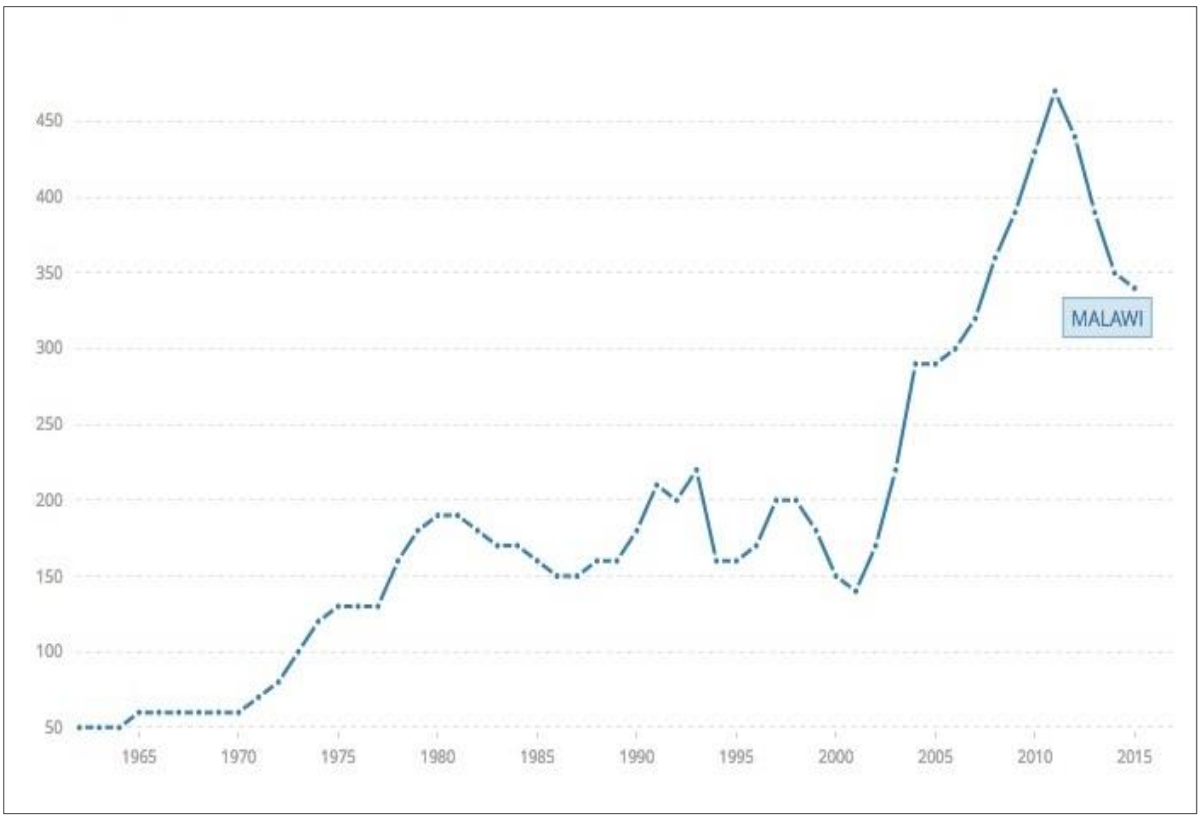


2. NATIONAL CONTEXT

COUNTRY CONTEXT

27. **Malawi is a landlocked country in southern Africa bordering Mozambique, Tanzania, and Zambia.** The country has a total area of 118,484 km^2 of which 20% is covered by Lake Malawi. It has a total population of about 18 million people with a growth rate of 3.06%[10]. Malawi continues to enjoy a stable and democratic government. Since the end of the one-party regime in 1993, it has organised five peaceful presidential and parliamentary elections. Real gross domestic product (GDP) grew by 5.7% in 2014, but slowed down to 2.5% in 2016 after floods in early 2015 followed by two consecutive years of drought, which has adversely affected the performance of agriculture, which accounts for about a third of the country's GDP. The country has a GDP of US$ 6.4 billion (2015 data), and per capita income (2015 data) is US$ 340[11]. Malawi is a low-income country with 74% of Malawians earning US$ 1.25 per day or less[12]. Approximately 84% of Malawians live in rural areas[13]. Poverty is still widespread, and the economy remains undiversified and vulnerable to external shocks. Existing high population density combined with a rapidly growing population places pressures on land, fisheries, water and other natural resources, including forest cover on steep slopes. have access to electricity, making it one of the least electrified countries globally.

Figure 2. Malawi GNI/capita (US Dollars)



Source: World Bank.

[10] Estimated total population 2017 and population growth rate 2010-2015: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, custom data acquired via website, accessed 26/01/2017.
[11] World Bank, 2017, Country data Malawi: http://data.worldbank.org/country/malawi accessed June 21, 2017.
[12] https://www-cif.climateinvestmentfunds.org/country/malawi
[13] CIA, 2017, World Fact Book, 2017, Central Intelligence Agency.

28. **Malawi ranks 170 out of 188 countries on the global UNDP Human Development Index[14].** Using national poverty headcount, approximately 50.7% of the population live below the national poverty line. About 24.5% are considered ultra-poor, meaning that they cannot afford to meet the minimum standard of the daily recommended food requirement. Levels of chronic malnutrition are very high at 42%, wasting is at 4% and underweight prevalence is at 13%[15].

29. **The country's topography is varied. In the mountainous sections of Malawi surrounding the Rift Valley, plateaus rise generally 800m to 1,200m above sea level, although some rise as high as 3,000m in the north.** To the south of Lake Malawi lie the Shire Highlands, approximately 900m above sea level. The country's climate is tropical, but the influence of its high elevation means that temperatures are relatively cool. The warm-wet season stretches from November to April, during which 95% of the annual precipitation takes place. Malawi experiences large heterogeneity in rainfall regime, and there are big differences between the North, Central and South regions. Annual average rainfall varies from 725mm to 2,500mm with Lilongwe having an average of 900mm, Blantyre 1,127mm, Mzuzu 1,289mm and Zomba 1,433mm. A cool, dry winter season runs from May to August with mean daytime temperatures varying between 17 and 27°C, and temperatures falling between 4 and 10°C at night. A hot, dry season lasts from September to October with daytime temperatures between 25 and 37°C [16].

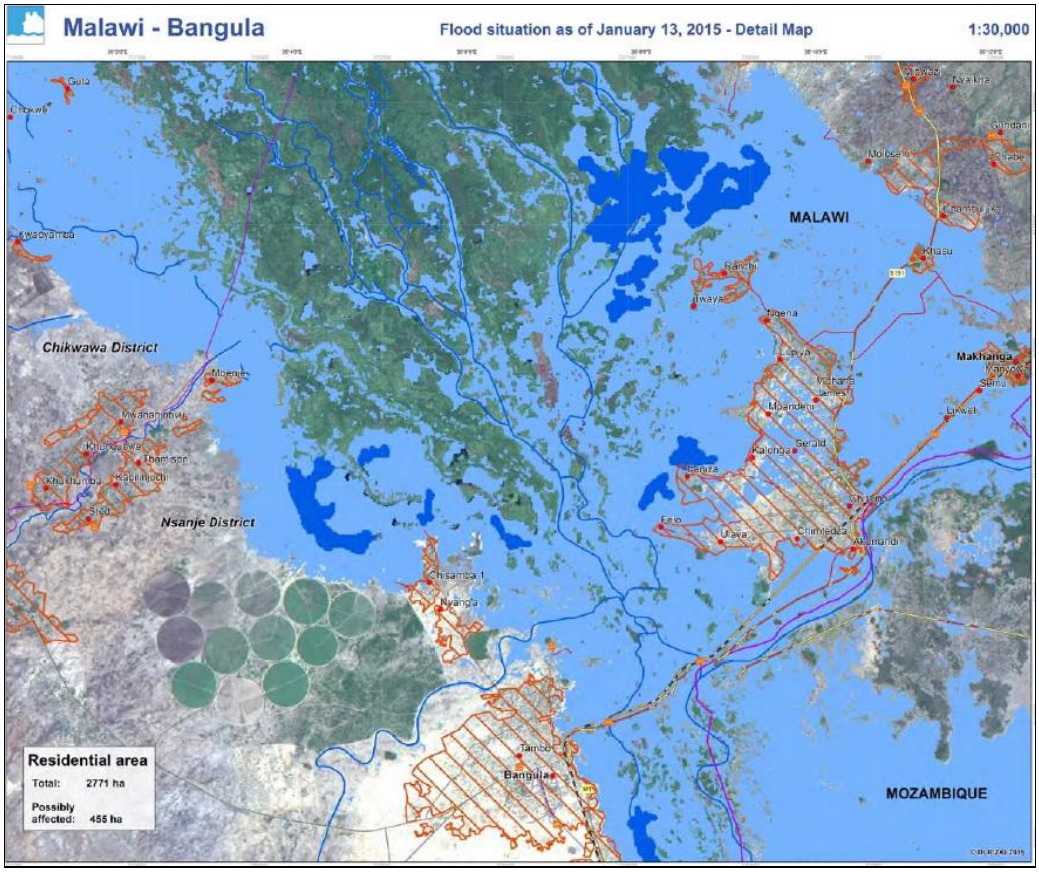
30. **Malawi experiences sub-tropical climate conditions and annual changes between wet and dry seasons.** The wet season generally occurs between November and April and the dry season between May and October. Average temperatures range between 18° and 27°C, and the wet season can bring average monthly rainfall in the order of 150mm to 300mm. The timing, variation and intensity of rainfall are interlinked with the movements and inter-annual changeability of the Inter-Tropical Convergence Zone (ITCZ). Local rainfall-conditions within Malawi also fluctuate across the varied landscapes of the country - from high altitude and steep escarpments (which can experience higher rainfall), through to lake conditions and low-lying floodplains. In conjunction with the ITCZ-effects on Malawi's climate, the El Niño Southern Oscillation (ENSO) phenomenon creates variations in sea surface temperatures of the Indian Ocean and thus subsequent variations in rainfall brought from the ocean air across into Malawi. Because most Malawians live in rural, often flood prone areas and because more than 80% of people depend on rainfed agriculture for their livelihoods, Malawians are especially exposed to any extremes in oscillations between and within wet and dry seasons, and the compounded impact of variations in the ITCZ and the Indian Ocean sea surface temperatures. Temperature and rainfall patterns are closely interlinked with food security, replenishment of river systems, water availability and biodiversity, amongst others.

31. **Malawi is considered one of the most vulnerable countries to climate-related events and experiences frequent cycles of droughts and severe flooding, often with significant social and economic costs**. Economic growth is largely premised on expanding agriculture, manufacturing, wholesale and retail trade, utilities, and transport sectors. Most of these sectors were directly or indirectly adversely affected by the reoccurring floods. Losses for agricultural GDP due to droughts, for example, are estimated to range from 1.1 to 21.5%

[14] UNDP, 2017 (a), Human Development Report, 2016, UNDP, New York.
[15] Integrated Household Survey 2010-2011, Household Socio-Economic Characteristics Report, National Statistical Office, Sept 2012.
[16] Malawi Meteorological Service. http://www.metmalawi.com/climate/climate.php (Accessed 8 June 2017)

for return periods of 5 and 25 years[17]. Malawi's vulnerability to climate change is further exacerbated by the Government's limited fiscal space. Extreme weather events that occur in Malawi include dry spells, seasonal droughts, intense rainfall, riverine floods and flash floods. Recent examples include a flood in 2015, in which around 1.1 million people were affected and 230,000 were displaced and resulted in 104 deaths and a further 172 reported missing. The satellite image in Figure 3, for example, illustrates the extent of floods on January 13, 2015 where water submerged irrigated land, road, rail and residential areas. The total cost of loss and damage of the 2015 flood event was estimated at US$ 335 million, equivalent to approximately 5% of GDP[18]. Later the same year, and continuing into 2016, an agricultural drought left 6.5 million people food insecure in 24 districts of Malawi (39% of the population)[19]. Annual agricultural production damage and losses were estimated at US$365.9 million (US$36.6 million in damages and US$329.4 in losses) and requiring recovery interventions estimated at US$500.2 million.[20] This drought was part of the El Niño phenomenon that had a severe impact across southern and eastern Africa and the regional decline in production led to severe spikes in food commodity prices – including a 51% increase in maize prices. Figure 4 illustrates how closely Malawi's economic growth and agricultural productivity are tied to changes in weather.

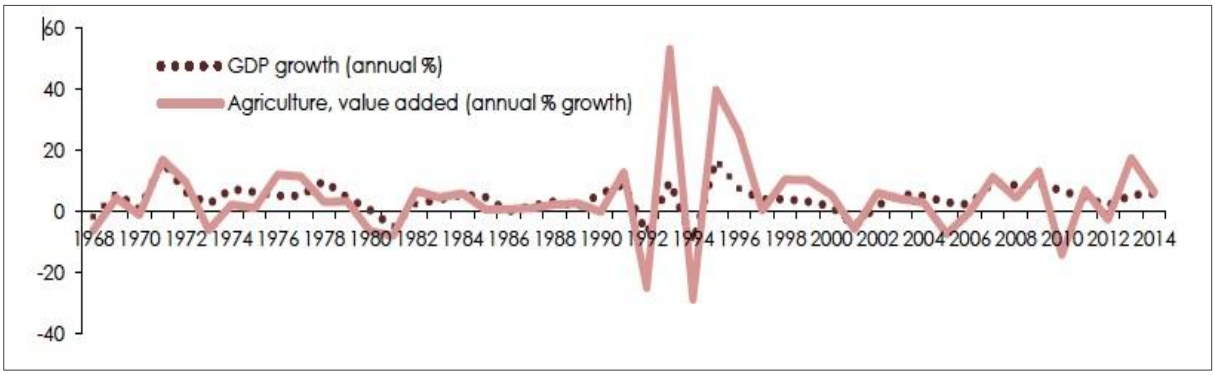
Figure 3. Satellite image of flood situation and impact on January 13, 2015
(red: residential areas, dark blue: normal water extent, light blue: observed water extent)



Source: ESA/Hatfield Consultants, 2016.

[17] Pauw, K., J. Thurlow, M. Bachu and D. E. Van Seventer, 2011, 'The Economic Costs of Extreme Weather Events: A Hydro-Meteorological CGE Analysis for Malawi', Environment and Development Economics, 16: pp. 177–98.
[18] GoM, 2015 (b).
[19] GoM, 2016.
[20] World Bank, 2016 (a).

Figure 4. Malawi's growth in GDP closely follows growth in agriculture



Source: Malawi Economic Monitor, May 2016.

32. **Natural resources underpin Malawi's productive sectors and are the main source of livelihood for most of the population.** The country's economy is highly dependent on land and water resources for productivity in agriculture, forestry, fisheries and energy as well as for population health outcomes. Most rural families depend directly and heavily on natural resources for their livelihoods – in particular woodlands and forests, for supplying fuelwood (supplying nearly 90% of national domestic energy needs), enhancing soil fertility, generating cash income (e.g. from charcoal) and for supplying protein (e.g. from fisheries). These same resources also help protect watersheds, sustain biodiversity and reduce greenhouse gas emissions through carbon storage**.**

Photo: Impact of deforestation on hillsides, Kapichira escarpment, Shire Valley.

33. **Degradation of agricultural land and of forests poses a major constraint to productivity and economic development.** Land degradation is estimated to cost the equivalent of 5.3% of GDP each year[21] with soil degradation a significant factor that contributes between 4 and 25%[22,23] to the loss of agricultural yields in Malawi (see photo of Kapichira escarpment and Figure 14 for European Space Agency satellite imagery of the Thylo escarpment). Natural resource degradation leaves farmers and local communities more

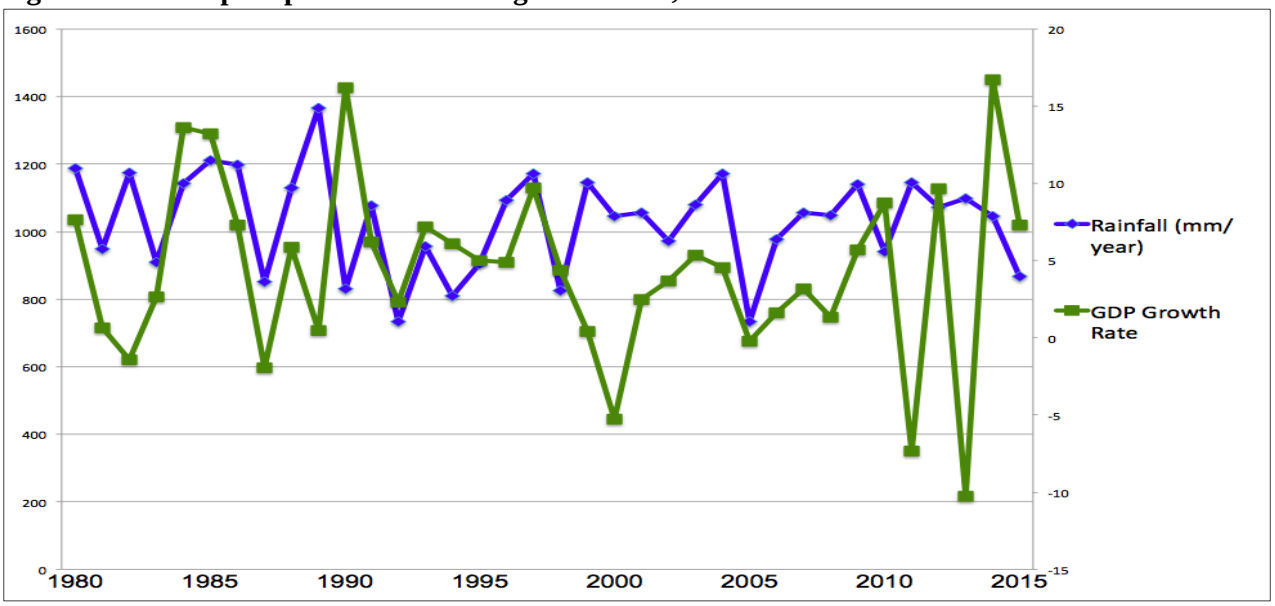
21 MoFEPD, 2011, *Economic Valuation of Sustainable Natural Resource Use in Malawi*. Poverty and Environment Initiative. UNDP/UNEP, Ministry of Finance and Development Planning, Lilongwe.
22 World Bank, 1992, *Malawi Economic Report on Environmental Policy*, World Bank, Lilongwe.
23 Bishop J., 1995, *The Economics of Soil Degradation: An Illustration of the Change in Productivity Approach to Valuation in Mali and Malawi*, LEEC Paper 95-02, IIED, London.

vulnerable to weather and climate shocks. These climate shocks coupled with limited irrigation, weak land tenure security, limited access to farm inputs and finance; and weak linkages to markets contribute to low productivity and high vulnerability. Malawi also faces considerable macro-economic uncertainty – and the impacts of natural resources degradation, combined with climate and fiscal management challenges amplifies their impacts on the economy and results in lower economic growth rates and deteriorating poverty outcomes.

Photo: Tree nursery in Upper Lisungwi catchment.

34. **The economic impacts of floods and droughts are severe but not always adequately recognised because these are intermittent, and often localised, events.** Measuring the overall economic cost is complicated because losses are not spread equally across the country and there are both gains and losses for farmers depending on the size and nature of their farming system (see Box 2). This presents difficulties for policy-makers who are faced with both the high level of weather variability combined with uncertainty regarding the rate of change in climatic conditions over time. National economic policy needs to recognise the adverse impacts of these events build over time with the potential to reduce economic growth and increase the economic and livelihood vulnerability of the poorest.

Figure 5. Annual precipitation and GDP growth rates, 1980 - 2015



Source: GDP Growth from data.worldbank.org; Precipitation from http://sdwebx.worldbank.org/climateportal.

Box 2. Economic impact of droughts and floods

The average annual GDP loss due to floods is about 0.7% (or US$9 million), thus making the average impact of floods slightly less than that of droughts. However, considering that this is the national-level impact of an event that is highly localised - that is, one that only affects production levels in the southern region directly for example - the economy-wide effects are quite severe. These national-level losses occur even though agricultural production in the central and northern regions may increase during floods. These benefits arise from higher national food prices during southern floods. The implications for farming households in the southern region are severe. Average annual crop and livestock losses range from 4.0% in Blantyre to 6.8% in Machinga. Floods are further found to mainly affect small and medium-scale farmers. By contrast, large-scale farmers and those growing export crops in the central and northern regions may actually benefit more during years with floods.

The impacts of droughts and floods are often discounted or ignored given the infrequent nature of these events. However, these events are costing the Malawian economy 1.7% of its GDP every year in terms of production forgone. Indications are that drought and flood events are becoming more frequent (RMSI 2009), which suggests that the average annual impact might become even greater in the future. It is therefore crucial that policymakers take heed of the severe implications of climate variability, especially for the most vulnerable in society, such as resource-poor small-scale farmers and poorer urban households.

3. CLIMATE CHANGE TRENDS AND PROJECTIONS

35. **Analysis of weather data over the past two decades[24] shows a relatively sharp increase in both maximum and minimum temperature over historical averages reported by the Malawi Department of Climate Change and Meteorological Services.** Average observed weather station data indicates an increase in mean temperatures of 0.9°C between 1960 and 2006 - an average rate of 0.21°C per decade - with comparative increases in evapotranspiration[25]. The largest shifts in maximum temperature are in November and December, with slightly lower increases in late summer months of January and February. Significant changes to rainfall patterns in the recent past are harder to determine but current research under the UMFULA Project (Uncertainty reduction in Models for Understanding Development Applications) shows that there has been a drying trend since the early 2000s, and that in parts of norther and southern Malawi, there were areas of moderate drying between 1981 and 2016. In the central parts of Malawi, however, there were very small wetting trends in the same 35-year period[26]. The reported total number of droughts, heavy rains and flood-related disasters increased from one in the 1970s to six, 14, and 19 during the 1980s, 1990s and 2000-2006 respectively[27].

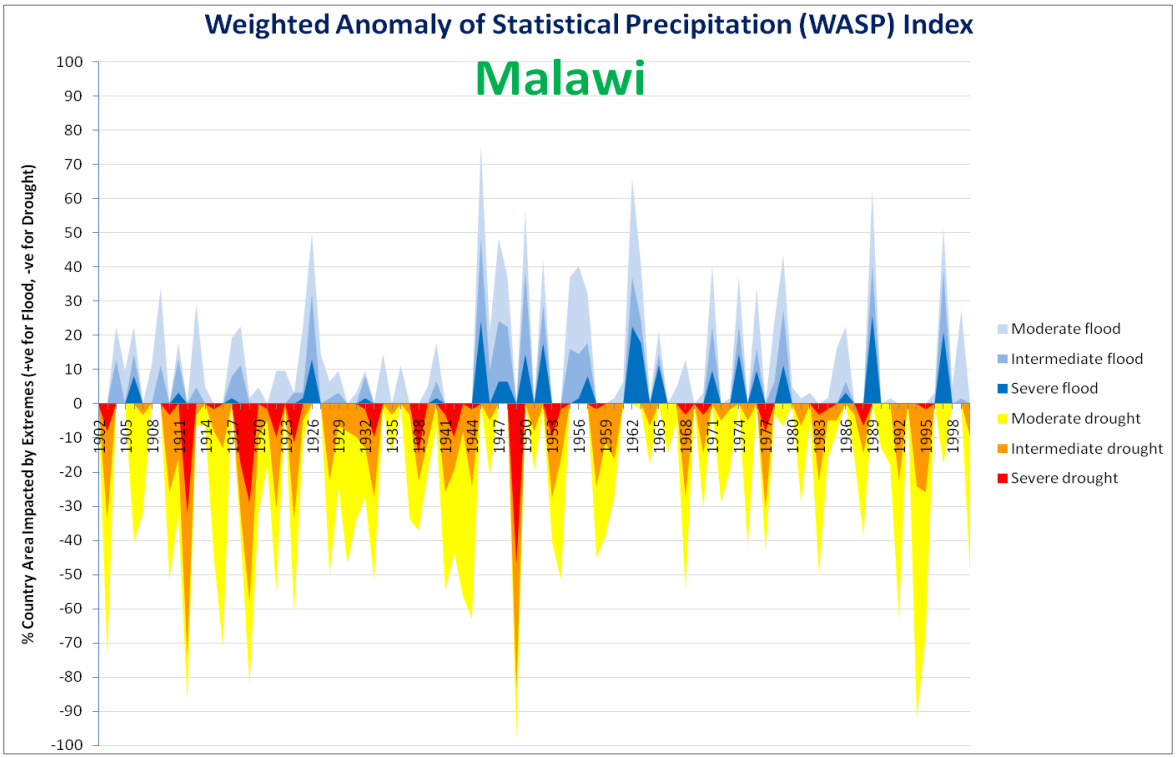
36. **Farmers' perceptions, despite inherent bias, report changes in temperature that support observed recent changes.** Farmers are inevitably very aware of weather patterns because it is such an important input to cropping. Various community participatory rural appraisal (PRA)-type assessments undertaken over the past few years report that farmers'

[24] USAID, 2013, *op cit*.
[25] Vincent, 2014, *op cit.*
[26] UMFULA, October 2017, *Malawi Country Climate Brief: Future Climate Change Projections for Malawi and Zulu*, 2017, *op cit*, provides an excellent overview of numerous studies of Malawi's weather patterns and climate.
[27] ActionAid. 2006. *Climate Change and Smallholder Farmers in Malawi: Understanding Poor People's Experiences in Climate Change Adaptation*, ActionAid International London And Johannesburg.

perceptions agree with the observed weather data that maximum and minimum temperatures are increasing[28].

37. **Modelling of future climate change scenarios indicates that the country will experience substantive medium and long-term changes to temperature and rainfall patterns**[29]. As such, Malawi's climate is already changing, and projections of future shifts indicate these will exacerbate numerous existing vulnerabilities. The country is challenged by climate variability (see historic variability in Figure 6), and will continue to be impacted by the changing climate in the coming decades. While there is still considerable uncertainty in future frequency and intensity of floods and droughts as well as the ENSO phenomena, there is agreement across the majority of climate models that mean temperatures will rise. UMFULA's research[30] analysing 34 models on climate change until 2090, show confidence in dry spells becoming more frequent but not necessarily more severe (i.e., there is confidence in a reduction of mean number of rain days and increase in the amount of rainfall on each rainy day). This suggests more variable rainfall, with both higher likelihood of dry spells and higher likelihood of intense rainfall events (often associated with flooding). These changes are likely to pose serious threats to livelihood and food security, and have an adverse impact on economic growth. Future projections and impacts also show spatial variations, yield and economic gains and losses, winners and losers[31].

Figure 6. Historic Climate Variability[32]



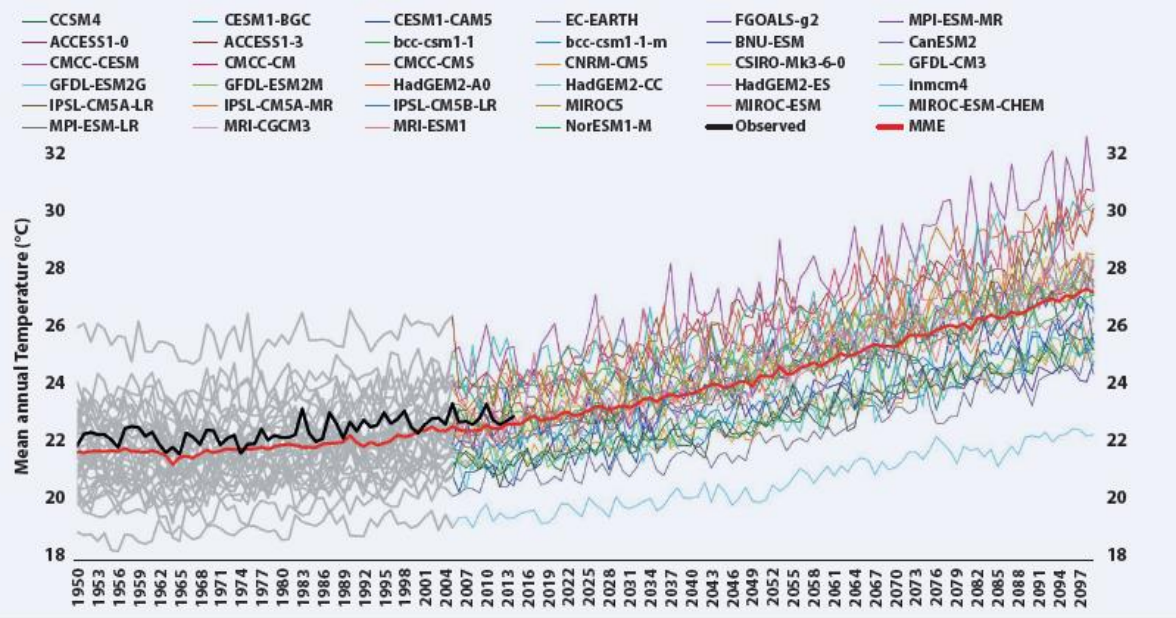
Source: The International Resources Institute for Climate and Society at Columbia University, derived from the CRUT-S (Climate Research Unit at East Anglia UK).Figure 8 for recently simulated

[28] USAID, 2013, *op cit.*; Zulu, 2017, *op cit.*
[29] USAID, 2013, Malawi Climate Change Vulnerability Assessment.
[30] UMFULA, October 2017, *Malawi Country Climate Brief: Future Climate Change Projections for Malawi.*
[31] Zulu, Leo. 2017. Existing Research and Knowledge on Impacts of Climate Variability and Change on Agriculture and Communities in Malawi. Malawi Report No. 9. East Lansing, Michigan: Global Centre for Food Systems Innovation, Michigan State University.
[32] Yellow-red markations (drought) show percentage of country's area that would experience lower than normal rainfall (to different degrees). Blue markation indicate higher than normal rainfall and extent show percentage of country's area.

temperature change). This is an adjustment to earlier estimates by the IPCC, where the average of the climate models (using multimodal information) project mean temperature to increase between 1.0ºC in a low warming scenario (IPCC RCP2.6 scenario) and 1.2ºC in a high warming scenario (IPCC RCP8.5 scenario) by the 2030s (2025-2045).

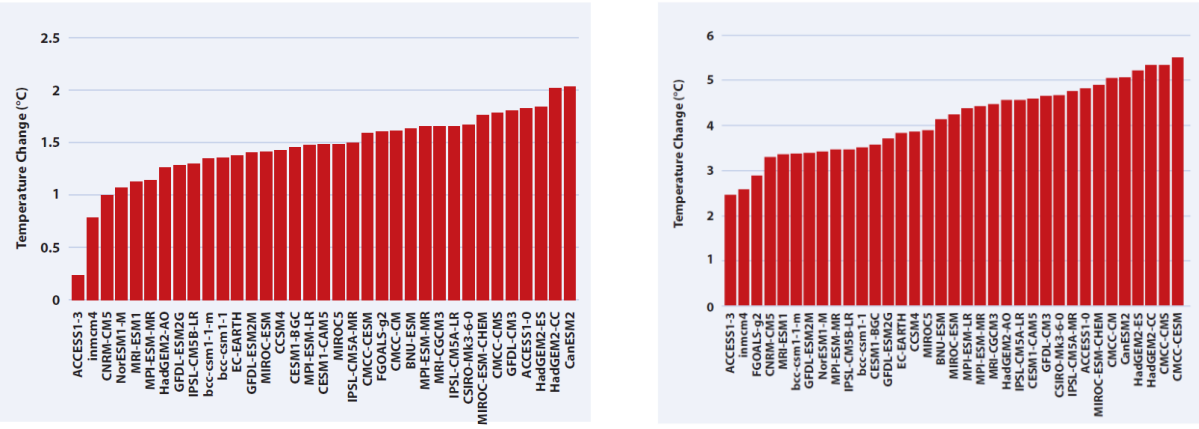
38. Figure 9 below illustrates the World Climate Research Programme's estimated temperature changes in Malawi for 2030 and 2040. As modelling advances, confidence and consensus on rising temperatures has grown and become more specific.

Figure 7. Time series of mean annual temperature (C°) for 34 CMIP5 models and their ensemble (*bold red line*) for the period 1950-2099 and CRU observations (*bold black line*) for the period 1950-2014



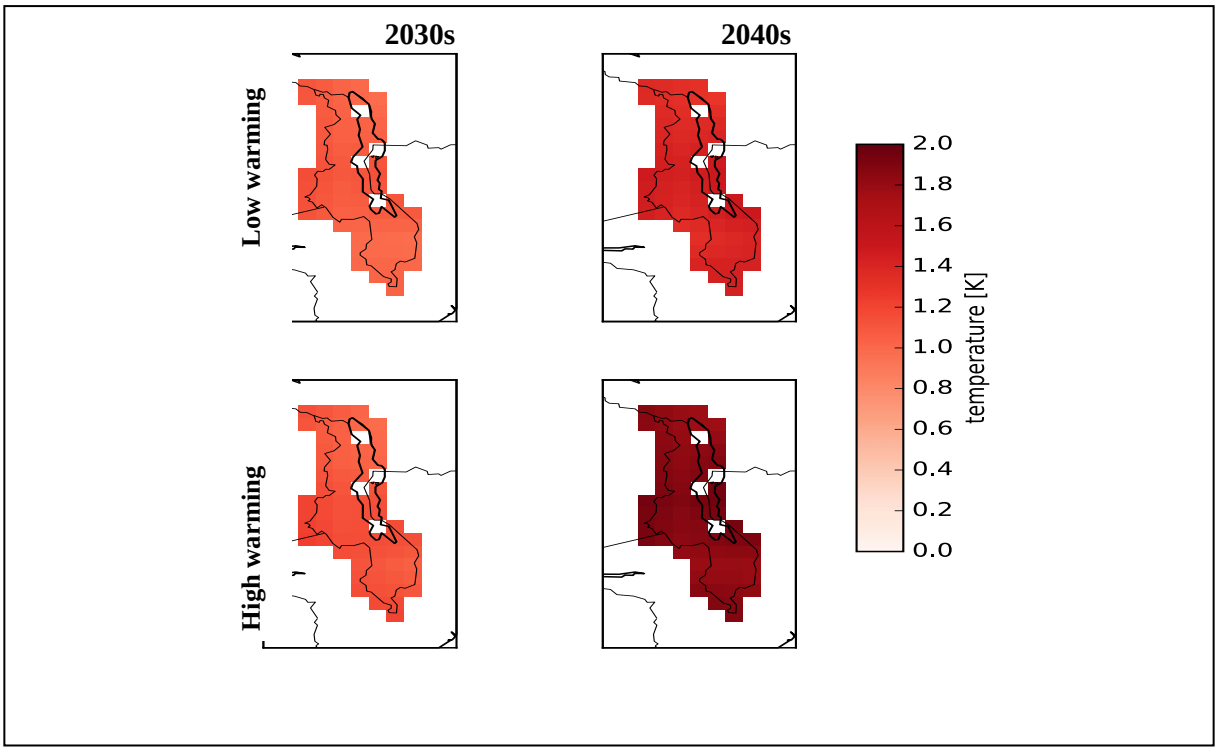
Source: UMFULA, October 2017.

Figure 8. Change in annual mean temperature (C°) for all Malawi between the GCM simulated current period (1976-2005) and 2021-2050 (*left)* and 2070-2099 (*right*) for 34 GCMs



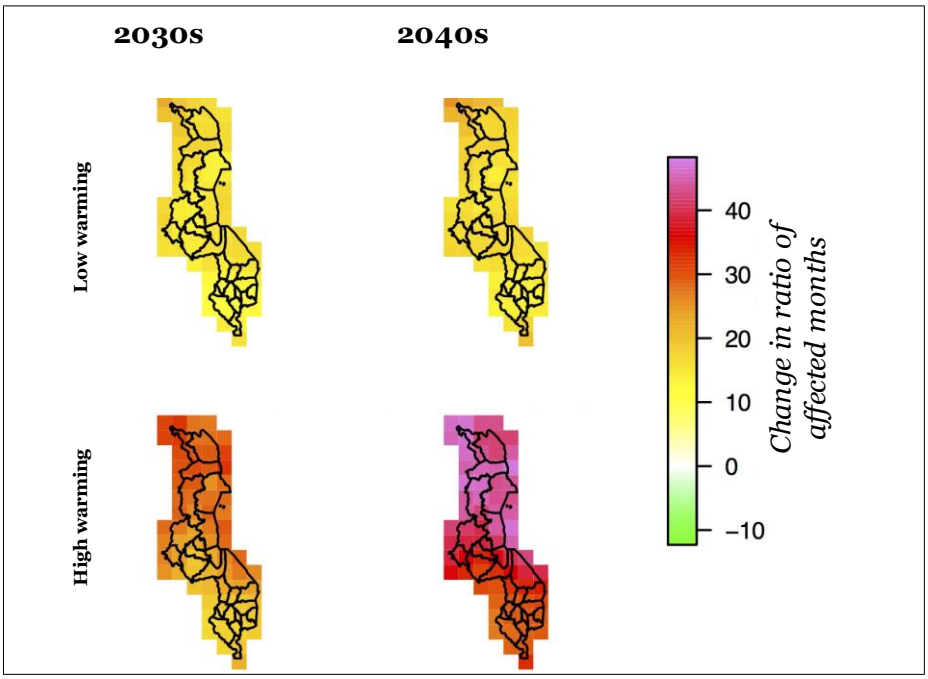
Source: UMFULA, October 2017.

Figure 9. Projected average temperature increase compared to the period 1986-2005



Source: Multi-Sectoral Investment Plan for Climate and Disaster Risk Management in Malawi (draft June 2017), computed using data from the World Climate Research Programme's (WCRP) Coupled Model Inter-comparison Project Phase 5 (CMIP5).

Figure 10. Changes in heat extremes[33]



[33] Projections of exposure to heat extremes, as illustrated for the timespan 2025-2045 ('2030s') and 2035-2055 ('2040s') as the increase in the frequency of historically unprecedented heat extremes (2 standard deviations above the historical mean in the period 1986-2005) is measured for both warming scenarios for the annually warmest three-month period.

Source: World Bank 2017 (b)

39. **Hot and very hot days are projected to occur more frequently as shown in Figure 10.** Extreme heat can disproportionately impact the health of vulnerable groups (the elderly, children, or those with existing health conditions) and can disproportionally affect people living in poverty depending on geographic conditions (such as cooler conditions in some areas). Extreme heat leads to adverse economic and environmental impacts, reducing labour productivity and output (particularly outdoor and those active in agricultural production) and impacting on livestock (poultry are severely impacted by high temperatures and milk production and cattle reproduction also decreases). Extreme rises in water temperature can contribute to water quality degradation and may have a negative impact on fish populations and many other organisms in aquatic ecosystems[34]. High temperatures are linked to surges in algae growth, causing fish kills in rivers and lakes.

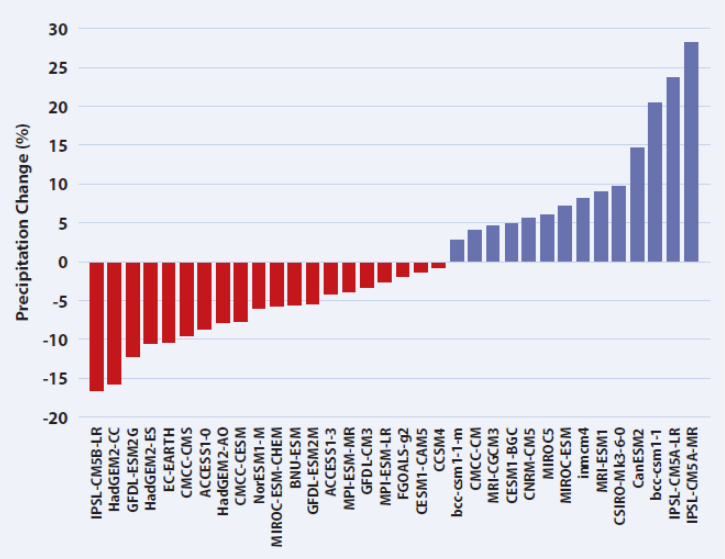
40. **There is less agreement on changes in annual rainfall, with projections varying from modest decreases to increases of up to 400 mm**[35]. Recent modelling in the UMFULA Project showed that[36]: "out of 34 models used, 13 (38%) project reductions in annual rainfall for the 2030s – and the rest (62%) project wetter conditions. 20 models (58%) project drying by the 2070s. The size of change in annual mean rainfall is generally modest, from a -8% drying to a +20% wetting. Nineteen models project changes less than +/-5% for the 2030s. The changes are larger by the 2070s; a range of -17% decrease to +27% increase and only 12 models produce changes less than +/-5%" (Figure 11).

Figure 11. Percent change in annual mean rainfall for all Malawi between the GCM simulated current period (1976-2005) and 2070-2099 for 34 GCMs.

[34] There has not been detailed research on the impact of water temperature on Malawi's lakes to infer warming water temperature's impacts on ecosystems and fisheries. However recent studies on Lake Tanganyika, in neighbouring Tanzania, show that declines in commercially important fishes and endemic molluscs have accompanied lake warming. See for example: Cohen, A., *et a*l, 2016, Proceedings of US National Academy of Sciences. http://www.pnas.org/content/113/34/9563.full.pdf.

[35] Asfaw, S., N. McCarthy, L. Lipper, A. Arslan, A. Cattaneo, and M. Kachulu. 2014. *Climate Variability, Adaptation Strategies, and Food Security in Malawi. ESA Working Paper No. 14-08* Rome: FAO; Nicholson, S.E., D. Klotter, and G. Chavula. 2014. *A Detailed Rainfall Climatology for Malawi, Southern Africa*. International Journal of Climatology 34: 315 – 325; Ziervogel, G., A. Cartwright, A. Tas, J. Adejuwon, F. Zermoglio, M. Shale, and B. Smith. 2008. *Climate Change and Adaptation in African Agriculture*. Stockholm, Sweden: Stockholm Environment Institute, Rockefeller Foundation; Jury, M. and N. Mwafulirwa. 2002. *Climate Variability in Malawi, Part 1: Dry Summers, Statistical Associations and Predictability.* International Journal of Climatology 22: 1289-1302.

[36]UMFULA, October 2017, *Malawi Country Climate Brief: Future Climate Change Projections for Malawi.*



Source: UMFULA, October 2017.

41. **Developing future climate projections is constrained by limited data availability.** Despite the importance of downscaled climate models in determining long-term climate projections, developing downscaled climate models for Malawi is challenging because there is limited long-term weather data to draw on. Less than half of Malawi's 761 rainfall stations have more than 10 years of information[37] which limits their use in developing climate change projections. This shortage of weather data also makes it difficult to accurately determine longer-term temperature and rainfall trends. Future projections are also complicated by Malawi's geographical position between two opposing climatic-response regions (eastern equatorial and southern Africa). This presents challenges for developing future projections of Malawi's climate, especially for precipitation. In addition, inter-annual rainfall variability is generally influenced by the El Niño Southern Oscillation (ENSO) phenomenon by altering the Indian Ocean sea surface temperatures and by the movement and location of the ITCZ, neither of which follow fixed patterns year on year[38]: while the ENSO will remain important in influencing inter-annual variability, confidence in projected change to ENSO is low[39].

42. **Short, medium and long-range weather forecasts as a vital tool in understanding the patterns of climate change do not yet provide sufficient detail for effective planning and decision-making by farmers, government or other stakeholders.** The forecasts that are produced and made available by the DCCMS and DWA are often shrouded in uncertainty. The reliability and level of detail of forecasts can be weak, the geographical scale of forecasts may be too coarse and irrelevant, and the timing of official clearances and release of forecasts may not align with the timing of important decision-making (such as forecasts needed to guide purchasing of seeds or planning for harvests). At present, forecasts are mostly distributed through government channels in the form of bulletins published in newspapers or at district offices or as radio broadcasts. The use of dial-in numbers, where individuals can dial a standard number and listen to messages about climate conditions and forecasts – is also being piloted. Considering these uncertainties and weak systems of communication with the public and

[37] Vincent et al., o*p cit.*
[38] Zulu, 2017, *op cit.*
[39] According to the IPCC AR5 WG1 SPM: "*Natural variations of the amplitude and spatial pattern of ENSO are large and thus confidence in any specific projected change in ENSO and related regional phenomena for the 21st century remains low."*

stakeholders, there are significant improvements to be achieved in accuracy, relevance, accessibility and timeliness of weather forecast for multiple time-scales.

4. VULNERABILITIES BY SECTOR

43. **This section describes the specific vulnerabilities in key economic sectors that are adversely impacted by climate change.** These are: agriculture, water resources, fisheries, forests, energy, infrastructure, and health[40]. The National Climate Change Investment Plan regards watershed management and building community resilience through agriculture as key areas which should be prioritised for adaptation investments. This section provides a brief overview of sectoral vulnerabilities, with more details provided on agriculture and water resources because they are priority sectors for adaptation.

Agriculture

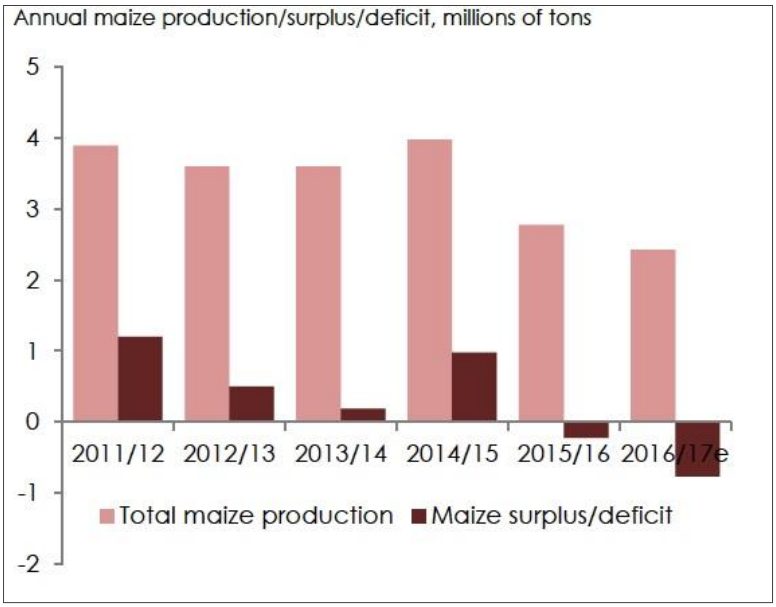
44. **The vulnerability of Malawi's economy and population is exacerbated by a narrow economic base, and a strong dependence on rainfed agriculture.** Climate-sensitive, rainfed agriculture is the mainstay of Malawi's agricultural-based economy and accounts for one third of GDP, brings in close to 80% of export earnings (a large proportion of which is tobacco) and employs some 80% of the country's workforce[41]. Rainfed maize is by far the predominant crop of smallholders and is considered the most important food staple in Malawi. Currently, around 99% of national food production each year is grown during a single rainfed harvesting season. In recent years, this specific season has been affected by delays in the onset of the rains, insufficient rainfall amounts, major droughts reducing maize yields resulting in frequent famines. Poor maize yields are exacerbated by poor market functionalities which affects food access and leads to risks of food insecurity. Even if projected structural shifts and economic development bring significant change in the economy over the next 30 years, agriculture is likely to remain an important pillar of the economy and society, particularly in terms of food security and employment in rural areas.

45. **The pattern of agricultural production is not currently resilient to the current climate and high levels of climate variability.** For example, maize production (the country's staple food) was markedly reduced by the extended drought in 2015/2016 (see Figure 12). This drought correlated with a severe El Niño event, which brings a regular cycle of droughts to southern Africa. However, the level of agricultural losses experienced during this prolonged drought highlights the vulnerability of Malawi's food systems in the face of climate change impact. For example, with the decline in maize production during the 2015/16 drought, 6.5 million people required food assistance[42]. Also during 2015, of the six major field crops cultivated, the area under cultivation is almost the reverse of their climate resilience. For example, maize, a crop sensitive to rainfall variability, dominated food crop production and covered over twenty times the cultivated area of sorghum, a crop than is better suited to thriving in low rainfall conditions. As climate projections suggest that there is a higher likelihood of dry spells and higher likelihood of intense rainfall events, the resultant risks to food security are likely to increase.

[40] These priorities are identified in: GoM, 2006, "Malawi's National Adaptation Programmes of Action (NAPA) Under the United Nations Framework Convention on Climate Change (UNFCCC)." First Edition. Ministry of Mines, Natural Resources and Environment, Environmental Affairs Office, Government of Malawi.
[41] FAO, 2015 (a), Country Fact Sheet on Food and Agriculture Policy Trends.
[42] World Bank, Malawi Economic Monitor, May 2016.

46. **The agriculture sector will remain an important pillar of the economy, particularly in terms of food security and rural employment, even though economic development and structural change in the economy over the next 30 years are projected to reduce the reliance on agriculture as the key driver of growth**[43]. Recent analysis of the future impacts on the agriculture sector in Malawi has been undertaken using econometric analysis to assess the impact on economic growth for the main sectors and geographical regions for mid-century for low and high warming scenarios. In the high warming scenario, the highest risk to which the sector could be exposed is a drop of around 90% of agricultural value-added growth, leading the sector close to a recession. The Northern region is projected to be most affected by all three primary climate stressors – extreme heat, dry and wet events – in relative terms in both the high and low warming scenarios, but, the absolute effects are less pronounced as a share of national output due to its lower population and economic output. Nonetheless, climate impacts are likely to have detrimental effect on standards of living, poverty reduction efforts, and increase migration out of the region. The Central region is likely to suffer the greatest absolute loss of agricultural output as a result of climate change because of its higher share of total production (currently almost 50% of the country's agricultural value added). Like the Northern region, a large proportion of the Central region's population have agriculture-based livelihoods which are particularly at risk from an increased incidence of extreme heat events, and irregular water flows caused by changing rainfall patterns in the river basins. The Southern region is slightly more diversified and urbanised. Even so, around 58% of the population are reliant on agriculture as their primary source of income. The primary risk to agricultural output here are extreme rainfall events, and the area could experience a rise in economic risks caused by changes in flood risks.

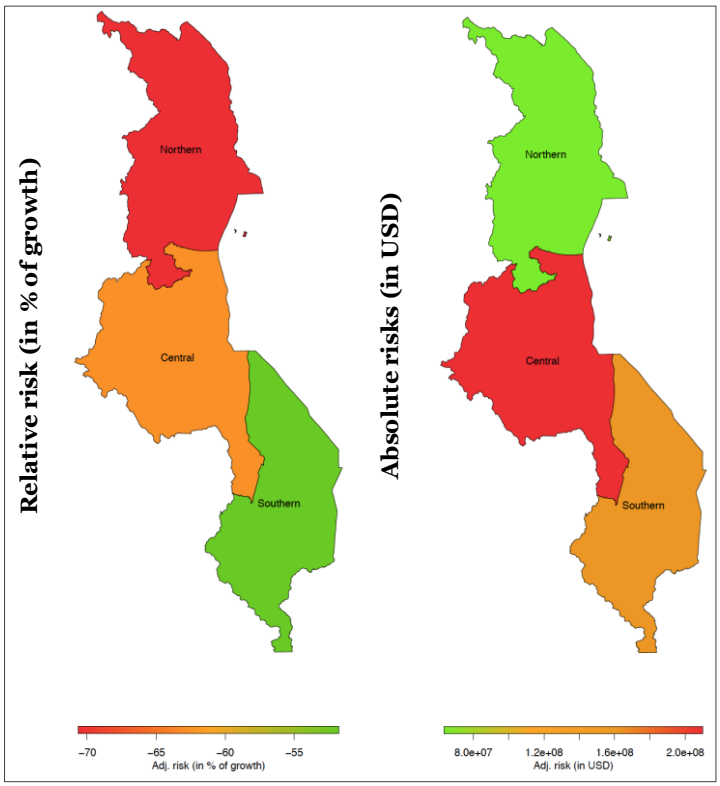
Figure 12. Maize Production



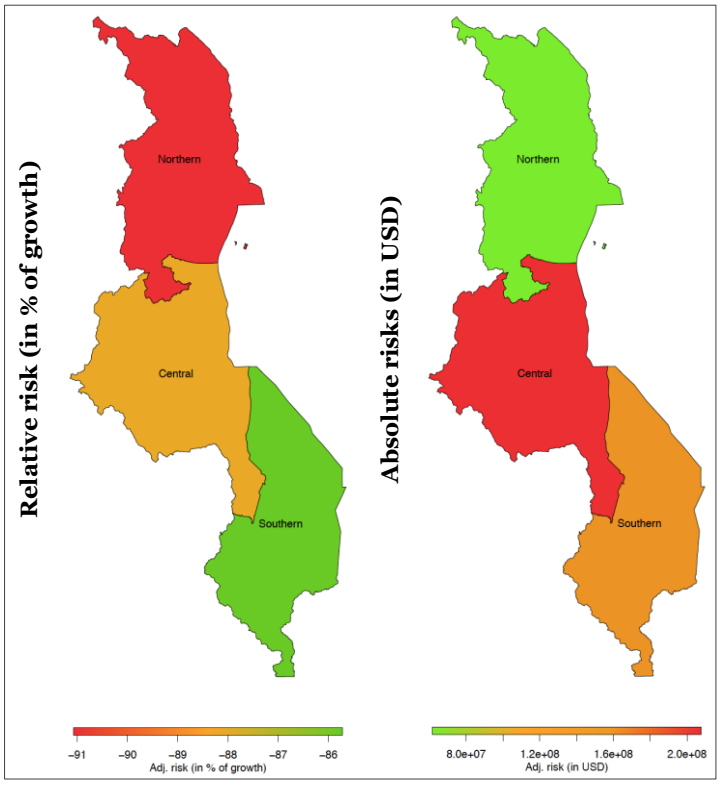
[43] This paragraph draws on World Bank, 2017 (b).

Photo: Villagers in the upper Kapichira sub-catchment demonstrating soil and water conservation measures.

Figure 13. Economic risk in the 2040-2049 period on the agriculture sector[44]



Low warming (IPCC RCP2.6)



High warming (IPCC RCP8.5)

Source: World Bank, 2017.

[44] From World Bank 2017 (b), *Multi-Sectoral Investment Plan for Climate and Disaster Risk Management in Malawi (draft June 2017)*. Economic risk induced by the consequences of precipitation and temperature measured in percentage of growth (left of both panels) and in US$ (right of both panels) in the low warming (RCP2.6 – left panel) and high warming scenario (RCP8.5 – right panel). Results are for a probability of occurrence of 10% during the decade or 1% for each year of the decade. Results are subject to revision until final publication of the report.

47. **The agricultural sector will remain the sector most at-risk from direct climate change stressors**. This is because it is sensitive to projected changes in both temperature and precipitation**.** For example, flooding in southern districts, followed by countrywide drought conditions extending from 2015 into 2017, caused a decline in agricultural production. Maize, the key crop for food security purposes, had a 30% year-on-year drop in production. On a positive note, recent crop modelling projections suggest that climate change will increase maize production in the Mzimba district over the period 2040-2070, with the model suggesting that 56% of farmers will register gains[45].

48. **Many farmers are already responding to changes in current climate stressors and emerging trends and associated reductions in yields.** Despite weak agricultural extension service delivery, farmers are innovating. They are increasing their use of drought resistant varieties, changing planting timings, and deliberately selecting seeds that have a shorter growing period. Another response is to cultivate closer to water bodies (*dambos*) streams and rivers to supplement rainfall with some basic irrigation. However, this can increase vulnerability to flooding as well as land and water degradation through pollution and sedimentation[46]. There also appear to be an increasing number of farmers adopting improved soil and water conservation methods such as ridging, zero-tillage, increasing the use of manure and composts, as well as intercropping and crop diversification. In some places, farmers are actively protecting and regenerating tree cover in fields which improves soil organic matter and nutrient status, reduces rainfall runoff, increases infiltration and helps groundwater recharge. These practices provide positive improvements to land husbandry with or without climate change, but there is field-level evidence that farmers are increasingly adopting these sorts of measures in response to their perceptions of shifts in climate[47].

49. **Agricultural subsidies may have worked against efforts to build resilience into the selection of climate-resilient crops.** Most smallholder farmers cannot afford irrigation technologies and the rate of uptake of conservation agriculture and the use of drought tolerant crops has been disappointing - adoption rates are lower than would be expected given the potential benefits and resources spent on promotion[48]. Government subsidies for inorganic fertiliser in Malawi have raised yields considerably[49] but may also have encouraged over-reliance on non-flood and drought-tolerant crops and cultivars, especially of maize. For maize, the subsidy has encouraged planting of more land with maize - a crop that is susceptible to higher temperatures, erratic rainfall and drought. Conversely, the subsidy may have resulted in less area devoted to more drought-resistant crops such as sorghum, millet and cassava, hence reducing farmers' resilience by increasing their vulnerability to bad weather conditions. The subsidy programme consumes more than half of total public spending in agriculture, crowding out expenditures in areas that could boost climate resilience of the sector such as irrigation or climate smart agriculture. An ongoing programmatic World Bank Development Policy Operation programme is seeking to support Malawi's efforts to break this cycle of vulnerability through support for policy and institutional reforms that will reduce distortions in the agricultural sector, as well as boosting growth and resilience. A recent study undertaken in collaboration with the National Smallholder Farmers Association of Malawi Farmers suggests

[45] Gama, A C., L.D. Mapemba, P. Masikat, S.H. Tui, O. Crespo, and E. Bandason. 2014. *Modelling Potential Impacts of Future Climate Change in Mzimba District, Malawi, 2040 - 2070: An Integrated Biophysical and Economic Modelling Approach*. IFPRI Working Paper 08.: International Food Policy Research Institute, Washington DC.
[46] In Malawi, it is illegal to cultivate *dambos* and river banks.
[47] See for example, *Overcoming the Barriers – how to ensure future food production under climate change in Southern Africa*. Oxfam. Available at https://www.oxfam.org/en/research/overcoming-barriers.
[48] Whitfield et al, 2014; Mambo et al, 2017.
[49] See for example: Ricker Gilbert, 2011; Dorward and Chirwa, 2011; Denning, et al. 2009; Sanchez et al. 2009.

that providing transfers and intensive agricultural extension support could alleviate farmers' capital and information constraints, and boost their productivity[50].

50. **There is an emerging body of work that points to climate resilient agricultural adaptation approaches suitable for Malawi.** For example, assessments of the cost and benefits of 'climate smart' agricultural investments, using mathematical crop modelling to understand the likely climate change impacts on different cropping scenarios and identifying practical responses; and evaluating options to promote location-specific resilient agriculture[51].

Box 3. Conservation agriculture can increase yields

Farmers adopting conservation agriculture in dry, degraded catchments of Kapichira in southern Malawi reported three-fold increases in yields after just two years. These yield increases have been achieved by basic changes to farming practices - eliminating burning of crop residues – (an entrenched customary practice), introduction of mulching and zero tillage, and composting.

51. **Some farmers are already making changes to their farming practices in response to perceived climate impacts, but there is still a need to speed up and spread innovations. Error! Reference source not found.** Table 3 provides an overview of adaptation strategies that some (not yet all) farmers have used to date at different stages of the agricultural value chain. There are also additional climate smart options that have not yet been adopted which have considerable potential. It is important to guard against unsustainable responses (maladaptation) such as cultivating *dambos* or clearing forests in attempts to compensate for falling yields.

Table 3. Examples of farmers' responses to changes in climate in Malawi[52]

Activity	Climate Impact	Adaptation Strategies
Planting and harvesting	Rising temperatures and erratic rainfall contribute to crop destruction and lower yields	• Changes in planting dates • Replanting • Increased cultivation of improved / hybrid varieties • Increased cultivation of drought resilient varieties • Crop diversification (to cassava, sorghum, cotton) • Addition of winter cropping and dry season vegetable gardens • Increased demand for irrigation • Increased use of small scale irrigation (i.e., watering cans); stream diversion
	Climate impacts on soil fertility (and then, lower yields)	• Expansion of cropping to dambos and river banks • Increased use of conservation agriculture

[50] Ambler, K., A. de Brauw, and S. Godlonton,2016, *Relaxing Constraints for Family Farmers: Providing Capital and Information in Malawi*, International Food Policy Research Institute, Washington, DC.
[51] See for example: Branca et al, 2012; Pauw et al, 2011; LTS, 2014
[52] This table simply lists some observed responses to changes in the climate, and does not cover the full range of potential adaptation options.

		• Afforestation: In-field tree regeneration • Improved husbandry methods, such as use of compost, organic vegetative and animal manure as fertiliser
	Heavy rains at end of season damage crops or trigger pests	• Increased planting of sugar cane and bananas at field edges (to prevent wash away by rains) • Premature harvesting
	Wind and flooding damage to crops	• Increased planting of trees and sisal near field boundaries and riverbanks
Storage and processing	**Rising temperatures** engender pests and disease (e.g., locusts and termites)	• Shorter storage periods • Earlier selling (with lower profits)
Transport/ trading	**Heavy rains and flooding** make roads to/from markets impassable	• Not selling (loss)

Source: USAID, 2013.

Water Resources

52. **The projected rises in temperature and rainfall variability due to climate change will adversely affect water resources and water-dependent sectors such as agriculture, livestock and energy**. Demand for water will continue increasing as a result of population growth and agricultural intensification. Rising temperatures linked to climate change will accelerate evapotranspiration and will decrease soil moisture availability, significantly affecting smallholder farmers who depend on rainfed agriculture.

53. **A rising population has put increasing pressure on water resources and wetlands and has led to marked degradation of rivers, watersheds and wetlands.** Historically, Malawi developed its abundant water resources, opening up large irrigation systems and a significant hydropower industry with a minimal focus on water allocation or pollution. Water demand across the country is dominated by arable agriculture (71%) and by domestic needs (19%).

54. **The severe degradation of catchments, watersheds and wetlands is driven by a number of interconnected factors.** The main drivers of degradation include: (i) human population pressure on water resources and wetlands; (ii) agricultural expansion and intensification; (iii) unplanned settlements and cultivation by the urban and rural poor; (iv) limited information about water resource and wetland management combined with a lack of funding and limited institutional and technical capacities; (v) deforestation through uncontrolled burning and agricultural expansion, and (vi) the lack of clarity of water resource allocations, rights and responsibilities[53]. These drivers, if not checked and properly managed, are likely to exacerbate the impacts of climate change. Supporting good land husbandry practices is an important aspect of building community resilience.

[53] World Bank, 2017 (c), *Malawi: Country Environmental Analysis*.

Photo: Malawi's wetlands help buffer floods, sustain fisheries and dry season grazing as well as support biodiversity such as these African Pygmy Geese.

Box 4. Climate change water resources and eco-system health

Examples of the linkages between water resources, climate change and human and ecosystem wellbeing:

The Shire Basin occupies 16% of Malawi's total land and contains over 22% of the population. The Shire River, which flows out of Lake Malawi running into Lake Malombe and flowing through the southern region of Malawi, is joined by numerous rivers and streams before merging with the mainstem of the Zambezi River on the border with Mozambique. The Shire River is Malawi's most important waterway and its basin is of critical economic importance. It provides water for many productive purposes, including: hydropower, agriculture, fisheries, transport, tourism, urban water supply and rural water users along its length, and has numerous environmental functions. As such, it has been estimated that its water resources directly or indirectly influence the livelihoods of over 5.5 million people in the southern region of Malawi.

Lake Chilwa (which is shared with Mozambique) has a very fragile hydrologic system, which is especially vulnerable to the impacts of climate change. The lake and it surroundings is a Ramsar site[54] and very important for biodiversity. It is surrounded by wetlands and has a maximum depth of just five metres. Typical seasonal lake level fluctuations in Chilwa are 0.8 to 1 meters, but in the past lake level fluctuations of 2 to 3 meters have left the lake partially dry and following a drought in 1995, it dried up completely. The Lake's shallow depth and very low total volume make this a very fragile system, with the lake particularly vulnerable to precipitation variability and evaporation, both of which are likely to increase with climate change. This has serious economic and social implications as at least a quarter of Malawi's fish production is sourced for Lake Chilwa[55] and the lake's basin is home to over a million people.

[54] A Ramsar Site is a wetland site designated of international importance under the Convention on Wetlands, called the Ramsar Convention.
[55] Wetlands International, no date. Available at http://www.wetlands.org/reports/ris/1MW001en.pdf.

Fisheries

55. **The fisheries sector accounts for 60 to 70% of protein intake by Malawi's population, and contributes around 4% of Malawi's GDP.** Lake Malawi provides the main source of the country's fish production. Other important sources include Lake Chilwa, Lake Malombe and the Elephant Marsh. The sector has experienced considerable decline of commercially important fish species like Chambo (*Oreochromis* spp.) from around 30,000 Mt a year in the late 20th century to about 2,000 Mt annually in recent years from Lake Malawi. This has been attributed to overfishing and climatic influences that result in reduced water levels and disrupt fish breeding and nursery sites[56], although corroborating evidence is limited. Weak governance capacity to enforce fisheries regulations, and control of illegal fishing and destruction of habitats, contribute to reduced abundance of fish stocks and fisheries resources in Malawi.

Photo: Fishermen in the Elephant Marsh of the lower Shire River.

56. **There is currently insufficient evidence to identify the relative impact of climate change on fish stocks, compared to the impacts of other stressors.** It appears that both warming, and eutrophication could be influencing a decline in Lake Malawi's fish stocks, but the ways that climate change impacts Malawi's fisheries are not well understood, and very little monitoring or research has been done[57]. Changes in precipitation, temperature, runoff shifting wind patterns, as well as flooding and droughts, are potentially impacting on the reproduction, productivity and habitat of some fish species, but it is difficult to untangle climate impacts on fish stocks from other factors, particularly the range of human driven stressors. Nevertheless, some correlations between weather patterns and fish catch are already being observed. See

[56] USAID, 2013, *op cit.*
[57] USAID, 2013, *op cit.*

Table 4. Potential Effects of climate on Fish Stocks

Environmental element	Effect of weather patterns and climate trends	Impacts
Ecosystem/ Breeding habitats	Rising temperatures may cause some species of fish to migrate to deeper colder waters. Winds can change upwelling patterns in the lake and may indirectly foster migration of fish to other areas, further from the shoreline (Source: PRA interviews with fisherfolk).	Changing distribution. Potential for declines in some species and stocks
Fertilisation and nest protection	Heavy siltation due to more intense rainfall and high rates of runoff and soil erosion reduces visibility, potentially affecting breeding and early stage development	Potential for reduced population

Source: Adapted from USAID, 2013.

57. **Fishing communities perceive some climate-linked influences on fisheries, although it is not yet considered as amongst the most serious of problems.** Nevertheless, certain adaptation strategies are being adopted by fisherfolk to existing weather and early changes to climatic trends. Overfishing and the use of inappropriate fishing gear such as mosquito nets, may well be a significant reason for decline catches. Some farmers turn to fishing and aquaculture as a means to spread the risks of low productivity agricultural production, and this may also be viewed, in part, as a climate adaptation response. A diversified livelihood strategy, combining agriculture and fishing, has the potential to build resilience but requires an overarching fisheries policy and /or locally negotiated and agreed bye-laws to improve fisheries management and reduce overfishing - a 'tragedy of the commons' which is already visible in some areas. Table 5 below shows some of the adaptation measures adopted by fisherfolk to adapt to changes in climatic conditions.

Table 5. Observed Fisherfolk adaptation strategies to existing weather & emerging climate trends

Activity	Impact	Current Adaptation Strategies
Catching	Wind related risks. Fishermen lost their lives, boats and gear during heavy winds on Lake Malawi, &S other water bodies	• Change times of fishing on lake
	Lower fish stocks, species and sizes (all factors combined) and lower water levels - noting change predominantly due to other non-climatic factors	• Change fishing gear - i.e. finer nets to catch smaller fish. (e.g. use mosquito nets – a maladaptive response that harms fish stocks) • Move from lake to seasonal river fishing • Renting boats
Processing	Prolonged cloud cover makes it difficult to sun-dry/process fish.	• Shell fish earlier (often with reduced profit); suffer loss
Transport/ trading	Heavy rains and periodic floods lead to disruption to transport of fresh fish to markets	• Change to processing (drying) • Move away from fishing
Aquaculture	Drying up of ponds during droughts Flooding of ponds during heavy rains	• Adopt new technologies like deep ponds • Proper choice of sites for aquaculture investment

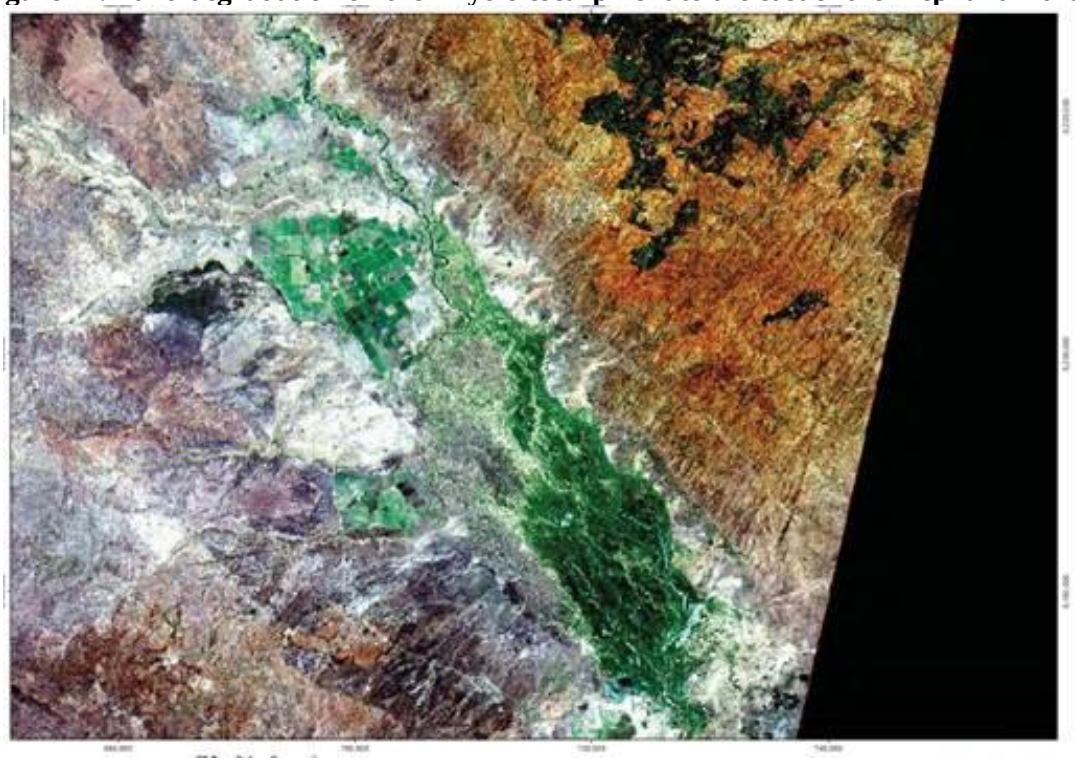
Source: adapted from USAID, 2013.

Land Use Change and Forests

58. **Malawi's forests are an important natural resource that is facing multiple threats, including the impacts of climate change.** Over 80% of national energy consumption uses forest biomass (fuelwood and charcoal) and the denudation of forests and woodlands to supply biomass energy is having broader impacts – reduced watershed protection, erosion, biodiversity loss. There are already growing deficits between biomass supply and demand, particularly in urban woodsheds of Lilongwe and Blantyre. These forms of environmental degradation will combine with climate change-induced stressors likely to increase the vulnerability of environmental systems, with knock-on adverse impacts on livelihoods and human health. If climate change projections are included, then the economic impact of these losses is even greater. It has been estimated that under wet climate conditions, an additional 16.9 million tons of soil would be eroded from forested areas resulting in a net incremental cost of between US$ 24- 27 million by 2030 (NPV at 10% discount). Under a dry future scenario, soil water stress was projected to increase as much as ten- fold by 2030[58].

59. **Agricultural expansion, growth of human settlements, rapid population growth, and low levels of reforestation are further the causes of the decrease in forest cover.** Forest loss negatively affects Malawi's ability to withstand natural disasters, including flooding. It compounds women's workloads, as they need to walk longer distances to fetch firewood and it also means there a fewer trees to absorb carbon dioxide (deforestation is a major contributor to climate change). Deforestation (often on steep slopes), leads to further cycles of erosion and siltation, processes that will be exacerbated by the projected increases in extreme weather events such as more intense rainfall from climate change. Forests also provide a very important 'safety net' that boosts resilience by providing a source of income following major climate-related shocks. Their diminution will erode this safety net.

Figure 14. Land degradation on the Thyolo escarpment to the east of the Elephant Marsh



Source: ESA/Hatfield Consultants, 2016.

[58] LTS, 2013, *Land Use Management Investment Plan*, Annex 7.

Livestock Production

60. **Increases in livestock diseases are perceived to be linked to higher temperatures.** A lack of specific research means that it is not possible to identify with certainty direct links between climate and animal health but there are certainly strong correlations. Major risks to livestock from climate change are from heat stress, shifts in the incidence of pests and diseases and changes in fodder availability and quality. Outbreaks of livestock diseases such as Newcastle Disease in chickens and African Swine Fever in pigs are linked to high temperatures, which provides favourable environmental conditions for the disease-causing micro-organisms. Similarly, grazing land becomes more difficult to manage due to extended droughts and this can lead to competition for resources and conflicts over both land and water. Existing livestock sector vulnerabilities, such as lack of access to veterinary services, lack of dip tanks and shortages of adequate grazing are likely to be exacerbated by the impacts of climate change.

Energy

61. **Virtually all of Malawi's hydropower generation capacity is located on the Shire River[59].** Continuity of electricity supplies from the Shire River power stations is essential for Malawi and is dependent on the sufficiency of water in the river. Increases in the frequency of droughts diminishes water supplies. This in turn affects hydropower generation and power is often rationed at the end of the dry season because of low water levels. Even if climate change brings an increase in wet season surface water yields, this will be more than offset by dry season decreases[60]. Following the 2016 drought, Lake Malawi was at its lowest level for over a decade and electricity was rationed throughout the country.

62. **Increases in the occurrence of extreme weather events such as rainstorms, combined with land degradation and deforestation, are likely to result in increased flooding which can damage hydropower generation infrastructure.** Intense rainstorms combined with ongoing degradation of upstream catchments also contributes to a rise in siltation and sedimentation, adversely affecting the country's hydropower energy generation. Shire River flows are largely dependent on water levels in Lake Malawi hence management of Lake Malawi catchment and ecosystem is key for the energy security of the country, and this can lead to significant worries about energy security based on reliability of flow into the river dependent on lake levels. Although one study has suggested climate change will have only a small effect on hydropower production in Malawi[61], this was because they used projections which predominantly predicted an increase in rainfall (which may or may not hold true) and also assumed that Malawi will reduce domestically produced hydropower as a share of total generation because of a paucity of good locations. Forest and wood biomass is the principal source of energy, and this is discussed in the section on forests (above).

Infrastructure

63. **Climate change affects the road network and is projected to slightly reduce the growth rate of GDP[62].** Severe flooding in particular causes considerable damage to infrastructure, including roads, bridges, schools and health facilities. Costs for repair and restoration of infrastructure place an added burden on over-stretched public expenditure budgets. For example, the 2015 floods highlighted the vulnerabilities of the transport sector

[59] Forest and wood biomass is the principal source of energy, and this is discussed in the section on forests (above).
[60] USAID, 2013.
[61] Arndt et al., 2014.
[62] Arndt et al., 2014. *op ocit.*

with serious damage caused to the infrastructure. For the transport sector, the total disaster effects of damages and losses were approximately US $60 million while the cost of recovery was almost US $130 million[63]– the highest among all the sectors. Based on a broad analysis using median climate scenarios directly related to temperature and precipitation changes through to 2050 it has been estimated that, without adaptation measures applied to the planning, construction and maintenance of road infrastructure, Malawi is facing a potential total annual average cost of US $165 million[64].

Health

64. **Climate shocks (droughts and floods) are health stressors.** For example, the Malawi government reports an increase in the transmission and incidence of malaria following floods (as well as increases in cholera, and schistosomiasis)[65]. Crop failures following droughts frequently have knock-on impacts on food security and nutrition availability.

65. **Climate change is likely to increase current health risks in Malawi.** Malawi's Second National Communication to the UNFCCC (2011)[66] provides a detailed description of the country's current situation and future risks. The Second National Communication assessed the associations between weather and malaria, cholera, diarrhoea, and undernutrition, with additional climate change expected to increase the levels of risk:

- **Undernutrition** is one of the most important health and welfare problems facing Malawi. Agriculture is predominantly subsistence, so droughts and floods (regular occurrences) severely reduce crop yields and food security. There is a significant relationship between climate change and undernutrition - which has been described as a 'hunger risk multiplier'. Climate change exacerbates existing rates of undernutrition through three causal pathways: (i) impacts on household access to sufficient, safe and adequate food; (ii) impacts on care and feeding practices; and (iii) impacts on environmental health and access to health services[67]. Declines and variability of crop yields could have significant negative implications for nutrition and stunting, and even when calorie consumption is adequate there can still be micronutrient deficiencies[68].

- There is a strong relationship between temperature and **diarrhoea**, where the incidence is related to food-borne diseases caused by high temperatures. In addition, diarrhoeal outbreaks are frequently associated with the aftermath of floods, due to contamination of water supplies. As an example: WHO analysis suggests that, under a high emissions scenario, diarrhoeal deaths attributable to climate change in children under 15 years old is projected to be about 10.6% of the almost 5,800 diarrhoeal deaths projected in 2030[69]. Although diarrhoeal deaths are projected to decline to about 3,100 by 2050 the proportion of deaths attributable to climate change will rise to approximately 14.9%.

- **Cholera** epidemics have been occasionally reported, with the 2001/2 epidemic associated with over 33,000 infected and over 1,000 deaths. These epidemics occurred

[63] Source: GoM, 2015, Malawi PDNA Report, 2015.
[64] Chinowsky et al., 2015.
[65] Government of Malawi. 2011. Ministry of Environment and Climate Change Management, Malawi State of Environment and Outlook Report.
[66] MoEEE, 2011, The Second National Communication of the Republic of Malawi under the Conference of the Parties of the United Nations Framework Convention on Climate Change Ministry of Natural Resources, Energy and Environment, Lilongwe.
[67] FAO, 2015 (b).
[68] Gama et al, 2014, *op cit.*
[69] WHO, 2016, Climate and Health Country Profile – 2015: Malawi, World Health Organisation, Geneva.

more often in dry years when people are forced to rely of contaminated water, although it can also be exacerbated by floods, when these contaminate water sources.

- **Malaria** is increasingly being reported in high altitude plateaus and hilly areas that were malaria free four to five decades ago. In part this is due to changes in rainfall patterns and increase in temperature, although socio-economic determinants also account for spatial variations in malaria risk[70]. Temperature was not associated with malaria incidence over the period 1974-2006, and there was a negative relationship between rainfall and malaria.

5. GENDER AND OTHER SOCIAL VULNERABILITIES

66. **In Malawi, women remain the largest proportion of poor people most vulnerable to the impact of climate change**. Women comprise 52% of the population but are still marginalised and comprise roughly 70% of agricultural-based labour force. Women are more likely than men to suffer from the impacts of climate change as they face different vulnerabilities and risks, and have lower opportunities and resources upon which to draw in their adaptation and mitigation strategies. Due to gender and social exclusion, women often face economic and social barriers because of discriminatory statutory and customary laws, harmful social norms, and the disproportionate burden of domestic and care work. Women are the mainstay of subsistence farming responsible for the bulk of cultivation operations, such as sowing and weeding as well as collecting firewood and fetching water, yet they have limited access to extension services and credit facilities.

67. **Women are disproportionately vulnerable to climate-induced shocks at the household level**. This is especially important in regions facing multiple hazards or increasing frequency of extreme events. Their reliance on the natural resource-base can also lead them to responding to these sorts of shocks by using negative coping strategies such as reducing their own food intake. Further, in the face of extreme weather events (e.g., droughts, heat stress), the competition for resources can lead to a loss of access to land, water, and crops but also to a loss of social cohesion, livelihood systems, and other employment opportunities, which further amplifies the gender inequality gap. Women have a higher vulnerability in the context of climate-induced migration, because of tenure insecurity; potential for gender-based violence; loss of social network; and reduction of place-specific livelihood skills. High fertility rates are noted as an impediment to women's adaptive capacity to climate change as having multiple children increases the time spent to take care, reducing women's participating in paid employment.

[70] Lowe. R, J Chirombo and A M Tompkins, 2013, Relative importance of climatic, geographic and socio-economic determinants of malaria in Malawi, Malaria Journal 12:416, 2013.

Photo: Women are disproportionately vulnerable to climate shocks and play a key role in the management of Malawi's natural resources. Investments proposed in the SPCR will be gender-responsive and will seek to address social exclusion.

68. **Despite equality in rights guaranteed by the Constitution, Malawian women are still marginalised.** Women are disadvantaged relative to men in every sphere of activity as they are poorly protected by cultural and legal norms, typically less well educated, and are less numerate and literate than their male contemporaries. In Malawi, only 16.7 of parliamentary seats are held by women. There are less women who have reached secondary level of education (14.9%) in comparison to male counterparts (24.2%)[71]. Due to gender and social exclusion, women often face barriers in accessing the opportunities arising from economic growth, or in taking advantage of new resources, leadership opportunities, and assets created through climate investments. Women are primarily responsible for producing food for the family, but they have limited right to own and access land. They are often not allowed to retain land in a divorce or when the husband dies, unless they have legal documents proving they had joint ownership or that they contributed financially to the acquisition and upkeep of the property. Most women in rural areas have no such documents. However, with increase in literacy level, many women are able to claim land ownership, especially in cases of death of the husband. Where women are heads of households due to men's migration to towns, they make all decisions relating to land development. GoM has made gender mainstreaming a priority in its development agenda in order to narrow the inequality gap by ensuring rights of rural women are protected in regard to food security, non-discriminatory access to resources, and equitable participation in decision-making processes.

69. **The HDI Gender Inequality Index (GII) value for Malawi is 0.611, giving it a rank of 140 out of 188 countries**[72]**.** Women continue to be disadvantaged on three fronts – reproductive health, socio-political empowerment, and economic activity, all of which can be impacted by climate change. Female participation in the agriculture labour market is currently

[71] UNDP, 2016 (b), Malawi Human Development Report 2016
[72] UNDP, 2016 (b), *op cit.*

84.5% compared to 81.5% for men. Female-headed households are only one segment of vulnerable social groups in Malawi to climate change, and there is a need to include targeted interventions that benefit the most vulnerable.

70. **The National Climate Change Management Policy for Malawi seeks, among other priorities, to include vulnerable and disadvantaged groups such as women, the elderly, the physically and mentally challenged in the adaptation, mitigation, technology transfer and capacity building plans, projects and programmes.** These constitute the most vulnerable social groups in Malawi. PPCR targets are women-headed households; widows and elderly (both men and women); rural youths (both boys and girls); and people living with HIV and AIDS or caring for HIV and IDS orphans. The elderly – both men and women – some men-headed households and the chronically ill are also highly vulnerable. Rural youth are included in this group because they can be particularly disadvantaged. For example, in isolated parts of the Lake Chilwa, Lake Malawi and Shire River basin, these groups lack access to irrigable and arable land, normally a preserve for the elders. As a consequence, rural youth face high levels of unemployment, lack vocational skills and have few alternative livelihood options to farming. In general, the prevailing high disparities in economic and social standing between these vulnerable groups and the remaining population make it imperative that any efforts to build resilience explicitly explore opportunities to ensure the inclusion of disadvantaged social groups.

71. **Vulnerable communities have an important role in the development of an effective and efficient medium and long-term adaptation plan for Malawi**[73]. They are the ones that are directly impacted by the negative effects of climate change, and therefore are better able to articulate the real adaptation needs.

72. **Under the Decentralisation Policy, the rural communities have established structures that can be the avenue for informing the district planners on adaptation needs**. Committees such as Village Development Committees (VDCs) and Civil Protection Committees (CPCs) could play a leading role in ensuring differing gender needs are adequately addressed in local level adaptation planning, though this would require specific activities, and financing, to flow through these institutions and programme modalities.

73. **Investments and interventions included in the SPCR are designed to be gender-responsive**. There are differences in the way that men and women can respond to interventions and investments and designing the detail of these appropriately is a key aspect of building climate resilience. Investments that support removing structural barriers present an opportunity for women's empowerment, economic development and societal resilience to climate change. PPCR investments will explicitly acknowledge how gender-specific barriers are relevant to proposed investments and take appropriate steps to address this through the way they are designed and implemented. Gender aspects have also been integrated into the indicators included in the results framework. Given the weak capacity at the sub-district level and local government institutions, NGO partners working on climate resilience it will be important to partner with NGOs in implementing PPCR investments, to ensure adequate practical support and capacity development is available for these vulnerable stakeholders, including helping establish and access targeted activities and services.

[73] UNDP, 2016, Malawi NAP Stocktaking Report, prepared for Environmental Affairs Department, Government of Malawi, Lilongwe.

6. INSTITUTIONAL AND POLICY FRAMEWORKS

74. This section describes in detail Malawi's institutional structures, policies and challenges that work together to direct the country's approach to climate change and development. This includes a background to how the institutions are structured around climate change policy and information, and how the policies already in place can be used to support climate change adaptation. It highlights the particular challenges faced by Malawi. The SPCR supports these priorities and choices by helping strengthen Malawi's climate change framework. The proposed PPCR investments provide a means to build on existing policies and institutional arrangements with practical opportunities for investments that will build resilience. This will make sure that the current programmes and initiatives can be sustained in an effective and coordinated fashion.

INSTITUTIONAL STRUCTURES

75. **Malawi has a number of existing institutional structures in place that support the implementation of climate change mitigation and adaptation policy.** The Malawi constitution explicitly requires the support of the environment, and the Malawian government has addressed climate change at national, ministerial and departmental level. There are a number of programmes and projects in place and potential partners available to work with. In addition, it is recognised that civil society, non-government organisations and the private sector all have a role in supporting this policy. According to '*Climate Action Intelligence*'[74], over 200 institutions/organisations are involved in climate change activities in Malawi. This section provides a summary of a very complex institutional landscape.

76. **Malawi is a signatory to various international treaties, instruments and that cover climate change.** These include the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. These treaties and instruments oblige the country to take various actions to address climate challenges including putting in place instruments such as climate change policies and legislation. Malawi is a member of the Least Developed Countries' (LDCs) Group, the LDC Expert Group (LEG), and currently has a seat on the board of the Adaptation Committee and the Green Climate Fund (GCF) Board.

77. **Through a stakeholder consultation process, the Government of Malawi has formulated its National Climate Change Management Policy (NCCMP) to integrate climate change at a national and local level.** The policy's aim is to help channel resources and advice to efforts that address the negative impacts of climate change. At the same time, climate resilience is being integrated into local planning and institutions.

Malawi Constitution (1995)

78. **The Malawi Constitution (1995) has defined the role of the State in environment management.** In the Constitution, chapter III – Fundamental Principles – section 13, subsections (d) and (e) make clear that protecting the environment is a constitutional requirement, but the text does not mention climate change specifically.

[74] EAD, 2013 (a), Climate Action Intelligence (CAI) Actions & Actors Guidebook: Understanding who is Doing What, where on Climate Change in Malawi, Environmental Affairs Department, Government of Malawi, Lilongwe

Challenges for institutional coordination

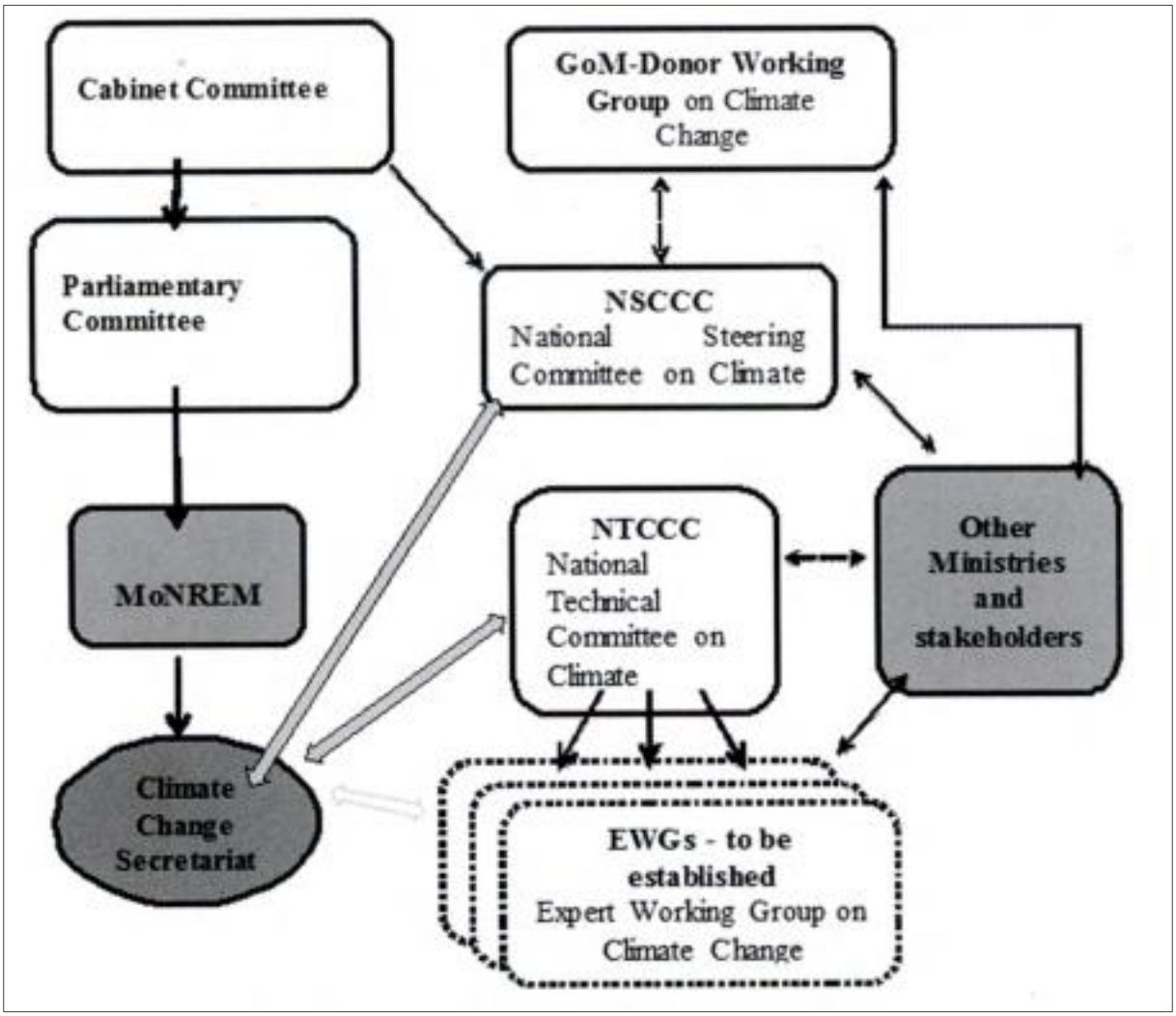
79. **Reponses to climate change are coordinated through the Malawi institutional and government framework**. Figure 15 illustrates these arrangements. Details of the other ministries and stakeholders referred to in this diagram are provided in the paragraphs that follow. In 2009, the Office of the President and Cabinet (OPC) mandated the Ministry of Economic Planning and Development to coordinate climate change activities under the National Climate Change Programme (NCCP). NCCP is mainly supported by the United Nations Development Programme (UNDP), Food and Agriculture Organisation of the United Nations (FAO), and the World Food Programme (WFP). The activities of the NCCP are largely supported and directed by the National Climate Change Technical and Steering Committees.

80. **The Ministry of Natural Resources, Energy and Mining (MNREM) leads on climate change policy development in Malawi.** This is exercised through the Environmental Affairs Department (EAD) that is responsible for coordinating national and international climate change related issues[75]. The Department of Climate Change and Meteorological Services (DCCMS) collaborates with EAD to coordinate national and international climate change issues. EAD also coordinates closely on climate change with the Ministry of Agriculture, Irrigation and Water Development (MAIWD), Ministry of Local Government (MoLG) and Ministry of Finance, Economic Planning and Development (MoFEPD). The Department of Disaster Management Affairs' (DoDMA) coordinates the implementation of Disaster Risk Management (DRM) at national level and is responsible for preparedness and response to weather and climate related disasters such as droughts and floods. DoDMA is also drafting a National Resilience Strategy which will include climate resilience.

81. **Coordination between government agencies can be a challenge.** For example, the Department of Disaster Management Affairs (DoDMA), the National Disaster Preparedness and Relief Committee (NDPRC) and the National Disaster Preparedness and Relief Fund all have responsibility for disaster risk management, which includes climate related hazards. This can make it unclear on where responsibility for climate variability ends and responsibility for climate change starts This can make it difficult, especially for external agencies and development partners, to know which government institution or agency is best placed to coordinate climate change management programmes in the country[76]. Any lack of consensus on which GoM department is best placed to coordinate climate change issues runs the risk of negatively affecting relationships of climate change related sectors. The role of Government ministries, departments and agencies is to provide policy direction and strategic direction in the particular sector of interest. Their roles also include sector-specific policy formulation, coordination of the thematic activities; monitoring, reporting and verification of project activities, capacity building across ministries and departments and tailored to the challenges encountered in the respective projects, and resource mobilisation[77].

[75] The EAD is the focal point for the UNFCCC (also UNCBD and UNCCD) and DNA for CDM.
[76] See UNDP, 2017 (b), National Climate Change Programme Evaluation Report (Draft report), Report prepared for Government of Malawi; UNDP, New York; Todd, 2013.
[77] Malawi NAP stocktaking report, 2016.

Figure 15. Institutional arrangement for climate change management in Malawi



Source: Malawi Climate Change Management Policy, 2016.

82. **Malawi's Growth and Development Strategy establishes working groups to coordinate climate change and other sectoral priority areas**. Under the Malawi Growth and Development Strategy II (MGDS II, 2011-2016) coordination arrangements, 16 Working Groups were envisaged. One of them is the Working Group on Natural Resource, Land and Environment, later re-named as 'Climate Change, Environment, Natural Resources, Mining and Energy (CC and ENRM)'. MGDS III, 2017-2022 (approved by GoM in September 2017) places responding to climate change challenges amongst the highest priorities for the country and confirms the continuation of Special Working Groups to coordinate policy.

83. **Although the NCCMP has outlined measures to address institutional coordination, providing the leadership to bring together institutions will be extremely challenging to attain**. This coordination is important because climate change is a cross-cutting issue as it affects most sectors such as agriculture, human health, energy, fisheries, wildlife, water, forestry and gender. At present it remains a challenge for Malawi's government structures to coordinate effectively across sectors. The investment programmes proposed in the SPCR provide opportunities of cross-departmental coordination at both national and local level. They will also strengthen links between local and national level government bodies. The limited scope and time frame of PPCR investments cannot bring about wholesale shifts in the

GoM's long-standing institutional structures, but will provide opportunities to build and share experience on effective coordination for building climate change resilience.

CIVIL SOCIETY AND NON-GOVERNMENTAL ORGANISATIONS

84. **Non-governmental and civil society organisations (CSOs) are highly active in climate change-related issues in Malawi at community, district and national levels.** CSOs are expected to contribute towards implementation of the National Climate Change Management Policy (NCCMP) and the Policy Implementation Plan that has already earmarked specific activities to be undertaken by CSOs.

85. **NGOs and CSOs are also actively involved in policy analysis and advocacy processes.** They include, among others, the Civil Society Network on Climate Change (CISONECC) which represents more than 41 NGOs and CSOs involved in climate change issues in Malawi; the Centre for Environmental Policy and Advocacy (CEPA) a local environmental policy think-tank with local and international links. Leadership in Environment and Development (LEAD) focuses on Natural Resources and Climate Change Management around the Lake Chilwa Basin and the Network for Youth Development (NFYD), an active advocacy youth group that has organised a series of Climate Change Youth Conferences and Symposia in Malawi.

DEVELOPMENT PARTNERS

86. **Several international Development partners are active on climate change issues in Malawi**. In addition to the World Bank and African Development Bank, USAID, DFID, the Royal Norwegian Embassy, the Irish Embassy, UNDP and FAO and others have a long history of working in Malawi have already been supporting projects that deal, in whole or in part, with climate change issues. There are many lessons to learn for these experiences and the SPCR Preparation Grant will support an analytical study to ensure that this experience feeds into the detailed design of the proposed investment projects. The SPCR's programmatic approach will open-up opportunities to coordinate and build synergies with on-going development initiatives supported by these development partners. The combination of financial and technical support that development partners provide will assist GoM's efforts to tackle Malawi's climate change challenges.

PRIVATE SECTOR

87. **Private sector is expected to play a role in mitigation related interventions such as REDD+, CDM, emissions trading and payment for ecosystem services**. The NCCMP for Malawi is aimed at promoting private sector involvement through provision of incentives in climate compatible development and environmentally friendly production and consumption. Private sector stakeholders in Malawi range from large corporate, small and medium enterprises, to farmers. To date, they have had a somewhat limited role in addressing climate resilience, but given the proper incentives and information, have the potential to play leading roles in promoting innovative technologies. Other areas that the private sector can, and already do to a limited extent, play an important role are: developing micro-finance services to benefit vulnerable social groups; provide information to farmers through mobile phone services; and developing and promoting weather index-based insurance products for small and medium farmers. In addition, opportunities are emerging, around climate change mitigation, in particular renewable energy, that could potentially be funded under various climate change

mechanisms[78] with potential private sector investment opportunities. Incentivising private sector involvement in adaptation is more challenging. This is because climate adaptation responses have long payback periods, involve non-market sectors and has high transaction costs because there are large numbers of vulnerable people.

THE POLICY ENVIRONMENT

88. **Malawi has long-term and medium-term development plans which provide a road map to guide development efforts in various sectors.** Vision 2020 sets the development agenda for Malawi including the need to address climate change. In addition, there are a number of related policies that also contain climate change management provisions in general terms. There are two key high level strategic documents, Vison 2020 and the Malawi Growth and Development Strategy (I, II and III, the medium term five-year plans) that provide the overarching strategic direction for national policy, including climate change policy. There are five policy instruments that Malawi primarily uses as a guide to the reduction of climate change risks and disasters. These are: the Nationally Determined Contribution (INDC); the National Climate Change Management Policy (NCCMP); the National Climate Change Investment Plan (NCCIP); the National Adaptation Programme of Action (NAPA), and the Disaster Risk Management Policy. There are also three main environmental-based policies that also support these main instruments: the Environmental Management Act (EMA); the National Environmental Policy; and the National Environment Action Plan.

Vision 2020

89. **Vision 2020 was launched in 2000 and sets the development agenda for Malawi.** Vision 2020 remains a guiding tool for the country and all development plans and policies cascade from it. It provides a long-term basis for national development goals, policies and strategies, although it provides only an overarching framework rather than detailed plans to be implemented. Vision 2020 emphasises the need to achieve environmental sustainability and that this includes contributing to global efforts on climate change. It also covers improving monitoring and information systems on disaster preparedness, promoting education in climate change, and use of climate friendly technologies.

90. **Vision 2020 mentions climate change but does not describe clear mitigation or adaptation responses.** It simply states that sustainable development will be achieved by, among other interventions, "contributing to global efforts to managing climate change and other global environmental issues; incorporating environmental considerations at all stages, and enhancing the participation of the public in the planning and implementation of natural resource and environmental programmes[79]." Key responses such as mitigation and adaptation are not mentioned. However, it covers the strengthening of monitoring and information systems on disaster preparedness, promoting education in climate change, and use of climate friendly technologies.

Malawi Growth and Development Strategy (MGDS III)

91. **MGDS III (2017-2022) is Malawi's medium-term strategic development plan and was approved in September 2017.** MGDS III is the main tool that guides Malawi's

[78] Mechanisms such as the Clean Development Mechanism; Reducing emissions from deforestation and forest degradation (*REDD+*; Voluntary Carbon Markets, etc.).
[79] World Bank, 2011, Malawi – Vulnerability, Risk Reduction, and Adaptation to Climate Change, Global Facility for Disaster Reduction and Recovery, World Bank, Washington.

development planning. It takes forward the overarching goals of Vison 2020 and translates these into a five-year strategy. It provides guidelines to the Malawi Government on resource allocation and use in various sectors of the economy. Climate change is the top strategic priority in the MGDS III which recognises that, if it is not effectively addressed, the country runs the risk of having the gains made in almost all spheres of development reversed.

Box 5. Key priorities areas in MGDS III

- Agriculture and Climate Change
- Education and Skills Development
- Transport and ICT infrastructure
- Energy, Industry and tourism Development
- Health and Population Management

92. **MSGD III describes a range of outcomes related to climate change.** The most relevant are listed in Table 6 below. The proposed SPCR investments are aligned to many of these.

Table 6. **MGDS III outcomes relevant to building climate change resilience**

KEY AREA	OUTCOME
Agriculture	• Increased land under irrigation • Increased agricultural diversification • Enhanced agricultural risk management
Climate Change	• Improved weather and climate monitoring, prediction, information and knowledge management systems • Strengthened policy operating environment for climate change and meteorological services • Enhanced community resilience to climate change impacts • Enhanced climate change research and technology development
Water Resources Development, Utilisation and Management	• Increased access to water resources • Enhanced integrated water resources management at all levels
Vulnerability and Disaster Management	• Developed and strengthened people-centered early warning system • Improved preparedness for response to and recovery from disasters
Environmental Sustainability	• Strengthened environmental management • Enhanced environmental degradation preventive measures

Based on: MGDS III, GoM, 2017

93. **MGDS III notes that effective responses to climate change are context specific and often best addressed at the local level**. MGDS III emphasises the need for key sectors that utilise climate services to be able to access timely, site specific and accurate information within

reasonable and acceptable error margins. MGDS III also notes that while the Malawi meteorological service sector has provided useful information, the sector is fraught with major challenges. These include 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 national, regional and international benchmarks. The MGDS III seeks to address these challenges in a bid to ensure that actors in climate sensitive sectors can make informed decisions based on authoritative and timely weather and climate information.

Intended Nationally Determined Contribution (INDC) 2015

94. **Malawi submitted its Intended Nationally Determined Contribution to the UNFCCC in September 2015.** The INDC does not include a specific target for reducing emissions by 2030, but does pledge that the country will encourage energy efficiency, renewable energy deployment and take measures to support climate adaptation. Table 7 details how the government of Malawi will address the three key components of this policy.

Table 7. Key priorities in INDC

INDC PRIORITIES	
Adaptation	Priority sectors and thematic areas: agriculture (crops, livestock, fisheries), water resources, health, infrastructure, land-use planning, transport, population and human settlements, disaster risk management, forestry (wildlife), energy and gender.
Mitigation	Main sectors contributing to GHG emissions are; energy, industrial processes and product use (IPPU), agriculture, forestry and other land use (AFOLU), and waste. Between 2015 and 2040, total annual greenhouse gas (GHG) emissions are expected to increase from the current level of approximately 29,000 Gg CO2 equivalent to approximately 42,000 Gg CO2 equivalent, approximately a 38% rise
M&E	A monitoring and evaluation framework that covers all government programmes and projects implemented in the country. M&E activities are undertaken by MFEPD in collaboration with sectoral ministries, MNREM and other sectoral ministries. External technical and financial support will be needed to establish an INDC tracking system to monitor short, medium and long-term implementation.

Source: GoM, 2015 (a), Intended Nationally Determined Contribution

National Climate Change Management Policy (NCCMP) 2016

95. The NCCMP prioritises actions needed to address challenges of climate change, promote climate change adaptation, mitigation, technology transfer and capacity building for sustainable livelihoods[80]. The policy is guided by principles set out in the Malawi Constitution, the United Nations Framework Convention on Climate Change and the Kyoto Protocol. The policy has listed six priority areas:

- Climate Change Adaptation
- Climate Mitigation

[80] World Bank, 2017, *op cit.*

- Capacity building, education, training and awareness
- Research, technology development and transfer including systematic observation
- Climate Change Financing
- Cross-cutting issues: population, gender and disadvantaged groups

96. **While the long-term goal of NCCMP is to reduce the socio-economic impacts of adverse effects of climatic change, in the medium-term, NCCMP aims to improve community resilience, sustainable livelihoods and reduced GHG emissions**. The policy also sets out the institutional framework for coordination and implantation of all CC and DRM activities including the Clean Development Mechanism (CDM); Reducing Emissions from Deforestation and Forest Degradation (REDD+); and build on the National Environmental Policy (NEP). Furthermore, the policy recognises the need for more predictable and reliable financing mechanisms from both local and international sources. This policy guides and coordinates the implementation of the UNFCCC and Kyoto Protocol as well as the Paris agreement. However, the extent to which this will be applied in practice has yet to be tested.

National Climate Change Investment Plan (NCCIP) 2013-2018

97. **The NCCIP[81] is a medium-term vision and planning framework and is closely linked to the NCCMP**. It was developed by various stakeholders and the NAPA. Its main objective is increase climate change investments, aid allocation of resources to key environment and climate change priority areas, for timely and well-coordinated actions to address climate change. The NCCIP is a high-level strategy document that focuses on four main action areas of climate change adaptation. It does not provide details of how investments would be operationalised and implemented. These are integrated watershed management, improving climate change resilience of communities in agriculture production, development of climate-proofed infrastructure, and enhancing disaster risk management[82]. The aim is to develop capacity in climate change management through environmental protection and conservation as well as increasing the productivity of the environment and natural resources. The CCIP provides a list of dozens of potential investments, with a projected budget requirement of US$ 954 million. However, investments are not prioritised, and the level of finance required has not been realised[83].

National Adaptation Programmes of Action (NAPA) 2006, revised 2015

98. **As a Least Developed Country, Malawi produced a National Adaptation Plan of Action (NAPA) in 2006 with slight revision posted in 2015**. 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 (Box 6).

Box 6. Priority adaptation projects for Malawi identified in the NAPA

- Improving community resilience to climate change through the development of sustainable rural livelihoods
- Restoring forests in the Upper and Lower Shire Valleys catchments to reduce siltation and associated water flow problems

[81] EAD, 2013 (b).
[82] UNDP, 2016 (a), Malawi NAP Stocktaking Report, prepared for Environmental Affairs Department, Government of Malawi, Lilongwe.
[83] For more on NCCIP, see www.nccpmw.org/.../51-national-climate-change-investment-plan-short-version-final

- Improving agricultural production under erratic rains and changing climatic conditions
- Improving Malawi's preparedness to cope with droughts and floods
- Improving climate monitoring to enhance Malawi's early warning capability and decision making and sustainable utilisation of Lake Malawi and lakeshore areas resources.

Source: Malawi Climate Action Report 2016, Irish Aid.

99. **The NAPA has allowed Malawi to identify the sectors that could be potentially affected by climate change.** These include agriculture, human health, fisheries, energy, wildlife, water, forestry. The NAPA also identifies the differential gender impacts of climate change as a factor that increases vulnerabilities of individuals and households. Malawi has also prioritised, climate change, environment and natural resource management among the priorities within priorities of the Malawi Growth and Development Strategy (MGDS III). The MGDS III recognises that natural resources form a principal source of social well-being and economic development in Malawi and identifies the issues that need attention.

National Resilience Strategy

100. **The National Resilience Strategy (NRS – forthcoming in late 2017) will be a five-year agenda aimed at breaking the cycle of food insecurity.** The NRS will be linked to UN's Sustainable Development Goals 2 and 13 on zero hunger and climate action respectively. The key theses are: agriculture and food security – including supporting diversification, climate smart agriculture and support for fisheries and aquaculture; flood control infrastructure; enhanced early warning systems; and strengthened social protection programmes. At the time of writing, the National Resilience Strategy is awaiting finalisation and approval.

National Adaptation Plan Process (NAP process)

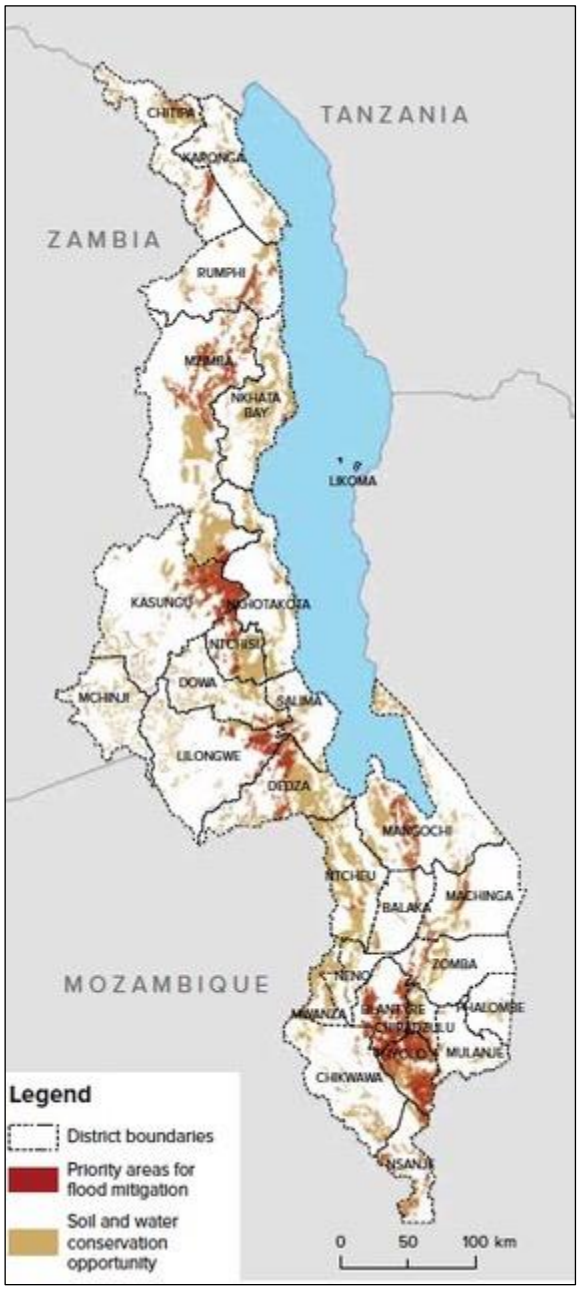
101. Malawi launched its National Adaptation Plan (NAP) process in 2014. The NAP formulation process has not yet been finalised. Priority sectors and thematic areas for the NAP process stem from the priorities identified in the NAPA. The NAP's mandate is to improve community resilience to climate change through enhanced agricultural production, infrastructure development and disaster risk management; enhance sustainable utilisation of natural resources especially forest, water, fisheries and wildlife resources; improve environmental management especially soil and land management; enhance conservation and / or restoration of biodiversity and ecosystems; integrate climate change adaptation in all development plans both at national, sectoral and district level; and provide climate change adaption advocacy to policy makers and other laws and by-laws on climate change and environmental and natural resources management. A further priority is strengthening climate services to improve links between national hydro-meteorological services and different user communities.

102. **The National Agriculture Policy (NAP, 2016)**

103. The Nationa Agriculture Policy takes cognizance of the fact the sector's productive capacity is being undermined by climate change impacts and risks. These impacts risks affect the national economy, hence the need to ensure that they are properly managed. Realising that climate change has adverse impacts on the agriculture sector, a number of strategies have been put in place to address them through adaptation and mitigation. Adapatation seeks to enhance preparation for and negate the effects of climate change, thereby reducing vulnerability of communities and ecosystems. The NAP takes into account the fact that projects adressing climate change in agriculture have tended to be small, fragmented and sometimes implemented on a one-off pilot basis. Through the NAP, emphasis is on transition to a systemic approach on

large scale and commercial agriculture through sustainable intensification and mechanisation. The NAP seeks to go beyond addressing food and nutritional insecurity to promoting agro-processing, value addition and manufacturing initiatives, while enhancing ecosystem integrity upon which the agriculture sector depends for sustainability. While harnessing water for irrigation, the NAP recognises the need to minimise environmental degradation, social conflicts and health risks.

Figure 16. Opportunities for soil and water conservation



Source: MoNREM, 2017, National Forest Landscape Restoration Strategy

Bonn Challenge

104. **In 2016, Malawi made an ambitious pledge to the African Forest Landscape Restoration Initiative (AFR100) and the Bonn Challenge.** This commits Malawi to bring 4.5 million hectares of degraded and deforested land into restoration by 2030[84], with an estimated economic benefit of US$ 1.4 million. Malawi has applied the Restoration Opportunities Assessment Methodology (ROAM) across all districts to identify priority areas for restoration and interventions that are most suited to local socio-economic and ecological conditions. A completed a forest landscape restoration assessment, has identified nearly 7.7 million hectares, which is 80% of the total land area of Malawi, that has opportunities for restoration[85]. Figure 16, for example, shows areas that will benefit from soil and water conservation measures.

[84] 2 million ha. by 2020, and a further 2.5 million ha. by 2030.
[85] http://www.bonnchallenge.org/malawi ; MoNREM, 2017, National Forest Landscape Restoration Strategy, Ministry of Natural Resources, Energy and Mining, Lilongwe.

CHALLENGES FOR IMPLEMENTING CLIMATE CHANGE POLICIES AND PROGRAMMES

Policy coherence

105. **Effective climate change adaptation requires multi-sectoral approaches.** As in many countries, ministries tend to work in sectoral silos weakening policy implementation and risks overlooking or under-resourcing opportunities for synergies that could be explored in response to climate change. For example, lack of coordination of different sectors dealing with land issues and land based natural resources. The Ministry of Agriculture, Irrigation and Water Resources has a Department of Land Resources and Conservation which deals with land use planning and conservation for agricultural land. However, there is no formal working relationship with Ministry of Lands, Housing and Urban Development[86]. Also, some policies create perverse incentives that counteract resilience goals. For example, agricultural policies that subsidise fertiliser and maize can sometime increase exposure and vulnerability.

Human resources and management challenges

106. **Skills and expertise in climate change mitigation and adaptation are limited.** Most sectors have to designate staff from other functions to address climate change issues such as participation in the National Technical Committee on Climate Change. Many sectoral staff at policy and programme level lack multiple skills and expertise that the interdisciplinary nature of climate change requires. The PPG will fund capacity development activities that aim to address these constraints. Implementation of PPCR-financed investments will, over time, provide some of the hands-on experience that will allow government staff to build the skill sets successful adaptation requires and embed this capacity in sectoral departments and ministries.

107. **Malawi has a range of climate change related projects.** The NCCIP alone identifies eleven major programmatic initiatives, with a notional total budget requirement of just under US$ 1 billion. A major challenge in the NNCIP is the inclusion of climate change initiatives that are neither prioritised nor linked to sources of financing. There is also a need for much better coordination in identifying and selecting climate change adaptation initiatives, to avoid fragmenting efforts and increasing transaction costs. There is a similar need for focused analysis of successful approaches to tackle climate change-related challenges, to share the lessons learned more effectively and then scale-up of successful approaches. Analytical work undertaken under the SPCR preparation grant will focus on drawing out lessons from current and recent climate change-related projects and programmes.

108. **There is a mismatch between the NCCMP framework and sector priorities on the one hand and national development planning and implementation on the other.** In addition, sectors and district councils hardly appreciate the content of climate change related policy documents and yet they are closer to where resilience should be built. District budgets are very small and fragmented across small initiatives. This results in limited integration of climate change into sector plans and budgets at district levels.

109. **There are also barriers that constrain full participation by communities and reduce their adaptive capacity.** These include abject poverty, low levels of education, lack of skills, lack of appropriate technologies, environmental degradation, and water availability, etc. Adaptation projects need to respond to the perceived and experienced needs and vulnerabilities of the given community.

[86] UNDP-UNEP, 2008, Institutional Mapping for Malawi.

PART 2

7. PRIORITIES OF THE MALAWI SPCR

110. **Malawi is working on strengthening climate change institutions and policies.** The Government of Malawi is working hard to ensure that institutions and policies make climate resilience a priority. It has already met many key policy targets and has completed important research. It is in consultation with all the key economic sectors and with local development planning to ensure prioritisation of short and medium-term climate resilience programmes and activities. There is strong support from a range of development partners.

111. **This SPCR aligns fully with national and relevant sectoral development goals and priorities.** This is detailed in Vision 2020, the National Climate Change Management Policy and the Malawi Growth and Development Strategy (MGDS) III and Malawi's INDC. It also aligns with priorities of the Climate Change Investment Policy, the National Agriculture Policy, the ongoing NAP process and the National Resilience Strategy which is currently under preparation. The experience and portfolios of Multilateral Development Banks (MDBs) and other development partners is incorporated in the document[87]. It aims to build a climate-resilient and low-carbon development plan for Malawi aligned to the 2016-2030 Sustainable Development Goals (SDGs). This SPCR is fully aligned with, and will contribute to the PPCR objective to "*integrate climate risk and resilience into core development planning, whilst complementing other ongoing activities"*[88].

112. **This SPCR will build on existing climate resilience activities in Malawi**. It will identify and address the main barriers and constraints to existing efforts in improving climate resilience. It will transform targeted sectors and areas, both at local and central government levels, by supporting more effective integration of climate resilience into planning and implementation structures and scaling up existing programmes. Knowledge sharing will also be implemented between programmes and stakeholders including the generation of new knowledge.

113. **The SPCR provides a strong 'business case' for investment projects.** It is also expected to catalyse the increased budgetary allocation towards climate change action. These include potential leveraging of resources from MDB (concessional financing sources (notably IDA and the African Development Fund), development partners and the Global Environment Facility (GEF). GoM will also use the SPCR to help prioritise and leverage support from the Green Climate Fund (GCF) and private sector, although it should be noted that accessing funding from GCF will likely require a lengthy engagement process with uncertain outcomes, and this will make it difficult to match GCF with concessional financing.

114. **Institutional capacity in Malawi to address climate change will be strengthened.** The challenges of addressing capacity issues in the complex institutional relationships that govern climate change responses in Malawi is recognised. It would be unrealistic to expect the PPCR-supported investments to be able to address all the necessary changes in behaviours and institutional relationships. Nevertheless**, t**he proposed investments do provide the opportunity for government departments to work together more effectively on climate change issues, both

[87] Further mapping and assessment of climate change initiatives in Malawi, to consolidate learnings from experience to date, will be undertaken with funding from the SPCR Preparation Grant.
[88] CIF, 2011, The Pilot Program for Climate Resilience Fund under the Strategic Climate Fund

across sectoral boundaries as well as between national and district levels. The quality and accessibility of hydro-climatic information will improve increasing climate-risk preparedness and reducing risk by ensuring that climate and hydromet data is both available and, importantly, able to be used across government for policy development and investment planning. All investments will include explicit knowledge and information sharing on climate risks and adaptation options. In time, this will lead be a greater awareness of the need to change behaviour and to invest in adaptation and risk prevention measures in the private sector and household level. These changes will make it easier for the citizens of Malawi to better withstand climate-induced shocks and become economically stronger.

115. **Malawi developed the Nationally Determined Contributions (NDC) in 2015 to show the country's commitment to the UNFCCC, against which the SPCR is aligned.** This SPCR has detailed the prioritised contributions and will support the implementation of some key elements of the INDC. Malawi is committed to reducing vulnerability and addressing climate-change adaptation across multiple sectors including agriculture and livestock, forestry, water, energy, health and disaster risk management. Integrated Watershed Management and Climate Smart Agriculture are identified as priorities in the NDC to increase resilience at the grassroots level and specific investment projects are planned to address this commitment89. The SPCR is aligned with the INDC and will support the Government by leveraging funding for targeted investments within a number of priority sectors for adaptation.

116. **The SPCR supports Malawi in the pursuit of achieving the Sustainable Development Goals Agenda 2030 and the African Union Agenda 2064.** Malawi joined the call to action to end poverty, protect the planet and ensure all people enjoy peace and prosperity through achievement of the 17 Sustainable Development Goals (SDGs) by 2030. The SPCR is fully aligned with the SDGs and the SPCR's thematic pillars and proposed investments will help Malawi progress in the associated SDG thematic scopes. Malawi is also committed to the implementation of the African Union Agenda 2064 where Malawi has adopted the collective vision and roadmap of actions for prosperity, amongst others, committing to building climate resilience through the implementation of the Programme on Climate Action in Africa[90].

Priority themes for investments

Proposed PPCR investments are primarily guided by broad priorities established by the Malawi's Nationally Determined Contribution. Specifically, the proposed PPCR investments address a number of the NDC adaptation priorities in each area, shown in Table 8 below.

Table 8. Adaptation Priorities in the NDC that proposed PPCR investments will address[91]

Agriculture	Water	Forestry	Fisheries	Gender (and vulnerable groups)
Build adaptation capacity in climate resilient agronomic practices for smallholder farmers	Implement integrated catchment conservation and	Expand afforestation and forest regeneration programmes	Capacity building in aquaculture and cage culture fish farming practices	Promote gender mainstreaming in policies, programmes and projects

[89] See Details on investment projects in following section.
[90] https://au.int/sites/default/files/pages/3657-file-agenda2063_popular_version_en.pdf
[91] This table does not show all the adaptation priorities listed in the NDC. It shows only those that are addressed in whole or in part by the proposed investments.

	management programmes			
Promote on-farm water conservation technologies	Promote water harvesting technologies at all levels		Adopt eco-system services approach in the management of fisheries resources	
Promote the growing of drought tolerant crop varieties	Support an expanded programme of constructing multipurpose dams to enhance water storage		Promote aquaculture and cage culture fish farming practices	
Implement conservation agriculture and agroforestry practices	Develop and enhance climate information and early warning systems		Protect fish spawning/breeding sites	
Promote improved land use practices	Develop and enhance climate information and early warning systems			

Source: Government of Malawi, Intended Nationally Determined Contribution.

117. The proposed SPCR investment projects are:

1. Promoting climate resilient approaches to water resources management;
2. Supporting climate resilient agricultural value chains;
3. Promoting the scaling-up of climate-resilient agriculture by supporting farmers directly through farmer field schools;
4. Supporting climate resilient fisheries value chains; and
5. Strengthening the provision of weather and climate data and establishing a national climate services centre.

118. **The proposed PPCR investment projects have been endorsed by government at national level**. They have strong support from district governments, civil society and development partners. The section on the Theory of Change describes how these investments combine to provide the overall strategic direction of the PPCR (see illustration in Figure 17 and elaboration in Annex 1).

PRIORITIES AND FOCUS OF THE MALAWI SPCR

Selection criteria for PPCR investments

119. **An agreed set of prioritisation criteria were jointly agreed upon and used for selecting the investments, to ensure the selection process was fully participatory and transparent**. The specific criteria used include:

i. Alignment with national development priorities (*i.e. Vision 2020, Climate Change Management Policy, Climate Change Investment Plan, NDC and SDGs*), sector strategies, and PPCR objectives; including potential for transformational change and for scaling up;

ii. Level of vulnerability of regions and sectors to climate change risk;

iii. Recommendations from the stakeholder consultations and field visit observations;

iv. Potential for sustainability of outcomes and impacts (e.g. livelihoods secured, economic benefits);

v. potential to achieve multiple benefits of adaptation, mitigation, poverty reduction and sustainable development;

vi. Sensitivity to gender issues, vulnerable groups and indigenous knowledge; and

vii. Leverage of funding from MDBs, Climate Finance institutions and other donors.

Selection of SPCR investments

120. **The identification and prioritisation of the five investment concepts listed above were done through broad and continuous consultations and workshop participation where government, civil society, academia, the media and development partners were all represented and engaged**. Formulation of the investment concepts was guided by how well they addressed vulnerabilities to climate change in Malawi in sectors such as water, agriculture and fisheries, including how the needs of poor, vulnerable and gender were considered; how the investments will assist the Government in achieving priorities and actions outlined in the national development plans and policies (i.e., MGDS III, the National Climate Change Policy, the National Resilience Investment Plan, NDCs and SDG etc.); how well the investments built and reinforced synergies with ongoing and parallel projects (Table 18); and how technical design solutions could be scaled up in the future and additional funding be leveraged from MDBs, the Green Climate Fund and other sources. Following the early rounds of stakeholder consultation and field visits, an initial list of potential investments was identified. These were then presented, discussed and refined in a series of workshops and further consultations with stakeholders from government, academia civil society and development partners. Once final priority investments were agreed through this process, draft investment concept notes were prepared, and these were then discussed and further developed by cross-sectoral government teams. Following this, the concept notes were presented for discussion and final comments at a multi-stakeholder workshop on Lilongwe, before they were finalised.

121. **In Malawi, the portfolio of ongoing and near-future investments in climate-related activities vary in both sectoral coverage and scale.** The proposed investments are also designed to align and blend with the country programmes of two MDBs, the World Bank and the African Development Bank, which will bring benefits such as scaled impact, reinforcing synergies and lower transaction costs in project administration for the Government and implementing agencies, as well as procedural due-diligence with results monitoring and the management of potential environmental and social impacts. It is important to note that the proposed investments have also be designed with consideration to the broader portfolio of the development partner community (see Table 18 in Annex 7). Transport infrastructure was discussed in detail during consultation. Finally, it was agreed not to include this as a PPCR investment, but instead to use SPCR Preparation Grant funds to finance support for the on-

going development of Malawi's Transport Master Plan, to ensure that climate resilience measures are fully integrated. The Transport Master Plan will form the basis of future investments in the sector and SPCR support ensure the mainstreaming of climate resilience into Malawi's transport sector for the first time.

122. **Cross-linkages between SPCR investment concepts.** Because livelihoods of most Malawians depend on natural resources and food security, and because large portions of the population are vulnerable to the impacts of poverty and climate change, the SPCR has been designed to capture the need to build resilience in the critical sectors of agriculture, fisheries and water resources. The two investments focused on agriculture will strengthen the capacity of individual farmers and their community through farmer field school investments at local level; and in parallel, strengthen economic value chains as a broader market intervention at macro level. Investing in fisheries, both through improved biomass monitoring and in economic value chains, similarly represents the role fisheries have in livelihoods and as a source of income as well as protein and nutrition. Improved watershed management and reduced land degradation, as proposed in the water sector investment, has strong linkages across productivity and resilience needs in both agricultural and fishery. Finally, by investing in climate information services, the SPCR will enable provision of critical underlying quality and availability of information that will help inform decision-making across the SPCR sectors and projects. At the operational level, the five investments will interlink through opportunities such as cross-ministerial capacity building and capturing and sharing lessons learnt during implementation.

123. **Cost-effectiveness.** Each investment has been selected because it builds on opportunities for leveraging MDB concessional, or other sources of finance. This provides the opportunity to ensure that PPCR finance adds value by ensuring a strong focus on building climate resilience into these investments. At detailed design, the government will assess and select project activities that provide the best result at optimal cost. The benefit-cost analysis of the projects themselves will be done in accordance with the MDB's requirement and will depend on both the scale of final financing for the project and the economic conditions at the time of project approval.

124. **Capturing opportunities from satellite earth observation and modern information and communication technologies.** During preparation of the SPCR, the European Space Agency (ESA) provided a dedicated assessment of the opportunities and relevance for integrating satellite earth observations (EO) in Malawi (made possible through the PPCR and ESA global partnership collaboration). The assessment[92] recommended that satellite EO can provide valuable inputs into climate resilience practices and climate smart planning, especially in:

- Establishing baselines against which changes can be detected and mitigation measures can be determined.

- Managing and protecting valued ecosystems to counteract overexploitation of resources, desertification and land degradation, and to support sustainable agriculture and biodiversity conservation.

[92] European Space Agency (ESA)/Hatfield Consultants, 2016. Integrating Satellite Earth Observation into Malawi's Pilot Program for Climate Resilience. Frascati, Italy.

- Managing and monitoring of water resources to predict flood and landslide events, plan for drought and water scarcity, track water pollution and ecosystem degradation, and assess impacts of climate change on water resources.

- Supporting risk assessment and crisis mapping including post-disaster recovery, rehabilitation, and reconstruction.

- Monitoring of urban development to understand how cities are evolving over time at the local, regional and global level.

- Supporting dialogue by putting development issues in a spatial context, in a reliable and unbiased manner.

125. **The assessment found ample opportunity for the investments to capture benefits of EO.** These will be explored at the detailed project design phase, and have been integrated into the PPCR investment concept for operationalising a national climate service centre.

126. **The PPCR's programmatic approach integrates individual investments.** The investments have strong interlinkages. Investment projects 1 (watershed management), 4 (resilience of smallholder farmers) and 5 (climate services) could be integrated into a single investment programme in the south of the country. This will be determined during detailed project design. Investment project 2 (agriculture value chains) will focus on the centre and north of the country to avoid duplicating an agricultural value chain component of the Shire Valley Transformation Project which is just starting. Adopting a programmatic approach increases the opportunities to ensure synergies, complementarities and linkages are capitalised on during implementation. The process of selecting investments during SPCR preparation included recognition of the benefits of ensuring that individual investments offered linkages that will support and strengthen each other.

STRATEGIC PILLARS OF THE SPCR

127. The proposed investments are grouped under three pillars consistent with the themes identified in the INDC. These are:

SP1. Building resilience in natural-resources dependent livelihoods
SP2. Strengthening sectoral governance of climate change adaptation
SP3. Addressing food insecurity and poverty, from household to national levels

SPCR Strategic Pillar 1. Building resilience in natural-resources dependent livelihoods

128. **The first strategic pillar of the SPCR reflects the greatest exposure to climate change that Malawians are facing.** More than 80% of the population rely on primarily rainfed agriculture for their food, income and employment. Nearby lands and lakes provide natural resources for nutrition, housing and cultural value (amongst other); and considering that most people live in rural areas, the high level of dependency on natural resources has led to striking environmental degradation. Analysis of weather data over the past two decades[93] shows a relatively sharp increase in both maximum and minimum temperature over historical averages (drying trend since the early 2000s). Recent modelling of climate impact show confidence in

[93] USAID, 2013, *op cit.*

dry spells becoming more frequent by 2030 and 2090, but not necessarily more severe (i.e., there is confidence in a reduction of mean number of rain days and increase in the amount of rainfall on each rainy day). This suggests more variable rainfall, with both higher likelihood of dry spells and higher likelihood of intense rainfall events (often associated with flooding)[94]. These changes are likely to pose serious threats to livelihood, natural resources and food security.

129. **Building resilience in livelihoods is therefore of utmost importance in the SPCR and forms the first strategic pillar.** The proposed investments in value chains in agriculture and fisheries, alongside water resources management and enhanced access to relevant climate information are aimed at providing solutions for the core challenges of the first pillar, by providing opportunities to diversify production activities and hence mitigate against weather and climate risks, as well as strengthening both the productivity of, and financial returns to natural resource-based production and products in the face of changes in weather and climate.

130. **PPCR finance provides the opportunity to make large development budgets 'climate smart', with a relatively small amount of additional finance.** Transformational and catalytic effects of the investments aimed at improving livelihoods can be achieved at two levels: i) the investments will be leveraged by parallel, large-scale investments of the MDBs; and ii) the investments will fill existing gaps in the national set of activities focused on building resilience. This is particularly the case for water resources activities in the SPCR that will build on the success and be informed by lessons learnt from the Shire River Basin Management Project (e.g., the micro-grant schemes used to support local communities in enhancing catchment management practices in priority sub-catchments); and from the broad-based support from the African Development Bank in the agricultural and fisheries sectors (e.g., strengthening smallholders and farmers' and fishers' organisations' market linkages through improved market information services, that include weather and climate information and option for managing climate-related risks; and supporting the development of climate resilient infrastructure such as storage facilities, value-addition processing and storage of climate resilient products. An example of a catalytic activity to build resilience is: the climate services center which will produce useful climate information products through co-production with users, and as such, the PPCR investment will help bridge ongoing investments in improved water and weather monitoring with strengthened GIS capacity built in the National Surveys Department and the National Statistics Office and with better access to satellite earth observation data.

SPCR Strategic Pillar 2. Strengthening sectoral governance of climate change adaptation

131. **The second strategic pillar of the SPCR focuses on the need for capacity building in making climate-informed decision-making and planning at a sectoral level in the priority areas of water, agriculture, fisheries and climate services**. The investment for improving the management, production and delivery of climate information through a Climate Services Centre will address challenges of currently disconnected and fragmented climate information systems. The outcomes, i.e., tailored climate information, is thus an example of how project activities can provide stronger linkages and cooperation across sectors. This is also the case for capacity building activities within the investments. At the forthcoming design

94 UMFULA, October 2017, *Malawi Country Climate Brief: Future Climate Change Projections for Malawi*.

phase of the projects, it capacity building should be integrated into activities so that they will help build skills amongst government staff who are tasked with managing the specific sector within the projects. Such training opportunities shall be available across the SPCR and the projects and enable cross-ministerial learning opportunities.

132. **The transformational impact is centred on the opportunities, necessity and incentives that bring agencies together to work beyond their traditional sectoral and institutional boundaries** (e.g. the Department for Water Affairs coordinating with the Department of Disaster Management). The investments will necessitate and encourage sharing and analysing data, and the production of climate information that can be made more accessible and more relevant to users of climate information (e.g., a female farmer planning for the growing season) or communities at risk of water and weather extreme conditions (such as district level villages in the floodplains of the lower Shire River basin). Furthermore, the investment will catalyse on outputs from a series of investments in improving the collection and management of hydrological and meteorological information: for example, the early warning systems project financed by the GEF/UNDP and forthcoming investment from the Global Climate Fund aimed at scaling up the aforementioned project; the series of successes achieved in the Government's ability to manage and analyse spatial and statistical data at the Department of Surveys and the National Statistics Office (see MASDAP); and the Operational Decision Support System under the Shire River Basin Management Project aimed at improving the integration of river and rain data for better flood warnings.

SPCR Strategic Pillar 3. Food security and poverty - household to national levels

133. **The final strategic pillar of the SPCR brings food security and poverty to the forefront of the climate vulnerability spectrum.** This aligns with the priorities in Malawi Growth and Development Strategy (MGDS III) the (draft) National Resilience Strategy. Poverty rates are amongst the highest in the world and Malawi ranks 170 out of 186 countries in the UNDP's Human Development Index. Life expectancy at birth is 63.9 years, child mortality under the age of five is the high 64 per '000 births, and 42.4% of under-five children suffer moderate or severe stunting[95]. Research on the impact of extreme natural events, such as floods, reiterate the high vulnerability that people living in poverty are exposed to in terms of economic and food security. For example, the impacts of floods in southern and eastern districts in 2015 observed the strong correlation between large number of people living in poverty and the level of impact of floods on livelihoods and agricultural land (i.e., 600,000 people were affected, 170,000 were displaced, and agricultural crops covering more than 60,000 hectares were damaged[96]).

134. **The investments proposed under the SPCR captures the importance of food security and poverty by focusing on strengthening value chain in two major sectors: agriculture and fisheries.** By introducing market-driven approaches and incentives to improving productivity and diversification in agriculture and fisheries with a specific focus on climate resilient products and production methods, the investments can be scaled and have cross-sectoral impact. For example, developing new funding mechanisms and frameworks that provide incentives for investment in new/alternative value chain development and include

[95] http://hdr.undp.org/en/countries/profiles/MWI
[96] World Bank, 2015. *Unbreakable – Building the Resilience of the Poor in Face of Natural Disasters.*

support for emerging processing industries and marketing channels will increase financial returns to small scale fisherfolk, which in turn builds their resilience to climate-driven shocks.

135. **The priority investments in this SPCR are focused on the sectors and activities which need to be scaled up substantially, utilising inputs from other financing mechanisms.** The priority investments will be designed to blend with existing or pipeline investments of the supporting Multilateral Development Banks (World Bank and AfDB) and other development partners and, importantly, add value to these by ensuring they are significantly climate sensitive. This will enable PPCR funds to mainstream climate change into larger investment projects and provide impacts at scale. This blending will also help to reduce overall transaction costs during processing and implementation and ensure value for money.

Results framework

136. **The SPCR has been designed according to the Pilot Program for Climate Resilience (PPCR) objective to pilot and demonstrate ways to integrate climate risk and resilience into core development planning, while complementing other ongoing activities**. Evaluating and tracking the results of the SPCR at a programmatic level and PPCR financed investments at the project level will be done in accordance with the 2012 PPCR Monitoring and Reporting System (which is based on the four principles of country ownership, stakeholder engagement, use of mixed qualitative and quantitative methods and learning by doing[97]). This will allow for both results reporting and learning throughout the implementation of the PPCR financed projects. Undoubtedly, it is at the project level where the detailed output monitoring and reporting will be established by the government implementing agencies in cooperation with broader stakeholder groups, and with the assistance of the MDB's implementation support systems and reporting routines (whilst aligning with MDBs strategic sector and country frameworks). The exact indicators to be monitored are appropriately defined at the project design and preparation phase of the individual investment concepts, and will incorporate the five core and additional six (if applicable) PPCR indicators. The PPCR indicators, core including, will factor in gender considerations in accordance with the PPCR M&E guidance. The proposed SPCR results framework is provided in detail in Annex 1.

137. **The three core indicators to be monitored at the project level and synthesised at the SPCR level are**:

A1.3. Number of people supported by the PPCR to cope with effects of climate change;

B1. Extent to which vulnerable households, community businesses and public-sector services use improved PPCR supported tools, instruments, strategies, activities to respond to CV&CC;

B5. Quality of and extent to which climate responsive instruments/ investment models are developed and tested.

138. **At the programme SPCR level only, the following two core indicators should be monitored**:

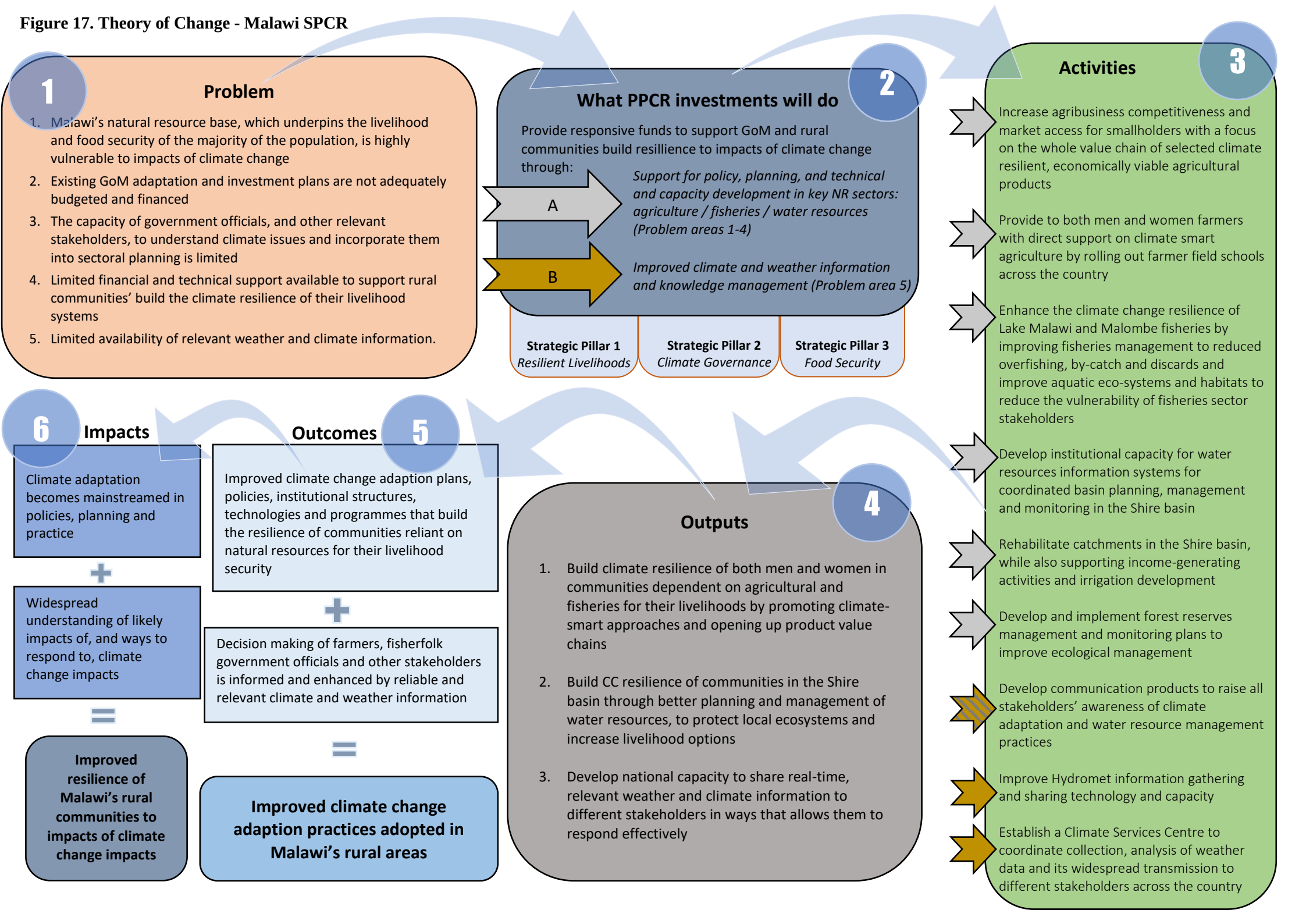
A2.1 Degree of integration of climate change in national, including sector planning; and

B2. Evidence of strengthened government capacity and coordination mechanism to mainstream climate resilience.

[97] https://www.climateinvestmentfunds.org/sites/default/files/knowledge-documents/09-giz2017-factsheet-ppcr.pdf

139. **To describe and illustrate how the proposed PPCR investments will build climate resilience in Malawi, a 'theory of change' framework was developed as part of the SPCR preparation.** It shows how activities funded through the investments address core climate-related problems and will result in improved resilience of rural livelihoods to, and protecting the environment from, the impacts of changes weather and climate. The theory of change is presented in Figure 17 and is elaborated in detail in Annex 1.

Figure 17. Theory of Change - Malawi SPCR



8 Financing and Implementation

SPCR FINANCING

140. The indicative costing and potential financing sources of the SPCR investment projects is given in Table 9. The financing of the investments proposed in the SPCR assume that PPCR finance will be available for Malawi. The financing table outlines the indicative financing sources of the SPCR's proposed investment concepts and shows how the future PPCR financing would align with co-financing and with other financing agencies. It also provides an overview of the PPCR's contribution to the total estimated overall financing. It indicates that Malawi requests PPCR finance of US$ 50 million, which will be part of a broader package of finance from MDBs[98], GCF and other financing sources of US$ 159 million.

141. The PPCR and other sources of finance are critical to the implementation of this SPCR. The Government of Malawi is requesting resources from the PPCR but is aware that resources for project implementation may not be provided, or only partially provided. Other sources of finance which the GoM and MDBs will approach include: the Green Climate Fund (GCF) to finance adaptation activities through accredited entities; the Global Environment Facility (GEF) to the extent that country allocations permit; bilateral finance from Development Partners who are already active or who wish to be active in Malawi; and market and non-market mechanisms under Article 6 of the Paris Agreement.

Table 9. Indicative sources of funding for PPCR investments

Proposed Investments	GoM	PPCR	GCF	GEF	WB (IDA)	AfDB (ADF)	FAO	EU & Other	Total
	(Million US$)								
Investment 1: Climate Resilient Integrated Watershed Management (WB)	1	25	20	8	30				84
Investment 2: Building Climate Change Resilience in Selected Agricultural Value Chains in Malawi (AfDB)	1	10	10			5			26
Investment 3: Improved Climate Resilience in the Fisheries Sector through Lake Conservation and Fisheries Value Chain Management (AfDB)	0.2	10	5			3			18.2
Investment 4: Strengthening Climate Resilience of Smallholder Farmers in Malawi (FAO)	1.5						2	10	13.5
Investment 5: Operationalising Malawi's Climate Services Centre (WB)		5	12.3						17.3
Total	**3.7**	**50**	**47.3**	**8**	**30**	**8**	**2**	**10**	**159**

[98] Additional WB finance from IDA (International Development Association) and additional AfDB finance from ADF (African Development Fund).

Project preparation financing

142. Request for preparation financing are shown in Table 10.

Table 10. Proposed Project Preparation grants

#	SPCR Investment Project Concept	PPCR Project Preparation Grant requests (US$)	
		WB	AfDB
1	Promoting climate resilient approaches to watershed management	300,000	
2	Building climate resilience in selected agricultural value chains		100,000
3	Improved climate resilience in the fisheries sector through lake conservation and fisheries value chain management		100,000
4	Building climate resilience through climate smart agricultural practices	[100,000[99]]	
5	Operationalising Malawi's climate services centre	100,000	
Total		400,000	200,000
		US$600,000	

IMPLEMENTATION ARRANGEMENTS

143. The GoM have established a clear institutional framework for climate change coordination. It was agreed during the First Joint Mission that the SPCR will be prepared and implemented in accordance with this organisational structure (Figure 18) and no new institutional structures will be established for the PPCR.

144. The GoM's National Steering Committee on Climate Change (NSCCC) will provide strategic guidance and direction for the SPCR. The NSCCC is chaired by the Secretary to the Treasury and supported by a National Technical Committee on Climate Change (NTCCC) and a Climate Change Secretariat housed in the Environmental Affairs Department (EAD). The two primary ministries responsible for the implementation of the SPCR will be the Ministry of Finance, Economic Development and Planning, and the Ministry of Environment and Climate Change. Implementation of the projects will be through the relevant sector ministries and departments.

145. Implementation responsibilities of the SPCR and projects investments will be allocated as follows:

- Policy oversight will be provided by the NSCCC supported by the NTCCC.
- Under the guidance and supervision of the NTCCC, a group of technical experts will be formed to support the detailed preparation of individual PPCR investment plans. These experts will draw, where appropriate, on the findings of analytical studies financed by the SPCR Preparation Grant.
- The NTCCC will support the preparation of individual PPCR investment plans drawing, where appropriate, on the findings of analytical studies financed by the SPCR Preparation Grant.

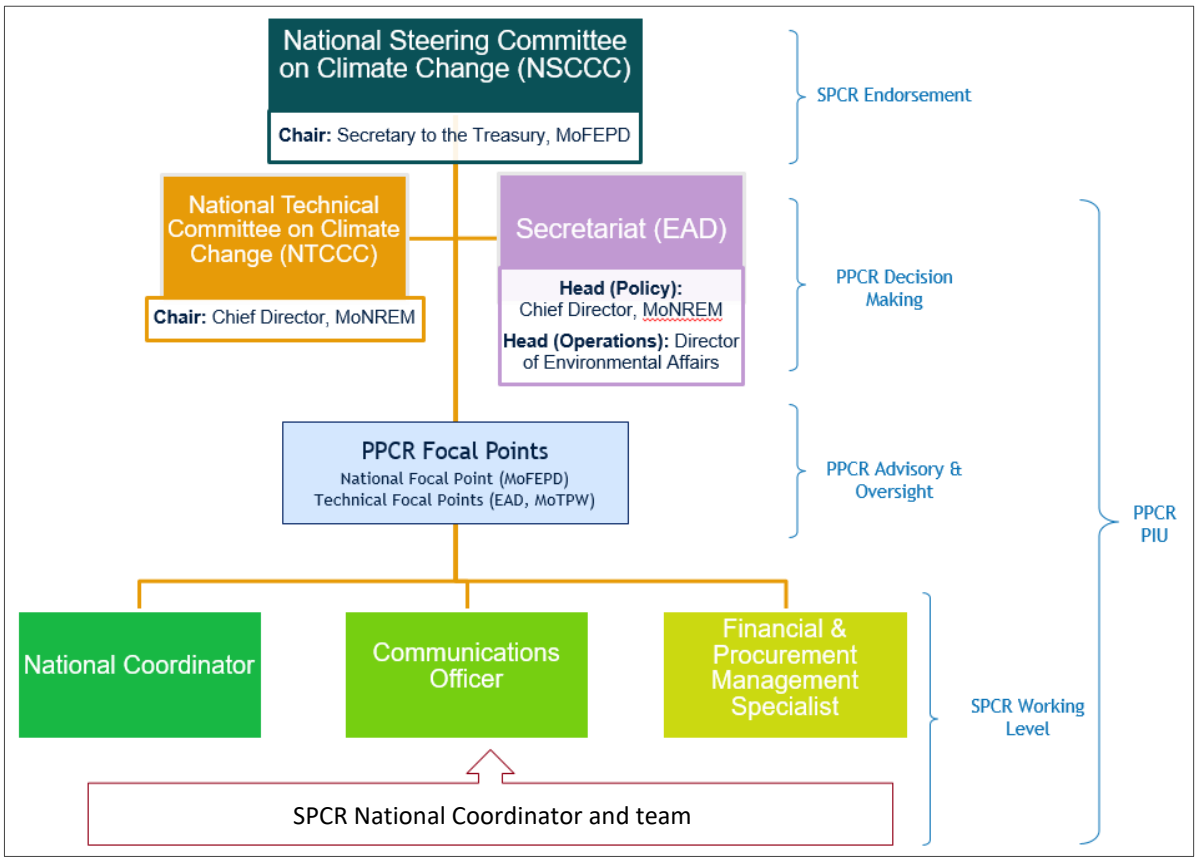
[99] NB: FAO Preparation Grant finance will be programmed through one of the MDBs.

- A National Coordinator, Communications Officer, Financial Management Officer and a Procurement Officer are to be recruited, with funds made available through the Preparation Grant and housed in EAD. This team will support the NTCCC and NSCCC prepare the PPCR investments.

- SPCR reporting unit at ministerial level/MoFEDP or EAD (for programmatic-level reporting, not for projects but for coordination, M&E and communication)

146. The detailed project implementation arrangements for each of the projects will be further outlined and consulted during project preparation. A full list of ministerial and departmental mandates is provided in Annex 4.

Figure 18. GoM Coordination Structure for the SPCR and PPCR



ENVIRONMENTAL AND SOCIAL SAFEGUARDS

147. During the preparation of the proposed SPCR investment, the GoM and the MDBs will perform systematic due diligence with respect to screening, assessment and design of action plans and frameworks with respect to environmental and social safeguards.

KNOWLEDGE SHARING & CAPACITY BUILDING

148. The SPCR preparation process, alongside several sector studies on adaptation in Malawi, highlight the need for sharing knowledge, and building institutional and technical capacity in climate change and resilience at ministerial and departmental levels. The need for capacity building has informed the preliminary investments concepts as well as the opportunity of the SPCR to link capacity building activities across the projects and ministries, and from departmental up to ministerial levels. The exact methods and focus of capacity building and

training will be dependent on the specific needs and the final scale of financing of the project. These will be further explored and determined at the detailed project design phase.

149. The GoM and the MDBs will capture lessons learnt from the implementation of the SPCR and the proposed investment concepts. Feedback will be captured at project level by implementing agencies, and by the SPCR monitoring team at the aggregated national level. The MDBs will bring lessons learnt to the forefront of project preparation and implementation support, and will share knowledge with development partners and across the respective institutions as part of the regional and global PPCR efforts.

150. In addition, analytical studies, financed by the Preparation Grant and to be undertaken as part of the SPCR and preparation activities of the projects, will be shared publicly for the benefit of similar projects and efforts globally. These include, for example, lessons learnt from organisational design of national climate service center (that will support design of project concept 5 on operationalising a national climate services center) and analysis of climatic variability and impacts on Malawi's three major freshwater lake systems: Lake Malawi, Lake Malombe and Lake Chilwa (that will support design of project concept 3).

Proposed Investment Project One: Climate Resilient Integrated Watershed Management

Responsible MDB:	World Bank
Total Project Cost:	US$84 million
PPCR request:	US$25 million
Co-financing (indicative, to be sought):	GoM: US$1 million, WB (IDA): US$30 million, GEF US$8 million, GCF: US$20 million
Project Preparation Grant:	US$ 300,000

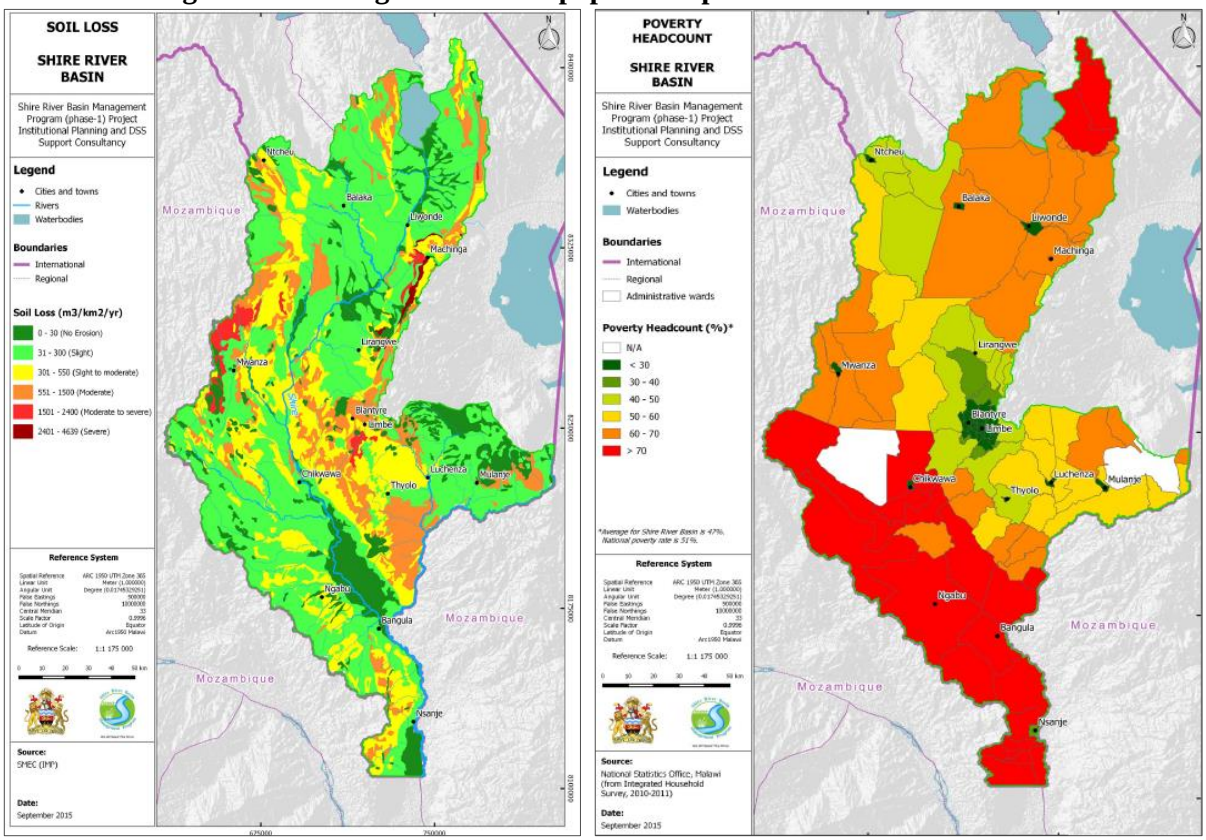
Background and Justification

151. The Shire River originates from the southern end of Lake Malawi and flows south into the Zambezi shortly beyond the boundary of the country. The Shire Basin occupies most the southern half of the country and delivers 95% of hydroelectric production (from cataracts in the middle Shire), supports extensive smallholder agriculture and the country's largest sugar and tea estates. The population of the Shire basin is growing rapidly – from less than 4 million in the mid-1960s to nearly 13 million by 2008. The basin's natural resources have been rapidly depleted, and today, most areas outside of wildlife and forest reserves have been deforested, and even some reserves have been extensively denuded. Soil fertility has decreased, and sedimentation and eutrophication from agricultural run-off has reduced effective hydropower generation capacity, and disrupted fisheries and irrigation systems. Hydrological flows have also become more erratic, and the basin has experienced several severe drought and flooding episodes within the last 20 years.

152. Most of the basin's population are smallholders, with the majority of them cultivating fragmented plots of less than one hectare. This compromises farm households' ability to produce enough for their subsistence requirements. The interlinked factors of high population density and poverty levels led to significant human pressure on the basin's natural resource base. With increasing population growth, land area under cultivation continues to grow. Similarly, the rate of exploitation of forests and woodlands for firewood and charcoal remains disturbingly high. This has led to increased deforestation, soil erosion, and sedimentation into river beds, reservoirs and floodplain wetlands, with frequent flash floods in the Lower Shire. This compromises the capacity of the Shire River basin to support economic activities such as irrigation farming, fisheries and hydropower generation. Figure 19 below illustrates the pressures of both soil loss on pollution growth on the basin.

153. High levels of degradation, unsustainable of land and water use, the increased use of chemical fertilisers, increased levels of human and industrial waste of water pollutes the waters that pass through these catchments. At the same time, there have been very weak efforts to implement sustainable soil and water conservation measures. All these problems and vulnerabilities are exacerbated by the impacts of a changing climate, which are already evident in the increasing variability of weather patterns and the increasing frequency and severity of both droughts and floods.

Figure 19. Soil degradation and population pressure in the Shire basin



154. Until recently, efforts to address these challenges in the Shire Basin have been disjointed and uncoordinated by various government agencies and/or non-state actors because there has been no institutional mechanism to coordinate water, land and water-use planning and systems operations for the Shire Basin. Similarly, there has been no modern knowledge base and/or modelling tools to support decision making. As such, decisions on development of the water resources along the Shire River have been taken on an ad-hoc and uncoordinated basis as need arises. However, starting in 2011, the first phase of the Shire River Basin Management Programme, led by the Ministry of Agriculture, Irrigation and Water Development and financed by the World Bank and Global Environmental Facility (GEF), started to address these issues, by putting in place a basin management plan – agreed by a wide range of institutional stakeholders, establishing a basin management organisation and introducing a range of catchment and ecosystem management approaches that are designed to tackle land degradation and protect ecosystem services in the basin. Land use planning, to better manage flooding and tackle land degradation, continues to be an integral part of the Shire River Basin Management Programme. This has the potential for large-scale impacts to improve land use planning and management as the programme covers nearly one-third of the country's land area.

155. The proposed project is in alignment with the Climate Change Investment Plan and will build on the strong foundation of the first phase of the Shire River Basin Management Programme (SBRMP 1) and will include a clear and robust climate resilience focus, with specific gender focus, to a follow-up phase of support for watershed management in the Shire Valley. PPCR support will provide co-financing for the second phase of the Shire River Basin Management Programme (SRBMP). Women, men and children use water resources and systems differently due practical and strategic needs and gender norms. Women and girls are primarily responsible for collecting water for cooking, cleaning and washing. Women are the

primary to managers of water and sanitation. Gender specific needs for multiple use water service delivery (i.e., irrigation plus domestic water use) needs to be considered as women face specific obstacles in participating in community-organised water management projects, joining water-users committee, or providing inputs into a consultation process.

156. It will ensure that the institutional progress and gains of Phase 1 are firmly embedded in both government and community structures. It will also build on and expand technical progress that is already reducing land degradation throughout the Shire basin.

157. The expected outcomes of project interventions are: (i) Increased household incomes through improved land and water management practices; (ii) Increased community resilience to impacts of floods in the Lower Shire Valley; (iii) Enhanced resilience of the ecosystems and conservation of biodiversity, (iv) Uptake of improved land management practices that reduce sediment loads in the basin; and (v) Design of a national programme for Integrated Watershed Management that builds on successful models and approaches piloted under SRBMP1 and other sustainable land and water management interventions. Detailed design of this programme will include consideration of future climate change implications for the design of integrated watershed resource management interventions – including use of existing models developed under SRBMP1. The project will also seek to increase women's access to water resources by supporting women's participation in water use associations, improving access to better land management practices and weather information, strengthening women's participation in commodity value chains.

158. The project will be transformational by strengthening the resilience of both government agencies and communities' abilities to respond to the challenges of a changing climate and build resilience to climate and weather-related shocks. It may be possible to fully integrate into this project substantial scale-up of climate resilient agriculture through the approach outlined in more detail in Investment Project #4. This project may also provide an opportunity to integrate support for strengthening climate services, through the approach outlined in more detail in Investment Project # 5.

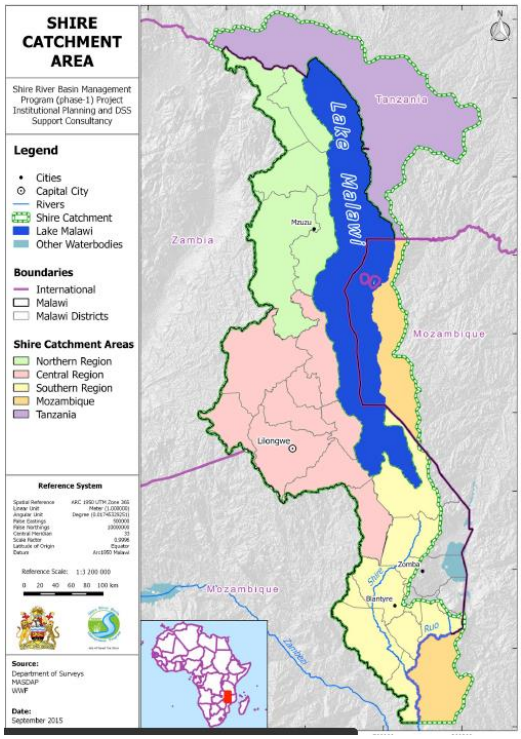
Project Objectives

159. The project objective is to support communities in the Shire basin build resilience to the adverse impacts of changes in current climate variability and projected future changes in climate (for example, increasing temperatures) through sustainable watershed management practices that protect **local ecosystems and increase livelihood options,** especially for women as they do not have equal access to and control over water resources but play a central role in the management and safeguarding of water for households' use.

Geographical Scope

160. The SRBMP 2 will retain a focus on the Shire Valley. PPCR funding will focus on building community resilience in the Lower Shire basin particularly on the lower floodplains. In this area, communities are particularly exposed to regular cycles of prolonged drought and severe flooding and ecosystem health and viable livelihood options are deteriorating due to early climate change. Indicatively, IDA resources would be mobilised for investments in sustainable land management in critical sub-catchments, particularly those in the upper sub-catchments of the middle Shire Valley. Global Environment Facility (GEF) resources would be used for supporting improved management of natural ecosystems in the Upper Shire Valley landscape.

Project Components



161. Indicatively, the proposed investment project will have three components: (i) Sustainable land management in vulnerable catchments of the Shire basin to build resilience; (ii) Protection of environmental services through improved management of natural ecosystems, and (iii) Climate resilience livelihoods on the Lower Shire floodplains. It will also improve the sustainability and effectiveness of the project through incorporation of gender equality perspective throughout the project cycle.

Component 1: Sustainable Land Management in Vulnerable Sub-catchments of the Shire Basin to Build Resilience

162. This component will consolidate and expand successful approaches to sustainable land management in critical sub-catchments of the Shire basin. The proposed project will place an emphasis on engagement with communities to ensure their ownership of programme interventions. The project's coverage will consolidate ongoing work in 4 critical sub-catchments and expand this to new catchments in the basin, not covered by the SRBM 1. This will be informed by forthcoming land degradation analysis (supported by the TerrAfrica Trust Fund) that includes identification of current climate risks and future climate change considerations. During project design, a modelling exercise will be undertaken to identify priority sub-catchments to feed into this component.

163. There will be strong focus on addressing catchment degradation and poor catchment management governance, long-term improvement of rural livelihoods, and support for improving agricultural productivity to enhance incomes and food security. Specifically, this will include support for participatory catchment planning processes and interventions with traditional authorities and villages identified through these plans at local level (known as Village Level Action Plans (VLAPs). Typically, these include such interventions as:

- Continued and expanded investments in VLAP development and implementation;

- Re-forestation to restore vegetative cover on steep slopes and increase biomass wood supply. Support would include introduction of models for re-afforestation of degraded forest reserves as well as community-established and managed woodlots on customary land. New models for reforestation would be piloted at scale, including use of bamboos to stabilise slopes and generate quick returns for biomass woodfuel supply;

- Promotion of climate resilient agriculture through scale-up of Farmer Field School approaches[100];

[100] Consideration could be given to the integration of Investment 4 on Strengthening Climate Resilience of Smallholder Farmers in Malawi into this component.

- Contour ridging and water harvesting based on experience from the SRBMP, Phase 1; and

- Targeted measures to address severe gullying is specific areas.

Component 2: Protection of natural ecosystems and environmental services through improved management of natural ecosystems to protect and build resilience.

164. Currently national parks, wildlife reserves, and forest reserves cover 18% (1.7 million hectares) of the land mass of Malawi and a substantial proportion of the Shire Valley. If properly protected, and this protection is enforced, these resources will continue to contribute significantly to address the drivers of climate change through afforestation and reforestation practices, carbon storage and sequestration, and through best practice land management to combat land degradation. Currently, forests are being lost and (especially) degraded at a substantial rate, driven by a range of factors, including conversion for agricultural use, over-harvesting of firewood, cutting for charcoal production and increasing frequency of forest fires. Future management of forests will need to respond to these driving factors and these are likely to change and intensify as population pressures continue to grow, remaining forests decline in both quality and coverage and as changing climatic factors influence regeneration, forest fire frequency etc. Investing in the sustainable management and conservation of these remaining natural habitats, with strategies and interventions that are informed by climate modelling, offers a potentially cost-effective way of protecting ecosystem services and contributing to resilience.

165. This component will invest in sustainable management of conservation areas (forest reserves and protected areas), especially those in the Upper and Middle Shire Valley (including Namizimu, Mangochi and Liwonde Forest Reserves and Liwonde National Park). This support will seek to ensure that key environmental services are protected over the long-term with improved management models and thus continue to contribute to resilience. Support will include:

- Investments in conservation areas management – including support for communities living around key conservation areas (there are no formally-designated 'buffer zones' around forest reserves or protected areas); support for improved enforcement (e.g. through training, field equipment provision) and support for conservation areas surveillance and monitoring, the former to combat growing challenges posed by illegal logging.

- Support for the scale-up of forest co-management based on successful pilots supported by previous rounds of support from the EU and WB. These provide an approach that can contribute to sustainable forest management whilst also boosting supply of forest products (including charcoal) in a sustainable way;

- Support for the development and expansion of concessions to attract and leverage private sector investment in wildlife conservation and forest management.

Component 3: Climate resilience livelihoods on the Lower Shire floodplains

166. The Lower Shire floodplains support a rapidly growing human population in the most climate-vulnerable region of Malawi. The floodplains support the country's most significant livestock rangelands and important dry season agriculture, especially adjacent to the Shire river and on the islands of the Elephant marsh. These communities are also extremely vulnerable to extreme wet season floods, the last of which, in 2015, caused major loss of life and damage to agricultural and pastoral resources and infrastructure, as well as prolonged droughts. This

component will focus on supporting these communities to have viable livelihood opportunities beyond low production agriculture and the unsustainable exploitation of forest resources. Indicative project activities would include:

- Support and invest in community-managed fisheries and livestock management both of which were identified as priority investments by the recent analysis of climate resilient livelihoods in the Lower Shire basin. Community-fisheries management interventions will be designed to boost yields and reduce damage to fish stocks from unsustainable fishing practices including the widespread use of mosquito nets. This should boost overall productivity of the fishery and make a longer-term contribution to resilience of vulnerable fishing communities. Improved livestock management should also deliver returns to local communities and should also help address damage to riverbanks within the Elephant marsh that contribute to ecological damage and lost agricultural productivity.

- Investment in the management of a newly-designated Ramsar wetland in the Elephant marshes through the establishment and operation of management zones, reporting and monitoring.

- Investment in the development of flood early warning systems, building on previous support from SRBMP1 and designed to boost resilience through provision of improved flood warnings.

Expected Project Outcomes

167. The following outcome is expected in the Shire basin:

- Improved land and water management practices;
- Enhanced resilience of ecosystems;
- Increased economically viable and environmentally sustainable livelihood options with a strong focus on integrating women's specific needs and reducing vulnerability to increased climate variability (for example, traveling a longer distance to collect water exposes women to higher risk of gender-based violence);
- Greater resilience of communities and livelihoods to climate change impacts; and
- Improved land management sustaining the supply of ecosystem goods and services.

These are summarised in the table below.

Table 11. Concept No. 1 – Overview of components, activities, outputs and outcomes

Component	Activity	Outcome
Component 1: Sustainable Land Management		
Support improvements to catchment governance	• Support for participatory catchment planning processes and interventions with traditional authorities and villages identified (Village Level Action Plans - VLAPs).	Improved capacity for catchment planning and monitoring
Rehabilitate Targeted Catchments	• Re-forestation to restore vegetative cover on steep slopes	Rehabilitation interventions identified in sub-catchment

	and increase biomass wood supply; • Introduce models for re-afforestation of degraded forest reserves; • Support community-established and managed woodlots on customary land.	plans and Village Level Action Plans are implemented Enhanced resilience of ecosystems
Improve agricultural land management techniques	• Promote soil and water conservation measures such as contour ridging, water harvesting and gully control, based on experience from Phase 1 of the SRBMP; • Promotion of climate resilient agriculture through scale-up of Farmer Field School approaches	Increased climate resilience and productivity of small-scale farming Improved land and water management practices
Component 2: Protection of environmental services		
Investment in sustainable management of forest reserves and protected areas, especially those in the Upper and Middle Shire Valley	• Investments in protected areas management – including support for communities living around key conservation areas; • Support for the scale-up of forest co-management based on successful pilots supported by previous rounds of support from the EU and WB; • Support the development and expansion of concessions to attract and leverage private sector investment in wildlife conservation and forest management.	Improved protected areas management sustains the supply of ecosystem goods and services.
Component 3: Climate resilience livelihoods on the Lower Shire floodplains		
Support small farmers – esp. women, youth and landless to have viable livelihood opportunities	• Support and invest in community-managed fisheries and livestock management; • Investment in the management of a newly-designated Ramsar wetland in the Elephant marshes. • Investment in the development of flood early warning systems.	Increased economically viable and environmentally sustainable livelihood options; Greater resilience of communities and livelihoods to climate change impacts

Implementation Arrangements

168. The recently-established Shire River Basin Organisation will coordinate implementation with sector ministries and agencies including the Ministry of Agriculture, Irrigation and Water Development (MoAIWD), Department of National Parks and Wildlife

(DNPW), Department of Fisheries (DoFi), Department of Forestry (DoF) and Environmental Affairs Department (EAD). Each component, sub-component and activity will be implemented through the relevant ministry and department. District Councils will play a crucial role in facilitating implementation of project activities at District and community levels. Institutional arrangements will be developed further during detailed design, including reporting arrangements to the NSCCC and PPCR focal points in EAD and MoFEPD.

Monitoring & Evaluation

169. M& E will be part of the PPCR Results Frameworks. Project specific monitoring will be through project specific outputs and outcome indicators.

Time Frame

170. The project duration will be 5 years.

Proposed Investment Project Two: Building Climate Change Resilience in Selected Agricultural Value Chains in Malawi

Responsible MDB:	African Development Bank (AfDB)
Total Project Cost:	US$26 million
PPCR request:	US$10 million
Co-financing (to be sought):	GoM: US$1 million, AfDB: US$5 million, GCF: US$ 10 million
Project Preparation Grant:	US$ 100,000

Background

171. As stipulated in the MGDS III, agriculture remains key to economic growth and contributing to socio-economic development in Malawi. Traditionally, the agriculture sector is divided into two subsectors, namely the smallholder subsector which constitutes about 70% of total agriculture production with more focus on food crops produced mostly under rain fed production systems, and the commercial subsector, which contributes about 30% of agricultural production with a focus on cash crops, principally sugar, tea, tobacco and cotton. The agricultural sector accounts for around 30-40% of the country's GDP and contributes about 90% of the country's national export earnings. The largest percentage of the country's workforce, around 80 - 85% is absorbed by the sector. The sector is also key to national and household food and nutritional security. About 99% of Malawi's national food production is grown during a single rainfed growing season which has put the country at risk in the face of changing climatic conditions. For example, the droughts of 2015/2016 did lead to 30% reduction in maize production, affecting the national food security given that maize is the main staple food in Malawi. Major changes observed in climate change and weather variability include increased frequency of droughts as well as irregular flooding both of which affect agricultural production in the country. Currently there are many on-going agricultural development programmes funded by several development partners including the African Development Bank and the World Bank. The African Development Bank intends to build on its on-going agricultural development programmes as well as linking up with other initiatives to build resilience in the agricultural sector in Malawi. Targeting climate smart agriculture in the agricultural production systems as well as improving value chain systems in our agricultural production.

172. However, the agricultural productive capacity is being undermined by changes in climatic conditions that has made weather and climate highly unpredictable. Malawi has experienced weather variability and climate extremes most them highly unpredictable due to lack of serious early warning systems to detect and forestall changes in climatic conditions with several impacts and associated risks. The negative impacts are exacerbated by other challenges that include poor access to and low use and application of meteorological information and services. The limitation in the access and use of reliable weather and climate information by farmers reduces their preparedness to respond to the climate shocks. This has resulted in regular crop failures, post-harvest losses and consequently regular famines and dependence on humanitarian relief. In addition, low agricultural diversification and lack of access to climate resilient technologies, low rates of irrigation development, small landholding sizes, land degradation and under-developed market systems, among other factors have combined to contribute to increased vulnerability by the farming communities in Malawi. Overall, poor agricultural performance has a big negative effect on the national economy hence the need to ensure good agricultural production management. Good agricultural production

management should be complemented with applications of farming techniques, production processes and agricultural processing systems and marketing that are climate smart as an integral part of climate change resilient agricultural production. The proposed project aims to improve resilience mechanisms as a way of increasing adaptation to climate change and supporting mitigation interventions to reduce causes anthropogenic causes of climate change and subsequently minimise the adverse effects of climate change thereby reducing vulnerability of communities and ecosystems while promoting economic development and landscape/ecosystems integrity.

173. There have been efforts to implement projects and programs to address the impacts of climate change in the agricultural sector as well as other economic sectors. However, such initiatives have tended to be small, fragmented and sometimes implemented on a pilot basis hence lacking the transformative impacts that can bring about significant resilience at community, regional and national levels. The design of the proposed initiative under the Pilot Program for Climate Resilience (PPCR) intends to take a programmatic approach that will include climate smart agricultural production systems that combine good agricultural land use practices, improved land and water management systems, water harvesting and management programmes as well as good use of climate and weather information to address information needs of the agricultural sector. The programme will also include climate smart agricultural produce processing systems while incorporating good storage and marketing infrastructure in addressing climate change impacts to build resilience in the various segments within the agricultural value chain system. The emphasis will be a transition to a more comprehensive systematic approach on large scale both in space and time and having a commercial orientation in the agricultural production through sustainable land and water management technologies and practices incorporating intensification and mechanisation of agricultural production in Malawi.

174. The outcomes of the programme will be documented for replication in other parts of the country. The programme aims at addressing the acute food and nutritional insecurity while promoting agro-processing, value addition and manufacturing initiatives for export, and, enhancing ecosystem integrity. In achieving these broader and long-term objectives, the programme will be linked to various Malawi's development strategies and programmes such as: (i) Malawi Vision 2020; (ii) Malawi Growth and Development Strategy; (iii) Malawi National Resilience Strategy; (iv) Malawi's Nationally Determined Contributions (NDC); (v) the Climate Change Management Policy; and, (vi) the Malawi Climate Change Investment Plan.

175. Activities to ensure ecosystems integrity will encompass good land and water management practices hence supporting the development of on-farm water management programmes while improving water infiltration and percolation to improve stream flow systems which can be used to support interventions in agriculture, health, energy as well as transport sectors.

176. In view of the fact that effective responses to climate change are context specific and often best addressed at the local level, the programme will support extensive use of information generated from the weather and climate services in a timely, site specific and accurate manner and within a timeframe to ensure resilience of the targeted communities. While the Malawi meteorological service sector has provided useful information, the sector is fraught with major challenges including fewer functional observational stations, shortage of trained personnel, vandalism of weather data collection equipment, weak telecommunications support systems, and inadequate data processing and information dissemination facilities. These challenges

compromise service delivery to meet national, regional and international benchmarks. The programme will intensify the use of weather and climate information from the weather and climate services that has been proposed by the DCCMS to address the challenges of lack of timely information for the agricultural production and agricultural value chain systems on the basis of authoritative weather and climate information. Agriculture is dominated by the rural poor population in Malawi. As such the government will ensure that there is specific focus on strategies to achieve high levels of empowerment, particularly for women who constitute the greatest proportion of farm workers while enticing the participation of the youth and vulnerable groups as enshrined in the National Agriculture Policy of 2016.

177. The country's newly formulated National Agriculture Policy (NAP) has emphasised value chain development and commercialisation as a means of promoting sustained growth in the agricultural sector. The nation's agriculture transformation agenda as encapsulated in the NAP aims to facilitate transition of farming communities from subsistence production to non-traditional high-value agricultural value chain systems that will ultimately result in wealth creation and poverty reduction while sustaining food and nutritional security. The Policy articulates specific priorities needed to achieve this agricultural transformation including sustainable agricultural production and productivity. The programme will endeavour to support climate smart agriculture that will include sustainable irrigation development; mechanisation of agriculture; climate proof agricultural market development, agricultural risk management including climate risk based insurance; climate smart agro-processing and value addition.

178. Addressing climate risks along the entire value chain is critical to strengthening value chains and fostering linkages to functional markets facilitated with climate proof storage facilities and improved transportation systems. In fact, climate hazards such as drought, floods and changing rainfall patterns negatively affect all the agricultural value chain segments as such the programme will identify the impacts of climate change and weather variability at the different value chain segments. Hence, climate change resilient approaches in the sector will include climate risk analysis and vulnerability assessments of critical production, storage, distribution, processing and marketing systems and consumption. The ultimate goals are to improve productivity and production of the selected crops, reduce post-harvest losses and enhance quality of products, and build in commercial possibilities of linking smallholder agriculture to markets through strengthening farmer organisations.

179. Poverty in Malawi is especially widespread among female-headed households, suggesting that investing in agricultural growth has benefits both for poverty reduction and for gender equality. Systematic gender differences persist in agricultural productivity, mostly due to differences in: (i) access to and use of agricultural inputs, including improved technologies; (ii) tenure security and related investments in land; (iii) market and credit access; (iv) human and physical capital; and (v) informal institutional constraints affecting farm/plot management and the marketing of agricultural produce. It is believed that women provide more than 80% of agricultural labour, yet they continue to be disadvantaged in matters of control and ownership of land especially under the customary land tenure system. Women provide the most housework, unpaid child and elderly care, constraining their own ability to increase agricultural productivity. Women use lower levels of agricultural inputs such as improved seeds, inorganic fertilisers, and extension services compared to men due to high poverty levels which reduces their ability to purchase and use such high cost inputs. Addressing these gender differences coupled with climate smart agricultural production practices could result in tremendous agricultural production gains. The program will make use of farmer's cooperatives, women groups and youth groups to ensure they benefit, considering the limitation women have when it comes to access or owning land. The Programme will also ensure that when it comes to

agriculture value chain, crop analysis will be carried out to ensure crops dominated by women are included in the value chain. Women and youths will be trained in agricultural technologies and provided with needed extension services. The intervention will also support promoting alternative income generating activities as a way of ensuring environmental conservation and economy sustainability; where by women and youth will benefit from the project by making use of their skills and participate in the project as decision makers.

Project Description

180. The proposed project will focus on supporting the development of inclusive climate change resilience in in high value crops and drought tolerant crops. Among these are Soybeans, Groundnuts, Sorghum and Pigeon Peas value chains. In order to maximise land use, efforts will be made to incorporate Dairy value chain in the programme. The project will support investments climate smart agricultural production systems of the selected crop value chains to improve livelihoods through increased production and productivity, supporting agribusiness processing and value addition, strengthen farmer organisations to enhance their market access potential and build communities capacities in farming systems while supporting climate smart financing such as climate/weather risk insurance, funding certified seed supplies through a voucher system, etc. for the selected value chains. Prior to the commencement of the programme, it is recommended that analytical studies using the preparatory grants will be carried out to generate information necessary for assessing climate/weather risks for each targeted crop value chain. The analytical studies are expected to generate detailed information that will help in designing a better programme for enhancing climate change resilience in the identified crop value chains.

181. Long-term adaptation against climate change and climate variability in Malawi, evidently requires measures that support a total and sustainable transformation of current agricultural systems. This will combine the increase of financial investments and deliberate efforts geared towards technology transfer and improved farming knowledge through capacity building in farming. Efforts will be aimed at supporting development of the key resilience pillars for adaptation: (i) adaptation measures that could bring large incremental gains and changes, including technical interventions, governance, policy frameworks, and institutions; (ii) (ii) effective adaptation and transformation of agriculture in Malawi conditional on addressing current knowledge and capacity gaps that are inherent in the systems and will inevitably be aggravated under the new transformational processes. The programme will incorporate establishment of mechanisms of collecting and analysis of climate and weather-related data and documentation of the same as part of the overall agricultural production and management system. For example, there is evidence on impacts of climate change and variability on agricultural systems in Malawi, but not in sufficient detail and scale to inform disaggregated planning and decision-making processes for specific contexts and in specific crop value chains

Project Location and Beneficiaries

182. The project will be implemented in Zomba, Salima, Mzimba, Kasungu and Karonga districts. The primary beneficiaries for the proposed are small-holder and medium scale farmers, and agro-processors.

Complementarity with on-going programmes

183. The proposed project will upscale lessons learnt from implementing the Climate Adaptation and Rural Livelihoods (CARLA) Project on adaptation to climate change in Malawi

being funded by the African Development Bank. Furthermore, the proposed project will upscale climate resilient good agricultural practices on the selected values chains that have been promoted under the Agriculture Sector Wide Approach-Support Project (ASWAp-SP), and the Sustainable Agricultural Production Project (SAPP) funded by the World Bank.

Project goal

184. The goal of the project is to improve agricultural production and productivity in the selected crop value chains through incorporation of climate smart agricultural production systems by managing key agricultural risks including weather and climate change through scaling up climate resilient technologies in Soybeans, Groundnuts, Sorghum, Pigeon Peas and Dairy value chains.

Project Specific Objectives

185. The specific objectives include: (i) Build resilience of agricultural livelihoods of communities through adoption of climate smart agricultural practices in the production processes and incorporating climate smart agro-processing, marketing and transportation to minimise adverse effects of changes in climatic and weather conditions; (ii) to support agro-meteorological information collection, analysis and management in relation to crop production, processing, marketing and transportation; ; (iii) to Promote climate smart agribusiness systems to enhance competitiveness and market access for smallholder farmers while building resilience to climate change; and, (iv) to ensure inclusivity of gender inclusion, vulnerable groups and the youth in order to build resilience through increased farm incomes of the vulnerable groups through the selected crop value chains.

Project Components

186. The proposed project will comprise four components (i) Sustainable resilient agriculture production and productivity through the use of climate smart crop production practices and systems; (ii) support for the generation, management and analysis of agro-meteorological information systems; (iii) supporting the development of climate proofed agribusiness, value-addition to enhance competitiveness and market access (iv) Project Management, Coordination and Monitoring and Evaluation.

Component 1: Climate smart sustainable resilient Agriculture Production and Productivity systems

187. This component will focus on addressing key constraints in the agriculture production systems. Potential activities will include: (i) Promoting sustainable land and water management practices that will include soil and water conservation techniques to conserve the limited moisture and reduce run-off under drought conditions, on-farm water harvesting and irrigation development, catchment conservation through alternative livelihoods activities, agro-forestry practices, reduced tillage and mulching to improve soil structure and soil fertility, afforestation and support to regeneration of natural forests and use of good agricultural practices; (ii) Building the capacity of local farmers in the use of appropriate climate change resilience technologies including the use of appropriate farm inputs, production technologies, post-harvest management including good storage and market facilities and market information systems; (iii) Supporting the distribution and access to improved and stress tolerant planting materials and diversification and intensification of agricultural production in target areas; (iv) Expand access to financing for adoption of climate resilient technologies and other agricultural technologies. (Potential studies: investigate models or financing channels for climate resilient

financing for agribusiness such as index-based weather insurance and other risk-sharing facilities); (v) Finding mechanisms to facilitate private sector engagement and public-private coordination that can increase the adoption of climate resilient strategies to enhance agribusiness productivity and resilience; (vi) Enhance climate services information for improved capacity of value chain operators to access, interpret and apply climate information to increase their ability to maintain and or improve productivity levels; and, (vii) Enhance the research and extension linkages in the generation and dissemination of climate resilient technologies.

Component 2: To support agro-meteorological information collection, analysis and management in relation to crop production, processing, marketing and transportation

188. This component will include agro-meteorological data and information as well as analysis and management of the same information in supporting crop production, agricultural produce processing, marketing and transportation. Key activities will include: (i) linking up with agro-meteorological climate/weather data collection systems within the country; (ii) generation and analysis of the requisite data and information; (iii) dissemination of the information for the wider use by the farmers and other interested stakeholders.

Component 3: Supporting climate proofed Agribusiness, Value-Addition, Competitiveness and Market access

189. This component will include post-production interventions. The identified activities will include: (i) Supporting development of basic climate resilient facilities such as storage facilities, climate proofed roads, value addition processing and warehousing to enhance urban-rural market linkages; (ii) use and application of relevant weather and climate information necessary for processing, storage and transportation of the various crop value chains; (iii) Strengthening farmer organisations to improve market access and linkages; (iv) Supporting the resilience of linkages between smallholder farmers and markets through provision of improved market information services/systems through market analysis for decision making by farmers; (iv) Develop new funding mechanisms and frameworks that provide incentives for investment in new/alternative value chain development including support for emerging processing industries and marketing channels; (v) Promoting waste reduction through value-addition of by-products from processing activities; and, (vi) Adoption of successful anchor models/out grower schemes to enhance the transformation of the smallholder farmers from subsistence based farming towards sustainable commercial production.

Component 4: Strengthening the link between small scale farmers and large-scale farmers through enhanced participation of the private sector

190. As part of enhancing and improving crop production resilience, the link between smallholder farmers and large-scale farmers need strengthening whereby large-scale farmers will act as the private sector. The proposed project will promote contract farming arrangements in the form of out-grower scheme models and other applicable arrangements. This will be implemented within the framework of the existing contract farming strategies already underway in the country. Proposed activities will include: (i) identification of large scale farmers who might be interested in contracting the small-scale farmers through the contract arrangement; (ii) capacity building of the small-scale farmers to be able to produce crops at the quality levels that will be purchased by the large-scale farmers; (iii) public awareness and education and making information available to both large scale and small-scale farmers.

Component 5: Project Management, Coordination and Monitoring and Evaluation

191. The Project shall be coordinated by Environmental Affairs Department and will follow and use coordination structures that have been established by the National Climate Change Management Policy. In this regard, policy direction and guidance will be provided by the National Steering Committee on Climate Change (NSCCC) and the National Technical Committee on Climate Change will provide technical direction throughout the design and implementation of the project. A finance and Administration officer will be recruited to ensure transparent financial management as well as assist on procurement issues.

192. The Ministry of Finance, Economic Planning and Development (MFEPD) shall provide guidance on the overall monitoring and evaluation of the program. Thus, MFEPD will assist in the development of the program's/projects' monitoring and evaluation plan to ensure that it is in line with the Government's requirements.

193. The Ministry of Agriculture, Irrigation and Water Development will be the key implementing partner for the project. The PS Agriculture will coordinate the preparation of the project's annual work plans and budgets by the Departments of Crop Development, Animal Health and Livestock Development, Land Resources Conservation and Extension Services which will be directly involved in the day to day implementation of project activities through the Department of Agricultural Planning Services. Furthermore, the PS Agriculture will be responsible for monitoring and production of the projects quarterly and annual performance reports which will in turn be submitted/presented to the National Steering Committee on Climate Change.

Table 12. Concept No. 2 – Overview of components, activities, outputs and outcomes

Component	Activities	Outputs	Outcomes
Component 1: Climate Smart Agricultural Production Systems and practices			
Improving agricultural production and productivity	• Promoting sustainable land and water management practices that will include terracing to reduce run-off, on-farm water harvesting, agro-forestry practices and mulching to improve soil structure and soil fertility, general tree planting programmes, etc • Building the capacity of local farmers in the use of appropriate climate change resilience technologies including the use of appropriate farm inputs, post-harvest management including good storage facilities • Supporting the distribution and access to improved and stress	• Improved water infiltration • Improved agricultural outputs • Improved soil fertility • Improved tree cover • Both men and women including the youth trained • Good managed farms • Availability of appropriate planting materials • Increased yields • Increased availability of financial resources to support	Land management systems and agricultural production and outputs improved

	tolerant planting materials and diversification and intensification of agricultural production in target areas • Expand access to financing for adoption of CSA and other agricultural technologies. (Potential studies: investigate models or financing channels for climate smart financing for agribusiness such as index-based weather insurance and other risk-sharing facilities) • Finding mechanisms to facilitate private sector engagement and public-private coordination that can increase the adoption of CSA strategies to enhance agribusiness productivity and resilience • Enhance climate services information for improved capacity of value chain operators to access, interpret and climate information to increase their ability to improve productivity levels	agricultural production • Availability of different credit lines • Increased involvement of the private sector • Increased use of real-time weather information in agricultural value chain	
Component 2: To support agro-meteorological information collection, analysis and management in relation to crop production, processing, marketing and transportation			
Agro-meteorological data and information collection, analysis and management	• Linking up with agro-meteorological climate/weather data collection systems within the country • Generation and analysis of the requisite data and information • Dissemination of the information for the wider	• Improved data and information flow between the meteorological centres and farmers • Increased availability of relevant agro-	Availability of agro-meteorological information enhanced

	use by the farmers and other interested stakeholders	meteorological information • Free flow of agro-meteorological information to farmers and other users	
Component 3: Agribusiness, Value-Addition, and Competitiveness Market Access			
Climate smart Agribusiness processing, value addition, competitiveness and market access	• Supporting development of basic storage and transportation facilities • strengthening farmer organisations to improve market access and linkages • Supporting provision of improved market information services/systems through market analysis • Develop new funding mechanisms and frameworks that provide incentives for investment • Promoting waste reduction through value-addition of by-products	• Modern basic storage and transportation facilities developed in targeted areas • Increased access to markets and marketing facilities • Increased availability of market information • Increased agricultural credit lines and increased participation of the private sector in the agricultural value chains • Reduced solid waste generation from the agribusiness processing	Value of agricultural products in the selected value chains increased and market access enhanced
Component 4: Strengthening the link between small scale farmers and large-scale farmers through enhanced participation of the private sector			
Strengthening the link between small scale farmers and large-scale farmers through enhanced participation of the private sector	• Identification of large scale farmers who might be interested in contracting the small-scale farmers through the contract arrangement • Capacity building of the small-scale farmers to be able to produce crops at the quality levels that will be purchased by the large-scale farmers	• A list of identified large scale farmers as well as that of willing contract farmers in the project localities • Extensive engagement of agricultural extension officers • A good percentage of farmers trained to produce the	Participation of the private sector in the identified crop value chains enhanced Crop production knowledge enhanced

	• Public awareness and education and making information available to both large scale and small-scale farmers	identified crop value chains at the standards required by the industry players • Increased flow of information between the small-scale farmers and large-scale farmers	
Component 5: Project management, coordination and M&E			
Project Management, Monitoring & Evaluation	• Day-to-day management of the project by the project management unit • Coordination & Knowledge dissemination • Monitoring & Evaluation.	• Good project management systems put in place • Improved project management practices applied • Success stories documented, packaged and disseminated • Monitoring and evaluation tools with monitoring and evaluation indicators developed	Good project management practices as well as monitoring and evaluation

Implementation Arrangements

194. The proposed project will be implemented by the Ministry of Agriculture, Irrigation and Water Development and Ministry of Energy, Environment and Natural Resources (Specifically Department of Environmental Affairs) as lead institutions. The PPCR steering committee shall comprise members of the National Steering Committee on Climate Change. The table below provides specific institutions that will be involved in implementing each component of the project.

Table 13. Concept No. 2 - Proposed implementation arrangements

Component	Implementing Institutions
Component 1: Climate Smart Agriculture Production and Productivity	Ministry of Agriculture, Irrigation and Water Development (Lead); Department of crop production, Extension Services,
Component 2: Agro-meteorological information and management	Department of Environmental Affairs

Component 3: Climate proofed Agribusiness, Value-Addition, and Competitiveness Market Access	Ministry of Agriculture, Irrigation and Water Development (Lead); Ministry of Industry and Trade; Department of Environmental Affairs
Component 4: Strengthened link between large scale farmers and small-scale farmers to enhance private sector participation	Ministry of Agriculture, Irrigation and Water Development (Lead); Ministry of Industry and Trade; Department of Environmental Affairs
Component 5: Project Management, Coordination and Monitoring and Evaluation	Ministry of Agriculture, Irrigation and Water Development (Lead); Ministry of; Department of Environmental Affairs; Ministry of Finance, Economic Planning and Development

Proposed Project Budget

195. The total estimated cost for the proposed project is US$ 26 million.

Project Preparation Grant

196. The project preparation grant amounting to US$ 100,000-would be required for detailed project designs which would be informed by assessments of the magnitude of climate impacts on the identified value chains. Furthermore, the project preparation grant will be used in preparation of other documents (such the Project Implementation Manual, the Monitoring and Evaluation Plans and Environmental Safeguards documents that will be required to successfully implement the project.

Proposed Investment Project Three: Sustainable Fisheries Sector and Fisheries Value Chain in Malawi through Improved Climate Resilient Lake Ecosystem Conservation and Management

Responsible MDB:	African Development Bank (AfDB)
Total Project Cost:	US$18.2 million
PPCR request:	US$10 million
Co-financing (to be sought):	GoM: US$0.2 million, AfDB: US$3 million, GCF: US$ 5 million
Project Preparation Grant:	US$ 100,000

Background

197. Malawi's fisheries sector is of great importance to the national economy as it contributes 4% to the Gross Domestic Product (GDP) and is also a source of employment, food, rural income, export, import substitution and conservation of biodiversity. The sector directly employs over 60,000 fishers and 9,000 fish farmers and indirectly supports 500,000 people who are involved in fish processing, fish marketing, boat building and engine repairs. Over the years more and more women have become engaged in the fish production sector through fish processing and marketing while some own fishing gears hence directly engaging in fish production. Millions of people depend on fish for their dietary requirement as over 60% of dietary animal protein intake and 40% of the total protein supply of Malawians comes from fish. Much of the fish is consumed in rural areas, contributing significantly to daily nutritional requirements.

198. The sector has, however, been experiencing a number of challenges that has led to dwindling fish supplies especially high value fish species like Chambo (Oreochromis sp) and has subsequently reduced per capita fish consumption in Malawi. Over the past three decades, production in per capita terms has fallen from 12.9 kg, to about 8 kg. Given that some of the fish catch is for sale, the reduced supplies have reduced the per capita consumption of 13-15kg per annum as recommended by the World Health Organisation (WHO). The decline in the per capita supply and protein intake has resulted in serious nutritional implications for the nation especially to some vulnerable groups such as the HIV/ AIDS infected people, the aged, orphans and the poor.

199. The main issues related to the declining catches include the open access nature to the fishing systems in Malawi that leads to overcapacity and subsequent over-fishing; limited capacity to enforce fishing laws; weak locally based fisheries governance structures, limited alternative income sources among the fishing communities; gender inequality and environmental degradation due to poor land use patterns; and increased pressure on natural resources including fish due to high population growth. In addition to these socio-economic challenges, the fish sector has been affected by climate shocks resulting from changes in climatic conditions such as increased frequency of droughts and regularly occurring floods that affect the water supply systems in the country. The effects and impacts of climate variability and change on the fisheries sector has become a significant policy discourse for sustainable livelihoods of the dependent fishing communities in Malawi. Increases in seasonal and annual rainfall variability and resulting flood and drought extremes are additional consequences of changes in climatic conditions affecting fish capture and aquaculture production (World Fish, 2007). The extreme weather events (e.g., droughts, heat stress) are believed to have impacts on

production and productivity in the fisheries sector including loss of access to water and stocked fish in ponds.

200. Effects of the 2015 flooding episodes led to shifts in fish species, loss of fishing assets, destitution of the affected fishing communities and destruction of aquaculture infrastructure such as flooding of fish ponds. In the Lower Shire River system, for example, there was an increase in fish landings of cyprinids (bream) while cichlids like Oreochromis species decreased in abundance. In the same area and in Lake Chilwa, there was a heavy loss of fishing assets including fishing vessels and fishing gear due to floods. In the northern part of Lake Malawi (Karonga) fishermen reported that floods led to destitution while in some parts stocked fish were swept away from the flooded fish ponds. Although not validated through scientific research, the fishermen reported having observed changes in climatic conditions and changes in periodic weather patterns which they believe have led to changes in breeding patterns of Usipa (Engraulicypris Ardella) resulting in increased supplies of this particular fish species (Njaya 2015). A similar observation was made on Lake Malombe with high landings of Usipa catches.

201. Whereas there has been a link between human activities like deforestation, poor catchment practices, poor farming practices and overfishing that have adversely impacted on the fishing and aquaculture, it is believed that the changing climate seems to be contributing and likely affecting and exacerbating the problems experienced in the fishing sector in Malawi. The vulnerability of fisheries and the negative impacts on the fishing communities seems to be highly associated with climate variability and climate change especially depending on the fish exposure and sensitivity to changes such as lake water temperatures which could potentially be affecting reproduction, breeding, development and fish health. The anthropogenic activities that lead to deforestation, poor catchment management, and bad land use practices are believed to be affecting the fisheries sector through destruction of fish breeding grounds and having negative impacts on the lake ecosystems and ecology. The programme therefore needs to identify how to empower the capacity of individuals and fishing systems to anticipate and adapt to such changes.

202. The vulnerability of fisheries stakeholders will vary depending on their adaptive and absorptive capacities as well as the demographic patterns of the groups or households (Cochrane et al., 2009). Lack of appropriate infrastructure such as feeder roads, ice plants, cold rooms and poor fish processing facilities leads to loss of fish quality especially during the rainy season. Post-harvest fish loss is estimated at around 30-40%, which has contributed to loss of revenue for the fishing communities, and fish processors and traders most of whom are women. Some of the fish processing methods like the traditional fish smoking methods of using open pits demand the use of large quantities of fuelwood thereby leading to environmental degradation. Women remain the largest proportion of poor people most vulnerable to the impact of climate change as it affects the fishing sector because they constitute the largest proportion of the population engaged in fish processing. The women tend to be most affected because of gendered nature of fish processing, socially determined roles which designates women to some of the fish processing activities, specific responsibilities and lack of access to capital resources by women. It is worth noting that women and men face different vulnerabilities and risks from climate change in the fishing sector, and have varied opportunities and resources upon which to draw in their adaptation strategies like migration as is the case with Usipa fishery due to the fact that women are less adaptable to migratory lifestyles. Due to gender and social exclusion, women often face barriers in benefitting from opportunities within the fisheries sector including limited access to suitable land for aquaculture, taking best advantage of new resources, leadership opportunities, and capital

assets. As such women should be highly considered when it comes to benefiting to resources created through climate investments such as the Pilot Programme for Climate Resilience (PPCR).

203. As we move into the implementation of programmes like this one, it is important that that such a programme be linked to the Government of Malawi's (GoM) developed National Climate Change Management Policy of 2016 whose priority areas include, among other priorities, the inclusion of vulnerable and disadvantaged groups such as women, the elderly, the physically and mentally challenged in the adaptation, mitigation, technology transfer and capacity building plans, as well as in projects and programme implementation. The programme will also link up very significantly to the National Fisheries and Aquaculture Policy of 2016 which highlights social development and decent work as a priority area with recognition of gender, HIV/AIDS, child labour and support for development of social amenities along the lakeshore areas.

204. The proposed project will focus on addressing some of the catchment management problems that are exacerbating the current negative impacts of climate variability while building the resilience of the fisheries sector against risks of future climate change. Among the anticipated impacts are expected to affect aquatic ecosystems and lake life and subsequently affecting fisheries resources. Activities to address such problems will include catchment management to minimise land degradation as well as conservation and protection of shoreline ecosystems to conserve fish breeding grounds and stabilising lake ecosystems. The project will also focus on the development of climate smart value chain systems in both capture fisheries and aquaculture such as good preservation systems and also taking into account good management practices in Lakes Malawi, Malombe and Chilwa. As an adaptation measure, the value chain development will involve value addition and specialised climate smart preservation systems for the small fish species like Engraulicypri carpella, Lotharios sp and Haplochromine sp), and other large fish species including Ramphrochromis sp and Bagrus spp that have been found to be more climate change tolerant fish species. Abundance of the fish species caught and landed on a beach and quality of fish products taken along the value chain are however affected by certain factors like weather or climatic conditions, lunar phase and fish processing facilities. The intervention will also support promoting alternative income generating activities as a way of minimising pressure on the fisheries resources and as a way of ensuring environmental conservation and sustainability.

Photo: Fishermen in the Elephant Marshes and dried fish.

The project will acknowledge how gender-specific barriers are relevant to the proposed investments and take appropriate steps to address this through the way they are designed and implemented. Given the weak capacity at the village and district council levels the project will

encourage partnerships with private and Non-State actors to ensure that adequate practical support and capacity development is available for the vulnerable stakeholders, including helping them establish user groups and assist them in accessing services. Women will therefore participate in this project in their own rights as decision makers. The project will mobilise women and the youth into cooperatives or groups to ensure that they benefit from the investment, considering the limitations they experience when it comes to access to fishing assets and technologies. The targeted youth and women will also be trained in aquaculture by constructing fish ponds or cages both for commercial use and household use.

Project objectives

205. The goal of the project is to enhance the resilience of the fisheries sector through improved management of the catchments and ecosystems of Lakes Malawi, Chilwa and Malombe by ensuring sustainable management of fisheries resources and communities against the impacts of climate change through conserving and sustainably managing immediate lake catchments and shoreline ecosystems. Specific objectives will include: (i) to enhance the sustainable fisheries management of the three lakes by enhancing conservation in the immediate catchments of the lakes; (ii) to protect and sustainably manage the shorelines and fish breeding grounds; (iii) carrying out climate information research and linking the same to the fisheries sector; (iv) to incorporate and improve climate smart fish processing and fish preservation systems into the fisheries value chains and integrate the value chains into the global fish value chains through enhancing the participation of the private sector and supporting branding; and, (v) develop a weather and climate variability monitoring system that could be used to monitor fish responses to weather and climate patterns in the three lakes; (vi) to improve fisheries resources governance, infrastructure development and value addition processes.

206. The project will have five components (i) Lake catchment conservation and shoreline protection and management; (ii) weather and climate variability monitoring and management systems including early detection systems; (iii) establishment of climate smart fish processing and management resilience systems in the fish value chain systems; (iv) Promoting innovative fisheries enterprises and business development; and, (v) Project management, coordination and monitoring and evaluation.

Component 1: Lake Catchment conservation, shoreline protection and management

207. This component will address problems caused by land degradation in catchments around the lakes that affect the aquatic ecosystems and lake life as part of the wider management plan to guard against negative impacts of weather variability and climate change through climate smart land management systems. This will focus on addressing the environmental issues along the lakeshore areas based on the Ecosystem Approach to Fisheries and Aquaculture (EFA). The component will also promote fisheries governance by incentivising participatory fisheries management or co-management with Beach Village Committees (BVCs)[101] for effective enforcement of fishing regulations and by-laws. Activities in this component will include:

i. good land use practices and environmental conservation within the surrounding catchments of the lakes including land and water management practices;

[101] Community-based committees composed of fishers, fish processors and traders involved in the management of fisheries resources with the Department of Fisheries, District Councils and other non-state actors

ii. providing alternative livelihood activities such as fruit tree production, bee keeping, fish pond or cage farming development;

iii. incentivise the locally based fisheries governance structures to effectively manage the aquatic resources; and

iv. enhance the linkages between the fisheries departments and other relevant key institutions such as agriculture, forestry, water and local government.

Component 2: establishment of weather and climate variability research and monitoring system

208. The principal activities of this component will include:

i. collect relevant weather and climate variability information

ii. carry out research to link weather and climate variability information to fisheries sector management system

iii. monitoring fish species behaviours and changes to climate and weather variability in the 3 lakes

Component 3: Supporting climate smart fish processing and storage systems to enhance resilient fish value chain systems

209. The focus for this component will be to improve resilience of the fishing communities in the project site. The component will focus on fish processing and value addition along the fish value chain from production to marketing. The project will provide storage fish storage and cooling facilities on selected beaches and in city markets to ensure high quality fish products and increased market prices. At fish production node, the targeted beneficiaries will be supported with necessary storage facilities on board to ensure that fish caught is preserved in ice on lake just after catching and use refrigerated trucks to ensure fish is kept in good quality along the supply chain. Use of prototype steel or fiberglass fishing boats will be promoted instead of using wooden boats. In collaboration with the Community Training Colleges or TEVET, some youth groups will be supported in boat building industry with advocacy on steel boats. Identified activities under this component will include:

i. supporting solar cooling storage facilities and infrastructure for processing, storage and transportation systems;

ii. supporting drying and processing systems using sustainable energy systems to minimise on deforestation;

iii. development of large deep fish ponds to reduce in lake fishing pressure;

iv. support improved fisheries management through formation of fisheries co-operative societies that will enhance the capacity of fishers and fisherwomen to access markets and fishing materials such as the BVCs to manage fisheries resources as cooperative;

v. support the alignment of policies and strategies for value addition and trade promotion integrating economic performance, food security, sustainability and social protection;

vi. promote improved technologies to scale up including feed technologies that take account of various targeted gender groups mainly women and youth; and

210. promote climate resilient fish breeds through deliberate breeding programmes that will target and include analysis systems for fish species monitoring for fisheries and aquaculture under different climate regimes.

211. promote climate resilient aquaculture (pond-based and cage farming) development that targets researched fish species that can do better in different conditions. The programme will take into consideration various vulnerable groups among them targeted gender groups mainly women and youth; and constructing and testing prototype non-wooden type of fishing vessels.

Component 4: Promoting innovative fisheries enterprises and business development

212. Component 4 will deal with promotion of innovative fisheries enterprises and business development that will include climate smart fish processing, storage and transportation systems. Innovative issues of risk mitigation options such as insurance are critical under this programme. The activities to help implement this component will include:

i. promoting climate smart fish processing, storage and transportation systems

ii. providing incentives for sustainable fisheries management;

iii. supporting restoration of overfished stocks in hotspot areas of the three lakes while ensuring conservation and protection of aquatic ecosystems;

iv. support mechanisms that will improve capacity of Government, fish farmers and young entrepreneurs in developing climate resilient strategies and management practices to stimulate investment in the fisheries sector;

v. support increased opportunities for the small and medium enterprises (SME investment in aquaculture value chain;

vi. support development of credit lines targeting the fisheries sector and find mechanisms for credit risk sharing with commercial banks;

vii. advance regulatory reforms for improved disease monitoring and enforcement, stocking density as well as better water management;

viii. promote rights based fisheries management;

ix. establish an incubating programme for the fisheries sector and develop business incubation strategies;

x. establish demonstration fish farms/agribusinesses as centres for profitable innovation; and,

213. training on the use of video clips to document successful youth agribusiness for sharing to the wider public, particularly through social media and news coverage.

Component 5: Project Management, Coordination, Monitoring and Evaluation

214. The Project Management, Coordination, Monitoring and Evaluation component will ensure effective implementation of the project based on set targets and indicators. The Ministry of Finance, Economic Planning and Development will jointly carry out monitoring activities of the project implementation through field visits, reports (monthly, quarterly, semi-annual and annual) with Department of Fisheries by involving the beneficiaries especially district councils.

Other key stakeholders will include Malawi Bureau of Standards, Ministry of Gender, Department of Nutrition, Ministry of Lands, Community Colleges, TEVET, traditional leaders, civil society groups and NGOs. Steering and technical meetings will also provide appropriate platform for monitoring of the project. Mid-term evaluation will be conducted to assess effectiveness and efficiency of the project design by focusing on how the project is achieving its objectives against the set targets against while project completion report will be prepared to determine impact of the project on the livelihoods of the beneficiaries. Specific activities under this component will include:

i. technically identify, plan, design and support all activities with specific indicators

ii. prepare the Annual Work Plan, Budget and monitoring plan;

iii. conducting day-to-day implementation of the project in line with the AWP;

iv. ensure a results-based approach to project implementation, including maintaining a focus on project results and impacts as defined by the results framework indicators;

v. coordinate project interventions with other on-going activities;

vi. monitor project implementation progress;

vii. facilitate and support the mid-term evaluation/review and final evaluation of the project; and

viii. promote network with other relevant stakeholders for effective implementation of the project activities.

Time frame

215. The project will run for 5 years from January 2018 to December 2023.

Project areas and beneficiaries

216. The projects sites will include Lake Malawi (Mangochi, Salima, Nkhitakota, Likoma, Nkhata bay, Rumphi and Karonga); Lake Malombe (Mangochi and Balaka) and Lake Chilwa (Zomba, Matching and Phalombe). Centralised fishing landing centres with cold rooms, iceplants and feeder roads will be established in selected areas. Jetties will also be constructed in Khayat bay, Likoma, Nkhotakota, Salima (Limuru) and Mangochi (Namiasi). Cage culturing including hatchery establishment and fish value chain activities will be implemented in the established landing centres along Lake Malawi. Alternative income generating activities will be promoted around Lake Malombe where a moratorium to open water seining will be declared. Specifically, the project will target the women-headed households; widows and the rural youths (both boys and girls); and people living with HIV/AIDS or caring for HIV and orphans. It is noted that vulnerable communities have an important role in the development of an effective and efficient medium and long-term adaptation plan for the country102. Since the vulnerable groups are the ones that are directly impacted by the negative effects of climate change, they are able to articulate the real adaptation needs through experience. Adopting a bottom-up approach to investment design enhances ownership and participation of all vulnerable groups including women who often carry the burden of climate change. Additionally, committees such

as Village Development Committees (VDCs) and Civil Protection Committees (CPCs) will play a leading role in ensuring that differing gender needs are adequately addressed in local level adaptation planning. The PPCR investments and interventions will be gender-responsive, as there are differences in the way that men and women can respond to interventions and investments which will demand proper design for building climate resilience. Investments that remove structural barriers present an opportunity for women's empowerment, economic development and societal resilience to climate change.

Implementation arrangements

217. The Ministry of Finance, Economic Planning and Development together with Ministry of Natural Resources, Energy and Mining, will be the lead government agencies for the proposed project. The Department of Fisheries through the Ministry of Agriculture, Irrigation and Water development will be responsible for implementation of the project. A Project Management Unit (PMU) led by a National Project Coordinator (NPC) will responsible for the overall operational coordination of all aspects of the project. Considering a multi-sectoral approach, a Project Steering Committee (PSC) composed of representatives from lead agencies and other key actors in the sector (including the private sector) will be established to provide policy level guidance to project implementation. Each of the components of this project like will be implemented by an institution with comparative technical capacity and mandate taking into consideration the linkages of the activities to various government policies, government strategies and national development blueprints.

Project budget by component

218. The project budget is estimated at US$ 18.2 million.

Table 14. Concept No. 3 – Overview of components, activities, outputs and outcomes

Component	Activities	Outputs	Outcomes
Component 1: Lake Catchment conservation and shoreline protection and management			
Lake Catchment conservation and shoreline protection and management	• Promote good land use practices and environmental conservation within the surrounding catchments of the lakes including land and water management practices • Providing alternative livelihood activities such as fruit tree production, bee keeping, fish pond development • Mobilisation of communities around aquatic ecosystems • Introduce fishery enhancement measures	• Improved and sustainable catchments that will improve fish production • Enhanced fish breeding grounds • Improved aquatic ecosystems to support fishery resources • Reduced pressure on fishery resources	Lake catchment environment and aquatic ecosystems improved to improve the supply of fish resources
Component 2: Supporting Climate resilient value chain systems			
Supporting climate resilient value chain systems	• Supporting solar cooling storage facilities and infrastructure • Supporting drying and processing systems using	• Fish catch wastages reduced • Deforestation reduced • Fish resources increased • Fish production and fish value chains streamlined and improved	• Fish supplies for the country and export increased • Household, community and

	sustainable energy systems to minimise on deforestation • Development of fish ponds to reduce on lake fishing pressure • Support improved fisheries management through formation of fisheries co-operative societies that will enhance the capacity of fishermen and fisherwomen to access markets and fishing materials such as the BVCs to manage fisheries resources as cooperative • Support the alignment of policies and strategies for value addition and trade promotion integrating economic performance, food security, sustainability and social protection • Promote improved technologies to scale up including feed technologies through the private sector participation • Promote climate resilient fish breeds through deliberate breeding programmes • Promote aquaculture (pond-based and cage farming) development considering at least 50% of women and the youths.	• Fisheries sector management streamlined • Income from fisheries enhanced • Food and nutritional security enhanced • Fish production improved • Fish value addition systems improved • Fish catches increased and the nutritional security improved • Fish volume in Malawi increased	national income from fish improved • Household, community and national poverty reduced
Component 3: Promoting innovative fisheries enterprises and business development			
Promoting innovative fisheries enterprises and business development	• Providing incentives for sustainable fisheries management • Supporting restoration of overfished stocks in hotspot areas of the three lakes • Support mechanisms that will improve capacity of Government, fish farmers and young entrepreneurs in developing climate resilient strategies and management practices to stimulate investment in the fisheries sector	• Improved fisheries management • Improved fish stocks • Enhanced value chain systems • Improved value chain systems • Improved financial resources in fisheries management and improved value chains • Improved fish disease control to increase stock and improved management of fisheries programmes • Controlled over-fishing • Increased awareness about fisheries value chains	• Fisheries value chains improved • Households, community and national incomes enhanced • Poverty significantly reduced

	• Support increased opportunities for the small and medium enterprises (SME) investment in aquaculture value chain • Support development of credit lines targeting the fisheries sector and find mechanisms for credit risk sharing with commercial banks • Improved business skill to be able to access these financial resources • Advance regulatory reforms for improved disease monitoring and enforcement, stocking density as well as better water management • Promote gender inclusive regulations on fisheries management. • Promote rights based fisheries management • Establish an incubating programme for the fisheries sector and develop business incubation strategies • Establish demonstration fish farms/agribusinesses as centers for profitable innovation • Training on the use of video clips to document successful youth agribusiness for sharing to the wider public	• Women and youths (both male and female) encouraged to participate in fisheries value chains • More competitive fishers and processor, including women • SME business growth in the fishery value chain	
Component 4: Project Management, Coordination, Monitoring and Evaluation			
Project Management, Coordination, Monitoring and Evaluation	• Technically identify, plan, design and support all activities with specific indicators • prepare the Annual Work Plan, Budget and monitoring plan; • conducting day-to-day implementation of the project in line with the AWP; • ensure a results-based approach to project implementation, including maintaining a focus on project results and impacts as defined by the results framework indicators;	• Successful implementation of the programme • Well defined output indicators • Monitoring and evaluation tool • Well defined monitoring and evaluation indicators • Improved fisheries sector management	• Fisheries sector management improved

	• coordinate project interventions with other on-going activities; • monitor project implementation progress; • facilitate and support the mid-term evaluation/review and final evaluation of the project; and • promote network with other relevant stakeholders for effective implementation of the project activities		

Proposed Investment Project Four: Strengthening Climate Resilience of Smallholder Farmers in Malawi[103]

Responsible MDB:	World Bank/ UN FAO
Total Project Cost:	US$13.5 million
PPCR request:	US$0 million
Co-financing (to be sought):	GoM: US$1.5 million, FAO: US$2 million, EU/Others: US$ 10 million
Project Preparation Grant:	US$ 100,000 (non PPCR)

Background and Rationale

219. Farming activities in Malawi generate 28% of Gross domestic product (GDP) and around 80% of export earnings making agriculture the largest contributor to GDP growth. Malawi agriculture comprises small-scale farmers and estates. Smallholder farmers constitute about 2 million families cultivating about 4.5 million ha of land. Smallholder production has low input and output levels. However, smallholders still produce about 80% of Malawi's food. The estate subsector contributes only about 20% of the total national agricultural production but is the nation's principal foreign exchange earner providing over 75% of agricultural exports.

220. Climate variability and emerging climate change is a major challenge for smallholder farming and rural communities dependent on agriculture and natural resources in Malawi. In 2010, the World Bank ranked Malawi as one of the 12 most vulnerable countries to climate change in Africa. In response to the growing vulnerability to the impacts of climate change, smallholder farmers and rural communities largely depend on own coping mechanisms that do not allow them overcoming low farm productivity resulting from low adoption of climate sensitive agricultural technologies, low access to farm inputs, limited knowledge and skills to address the various emerging constraints (diseases and environmental degradation), and weak linkages to markets. This is further constrained by the limited access by many farmers to information to guide their production decisions[104] and, subsequently, generally low adoption rate of new technologies. Further stumbling blocks are access to financing and smallholder integration into value chains. Women compromises a large proportion of the agricultural production, nutrition and food security at the household level, yet are found to be less productive than male farmers. This could be potentially linked to factors such as unequal access to key agricultural inputs (land, labour, finance, fertilisers, improved seeds etc.), extensive unpaid care work, limited voice and agency and lack of access of weather and climate information.

221. Key findings from a climate smart agriculture readiness project implemented by the Malawi Ministry of Agriculture, Irrigation and Water Development (MoAIWRD) and FAO (2012-2015) demonstrated that strong and effective extension services were key in facilitating adoption of improved agricultural practices, reducing vulnerability to adverse effects of climate variability and emerging climate change as well as in facilitating livelihood diversification

[103] NB: (1) PPCR Finance and Preparation Grant will have to be programmed through one of the MDBs; (2) EU funding is already committed.
[104] Currently, farmers have limited access to extension with 80% of Malawian farmers being visited by an extension worker less than once a month.

strategies, thus contributing to risk management and poverty reduction. The recent EU/Government of Malawi country – level evaluation also advocated that in the agriculture sector capacity building interventions at "grass roots" levels are more effective in terms of achieving sustainable results. Specifically, it was recommended to focus the support on capacity building of extension services to stimulate the promotion of agricultural technologies and advance practices using the Farmer Field School (FFS) approach. The National Agriculture policy (2016-2020) recognises the important contribution of the FFS methodology to successfully increase productivity and enhance climate resilience in agriculture.

222. The proposed investment project will apply the UN FAO approach to Farmer Field School (FFS) to capacity building and empowering farmers to increase production, incomes, resilience and food security. FFS capacity building of farmers will be combined with support to piloting promising climate adaptation farming practices as well scaling up proven technologies and practices both at the farmer, commune and farmers group levels. The proposed investment recognises that both men and women face different constraints and adequately address women-specific barriers (especially the unpaid care work in the household resulting women in having less time to gain new farming skills) to improve their climate adaptation farming practices. Also, the proposed investments will include financing of climate adaptation infrastructure, support to farmer engagement in agribusiness and value chain; and to improvements of agricultural information services.

223. The project approach will build upon extensive FAO experience of and lessons learned from implementation of the FFS concept. The piloting of the approach started in the 1990s. Different recent FFS based initiatives in Malawi [FAO-Flanders (2011-15), FAO-African Solidarity Trust (2014-16), FAO-EU (2015-19)] have generated positive results on productivity increase, technology adoption and cross-cutting topics and gained a recognition among the benefited farmers. To complement the FFS approaches, an additional educational concept named Farmer Business School (FBS) has been developed by FAO. FBS build farmers' capacity in entrepreneurial and management skills through the learning by doing approach, aiming to link smallholders to value chains and financing.

224. The proposed investment links to and complements both the Agriculture value chains and the Integrated Watershed investments included in the SPCR. It contributes to sustaining the livelihoods of smallholder farmers, both men and women, by enhancing its climate adaptation infrastructure at the micro-catchment level. The project activities will also contribute to and directly benefit from the Climate Services Improvement project proposed under the PPCR. The proposed project is in alignment with the GoM's Climate Change Investment Plan.

Project Development Objective

225. The project overall objective is to increase resilience of smallholder farmers and related livelihoods to the effects of climate variability and thereby enhance food and nutrition security and contribute to poverty reduction in rural areas of Malawi under a changing climate. This objective will be attained through the overall empowerment of the farmers, **especially rural women farmers as they remain the largest proportion of poor people and most vulnerable to the impact of climate shocks,** to address the various climate change impacts through (i) facilitation of farmers adoption of transformative technologies and practices that lead to increased agricultural productivity and income while also increasing resilience to climate change (including piloting of promising practices and technologies and provision of inputs to farmers in order to adopt these practices). It will be based on scaling up of Farmers Field School

(FFS) approach developed by UN FAO and successfully implemented in 10 agricultural districts in Malawi; (ii) support to smallholder farmers engagement in agribusiness and value chains; and (iii) improving agricultural climate information systems. Also, gender equality will be enhanced through empowering women in the FFS approach by mainstreaming a gender perspective into all stages of its projects – planning, designing, implementation and evaluation – to bring to the fore current gender relations and constraints faced by women farmers in relations to their livelihood, which in turn helps to inform decision-making and ensure that activities are more gender inclusive and balanced. For example, ensure that FFS curriculum includes topics that are relevant to both male and female participants).

Geographical Scope

226. The proposed project will be implemented in the seven most vulnerable to climate change impacts districts of the Shire river catchment - Blantyre, Zomba, Neno and Phalombe, Thyolo, Mulanje and Chiradzulu. The proposed investments will complement the two on-going projects: "Strengthening Community Resilience to Climate Change in Blantyre, Zomba, Neno and Phalombe Districts" and KULIMA[105] programme. These projects support the adoption of climate change adaptation practices and strengthening of the Malawi's agricultural extension delivery system based on the Farmer Field School (FFS) approach.

227. Specifically, the Strengthening Community Resilience to Climate Change (SCRCC) project aims to increase the capacity of vulnerable communities in the project areas through increased community and household adaptive capacity by targeting four key result areas: scale up of adoption of good practices and technologies; improved HIV and gender-sensitive nutrition practices, increased diversity of sustainable livelihoods; and enhancement of conservation and safeguard of ecosystems. The objective of the Kulima Programme is to strengthen the performance of the District Agricultural Extension Service System (DAESS) to increase and ensure equal access to extension services, technologies and knowledge and strengthen farmers' climate resilience for both men and women farmers.

228. The proposed project will allow for simultaneous scaling up of the strengthening of the Malawi's agricultural extension delivery system thus increasing the synergetic impact of the ongoing development efforts by the Government and development partners in wider adoption of climate resilient practices and strengthening climate resilience of farmers. The proposed investments will allow to expand the extension –focused activities under the ongoing projects towards investing in climate adaptation infrastructure that addresses communities' needs by supporting sustainable watershed management.

Project Components and Activities

229. The project is organised into five main components:

Component 1: Scaling up community outreach through quality Farmers Field Schools

230. The demand –based Farmer Field School (FFS) approach developed by UN FAO will be used for capacity building and empowering farmers and facilitating participatory processes for the adoption of climate adaptation practices and technologies. The component activities are expected to result in improved community/famer level knowledge on available options for climate resilience farming, leading to gradual increase in productivity, development of priority value chains, and increase of household income. To ensure that FFSs provide a quality basis

[105] In the local language, Chichewa, Kulima literally means "promoting farming in Malawi".

for large-scale dissemination and adoption of climate resilient farming, appropriate climate adaptation focussed support will be provided to:

- Awareness raising activities on FFS in DAESS in project districts;
- Establishing a support system to DAESS to operationalise FFS in project districts;
- Training of extension service providers through a Master Training Course;
- Implementing training programmes for community-based FFS facilitators to promote the FFS learning process at community level;
- Establishing a regular review process of the FFS programme implementation to ensure its adherence to quality standards;
- Financing the costs of extension services infrastructure, including transportation means, offices equipment/ building for extension services, etc.

Component 2: Piloting and scaling up promising technologies/practices for climate adaptation in specific agro-ecological zones

231. Considering location specific farming conditions, FFS outreach groups will facilitate the setting up demonstration plots and undertake comparative and validation studies, for famer communities to learn about various climate adaptation crop field practices as well as to discover the opportunities of complementary livelihoods options. The project will also provide inputs and other necessary resources to farmers for the actual adoption of the tested climate resilient farming practices. The priority will be given to low cost adaptation methods that do not require substantial upfront investments to modify farming systems and enhance farm level climate resilience. Specifically, this project component will support:

- Carrying out, in collaboration with research institutions (i.e. CGIAR Centres, DARS), on-farm trials to test and validate promising climate adaptation technologies and practices appropriate for specific faming localities, as well as dissemination of the lessons learned; and
- Provision of inputs to farmers for the adoption of validated climate adaptation technologies and tested practices. Support will be provided to farmers for the actual adoption and scaling up of the tested practices through credit and / or grant system (possibly, through the revolving fund facility established under the World Bank Shire Basin project), or physical provision of the necessary inputs (seeds, fertiliser, equipment, etc.).

Component 3: Investment in climate change adaptation infrastructure

232. The purpose of this component is to provide support to the implementation of catchment-based action plans to increase climate resilience of participating farmer communities. Targeted conservation activities, including the construction of basic low-cost infrastructure, such as small bunds and in-field catchments, will be implemented at the micro-catchment level to curb the prevailing environmental degradation and growing scarcity of land and water resources. The selection and prioritisation of these infrastructure investments will be done through a participatory process and may include soil and water conservation measures, procurement of low-cost irrigation equipment, rainwater harvesting facilities, tree planting and regeneration. This component will be implemented in close coordination with the public works programme implemented in the respective districts. Specifically, activities under this project component will include:

- Facilitation participatory catchment-based action planning to increase climate resilience of participating farmer communities (including capacity building and training activities at community, area-wide and district level); and
- Development of the micro-catchment level farmer community- managed infrastructure for sustainable land and water management.

Component 4: Support to farmer engagement in agribusiness and value chain

233. FFS capacity building of farmers will be combined with an additional educational concept named Farmer Business School (FBS) developed by the FAO. FBS build farmers' capacity in entrepreneurial and management skills through the learning by doing approach. The component will improve farmers' access to finance and market, also supporting value chain approach and integration into value chains. Support to value addition will increase off-farm employment opportunities for youth, women and other vulnerable groups. The component activities will include:

- Targeted technical assistance in the form of capacity building and business advice to smallholder farmers who wish to move towards commercialisation and be integrated into value chains. This will be implemented through support to FFS groups with affiliation to farmer Organisations and Cooperatives. The assistance will also include profiling of market information. Groups will be supported to identify and select a viable agricultural project for income generation to enhance their coping capacities against climate risks and to ensure the sustainability of their groups. Focus shall be placed on projects with a potential of triggering group marketing, diversifying income, sustaining production or enhancing nutrition among others. Examples of such enterprises include livestock production especially poultry and small ruminants, bio-intensive vegetable production, seed production, apiculture, tree nurseries etc.
- Operationalisation of the village savings and loan schemes. The project will support the establishing of a Village savings and Loan mechanisms in each FFS group for the management of savings and loan funds to ensure transparency in all savings and loan activities and the sharing of benefits by the members.

Component 5: Improving agricultural information services

234. Access to improved information for farmers' decision making is a critical element of the proposed project. The main activities of this project component may include: (i) enhancing agro-meteorological data collection and management to meet farmers' needs; (ii) developing the commune level weather forecast (seasonal and short-term) and advisory; (iii) improving the delivery weather forecast and crop price information to farmers, including the use of cell phones; (iv) strengthening the capacity of extension services in utilising the improved climate information products; (v) strengthening the capacity in using climate projections in order to assess climate risks and vulnerabilities at the local level. A design and delivery of this investment component would benefit from interventions proposed in this SPCR package under the Climate Services investment and synergies will be built on during detailed design.

Table 15. Concept No. 4 – Overview of components, activities, outputs and outcomes

Sub-component	Activity	Outcome
Component 1: Scaling up community outreach through quality Farmers Field Schools (FFS)		
Institutional framework for to	• Awareness on FFS in DAESS in project districts	Improved community/famer level knowledge on available

anchor FFS in the district extension services	• Establish a support system • Support to DAESS to operationalise FFS in project districts	options for climate resilience farming, leading to gradual increase in productivity, development of priority value chains, relative household income and wealth creation
Quality assurance framework	• Participatory catchment-based community action planning • Establishing a mentoring process • Regular review process	
Building the capacity of FFS Master Trainers	• Training of extension service providers through a Master Training Course • Community-based FFS facilitators are trained to facilitate FFS learning process	
Improving extension services infrastructure	• Project financing provided for transportation means, offices equipment/ building for extension services; etc.	
Component 2: Piloting and scaling up promising technologies/practices for climate adaptation in specific agro-ecological zones		
Demonstration trials to validate appropriate adaptation practices	• In collaboration with research institutions (i.e. CGIAR Centres, DARS), on-farm trials through participatory action research (PAR) will be carried out to test and validate promising climate adaptation technologies and practices appropriate for specific faming localities; lessons dissemination and implementation of recommendations. • The priority will be given to low cost adaptation methods that do not require substantial upfront investments to modify farming systems to enhance household level resilience.	Improved climate resilience of smallholder farming based on validated new climate adaptation technologies and practices
Provision of inputs for the adoption of tested practices by farmers	• Support will be provided to farmers for the actual adoption of the tested practices through credit and / or grant system, or physical provision of the necessary inputs (seeds, fertiliser, equipment, etc)	Upscale the adoption of the tested practices among farmers
Component 3: Investment in climate change adaptation infrastructure		
Development of capacity to develop sub-catchment level action plans	• Design and implement capacity building and training at community, area-wide and district level formulation and implementation of the catchment plans – addressing ecosystem services, especially water for production and for biodiversity. • Design and execute training and knowledge management activities	

	that ensure knowledge transfer through the generations and succession of implementers	
Multi-sector implementation of catchment level integrated infrastructure for sustainable land and water management	• Mobilise multi-stakeholder catchment committees at district, area and village development levels • Elaborate catchment management action plans • Design, layout and maintain catchment level infrastructure	• Area-wide community level farmer-managed tree regeneration • Promote set-up of village-level forest areas of fast maturing tree species coupled with adoption of energy saving cook-stoves and solar technology. • Micro dams, weirs and subsurface dams used to capture rainwater and used for domestic and agriculture uses
Component 4: Support to farmers engagement in agribusiness and value chain		
Entrepreneurial skills and income generation activities	• Support to FFS groups with affiliation to Farmer Organisations and Cooperatives; • Profiling market constraints and opportunities • Provision of market information • Linking of FFS to selected value chains and markets	Improved access to markets / agribusiness
Local level financing	• Operationalisation of the village savings and loan schemes	
Component 5: Improving agricultural information services		
Generation, proper use and interpretation of user-tailored agricultural climate information	• Enhancing agro-meteorological data collection and management to meet farmers needs • Strengthening the capacity of extension services in utilising the improved climate information products (see the Climate Services project proposal under this SPCR) • Developing the commune level weather forecast (seasonal and short-term) and advisory • Improving the delivery weather forecast and crop price information to farmers • Better use of climate projections to assess climate risks and vulnerabilities at the local level	Improved climate services for on-farm decision-making, harnessing synergies from related interventions
Component 6: Project management, monitoring and coordination		
Project monitoring and management	• Day-to-day management of the project by the project management unit	Effectively managed PPCR Project

	• Coordination & Knowledge dissemination	

Implementation Arrangements

235. It is suggested that an inter-ministerial Steering Committee is established to oversee the project implementation and give strategic direction to the project implementation as well as ensure appropriate performance evaluation. This will be explored during detailed project design. A Technical Committee (TC) will be established to provide technical guidance and ensure timely resolving of technical issues emerging during the project implementation. The TC will meet quarterly and comprise, in particular, representatives of the Departments of Extension, Land Resources and Crop Development of MoAIWD, as well as other relevant national technical entities and Government agencies. The Project Implementation Unit will be established for the project day-to-day project management, including co-ordination of project activities at district level and with other PPCR interventions through the Government and other MDBs. Institutional arrangements will be developed further during detailed design, including reporting arrangements to the NSCCC and PPCR focal points in EAD and MoFEPD.

M&E

236. The M&E system will be established to collect and process appropriate information and to verify the output, effects, and eventually the impacts of project activities over time. The system will be based on the M&E framework developed for the Malawi PPCR program, with specific indicator metrics established for the project areas and monitored during project implementation. A special attention will be given to developing a set of indicators to measure the progress with the adoption of technologies and practices for climate resilient farming.

237. Information sharing and stakeholder involvement and participation at all stages of the project cycle will be a core of the project's accountability for results. A communication and knowledge-sharing strategy will be designed and implemented to appropriately disseminate all information concerning approaches, processes, results, and lessons learned by the project to key ministerial departments and national agencies, communes, the private sector, farmers' organisations, farmers, and NGOs.

Time frame

238. The project implementation period is five years.

Proposed Investment Project Five: Operationalising Malawi's Climate Services Centre

Responsible MDB:	World Bank
Total Project Cost:	US$17.3 million
PPCR request:	US$5 million
Co-financing (to be sought):	GoM: US$0 million GCF: US$12.3 million (Approved 2015; UNDP accredited agency; Status: forthcoming)
Project Preparation Grant:	US$100,000

Background and Rationale

239. Extreme weather and water conditions, and emerging climate change thwart the ability of Malawi's 18.1[106] million people to sustain their livelihoods and extricate themselves from pervasive poverty. Vulnerability is high as more than 80% of the population depend on subsistence rainfed farming. If growing seasons are poor, malnutrition and food insecurity become widespread. Malawians are also exposed to reoccurring and consecutive floods and droughts. More than 85% live in rural areas, often in low-lying floodplains. Equally, volatilities in weather conditions correlate negatively with productivity of major economic sectors. In 2015, for example, 76% of export earnings and 29% of GDP depended on agriculture[107]; in 2013, 10% of the population's income came from fishery and contributed 4% to GDP; and 96% of Malawi's growing energy needs were met by hydropower from the waters of the Shire River[108].

240. As such, information about weather, water and climate is vital for decision making and planning in the short, medium and long-term. From the household level of individuals (women and men, young and old), through to the district level authorities and up to industry and government, actions are taken with little or low-quality climate information. Providing weather, water and climate information ('Climate Services') in Malawi is the political mandate of the Department of Climate Change and Meteorological Services (DCCMS) and the Department of Water Affairs (DWA).

241. The purpose of climate services is "to provide people and organisations with timely, tailored climate-related knowledge and information that they can use to reduce climate-related losses and enhance benefits, including the protection of lives, livelihoods, and property"[109]. Furthermore, the services should "provide climate information in a way that assists decision making by individuals and organisations" (Global Framework for Climate Services, 2014). Such service requires appropriate engagement along with effective access mechanisms and must respond to the needs of users of climate information. Women and men have different access to climate information and communication needs, and in the use and benefits from climate services. In general, access to, ownership of, and control use of information and communication technology, ICTs (i.e. internet, radio, TV, cell phones), remain lower for women than men in Malawi. Reasons for this disparity include a lack of financial resources to

[106] World Bank population statistics. 2016.
[107] The World Bank. *The Malawi Drought Recovery and Resilience Project Appraisal Document*. 2016. pp. 11. The project's associated hydro-meteorological activities are proposed as co-financing.
[108] ARCC, 2013. *Malawi Climate Change Vulnerability Assessment*. pp. 19-22.
[109] Vaughan & Dessai. 2014. *Climate services for society: origins, institutional arrangements, and design elements for an evaluation framework*. pp. 588.

secure the use of ICTs, higher levels of technological and language illiteracy among women, and discriminatory social norms. To reach women farmers, climate services need to address gender constraints and priorities. For example, women's information networks are often smaller than men's, so they offer fewer opportunities for learning about new productive opportunities. Building resilience to climate variability and change in Malawi, therefore, depends on availability and access to adequate climate information.

242. Strengthening the capacity of Malawi's climate services under the PPCR is about expanding the focus from not only relying on past observations and current systems, towards also understanding the impact of future climate change and reoccurring extremes, by building greater efficiency into the national services. Across key policy and planning documents, the government of Malawi commits to such improvement as part of a resilience and adaptation strategy (e.g., MGDS III, the National Resilience Plan, NAPA, the Climate Change Management Policy and Climate Change Investment Plan, the National Disaster Risk and Management Policy etc.). In the recently approved Malawi Growth and Development Strategy III, the government has made improving climate services as strategic outcome: "Promote effective and efficient generation analysis and utilisation of reliable, responsive, high quality, up to date and timely climate services". Further, MGDS III explains: "Considering that effective response to climate change are context specific and often best addressed at the local level, the key sectors utilising 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 fraught with major challenges [such as] …inadequate data processing and information dissemination facilities."

243. Subsequently, there are ongoing and upcoming investments in designated parts of the value chain of Malawi's climate service (Figure 20). These investments range from expanding monitoring coverage to establishing standard operating procedures (especially in the ongoing LDCF/GEF US$3.6 million project on early warnings and the IDA-funded Shire River Basin Management Project, and in the forthcoming GCF-funded US$12.3 UNDP-project on expanding early warning services). Furthermore, the government wants to develop a National Framework for Climate Services (NFCS) under the auspices of the WMO led Global Framework for Climate Services. To build a NFCS, however, two critical challenges remain unaddressed in Malawi and where the PPCR will play a decisive role.

244. First, generating and integrating multiple streams of validated[110] data remains challenging at the national and district levels. This is a persistent problem caused by factors such as inadequate meteorological and hydrological (hydro-met) data collection, as well as siloed management of data in few incoherent systems spread across institutions. Second, the development, management, production and delivery of sector-specific timely weather, water and climate information is inhibited in the absence of a physical location where multi-institutional efforts can co-produce, develop and distribute such information.

245. Extensive research in Malawi has reiterated the major challenges to climate information as being: "scale, accessibility and credibility, [alignment with] policy planning cycles, and timing more appropriately interpreted, packaged, and communicated in order for users to be able to apply it so that it can deliver adaptation benefits across sectors on a national scale"[111].

[110] Data collection is improving with the installation and rehabilitation of equipment in priority areas under ongoing investments. However, there are other streams of data being generated in Malawi and at times provided to the DCCMS on an ad-hoc basis. These sources of data are vital, but they must be validated by the DCCMS to meet WMO standards.

[111] Vincent et al. UMFULA. 2015. *Identifying Climate Services Needs for National Planning: insights from Malawi.* Climate Policy. London.

The key recommendation from Lilongwe University's assessment[112] of Malawi's climate services further recommends that agencies need to "work more closely together in co-producing climate services, incorporating indigenous knowledge, in a new Climate Services Forum". Co-production of climate information therefore relies not only on the collaboration across ministries and departments who hold siloed information on various aspects and inputs to climate information (from raw data on water and weather conditions through to geospatial data on terrain, roads, bridges and landscapes), but also with the active engagement of representatives in various sectors (e.g., subsistence and commercial farmers, airport authorities and disaster management services etc.) as well as communities that are vulnerable and exposed to weather and water extremes (such as community chiefs, women's groups etc.).

246. At present, Malawi lacks the operational space for such co-production of climate information and the mechanism to consolidate partnerships between DCCMS and DWA and their boundary organisations who collect, use or transmit climate information to end-users. The absence of an operational space and of cooperative mechanisms weakens DCCMS and DWA ability to meet demand for climate information across exposed sectors.

247. It should be noted that the outputs of this proposed PPCR investment link to and align with the activities and outputs of the other proposed investment concepts which target climate-informed decision making in their respective sectors of agriculture, fishery and water resources management.

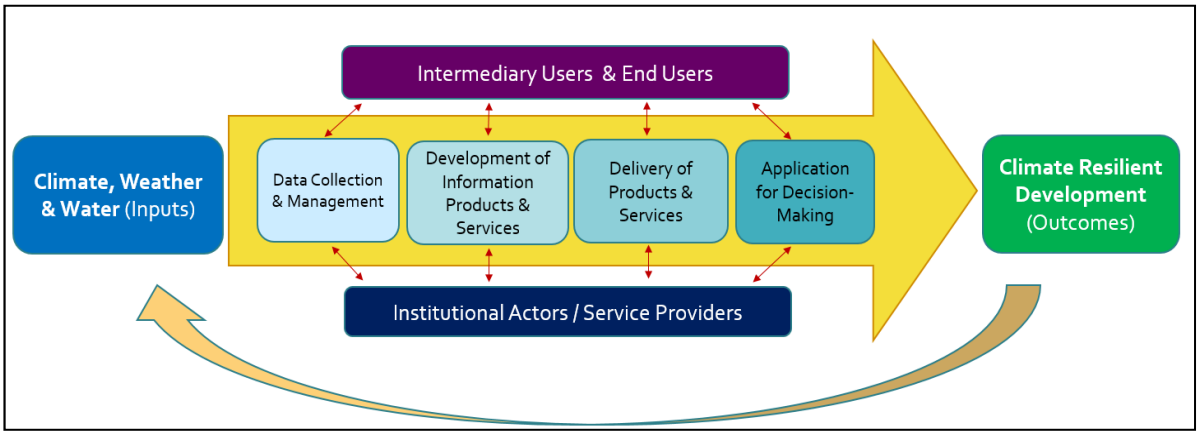
248. As part of the SPCR, expert guidance and a detailed assessment of Malawi's capacities to utilise satellite earth observation (EO) as integral to climate services and building resilience was performed with the support from the European Space Agency and Hatfield Consultants. Two of their recommendations are highly relevant for the development of the Climate Service Center in how EO could be utilised and how best to enhance collaboration and mutually beneficial operations between the DCCMS and government agencies such as the Department of Surveys[113]:

- "Capacity to integrate and operationally utilise EO for climate resilience activities is a significant issue, which needs to be addressed throughout all projects. The model currently being applied at the Surveys Department, with an embedded technical assistance working with government technical specialists to build capacity "on the job" and Training of Trainers has proven successful, and should be considered for future activities."

- "ICT infrastructure and internet connectivity will be a key constraint moving forward, as there is limited computing infrastructure in most departments beyond desktop computers for word processing, spreadsheets, email and internet browsing. Surveys Department has successfully implemented MASDAP using GeoNode for data storage and dissemination over the departmental LAN, and this model could be utilised for expansion of geospatial services through the GoM Wide Area Network."

[112] Lilongwe University of Agriculture and Natural Resources. August 2016. *Institutional Landscape for Climate Services Development and Delivery in Malawi.* The study was completed under the GFCF WMO-led project in partnership with the Michel Christensen Institute.
[113] Integrating Satellite Earth Observation into Malawi's PPCR. (December 2016). Hatfield Consultants for the ESA. The collaboration was made possible through the partnership for cooperation between the CIF/PPCR and the ESA.

Figure 20. The climate services value chain[114]



Development Objective

249. The development objective of the proposed concept is to strengthen the integration and output of Malawi's national climate services through the establishment of an operational Climate Services Center and this center's programme of co-produced climate information and training (adapted to sector, end-user, gender, scale, etc.). The operational goals of the center will be to support effective collection, management and transfer of streams of climate data (importantly, this is not meant to replicate or confuse existing institutional mandates or activities but rather support their efficiencies, and the interconnectedness and analysis of data streams); provide relevant, user-friendly climate information to stakeholders; and to offer consistent capacity building. Empowerment of women is critical in building climate resilience, therefore gender-specific climate services needs to consider women's domestic and agricultural tasks.

Project location

250. The cooperative forum for integrating climate data into relevant information products will take the form of an operational Climate Services Center - a physical office integrated into the existing institutional framework and government policies. In other words, the center would align with the existing mandates for managing climate data but organise and enable active and iterative engagement with key stakeholders and departments. As such, the center shall not replicate or create external functions to those that are currently in place. During the detailed project preparation phase, it will be important to define and reach consensus on the exact location and institutional design of the center after careful and in-depth consultations and consideration to existing mandates. Possible solutions may include housing the center in one of the existing agencies and/or through partnership agreement with a boundary organisation (a model pursued in countries in the region). To minimise the risks involved in designing and agreeing upon optimal institutional set up and delineation of mandates, project preparation financing will focus on supporting the process in advance of project implementation (including

[114] The concept of 'value chain' in climate services grew out of efforts in illustrating critical links between monitoring climate, weather and water conditions through to securing resilient development outcomes. The illustration in Figure 2020 is an adaptation of illustrations used across PPCR investments, WMO's GFCS, and the International Research Institute for Climate and Society.

the capture of learnings from other countries who have explored establishing dedicated centers).

251. Engagement between the Climate Services Center and government authorities at local level will be critical. This includes the 28 District Climate Information Centers (DCCMS), the district offices of the Department of Water Affairs (DWA), the Department of Disaster Management Affairs (DoDMA), and the Department of Agricultural Extension Services to name a few. Such engagement will also be vital in building on current activities and outputs from associated projects. These projects include: the forthcoming expansion of the US$3.6 million LDCF/GEF project with US$12.3 million GCF-funding for *Scaling Up of Modernised Climate Information and Early Warning Systems in Malawi* managed by the UNDP (with extensive upgrading of automatic weather monitoring and focus on early warnings for example); the IDA-funded *Shire River Basin Management Project* (with the Operational Decision Support System for improved flood risk management for example); and the significant capacity built in GIS and national data management systems through strengthening the Department of Surveys and the National Statistics Office (with outputs such as the *MASDAP spatial data platform*[115]).

Components and Activities

Component 1: Operationalisation of the Malawi Climate Services Centre

252. Component 1 will focus on the establishment and operationalisation of the Climate Services Center based on research, detailed design studies, consultations and awareness raising performed during project preparation. The center shall have a clear mandate, allocation of roles and responsibilities of staff, and be sufficiently equipped with resources (ranging from ICT and internet presence through to budgets and office space) to perform its work programme through the project implementation period. Component 1 will include the following proposed sub-components:

Sub-component 1.1: Institutional Operationalisation

- **Institutional mandates** will be agreed and endorsed for the smooth operation of the Climate Services Centre. Establishing and operationalising the institutional mandates of the centre will make inter-ministerial cooperation more effective and open, and shall apply at the national through to the district levels. The activity will build on ongoing efforts to put in place inter-ministerial standard operating procedures pursued by parallel investments in climate services.

- **Human resources.** The centre will allocate and recruit technical staff, technical assistance and cross-ministerial exchange of staff to ensure the technical capacity in areas from weather- and water data management through to producing tailored forecast and information products, are deployed (especially DCCMS and DWA).

- **Country visits and field-trips** would be organised to provide learning opportunities to staff of the centre on of how to manage and operate climate centres effectively. The activities build on the success of similar activities and centres in the region. Ongoing partnerships with agencies, such as the WMO, will be explored to enhance the

[115] http://www.masdap.mw

integration of the centre into international and regional cooperation (e.g., FEWSNET, SARCOF etc.).

Sub-component 1.2: Physical location and resources

- **Office capacity.** A dedicated physical office will be established and maintained within existing premises, equipped with sufficient technical and administrative resources. These include resources such as high-speed internet connection, servers, office equipment and furniture, training facilities, etc.

- **Specialised equipment and tools** will be procured, such as software and models needed to process climate data into information products (e.g., access and integration of remote sensing/earth observation data and materials building on further developing existing capacity in DCCMS, DWA, NSO, DoS), the integration/access to existing models and data management systems (from Climsoft through to the ODSS), and necessary equipment for sharing data efficiently with boundary organisations (e.g., Department of Survey who host important technical and staff capacity in spatial data and the National Statistics Office who host important statistical data and resources).

- **Resources needed for research and training** at the center and at district level will be acquired.

Component 2: Development, Production and Delivery of a Programme of Climate Information Training, Products and Services

253. Component 2 will focus on the development, production and delivery of a programme of sector-specific and timely climate information products and services. The component will rely on partnerships between the Climate Services Centre and key stakeholders that enable co-production and collaboration (e.g., building on the stakeholder analysis performed during preparation). The scope of Component 2 includes the following sub-components and activities which are not included in co-financing or associated projects mentioned above:

Sub-component 2.1: Multi-year programme of climate information production

- The sub-component will encompass a **programme of developing and producing climate information product and services**, tailored to the demand of stakeholders across sectors and to the research in respective fields of climate analysis. The programme will be multi-year and set the foundation for long-term provision of demand-driven climate information. Analysis done during preparation will outline the priorities, categories and detailed focus of the products and services to facilitate implementation at the onset of project implementation. The development of products and services will be shaped based on user priorities, whether they are immediate short-term forecasts that feed into improved flood management or longer-term seasonal forecasts provided at farm-level in time and in the format, that is useful to farmers decision-making (who may be predominantly rural and female). Overall, it will be critical for the programme to develop climate information products and services that are adapted to the users who would benefit from and/or require information. For example, in the case of tailoring information to strengthen the agricultural sector, the center may explore approaches such as Participatory Integrated Climate Services for Agriculture[116]. Noteworthy, the activities of the sub-component will be designed in

[116] https://ccafs.cgiar.org/building-climate-services-capacity-rwanda#.Wecz2LpFy70

detailed during project preparation and will capitalise and build upon the outputs from ongoing projects for a greater transformative and scaling up effect (especially the UNDP-managed project on scaling up early warnings and the information services delivered under the IDA-funded Shire River Basin Management Project and the Disaster Risk Management Project).

- Alongside the development of climate information products and services, an **extensive program of training and capacity building** would be offered to internal and external stakeholders, and to staff across ministries who utilise climate information in their planning and decision-making. The format of training can be short and long-term, based on reoccurring courses as well as training on emergent topic. Training should also make use of online training resources and collaborations with key partners such as the WMO, IRI, etc. The outcome of capacity building should be to support decision making and planning in various sectors (from disaster risk management to hydropower). Training should occur in conjunction with the co-production of information products.

Sub-component 2.2: Communication and outreach

- Alongside any emergent challenge, it is vital that government agencies provide the public with objective information. The local impacts of climate change are hard to predict as are the precision of extreme events (from lightning to timing of floods and droughts). With growing number of sources of information and delays in accessing relevant forecasts, the Climate Services Centre will have an important role in **providing the Malawian public with fact-based climate information in time**. To support this outreach, the sub-component would support public campaigns and two-way channels of communication between the climate services agencies and the public (e.g., through partnership with the media and news outlets, as well as using social media channels).

Sub-component 2.3: Development of Malawi's National Framework for Climate Services

- As part of the global commitment to the Global Framework for Climate Services (under the auspices of the WMO), Malawi is seeking to consolidate and articulate a National Framework for Climate Services. The sub-component would support the activities necessary to establish the NFCS and its catalytic effect in Malawi (i.e., building consensus and meaningful partnerships for using climate information in building resilience).

- As part of the NFCS, it is important to address the underlying institutional challenge of financial sustainability. Meteorological services and water information services are commonly impeded by unreliable streams of financing to simply maintain basic operations. Equally, the tradition to charge remuneration for accessing data has not translated into the reliable sources of financing that could, in combination with government budget allocations, maintain or expand existing services. The challenge of financial sustainability of climate services is common to many countries in the region and requires dedicated effort by agencies involves whilst at the same time not jeopardising the importance of open access to data. The activity is intended to help the Climate Services Centre access expertise in financial management and to set up a long-term financing plan that is endorsed at the highest political level.

- Because a NFCS cannot deliver relevant climate information products if it were not for the input of water and weather data, the sub-component will explore how to enhance data collection through partnerships with other agencies that collect climate data (e.g.,

universities, citizen observations etc.) and to explore furthering the needs for data collection through improvements to monitoring equipment and systems in critical areas in Malawi.

Sub-component 2.4: Sub-grants to support local development of climate information

- Because climate services can extend to associated organisations outside the core agencies mandated with climate services, the sub-component will explore the use of a sub-grants programme to support organisations in developing and tailoring climate information products to local needs. This activity will build on the success of ongoing projects, such as that of the organisation LEAD in Lake Chilwa. Sub-grants programmes are complex due to the alignment of procurement and financial management rules, but have proven an efficient tool to help engage and support more local- and small-scale interventions that hold promise.

Component 3: Project Management

254. Component 3 will focus on the management of the project and the required resources for successful implementation. Component 3 will include the following types of activities:

- Recruitment and contracting of project management, administrative, procurement and financial management staff[117].
- Strategic project coordination and planning through integrating the project into existing cross-departmental project steering committees with clear procedures and mandates.
- Deliver the administrative support for training and capacity-building activities outlined in Component 2.
- Develop and implement communication and public outreach activities.
- Management of the sub-grants programme proposed under component 2.
- Monitoring and evaluation undertaken to track performance and guide the strategic operations of the centre (i.e., the reconciliation of the centre's available resources and the demand and requirements of users of climate information products and services).

Table 16. Concept No. 5 – Overview of components, activities, outputs and outcomes

Component	Activity	Outcome
Component 1: Operationalising Malawi's Climate Services Centre		
Sub-component 1.1: Institutional Operationalisation		
Institutional mandates	Securing institutional mandates.	Strengthen implementation capacity and avoid confusing policy mandates.
HR	Recruitment of technical staff, cross-departmental exchange of staff.	Secure and engage technical staff.

[117] Preparation will explore to which degree the center can benefit from existing staff resources that are engaged and experienced in World Bank project management and procurement to ensure most efficient project implementation.

Country exchange	Country visits to provide learning opportunities of how other operational climate centres are managed.	Provide opportunities for international learning.
Sub-component 1.2: Physical location and resources		
Office capacity	Establishment and maintenance of a dedicated office with sufficient technical and physical resources.	Ensure the physical resources enable the running of the centre.
Specialised equipment and tools	Specialised equipment, software and models needed to process climate data into information products through analysis and co-production.	Ensure technical/ICT capacity for advanced climate analysis.
Resources required for research and training	Capacity building at the centre and at district levels.	Address need to strengthen and develop capacity.
Component 2: Development & Delivery of Climate Information Training, Products & Services		
Sub-component 2.1: Multi-year programme of climate information production		
Development and delivery of climate information products and services	Multi-year programme of developing, producing and of climate information product and services that are tailored to the demand from stakeholders across sectors and to the research in respective fields of climate analysis. Products and services will be shaped based on user priorities, whether they are immediate short-term forecasts and warnings that feed into improved flood management or longer-term seasonal forecasts that are provided to farmers in time and format that is useful in their decision-making.	Tailored climate information products available to wide range of users (from intermediary/boundaries to the public) and perceived relevant to the individual needs for information.
Training and Capacity building program	Extensive programme of training and capacity building offered to stakeholders. The objective is to provide training to assist decision-makers and planners in making full use of available climate information, and that training can be tailored to the needs in various sectors (such as disaster risk management, food production etc.).	Improved understanding of climate information and behaviour changed due to greater dependence on the information.
Sub-component 2.2: Communication and outreach		
Communication and outreach campaigns and activities	Support public campaigns and two-way channels of communication between the climate services agencies and the public	Provide the public with reliable and consistent sources of information that provides clarity and confidence in climate information.
Awareness raising	Creative campaigns to raise awareness on what climate change is and what the risks are.	Greater knowledge and awareness of climate risks to instigate behaviour change.
Sub-component 2.3: Development of Malawi's National Framework for Climate Services		

NFCS	Support activities necessary to establish the NFCS and its catalytic effect in Malawi	Endorsed and implemented NFCS.
Financial management	Strategic guidance on financial sustainability and the operational management of climate services at the national level.	Address challenge of financial sustainability of the centre.
Strengthen management and collection of climate data	Explore how to enhance data collection through partnerships with other agencies that collect climate data (e.g., universities, citizen observations etc.) and explore furthering the needs for data collection through improvements to monitoring equipment and systems in critical areas. Data rescue activities for data infrastructure installed by NGOs, other departments and some development partners. Involving NGOs in production and uptake of climate information to be considered in the design of the NFCS	Enhanced quality and quantity of climate data collected, merged, validated and made available to the public.
Sub-component 2.4: Sub-grants to support local development of climate information		
Expanding co-production of climate information	Sub-grants programme to support organisations in developing and tailoring climate information products to local needs. This activity will build on the success of ongoing projects, such as that of LEAD in the Lake Chilwa area.	Build on and scale up existing successful work done in Malawi on producing climate information and ensuring it reaches vulnerable local users.
Component 3: Project Management		
Project management staff	Recruitment and contracting of project management, administrative, procurement and financial management staff.	Ensure efficient management and implementation of the project.
Project steering	Strategic project coordination and planning through integrating the project into existing cross-departmental project steering committees with clear procedures and mandates.	Ensure strategic management and planning of the project.
M&E	Monitoring and evaluation undertaken to track performance and guide the strategic operations of the center.	Efficient performance tracking and management.

Implementation Arrangement

255. Project implementation will align with existing political mandates for the generation of climate information, i.e., primarily the Department of Climate Change and Meteorological Services and the Department for Water Affairs. Activities and co-production of climate information must be done in close partnership with key stakeholders and boundary/intermediary organisations. The exact implementation arrangements will be

elaborated and confirmed during project preparation and will explore the optimal models either in-house or through partnership agreement with boundary organisations, as well as reporting arrangements to the NSCCC and PPCR focal points in EAD and MoFEPD.

256. Active collaboration with other government agencies (from Department of Agricultural Extension Services through to Department of Fisheries) will be critical to build mutually beneficial impact across the SPCR programme of investments. Managers of the project will furthermore have to maintain open and efficient communication with the Department of Environmental Affairs and the Ministry of Finance considering their coordinating and strategic role in technical coherence of efforts in building resilience across ministries and sectors, as well as the overall management of PPCR financing.

257. To ensure climate information is useful for recipients - whether it is a 30-year old female farmer planning for the growing season, or an operator of a hydroelectric plant deciding on water releases – it is important to consider gender dimension in how climate information is communicated. Like neighbouring countries, Malawi is experiencing a 'feminisation' of both rainfed farming and vulnerability (due in part to migration of men to urban centres). As such, the activities of the project, whether they are training or co-producing seasonal forecasts, should consider the needs of recipients and the gendered and generational dimensions of recipient to better help build resilience amongst these end-user groups.

Monitoring & Evaluation

258. Monitoring and evaluation will be an integrated part of managing the project's results framework. Evaluation of the project will be performed by the project management staff and reporting of project performance will be done in accordance with the project legal agreement. Monitoring the output of the project will guide management as well as enable reporting on the results of the project activities and their contribution to achieving the project's development objective. The agreed results framework will align with M&E of the SPCR.

Time Frame

259. The project will run for five years from 2018 to 2023.

Project Preparation Grant

260. The World Bank Group requests a project preparation grant of US$ 100,000 to develop and elaborate the proposed project. These resources will be used for the following main activities: develop and consolidate the detailed organisational and institutional design and mandate of the Climate Services Center (e.g., financial-, human resources-, procurement- and ICT-requirements etc.), stakeholder analysis (to delineate key partnerships, collaborations and roles and responsibilities between DCCMS, DWA and boundary/partner organisations), and the work programme of climate information production and services (priorities, categories and detailed focus). In all, these preparation activities should help enable the center to open and become operational as implementation begins. As such, successful preparation will facilitate early and more effective project delivery.

PART 3

Project Preparation Grant Requests

PILOT PROGRAM FOR CLIMATE RESILIENCE **Project/Program Preparation Grant Request**			
1. **Country/Region**:	Malawi	2. **CIF Project ID#**:	TBC
3. **Project Name:**	**Climate Resilient Integrated Watershed Management** (#1)		
4. **Tentative Funding Request (in USD million total) for Project at the time of SPCR submission (concept stage):**	*Loan:*	*Grant:* **USD 25 million (PPCR)** *Other indicative sources of financing:* USD 30 million (IDA) USD 20 million (GCF) USD 8 million (GEF) USD 1 million (GoM)	
5. **Preparation Grant Request (in USD million):**	USD 0.3million	*MDB: n/a*	
6. **National Project Focal Points**:	**Ms. Shamiso Banda-Najira** Chief Environment Officer Ministry of Natural Resources, Energy and Environment Environmental Affairs Department, P/Bag 338, Lilongwe Malawi shamiso_b@yahoo.com / +265 1 772 428 **Mr. Nations Msowya** Director of National Authorising Office Ministry of Finance, Economic Planning and Development Finance Building, Capital Hill, PO Box 3009 Lilongwe Malawi nmsowoya@naosupportmw.org / +265 888 334 553		
7. **National Implementing Agency (project/program):**	**Shire River Basin Organisation** (Ministry of Agriculture, Irrigation & Water Development - MoAIWD, Department of National Parks and Wildlife - DNPW, Department of Fisheries - DoFi, Department of Forestry – DoF, and Environmental Affairs Department – EAD)		

8. **MDB PPCR Focal Point and Project/Program Task Team Leader (TTL)**:	*Headquarters-PPCR Focal Point:* **Ms. Kanta Kumari Rigaud** Lead Environment Specialist kkumari@worldbank.org	*TTL:* **Mr. Ross Hughes** Sr Natural Resources Management Specialist rhughes@worldbank.org

9. **Description of activities covered by the preparation grant:**

Preparation funding will include support for analytical and design work (through consultant services) and support for local training, workshops and seminars, operating costs and office equipment. Activities will include:

- Modelling to identify priority vulnerable sub-catchments in the lower Shire River for sustainable land management interventions with close engagement with communities (building on ongoing effective methodology for modelling and implementation in four sub-catchments under the SRBMP);
- Identification, prioritisation and detailed costings and financial analysis of components and activities.
- Training and capacity building (including on key themes to be included in design (e.g. SLM, Farmer Field School approaches, integrated watershed management approaches) and project design and management e.g. financial management, procurement etc.
- Studies to explore and generate agreed mandates for optimal and detailed institutional implementation arrangements;
- Stakeholder consultations to ensure specific activities and investments are inclusive, gender responsive and address key priorities (including social inclusion in NRM management interventions,
- Preparation of safeguard instruments (including environmental and social impact assessments and management plans.

10. **Outputs:**

Deliverable	**Timeline**
Detailed project design (including project concept note, project appraisal document)	Subject to funding availability.
Safeguard instruments	Subject to funding availability.
Training courses delivered	Subject to funding availability.

11. **Budget (indicative):**

Expenditures	**Amount (USD)** - estimates
Consultants	USD 140,000
Equipment	USD 10,000
Workshops/seminars	USD 60,000
Travel/transportation	USD 20,000
Others (admin costs/operational costs)	USD 60,000
Contingencies (max. 10%)	USD 10,000
Total Cost	**USD 300,000**
Other contributions (indicative):	

• Government	TBC
• MDB	WB (BB) $100,000
• Private Sector	n/a
• Others (please specify)	Trust Funds (TerrAfrica): c$100,000

12. **Timeframe** (tentative)

Submission of pre-appraisal document for PPCR Sub-Committee Approval:

Subject to timing and confirmation of PPCR funding.

Expected Board/MDB Management approval date:

Subject to agreement between WB and GoM.

13. **Other Partners involved in project design and implementation (indicative)**:
FAO
ESA
GEF

14. **If applicable, explanation for why the grant is MDB executed:**
n/a

15. **Implementation Arrangements** (incl. procurement of goods and services)**:**

The recently established Shire River Basin Organisation (SRBO) will coordinate and oversee implementation of the project preparation grant. The SRBO is a government owned legal entity that has been set up under the Shire River Basin Management Program (SRBMP, World Bank, USD 136 million, 2012-2019) and which includes dedicated administrative, procurement and financial management staff with competence in the associated World Bank Group operational policies and procedures as well as reporting requirements. Phase 2 of the SRBMP is currently being prepared. As the responsible MDB, the World Bank Group will support implementation of the PPG in accordance with routine and required implementation support missions and technical support.

PILOT PROGRAM FOR CLIMATE RESILIENCE **Project/Program Preparation Grant Request**			
16. **Country/Region**:	Malawi	17. **CIF Project ID#**:	TBC
18. **Project Name:**	**Operationalising Malawi's Climate Services Centre** (#5)		
19. **Tentative Funding Request (in US$ million total) for Project at the time of SPCR submission (concept stage):**	*Loan:*	*Grant:* **US$ 5 million (PPCR)** US$ 12.3 (UNDP/GCF approved)	
20. **Preparation Grant Request (in US$ million):**	US$ 0.1 million	*MDB: n/a*	
21. **National Project Focal Point**:	**Ms. Shamiso Banda-Najira** Chief Environment Officer Ministry of Natural Resources, Energy and Environment Environmental Affairs Department, P/Bag 338, Lilongwe Malawi shamiso_b@yahoo.com / +265 1 772 428 **Mr. Nations Msowya** Director of National Authorising Office Ministry of Finance, Economic Planning and Development Finance Building, Capital Hill, PO Box 3009 Lilongwe Malawi nmsowoya@naosupportmw.org / +265 888 334 553		
22. **National Implementing Agency (project/program):**	Department of Climate Change & Meteorological Services (DCCMS), Department of Water Affairs (DWA)		
23. **MDB PPCR Focal Point and Project/Program Task Team Leader (TTL)**:	*Headquarters-PPCR Focal Point:* **Ms. Kanta Kumari Rigaud** Lead Environment Specialist kkumari@worldbank.org	*TTL:* **Francis Nkoka** Senior Disaster Risk Management Specialist fnkoka@worldbank.org	

24. **Description of activities covered by the preparation grant:**

The PPG will be used for the following core activities:

- Technical design study to develop and consolidate the detailed organisational and institutional design and mandate of the Malawi Climate Services Center (e.g., Strategic and legal management framework, operational procedures and communication routines; and detailed capacity requirements for ICT, modelling, remote sensing, publishing, financial, human resources, procurement needs) which will equally incorporate design of project implementation arrangements;

- Study and consultations for detailed stakeholder analysis and procedures for cooperation, co-producing and open-access communication/dissemination of climate information to targeted users as well as the public (including delineation of key partnerships, collaborations and roles and responsibilities between DCCMS, DWA and boundary/partner organisations); and

- Technical design study to establish Climate Service's Center's work programme of climate information production and services as well as training needs (technical priorities, categories and detailed focus of what type of climate information and how water/weather/climate information is combined with sector or GIS specific data).

25. **Outputs:**

Deliverable	**Timeline**
(a) Organisational & Institutional Design study on the Malawi Climate Services Center	March – May 2018 (subject to funding availability)
(b) Stakeholder analysis with establishment of cooperation and co-production procedures	March – May 2018 (subject to funding availability)
(c) Establishment of the Climate Services Center's work program of climate information production and services	April – May 2018 (subject to funding availability)

26. **Budget (indicative):**

Expenditures	**Amount (US$) -** estimates
Consultants	US$ 90,000
Equipment	US$ 0
Workshops/seminars	US$ 7,000
Travel/transportation	US$ 3,000
Others (admin costs/operational costs)	US$ 0
Contingencies (max. 10%)	US$ 0
Total Cost	**US$ 100,000**
Other contributions:	
• Government	
• MDB	
• Private Sector	
• Others (please specify)	

27. **Timeframe** (tentative)

Submission of pre-appraisal document for PPCR Sub-Committee Approval: May 2018

Expected Board/MDB Management approval date: July 2018

28. **Other Partners involved in project design and implementation**:

Shire River Basin Organisation
Department of Disaster Management Affairs
Ministry of Agriculture, Irrigation and Water Development
Ministry of Local Government and Rural Development
Environmental Affairs Department
Department of Fisheries
Ministry of Natural Resources, Energy and Mining
United Nations Development Programme
European Space Agency
UMFULA
Leadership for Environment and Development in Eastern and Southern Africa (LEAD)
Lilongwe University

29. **If applicable, explanation for why the grant is MDB executed:** n/a

30. **Implementation Arrangements** (incl. procurement of goods and services)**:**

Implementation of the PPG will align with existing political mandates for the generation of climate information, i.e., primarily the Department of Climate Change and Meteorological Services and the Department for Water Affairs. The three core activities will be implemented in close partnership with key stakeholders and boundary/intermediary organisations.

To facilitate and ensure compliance with operational policies and procedures for procurement and financial management of the PPG, it is proposed that administration of the procurement processes is performed through the Shire River Basin Organisation who have established staff capacity in place.

Supervision of the PPG and implementation support of the responsible MDB, the World Bank, will be done in conjunction with closely associated missions on ongoing implementation of Phase 1 of the Shire River Basin Management Programme as well as preparation for its Phase 2 (alongside preparation of the PPCR concept 1 within the SPCR). As such, supervision can help technical alignment across the PPCR investments and the broader portfolio of investments related to climate services, as well as help achieve financial and administrative efficiencies in the MDB's own project preparation processes and missions.

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Annex 1: Malawi SPCR Results Framework & Theory of Change

Malawi SPCR – Programme Results Framework

The proposed SPCR Results Framework is aligned with the thematic pillars of the SPCR, which simultaneously reflect the priorities of the Government of Malawi's resilience agenda as articulated in the MGDS III, The National Climate Change Investment Plan, National Resilience Strategy amongst other programmatic high-level policy frameworks.

The SPCR Results Framework below also incorporates the revised, simplified PPCR logic model and results framework. As part of implementation of the PPCR, the PPCR Focal Points and relevant project implementing ministries will, with support from the MDBs, report on the five core indicators[118] during the life of their PPCR investment plans as part of reporting on the outcomes of the SPCR implementation[119]. At the project design stage of the PPCR investments, the exact targets will be determined as these are contingent on level of financing, appropriateness of geographic scope and scale at the time of project implementation, amongst other factors.

Malawi MGDS III Primary Vision: *to create an enabling policy and legal framework for a pragmatic, coordinated and harmonised approach to climate change management.*				
2017 National Resilience Strategy Objective: *to help make Malawi resilient to disasters and break the cycle of food insecurity*				
Contribution of SPCR to transformative impact *(10-20 years at national level)*				
Outcomes	**PPCR Indicator(s)**	**Baseline**	**Target**	**Reporting Responsibility** [120]
A.1 Increased resilience of households, communities, businesses, sectors and society to climate variability and climate change	**A1.3/ Core indicator 5.** # of people supported by PPCR to cope with CC/CR	*(Project level)* Zero - 0	*(Project level)* # of people supported by the PPCR # of people below poverty line supported by PPCR # of females supported by the PPCR … to cope with CC in xx location(s).	PPCR Country Focal Point and project implementation agencies with support of lead MDB. Quantitative assessment, using PPCR Table 5.
A.2 Strengthened climate responsive development planning	**A2.1/ Core indicator 1.** Degree of integration of CC in national including sector planning	*(National level)* 5 - Climate resilience strategies are embedded into the principal planning document, but are not being used	*(National level)* 10 - Climate resilience strategies are used in planning decisions, with no need to be complemented by other strategies	PPCR Country Focal Point with support of lead MDB. Qualitative assessment, using PPCR Scorecard 1.
SPCR Outcomes *To prepare for and respond to climate variability and change…*				

[118] In the list of outcomes and their indicators, A and B refers to PPCR indicators (core and non-core indicators) and those without prefix refer to specific outcomes and indicators proposed by the portfolio of the PPCR project investments.
[119] The detailed guidance on the monitoring and evaluation program, target definition and PPCR reporting structure is further provided in the PPCR Monitoring and Reporting Toolkit (https://www.climateinvestmentfunds.org/sites/default/files/PPCR_Monitoring_and_Reporting_Toolkit_March2015.pdf).
[120] Reporting at the aggregate level by the PPCR Country Focal Point will be done through the aggregated scorecard and table reporting at project level and with associated M&E mandated project staff.

Outcomes	PPCR Indicators	Baseline	Target *Defined at project design*	Reporting Responsibility
B. Adaptive capacities strengthened	**B1/ Core indicator 4.** Extent to which vulnerable households, communities, businesses & public sector use improved PPCR supported tools	*(Project level)* Zero – 0 (same as will be identified in scorecard 3)	*(Project level)* # of households # of communities # of businesses # of public sector service entities Describe impact on public sector services	PPCR Country Focal Point and project implementation agencies with support of lead MDB. Qualitative and quantitative assessment, using PPCR Table 4.
B. Institutional framework improved	**B2/ Core indicator 2.** Evidence of strengthened government capacity & coordinated mechanisms to mainstream CR	*(National level)* 3 - There are a few persons who are trained in climate change resilience and have experience implementing climate change resilience projects.	*(National level)* 10 - There is adequate expertise in climate change available in most departments/agencies, and most experts have good experience working on climate change projects and programmes.	PPCR Country Focal Point with support of lead MDB. Qualitative assessment, using PPCR Scorecard 2.
B. Climate information in decision making routinely applied	B3. Evidence showing that climate information, products/services are used in decision making in climate sensitive sectors	*(Project level)* Climate information is not routinely applied in DC and quality/access to climate information is limited	*(Project level)* Climate information products are relevant, accessible and of high quality and made available to # farmers, # media outlets, # communities in flood/drought prone areas	PPCR Country Focal Point with DCCMS, DWA with support of lead MDB. Qualitative and quantitative assessment using scorecard or in-depth approach.
B. Sector planning, and regulation for climate resilience improved	B4. Leverage of PPCR funding against public & private investments in climate sensitive sectors	*(Project level)* Access to public and private funding is limited	*(Project level)* PPCR funding leverages % of funding from public and private sources.	PPCR Country Focal Point with DCCMS, DWA with support of lead MDB
B. Climate responsive investment approaches identified and implemented	**B5/ Core indicator 3.** Quality of & extent to which climate responsive instruments/investme	*(Project level)* Zero – 0 Instruments/investments determined at project design stage	*(Project level)* 10 – Target set at project design stage and reflecting: if instrument/investments were developed,	PPCR Country Focal Point and project implementation agencies

	nts models are developed & tested	(same as indicator B1/4)	implemented at scale, appropriately incorporated by females and males and vulnerable populations.	with support of lead MDB. Qualitative assessment, using Scorecard 3.
PPCR Project Outcomes - *measured at project level*				
Outputs/outcomes	**Indicators**	**Baseline**	**Target**	**Reporting Responsibility**
Malawi SPCR Strategic Pillar 1: Building resilience in natural-resources dependent livelihoods				
Increased economically viable and environmentally sustainable livelihood options with a strong focus on integrating women's specific needs and reducing vulnerability to increased climate variability	Household income increased through improved land and water management practices, aggregated and by gender and location	xx – households xx – men xx – women xx – geographic locations determined at project design in focus areas of the Lower Shire basin (complimenting similar efforts in other regions, financed by non-PPCR sources)	xx – households xx – men xx – women xx – geographic locations *Exact target determined at project design*	MoAIWD with District Councils Qualitative and quantitative assessment using scorecard and/or in-depth approach
Improved community/famer level knowledge on available options for climate resilience farming	# Farmer Fields Schools established # of farmers applying new knowledge in agricultural practices that resulted in more resilient farming	# of Farmers Fields School in Malawi # of farmers in target districts who do not have access to knowledge *Determined at project design*	# of operationalised Farmers Fields School in project districts # of farmers applying acquired knowledge in practice *Determined at project design*	MoAIWD with DoELC Qualitative and quantitative assessment using scorecard and/or in-depth approach
Malawi SPCR Strategic Pillar 2: Strengthening sectoral governance of climate change adaptation				
Tailored climate information products available to users in agriculture and disaster risk management, perceived relevant to the individual needs for information.	# of seasonal forecasts with high-quality and location-specific climate data used in decision-making in farming and contingency planning.	Seasonal forecasts are provided too late to communities and farmers for the climate information to be valuable in resilient planning for the season. *Determined at project design*	# of farmers who find seasonal forecasts critical to farming planning and decisions, and find them valuable # of district councils using seasonal forecasts in contingency planning *Determined at project design*	DCCMS, DWA, DoDMA, MoP. Qualitative and quantitative assessment using scorecard and/or in-depth approach
Lake catchment environment and aquatic ecosystems	Improved fisheries management through formation and strengthening of	# of fishery co-operatives in target areas	# of fishery co-operatives formed and strengthened in target areas	MoAIWD with DoF

improved to improve the supply of fish resources	fisheries co-operative societies (enhancing the capacity of fishermen and women to access markets and fishing materials such as the BVCs to manage fisheries resources as cooperative)	# of men and # women with beneficial participation, access to markets and fishing materials in target fishery co-operatives *Determined at project design*	# of men and # women whose participation resulted in greater access to markets and fishing materials in target fishery co-operatives *Determined at project design*	Qualitative and quantitative assessment using scorecard and/or in-depth approach
Malawi SPCR Strategic Pillar 3: Food insecurity and poverty, from household to national levels				
B. Climate resilient agriculture and food security promoted	Value of agricultural products in the selected value chains increased and market access enhanced % increase in food production at household and community level in target locations	xx % of target value of agricultural products xx # of barriers to market access xx % of food deficit in target communities and households *Determined at project design*	xx % of target value of agricultural products # of barriers to market access xx % of food deficit in target communities and households *Determined at project design*	MoAIWD, DEA, MoI&T Quantitative assessment using scorecard and/or in-depth approach
Fisheries value chains improved	Value of fisheries value chains and market access enhanced	xx % of target value of fishery products # of barriers to market access *Determined at project design*	xx % of target value of fishery products # of barriers to market access *Determined at project design*	MoAIWD, DoF, MoI&T Quantitative assessment using scorecard and/or in-depth approach

Theory of Change

261. **The theory of change set out here describes how the proposed PPCR investments will build climate resilience in Malawi.** It illustrates how activities funded through the investments address core climate-related problems and will result in improved resilience of rural livelihoods to, and protecting the environment from, the impacts of changes weather and climate.

Impact and outcome

262. The theory of change is shown schematically in Figure 17.

- The **impact** the programme is aiming to deliver is to ensure that there is widespread understanding of likely impacts of climate change impacts, and ways to respond this are mainstreamed in policies, planning and practice.

- The **outcome** is improved climate change adaption plans, policies, institutional structures, technologies and programmes that are guided by reliable and relevant climate and weather information.

263. The outcome will be achieved by providing responsive funding that strengthens Malawi's climate resilience. This will be done through support that will:

i. **Promote climate-smart approaches and opening up product value chains** that builds climate resilience of both men and women in communities dependent on agricultural and fisheries for their livelihoods;
ii. **Improve planning and management of water resources,** to protect local ecosystems and increase livelihood options of both men and women living in communities in the Shire basin; and
iii. **Build national capacity to share real-time, relevant weather and climate information** to different stakeholders in ways that allows them to respond effectively to the information.

Basic premise

264. The focus of investment is deliberately on natural resource management by rural communities, as this covers the core livelihood systems for the majority of the population. This will remain so for the period of the PPCR investments and the twenty years or so following, when the investments will have longer-term, residual impacts. In order to ensure both government and rural communities in Malawi are able to respond to climate and weather variability, it is necessary to:

i. Support **policy, planning, and technical and capacity development** in key NR sectors: agriculture / fisheries / water resources; and
ii. Improve **climate and weather information** and knowledge management.

What is wrong now?

265. Responding effectively to the challenges of climate change requires addressing both environmental and institutional issues, along with adequate finance to makes changes at scale:

i. The country's natural resource base, which underpins the livelihood and food security of the majority of the population, is highly vulnerable to impacts of climate change;
ii. Existing GoM adaptation and investment plans are not adequately budgeted and financed;
iii. The capacity of government officials and other relevant stakeholders, to understand climate issues and incorporate them into sectoral planning is limited;
iv. Limited financial and technical support available to support rural communities' build the climate resilience of their livelihood systems; and
v. Limited availability of relevant weather and climate information.

What will the PPCR do?

266. The challenges described above and broad development issues facing Malawi, are echoed in three thematic and strategic pillars that the SPCR and the proposed PPCR investments build on. These are:

SP1. Building resilience in natural-resources dependent livelihoods

SP2. Strengthening sectoral governance of climate change adaptation

SP3. Fighting food insecurity and poverty, from household to national levels

267. Specifically, the strategic pillars inform the SPCR priorities and have guided the concept design for the PPCR investments. The PPCR will provide responsive funds to support GoM and other stakeholders. These funds will be channelled through five investment projects. These are:

i. **Climate resilient agricultural value chains:** This investment will focus on building and strengthening the resilience of the livelihoods of farmers, agro-processors and other actors and communities along the whole value chain of selected agricultural products. Criteria such as resilience to climate vulnerabilities and agribusiness / market / economic potential will be used for product selection. This investment's approach will integrate climate-smart approaches and efficient agricultural technologies. Its aim is to strengthen and improve agriculture production and productivity, increase agribusiness competitiveness and opportunities for value-addition and competitiveness, while enhancing incomes and increasing market access for smallholder farmers.

ii. **Providing farmers with direct support on climate resilient agriculture.** This will focus on rolling out successful pilots using a 'farmer field school' approach. This allows farmers to learn directly from each other, builds bridges between formal agricultural research and farmers' own experimentation and innovation, and helps identify and share farming practices that build climate resilience in specific local contexts. It recognises that men and women's roles and responsibilities are not identical, and it tailors advice to take account of these differences. It will address enterprise development as well as lake protection and integrated coastal zone management

iii. **Climate resilient fisheries management**. This investment will focus on enhancing climate change resilience of Lake Malawi and Malombe fisheries by developing infrastructure for value addition, improving access to markets, integrating the fisheries resource into global value chains, and improving the governance of Malawi's fisheries. It aims to reduce the vulnerability of fisheries sector stakeholders by improving

fisheries management, reducing overfishing, by-catch and discards, an improving aquatic eco-systems and habitats.

iv. **Water Resources Management:** This investment will focus on catchment management and basin planning. It will build on successes of the Shire River Basin Management Project, by supporting government and community structures continue to work together to build resilience to climate change and expand technical progress in reducing degradation throughout the Shire basin. It aims to increase household incomes through improved land and water management, increase community resilience to the impacts of floods, enhance the resilience of the ecosystems by reducing sediment loads and conservation of biodiversity in the basin.

Activities

268. Examples of activities to be undertaken to achieve the outputs are shown in Figure 17. More detailed description of activities will be developed during the design of the investments.

Assumptions.

269. The main assumptions in moving along the results chain are as follows:

From activities to outputs:

i. Planners and officials at national and sub-national levels recognise the value of understanding more about impacts of climate change natural resource management and agriculture and fisheries based livelihood and food security, but have limited capacity to prioritise relevant actions and investments;

ii. Farmers recognise the challenges of shifts in weather patterns and climate, are looking for ways to respond to these, and want to share experiences and learn from each other; and

iii. All stakeholders want to be able to access climate and weather information in more accessible and useful formats than they are able to at present.

From outputs to outcome:

i. The content and format of activities financed through the investments is: relevant to, and useful for, government policy makers and rural communities; sufficiently robust and relevant evidence will exist to adequately inform policy and implementation processes; used as evidence is to inform both climate change-relevant policy making and the design and delivery of activities and programmes that will implement policy;

ii. Development partners and government stakeholders recognise the need to address the risks to livelihood and food security and environmental degradation resulting from weather and climate variability;

iii. The programme is able to engage effectively with communities, farmers and fisherfolk on the need for new and/or adapted approaches specifically to address weather and climate variability risks. Technical assistance (TA) financed through the PPCR investments can provide adequate support to build capacity to address risks that weather and climate variability pose for livelihood and food security and environmental degradation; Adequate expertise exists within Malawi to develop and implement relevant policy (with short-term TA support, as required); and

iv. Government, development partners and private sector stakeholders recognise the need for additional resources to address the risks to livelihood and food security and environmental degradation resulting from weather and climate variability; Sources of finance additional to PPCR funds can be identified. Development partners and private sector stakeholders are prepared to provide finance and are able to manage any corruption risk. Government will be able to access finance that is available.

From outcome to impact:

270. Delivering all five the program's investments is sufficient to bring about significant changes to the way that adaptive responses evolve in Malawi. Government, communities, and other national stakeholders are better able to respond to additional challenges resulting from the risks to livelihood and food security and environmental degradation resulting from weather and climate variability. Missions by the World Bank and African Development Bank indicate there is strong interest in the programme and the assumptions are reasonable. During preparatory missions the proposed investments were discussed with a range of stakeholders including government officials, academics, non-government organisations and other development partners. These consultations indicted strong support for the proposed investments. The main risks relate to the technical capacity in government.

Annex 2: SPCR consultation history

Event: **SPCR Technical Mission meetings**
Location: Lilongwe, Blantyre and field visits
Date: June 12-16, 2017

Name	Title	Organisation	Gender	Email	Phone
Alfred Kambwiri		CISANET	Male	alfred@cisanetmw.org	0999 262 945
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George Phiri	Technical Coordinator,	FAO	Male	George.Phiri@fao.org	

	Climate Smart Agriculture				
Gertrude Kambauwa	Deputy Director	MoAIWD/DLRC	Female	gkambauwa@gmail.com	0888 321 562 / 0998 615 796
Gift Numeri		Network for Youth Development	Male	gnumeri@yahoo.com	0999 942 679
Innocent Phiri	Consultant	World Bank	Male	iphiri@worldbank.org	0888 338 441
James Kumwenda	Economist	MoAIWD	Male	jamesdaire@ymail.com	0994 672 697
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Wezzie Kabruta	Monitoring, Accountability, Evaluation & Learning Coordinator	Save the Children	Female	wezzie.kabruta@savethechildren.org	0993 637 615
William Mwanza	Consultant	World Bank	Male	wmwanza@worldbank.org	0999 200 570

Event: **Government Consultation meetings for concept note discussions**
Location: Lilongwe
Date: July 21, 2017

Name	Title	Organisation	Gender
Allan Kaziputa	Environmental Planner	Roads Authority	Male
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Event: **PPCR - SPCR Stakeholder Validation Workshop**
Location: Golden Peacock Hotel, Lilongwe
Date: 22-23 August 2017

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Gender approach during consultations (June 12-16 and August 22-23, 2017)

271. Women are disproportionately vulnerable to natural disasters and climate change impacts because their endowments and opportunities to cope with are not equal to those of men.

272. During the preparation of the proposed SPCR investments, consultations with the key stakeholders included discussions on how best to ensure the integration of gender aspects during the preparation, implementation, and monitoring and evaluation phases of the programme. The following outlines some of the approach and strategies to incorporate gender dimensions in the various phases of the project cycle:

273. **Design Phase:** (i) conducting a climate risk and vulnerability assessment report with a gender focus in specific sectors and targeted regions to highlight vulnerabilities as well as describe and analyse differences between gender and cultural norms in different communities with the help of gender experts and women from the community ; (ii) evaluation gender-related risks from potential project activity (for example, ensure women's access to water is not reduced by particular activity); (iii) developing a capacity building plan to incorporate gender perspectives, and monitor and evaluate progress; (iv) developing clear gender goals, objectives including formulation of clear gender indicators during each project formulation. (v) developing an operational plan to designate responsibilities to ensure proper gender monitoring by identifying responsible partners for the implementation and monitoring of gender indicators, as well as result framework of specific gender targeted tasks. (vi) assigning resources and budget specifically for monitoring and evaluation of gender-targeted activities while promoting women's active engagement in targeted activities. Also, special emphasis will be placed on generating gender-disaggregated data.

274. **Implementation Phase**: (i) Ensuring mechanisms put in place to carry out gender-responsive activities are conducted in a participatory manner (for example, establish a target of 50% participation; provide training to women in different skills); (ii) ensuring the capacity building of implementing agencies on gender issues remain an ongoing process.

275. **Monitoring and Evaluation Phase**: (i) Providing guidance on gender-specific factors are being integrated into projects and verify applicability including the collection of sex-disaggregated data wherever relevant (i) assessing project impacts for both men and women (ii) ensuring lessons learned knowledge dissemination includes findings on gender issues.

Annex 3: Responses to comments from the Independent Reviewer(s)

Matrix of responses to comments from the Independent Reviewer

Name of the reviewer: Paul Watkiss
Date of submission: October 18, 2017

PART I: GENERAL CRITERIA

This assesses whether the SPCR complies with the general criteria indicated in Annex A of the "*Procedures for the preparation of independent technical reviews of PPCR and SREP investment plans and programmes*". Each criterion is assessed in 3 colors: green = meets the criteria; orange = need for some additional work; red = did not meet the criteria.

a) complies with the latest principles, objectives and criteria of the relevant program as specified in design documents and programming modalities		**Response**
While the general coverage is compliant, there are some PPCR objectives and principles that have not been fully captured. The PPCR statement (Nov 2015) emphasised the need for alignment with adaptation planning processes and financing priorities, including the National Adaptation Plan process, in the preparation and implementation of SPCRs. The NAP is not mentioned in the document. This should be investigated, and it would be useful to clarify how SPCR fits with the NAP. Malawi also has an existing climate investment framework, the National Climate Change Investment Plan (NCCIP), 2013- 2018, and it would be again useful to clarify how the PPCR/SPCR aligns within this existing national framework. There is also a PPCR objective for mainstreaming. It would be useful to set out how the PPCR/SPCR aligns to the new national development plan MGDS III –for the agriculture and climate special theme – and the cross cutting theme of climate and environment management, and to ensure that the SPCR aligns to the MGDS III approach for mainstreaming. The core objective of PPCR is to develop resilience investments. However, the agriculture value chains (component 2) seemed to involve a large number of core development		The SPCR has been updated to better reflect the existing alignment with the NAP, the revised 2015 NAPA and the NCCIP priorities and actions. Priority actions in the NAP/A and the NCCIP are under implementation and effort has been made to avoid duplication and strengthen reinforcing impact. The SPCR has been designed to align with the MGDS III. The MGDS III was, however, not officially published until October 2017 after which the SPCR has been updated accordingly. The SPCR is aligned closely with the NCCIP and the Government team managing the SPCR/PPCR design process is the same overseeing the NAP and NCCIP (i.e., the institutional mechanism working towards integrating climate change adaptation priorities into broader development and economic planning). Both concepts on agriculture and fisheries value chains has been updated to better focus on resilience interventions. For example, the agriculture value chain concept was thoroughly revised with the aim of spelling out the resilience issues and gearing up the project towards meeting the PPCR reliance requirements. Part of the new agriculture value chain proposal is to use part of the preparatory grants to carry out analytical studies on how each crop value chain is affected by the changes in the climatic conditions

activities (not resilience activities). This was also the case with much of the fisheries concept, which again seemed focused on development and markets, rather than resilience. Both these concepts would benefit from further development to ensure they are targeting eligible and additional resilience activities. As an example, the agriculture value chain project could focus more on component 1 (climate smart agriculture) while the fisheries project could include components on early warning, monitoring and research, climate smart value chain analysis, and climate smart land management around lakes. This re-orientation should be undertaken before concepts move to the design phase.	
b) takes into account the country capacity to implement the plan	**Response**
The plan takes into account the country capacity and provides clear activities to help build capacity to deliver each individual project. However, there is a clear capacity deficit in Malawi, and to build a resilience program, further investment in adaptive capacity, technical assistance support and institutional strengthening at central level would be highly beneficial (at the moment the plan only includes project budgets). It would be useful to consider a central investment to deliver the overall programme and develop resilience programming in Government going forward. This would involve additional resources beyond the administration and SPCR secretariat role.	Challenges in institutional capacity are noted and are widely documented. It is important to bear in mind that there is a range of ongoing support (e.g. from USAID and UNDP) aimed at addressing such challenges. The SPCR preparation grant that will start implementation shortly will provide targeted support for institutional strengthening and capacity building for sector ministries and the ministry of finance. This also includes support for implementation and coordination of future resilience investments. The SPCR team emphasises that institutional strengthening and capacity building will be an integral aspect of all investment projects included in the SPCR program. The SPCR document has been adjusted to clarify these aspects.
c) has been developed on the basis of sound technical assessments	**Response**
Across most of the document, the technical assessment is sound. However, in part 2, the technical assessment of resilience options is under-developed, and there is no identification of the key risks (current and future) that interventions are targeting, or whether the interventions themselves are at risk from climate change. It would be beneficial to include more specific risks in each of the concept descriptions and to highlight how interventions are addressing climate risk with defined activities. As an example, for forestry	The SPCR has drawn on available estimated and documented sector specific climate risks and these have been identified further in the document. The narrative to climate uncertainty has been introduced and included in Part 1 and referenced in Part 2. The SPCR has been updated to ensure consistency in the use of the most recent and credible macro-economic data.

management, I did not see any mention of agro-climatic shifts under climate change and how these might affect tree suitability, or potential changes that may be needed in management practice (mulching of seedlings under increasing rainfall intensity). Furthermore, part 2 does not have any mention of climate uncertainty, yet this is a major challenge for a climate resilient program. This seems an omission. This can be tackled through an iterative approach with learning. It would therefore be useful to introduce some specific iterative programming and learning interventions. This is particularly important for longer lived investments, notably around water projects, but also where major investment will shift to new value chains (agriculture and fisheries), to avoid lock-in to future climate risks. A minor point but the document currently cites five different values for the % of GDP from agriculture and in different parts of the report, it has different values for labour force and export values. Single consistent values should be inserted.	Analytical and knowledge management support is provided through the SPCR preparation grant and this has now been flagged more prominently. Investment project concepts included in Part 2 have been adjusted to ensure greater clarity on resilience aspects. Inconsistencies in labour force, GDP etc. have been corrected.
d) demonstrates how it will initiate transformative impact	**Response**
The plan can deliver a transformative impact, in terms of development, through the scale-up of programmes, and through mainstreaming (integrating) lessons into national and sector development. In many areas this scale-up is clearly defined. For example, the scale-up of watershed planning to the national level in concept 1 is a demonstration of this approach. The inclusion of climate smart agriculture in a national farmer field school programme (4) and national climate services (5) are also good examples. It would, however, be useful to look for similar examples for agriculture value chains (2) and fisheries (3). However, a key part of transformative adaptation is integration (mainstreaming) and learning. There is currently insufficient consideration of how lessons from the concepts will be integrated into key sector development plans. Each concept would benefit from an additional component on learning, mainstreaming and dissemination.	The team agrees, and has further clarified the narrative on transformative impact potential and scalable impacts with larger sector programmes and ability to focus technical interventions on actions for resilience building. The team also agrees on the importance of addressing specific learning, mainstreaming and dissemination activities and these aspects will be elaborated further during detailed design. It will not always be appropriate to package these as separate components (in particular for larger programmes and projects). IPs have been adjusted to reflect greater attention to assessing future climate risks. For example, investment project 1 now makes specific reference to modelling future climate risks in the context of IWRM/SRBMP2 – building on modelling (developed and used extensively during the first phase of SRBMP); and the agriculture and fisheries value chain investments now better links up the proposed programme with several other on-going agricultural development programmes in Malawi. The revised concept on agriculture has

In terms of demonstrating a transformative resilience (i.e. beyond incremental adaptation), the project is less advanced, though this reflects the necessary focus on current climate risks. However, given the scale of future climate change in Malawi, some early investment should be included to address this. The concepts would benefit from an analysis of future risks and the inclusion of additional components that seek to start building future resilience. As examples, consideration of future climate change projections in the development of IWRM plans, or work to ensure value chains will be climate smart under a changing climate (e.g. fishery value chains focus on more resilient stocks).	also identified the national development strategies into which the programme links
e) provides for prioritisation of investments, adequate capturing and dissemination of lessons learned, and monitoring and evaluation and links to the results framework of the PPCR	**Response**
Prioritisation of investments is based on well-identified priority themes in government documents and agreed in the consultative process, and are informed by the risk assessment. However, there is no formal prioritisation in the review. Para 112 has a list of prioritisation criteria, but these have not been translated into a process, and it is not clear how the criteria have shaped the selection and prioritisation of investment choices. It would be useful to map each of the investments against these proposed criteria, to ensure they meet the criteria and score well (or else are amended to ensure they do).	The SCPR investments are guided by the priorities identified in the NDC and the prioritised set of NCCIP and NAP investments. Please see the updated section on the selection and prioritisation process of the SPCR that resulted in the proposed investment concepts and their interlinkages.
f) has been proposed with sufficient stakeholder consultation and provides for appropriate stakeholder engagement	**Response**
There is a well-documented stakeholder consultation process provided.	Agreed.
g) adequately addresses social and environmental issues, including gender	**Response**
A separate section of the report is focused on the issue of gender. The investments themselves also have a strong focus on gender components. The document states (para 69) that Gender aspects have also been integrated into the indicators included in the results framework and is in indicators in Annex 1.	Agreed.

h) supports new investments or funding additional to on-going/planned MDB investments	**Response**
There are many positive indications that the investments are aligned to on-going/planned MDB investments. However, the new investments are conditional on finance from the PPCR and GCF, thus the funding is uncertain. The plan would have been stronger if it had identified more specific investment opportunities. It would be useful to have a more specific discussion of likely resource availability, the options available, and to develop a full resource mobilisation plan in the design phase. For the GCF, it would be useful for the document to define the planned accredited entity and to ensure sufficient funds are included in the design budget to develop a full GCF proposal: at the moment the request looks too low to allow full proposal development as well as full design. It is also difficult to align the phasing of a GCF proposal (which would be likely to take 2 – 3 years before funds flow) with the planned 2018 – 2023 programme window. This may need a change in the programme length.	It is indeed unlikely that new PPCR funding will be available to support implementation of the priority projects included in this plan. However, GoM and the MDB team supporting the development of this plan was advised to plan on a nominal contribution from PPCR in the event funds do become available. With regards to GCF, it is recognised that accessing GCF financing is uncertain and will in any case require long lead-in times. To address this, none of the proposed investments will be solely-reliant on GCF financing and investments will be designed to be scalable – should GCF funding be secured, then this could be added as additional financing to increase scale and impact. Specific funding sources will be identified and confirmed at project preparation. The financing presented in the SPCR are indicative only at the stage of SPCR preparation. The SPCR has been clarified with respect to any financing uncertainty as well as potential implication in timing from future approved GCF financing.
i) takes into account institutional arrangements and coordination	**Response**
The report has a detailed analysis of the climate change landscape, but has not fully described the institutional arrangements and coordination on disaster risk management and resilience. This should be added. The concept 5 (climate services) states that 'mandates will be agreed and endorsed' during the project. This introduces some project risk and it would be preferable if early discussions among all relevant parties had been undertaken, and agreed in principle, before the concept moves to detailed design.	The SPCR has been updated to better reflect the institutional arrangements within the Government of Malawi. For concept 5, the team agrees with the risks associated with reaching agreement and endorsement for institutional mandates amongst key climate services agencies (particularly DCCMS and DWA and any potential partnership agreements for service delivery). The concept has been updated to better clarify the need for thorough investigations and consultations during detailed project design so as to minimise the risk prior to implementation.
j) promotes poverty reduction	**Response**
The document has some generic discussion of the importance of poverty reduction, but it would benefit from more specific analysis. This could draw on the recent Malawi analysis presented in the World Bank Unbreakable report, which has an analysis of poverty drivers, including climate, for Malawi. This would	Agreed. The referred report provides useful insights on the potential of social transfer and protection against losses from natural disasters. The SPCR has been updated to highlight these recommendations which will be important in the respective detailed project design phase.

allow targeted consideration of poverty reduction for investments.	
k) considers cost effectiveness of proposed investments.	Response
There is no consideration of the cost-effectiveness of the proposed investments in the document. This does require, however, a detailed analysis and this may be more appropriate for the design phase.	At this broad programme preparation level, the selection of investments was considered likely to be cost-effective for building resilience. Detailed cost-benefit analysis will be completed during project preparation. Cost effectiveness is positive on supporting programmes, such as the SRBMP.

PART II: COMPLIANCE WITH THE INVESTMENT CRITERIA OR BUSINESS MODEL OF THE RELEVANT PROGRAMME

Please comment on whether the SPCR complies with the criteria specific to the PPCR, as indicated in Annex A of the *"Procedures for the preparation of independent technical reviews of PPCR and SREP investment plans and programmes".*

a) Climate risk assessment: The SPCR has been developed on the basis of available information on the assessment of the key climate impacts in the country; the vulnerabilities in all relevant sectors, populations and ecosystems; and the economic, social and ecological implications of climate change impacts.	**Response**
Overall, the climate risk assessment is sound with respect to the analysis of current risks and climate change projections (section 3). However, the technical assessment is under-developed with respect to the sector specific risks (section 4) of climate change. In many cases, the analysis of sectors only comprises one paragraph and there are no references and little quantitative analysis. This section (4) could be enhanced to provide the basis for subsequent investments.	The SPCR has drawn on available estimated and documented sector specific climate risks and these have been identified further in the document. As investments move into detailed project design, attention to detailed sector-specific risks will be elaborated further to better inform the design and consensus for detailed project activities and results.
b) Institutions/ co-ordination: The SPCR specifies the coordination arrangements to address climate change: cross-sectoral; between levels of government; and including other relevant actors (e.g., private sector, civil society, academia, donors, etc.).	**Response**
The report has a detailed analysis of the climate change landscape, but has not fully described the institutional arrangements and coordination on disaster risk management and resilience. This should be added. It is not fully clear how the PPCR/SPCR will be mainstreamed into other national investment planning activities, notably the MGDS III, the NAP, the NCCIP and the national resilience strategy, and again this needs some clarification.	See response Part 1(i). See response Part 1(a).

In terms of the project concepts, the institutional arrangements are specified, but there is some inconsistency between project concepts. Some concepts will sit within the SPCR framework (e.g. concept 2) while others seem to be autonomous projects. It would be useful to provide a clearer and more consistent picture of how each project will be overseen by the SPCR program. There are numerous institutional, governance and policy barriers in Malawi that have made previous resilience initiatives challenging. There have been a number of political economy reports and consideration of these would be useful. The plan would benefit from considering the PE challenges and being more explicit on how it will address previous barriers to ensure effective delivery.	The institutional arrangements within concepts and linkages to SPCR has been clarified. Agreed.
c) Prioritisation: The SPCR has adequately prioritised activities taking into account relevant climate/risks and vulnerabilities and development priorities, sectoral policies; ongoing policy reform processes and existing, relevant activities and strategies.	**Response**
For prioritisation, see Part 1 response e). There is the issue of whether the SCPR has taken on board existing, activities and strategies. There is currently insufficient linkage to the MGDS III and the national resilience plan. The coverage of relevant activities is partial. The overview table in Annex 7 omits a number of relevant activities and could be expanded with: • International climate initiatives (http://www.climatefundsupdate.org/data). • UNDP database of climate change projects in Malawi. • Mapping aid in Malawi project. (https://www.strausscenter.org/ccaps-adaptation-aid-news/mapping-aid-in-malawi.html) • GoM development partner database. • Consideration of other World Bank programmes (notably on flood (MFERP), agriculture and social protection) • Resilience programmes (notably DFID/Irish aid/Norway, ECRP and also GFDRR capacity support). • A focus on the agriculture sector, as this comprises 3 of the 5 project concepts, including the Gov agricultural investment plan and the major initiatives in agriculture, including major Bank and EU programmes. • Consideration of the IDA 18 program, and likely future activities, especially given the IDA 18 special theme on climate change.	See Part 1(e). The MGDS III was officially published by Government in October 2017 and the SPCR has been updated accordingly with clarified links between the investments and activities. Regarding mention of other activities, the text does try to make clear that there are a large range of climate change related activities ongoing in Malawi, mostly small projects supported by faith based groups, NGOs, CBOs and small grants from other development partners. These are documented elsewhere, for example in the NCCIP and a comprehensive repeat of this information would require a huge expansion in the size of the document. The document already flags the larger initiatives and Table 18 has been now been expanded to further capture the relevant ongoing activities. Please note that the IDA 18 programme is currently under discussion between IDA and

	GoM and therefore speculation on 'likely future activities' would not be appropriate in a government document.
d) Stakeholder engagement/ participation: The SPCR has identified and addressed the needs of highly vulnerable groups.	**Response**
There is a well-documented stakeholder consultation process provided. There is, however, also no analysis of whether the projects will have positive distributional outcomes, and whether interventions are targeted to vulnerable groups. Indeed, some of the proposed value chain investments are more likely to benefit medium and higher income individuals, not the highly vulnerable. A distributional analysis could be flagged for the design phase, along with targeted interventions to help the most vulnerable.	The team would agree on the adequacy of the document stakeholder engagement process. The issue of distributional impacts for specific projects is best defined at detailed project design stage.

PART III: RECOMMENDATIONS

Please provide any recommendations that could enhance the quality of the SPCR.

The plan has been well written and has identified a well-defined and realistic set of project investments that would have major resilience benefits for Malawi. The main issues flow from the criteria assessment above and this leads to the following recommendations.

- At the moment there is the risk of multiple national climate investment frameworks in Malawi. Further clarification is needed on how PPCR/SPCR will align to the NAP and the NCCIP, as well as the new MGDS III. It would be useful to set out the institutional arrangements and linkages between all different investment plans. (see Part 1 a). There is also a set of sector development plans / investment plans that are being developed. It would be useful for the team to identify integration potential in the design phase.

  Agreed. See associated response above in Part 1.

- The plan takes into account the country capacity and provides clear activities to help build capacity for each individual project. However, it would be useful to consider a central investment to deliver the overall programme and develop resilience programming in Government going forward. (see Part 1, b).

  See associated response above in Part 1.

- The concepts are well advanced, but in some cases, they are not investing in resilience activities (see Part 1a). Some re-orientation should be undertaken before moving to the design phase.
  - Concept 2, Subcomponent 2, either needs to be funded by core MDB finance, or if it is targeting climate finance, it should be developed to ensure it is targeting eligible and additional resilience activities (e.g. resilience finance should not be funding baseline infrastructure). It may be that the PPCR and GCF finance should be focused on component 1 (climate smart agriculture).

- The fisheries concept (3) is an extremely good development project, but there is insufficient consideration of resilience, and most of the investment is in development. The concept would benefit from a more explicit focus to develop climate smart value chains. This could include early warning, monitoring and research on water temperature and fish stocks, analysis of the suitability for value chains under climate change, and climate smart land management. This is a priority, since Part 1 of the report highlights a lack of knowledge of the risks of climate change.
- It would also be worth strengthening the resilience activities in the other concepts (see Part 1 c) as there is almost no mention of current climate variability and climate change risks. This is particularly important for longer lived investments. (see Part 1c and Part 1d).

See updated investment concepts aligned with recommendations.

- The plan is clearly targeting transformational change, and has a series of defined activities for scale-up (See Part 1, d). However, there is insufficient consideration of how lessons from the concepts (learning) will be captured and then integrated into key sector development plans. Each concept would benefit from an additional component on learning, mainstreaming and dissemination. This also links to the point above on learning and investment in early resilience building for longer-term climate change (the risk of lock-in).

  Agreed and to be explored in detailed project design phase.

- The plan has an informal prioritisation of investments, but it would be useful for the team to map the concepts against their prioritisation criteria (Part 1 e).

  The section on the SPCR Selection Process (pp.57) outlines the process whereby the investment concepts were identified and developed.

- The finance involves considerable funds from PPCR ($50M) and GCF ($47M, of which additional likely to be $35). These both seems quite uncertain. It would be useful to have a more explicit discussion of these two funding streams, recommended accredited entity, and to include a full resource mobilisation plan in the design phase. The resources needed for a GCF proposal should be factored into the design budget and will require an increase in resources (see Part 1 h). Further clarification is needed on how to align the phasing of a GCF proposal (2 – 3 years) with the planned 2018 – 2023 programme window.

  See associated response above in Part 1.

- The GCF have already funded $12M of a $16m project in Malawi on Climate Information and Early Warning Systems. This isn't yet referenced explicitly in the document and should be added (concept 5).

  Concept 5 has been updated and clarified accordingly.

- While the document has some generic discussion of the importance of poverty reduction, it would benefit from more specific analysis, and could draw on the analysis in the WB Unbreakable report (see Part 1 j).

  Agreed. See associated response above in Part 1.

- The document does not consider the cost effectiveness of proposed investments. This does require a detailed analysis, though may be more appropriate for the design phase.

  Agreed. See associated response above in Part 1.

- The analysis of climate risks in sector 4 should be expanded (Part 2 a). A focus on more understanding these risks should be included in the design phase.

  See associated response above in Part 1.

- In terms of the project institutional arrangements, there is some inconsistency between project concepts (see Part 2 b). Some concepts will sit within the SPCR framework (e.g. concept 2) while others seem to be completely autonomous projects. It would be useful to provide a clearer and more consistent picture of how each project will be overseen by the SPCR programme, and if arrangements differ.

  The SPCR has been updated. See associated response above in Part 1.

- The document has not yet fully considered the disaster risk management and resilience landscape in Malawi. It would be useful to extend the institutional arrangements to cover this and to add resilience programmes and activities (see Part 2, c). Some analysis of the political economy challenges in Malawi would also be beneficial, and how the SPCR will tackle these.

  See associated response above in Part 1.

- There is a strong gender component to the project. However, there is no analysis of whether the projects whether interventions are targeted to vulnerable groups. A distributional analysis could be flagged for the design phase, along with targeted interventions to help the most vulnerable (see Part 2, d).

  See associated response above in Part 1.

In terms of the specific five concepts.

Promoting climate resilient approaches to water resources management.

- This programme is well defined, though it would be useful to clarify which interventions are funded by the World Bank programme and which are seeking additional climate resilience investment from PPCR and GCF.
- In component 1, there have been climate change projections considered in the water management plans of phase 1, and it would be useful to mention this and highlight a similar approach for national scale-up.
- In component 2, it would be useful to have some explicit climate resilience activities (e.g. for forestry, with climate smart investments, buffer zones, etc.), details on how these investments will be protected (e.g. enforcement or community based forestry) and consideration of demand side activities (e.g. ICS).

  See associated response above in Part 1.

- In component 3, it would be useful to include targeted resilience activities for livelihood interventions.

  See associated response above in Part 1.

- It would be useful to clarify the governance arrangements and whether this project will be managed under the PPCR oversight committee (this was not mentioned), as well as the linkages with MGDS III.

  The Government's Standing Committee for Natural Resources and Climate Change has the mandate to organise strategic oversight for adaptation measures. This is the same inter-ministerial committee that provides oversight for the NAP, the NCCIP and forthcoming PPCR. The same committee has been instrumental in coordinating consultation and concept development together with line ministries for the duration of the SPCR preparation phase.

Supporting climate resilient agricultural value chains:

- It would be useful to have a breakdown of the budget split by component, and to clarify what is covered by proposed baseline (MDB) investment versus additional climate finance (from PPCR and GCF).
- There are parts of this investment (component 2) that look like a market or agribusiness project, rather than a resilience project. it would be useful to separate out development funding from resilience activities. It may be useful to focus the marginal climate finance on core resilience issues (i.e. CSA, component 1), especially as this aligns directly to the NDC Focus on CSA 'practices'.
- There is also a need to consider the climate risks for each value chain, to ensure investment is climate smart, i.e. they are suitable for the future climate of Malawi. For example, maize is a highly climate sensitive crop, so why is this a focus for a new value chain project? Similarly, soybeans are grown in particular agro-climatic zones and it is important to ensure new projects are established in suitable areas. I would recommend a climate risk and suitability screening is included in the design phase.
- It would be useful to clarify how the concept aligns to the MGDS III (Agriculture and Climate theme) and the (draft) national agriculture investment plan, and how it will mainstream with these existing initiatives.
- There are a large number of agricultural investments focused on climate smart agriculture. This includes large World Bank and EU programmes, as well as proposed IDA 18 investment. It would be beneficial to discuss how this project aligns to this landscape, the added value of the intervention (geographically or by thematic), and opportunities for further synergies and integration.
- It would be useful to look at the synergies with FFS (concept 4) and W&CS (concept 5).

  The concept has been updated accordingly.

Supporting climate resilient fisheries value chains;

- The fisheries value chain project is a very good project, but I think much of the investment is in core development not resilience (especially component 3). It would be useful to

separate out what is covered by proposed baseline (MDB) investment versus additional climate finance (from PPCR and GCF).

- I would also recommend that a stronger set of resilience activities are included in the project, especially given the lack of knowledge on climate change. I would suggest: a greater focus on current climate shocks (thus early warning, soil and water conservation around lakes); a monitoring programme that starts collecting observational data (water temperature and other factors) linked to fish surveys, analysis of the suitability of different fish species for fisheries and aquaculture under climate change; etc.
- It would be useful to clarify the governance arrangements and whether this project will be managed under the PPCR oversight committee (this was not mentioned), and also set out how the programme aligns and integrates to MGDS III and fisheries sector policy.

The concept has been updated accordingly.

Promoting the scaling-up of climate-resilient agriculture by supporting farmers directly through FFS

- The FFS model looks a very good investment project. However, there appears to be no PPCR investment. It would be useful to clarify the governance arrangements and if this project will be managed under the PPCR oversight committee.
- The concept should seek to build the linkages with concept 1, 2 and 5, and thus demonstrate how the project fits within the SPCR programme.
- For component 2, the focus of demonstration plots is at research institutions. There would be a greater scale-up if demonstration plots were also included in all farmer field schools.
- For component 4, much of the activity is core development and there are potential linkages to concept 2.
- For component 5, there could be greater linkage to concept 5.

The concept has been updated accordingly.

Strengthening the provision of weather and climate data and establishing a national climate services centre.

- This concept was well developed and detailed. There are some technical issues on definitions and the separation of weather and climate services, and the need for services to focus on user needs.
- It might be useful for this concept to link to other areas of SPCR, with more concrete programmes of climate services for agriculture (farmers and government) in particular.
- For co-production, it may be worth investigating Participatory Integrated Climate Services for Agriculture.
- I think the concept would also benefit from considering different programming modalities for climate services, which make greater use of boundary organisations.
- The concept states ‘mandates will be agreed and endorsed’ during the project, but the set-up of a physical office and the integration of data from organisations with specific mandates could face institutional barriers. I would recommend that the concept more clearly sets out the activities within the proposed centre and maps this to current institutional mandates, then agrees these before detailed design.

- I would recommend the list of proposed activities (staff, buildings, etc.) is checked to ensure these are allowable under PPCR finance grants. I am not sure all of them would qualify for grant finance.
- The concept needs to clarify the funding and activities of the current Scaling Up of Modernised Climate Information and Early Warning Systems in Malawi (and funding from UNDP, LCDF and GCF) and set out the marginal activities of the PPCR investment.

  Recommendations have been taken on board and the concept has been updated accordingly.

Annex 4: Government institutions, mandates and policy instruments

Ministry/Department	Responsibility
Ministry of Natural Resources, Energy and Mining	Ministry of Natural Resources, Energy and Mining is the lead ministry mandated to coordinate natural resources and environment (including climate change), energy and mining issues. The Ministry hosts the Environmental Affairs Department, Department of Climate Change and Meteorological Services, Department of Forestry, Department of Energy Affairs, Mining Department, and Department of Parks and Wildlife.
Environmental Affairs Department	The Environmental Affairs Department (EAD) is the climate change focal point in the country. Therefore, EAD provides policy direction on issues related to climate change mitigation, adaptation, public awareness and technology transfer. The EAD is supported by a National Technical Committee on Climate Change, a multi-stakeholder technical team, to provide critical inputs to current and future climate change programmes and projects. At the policy level, it is supported by the National Steering Committee on Climate Change (NSCCC)19. The EAD in collaboration with the Department of Climate Change and Meteorological Services (DCCMS), is also responsible for coordinating international climate change related issues.
Department of Climate Change and Meteorological Services	The Department of Climate Change and Meteorological Services, previously known as Department of Meteorological Services, is mandated to provide reliable, responsive and high-quality weather and climate services to meet national, regional and international obligations through timely dissemination of accurate and up to-date data and information for socio-economic development of Malawi. The DCCMS has manned and automated weather stations throughout the country and also manages district climate change information offices to disseminate climate change information to aid district development planning. It is the only official authoritative voice on weather and climate for the Malawi Government, and manages all weather and climate data for Malawi as the official custodian of such information.
Department of Forestry	The Department of Forestry (DoF) is mandated to plan, provide technical extension guidelines, and facilitate forestry development on customary land and forest reserves, and participation of all stakeholders in the sustainable management of our natural resources in Malawi. Although its activities tend to mainly support climate change mitigation by conserving or enhancing carbon sinks, the Department has also looked at adaptation co - benefits e.g. REDD+. The Forestry Research Institute of Malawi (FRIM), which is within DoF, provides technical support in forest management to environment and agriculture departments.
Department of Disaster Management Affairs	The Department of Disaster Management Affairs (DoDMA), under the Office of the President and Cabinet (OPC), is responsible for coordinating and directing disaster risk management programmes in the country in order to improve and safeguard the quality of life of Malawians, especially those vulnerable to and affected by disasters. As part of disaster management, DoDMA is monitors, assesses, updates and disseminates disaster related information to various stakeholders.
Ministry of Finance and Economic Planning and Development	The Ministry of Finance and Economic Planning and Development (MoFEPD) is mandated to manage fiscal flows and economic development plans such as the Malawi Growth and Development Strategy (MGDS). The Department of Economic Planning and Development, in the recent past, was also actively involved management of climate change programmes. Since MGDS is a medium-term development plan for the country, DEPD will be instrumental in ensuring the SPCR processes are captured in the MGDS III which is yet to be approved.
Ministry of Agriculture, Irrigation and Water Development	The Ministry of Agriculture, Irrigation and Water Development (MoAIWD) is one of the largest ministries hosting nine departments, namely: Animal Health and Livestock; Agriculture Extension Services; Agriculture Research Services; Fisheries; Crop Development; Land Resources Conservation; Irrigation Services; Water Resources and Water Supply. The MoAIWD mandated to implement the Agriculture Sector Wide Approach (ASWAp) and is instrumental in generating and disseminating agriculture and water related adaptation knowledge and technology products to

	smallholder farming communities, who ultimately experience the greatest impacts of climate change. The Ministry has worked with the Food and Agriculture Organisation (FAO) to develop Agriculture National Adaptation Plan.
Ministry of Health	The Ministry seeks to achieve health for all Malawians by delivering health services and disseminating health information to the general public. The Ministry mission is to raise the level of health status of all Malawians by reducing the incidence of illness and occurrence of death in the population. This will be done through the development of a sound delivery system capable of promoting health, preventing, reducing and curing disease, protecting life and fostering general well-being and increased productivity. The Ministry has been working with the World Health Organisation (WHO) to undertake climate change vulnerability assessment of the health sector.
Ministry of Education, Science and Technology	The Ministry of Education, Science and Technology (MoEST) is responsible for the development and delivery of basic and higher education. The Ministry, through Malawi Institute of education (MIE), participated in the development of Malawi's Climate Change Learning Strategy and is currently mainstreaming climate change in primary and secondary school curricular. This has a potential of bringing climate change adaptation awareness to household level.
Ministry of Local Government and Rural Development	The Ministry of Local Government and Rural Development (MoLGRD) is mandated to promote and accelerate local governance and participatory democracy and social-economic development of local governance. MoLGRD is responsible for the District led development efforts. The districts, through the Decentralisation Policy, are a medium for capturing developmental needs from the grassroots to inform central government planning processes.

Note: The NSCCC is a committee of Principal Secretaries. It advises EAD on issues of policy on climate change programmes, projects and related activities.

Box 7. A list of climate change policy documents

- National Climate Change Management Policy (2016)
- Intended Nationally Determined Contribution (2015)
- National Climate Change Investment Plan (2013)
- Malawi Growth and Development Strategy II and III (2011-2016)
- National Adaptation Programmes of Action (2006 as revised in 2015)
- Nationally Appropriate Mitigation Actions (2015)
- National Disaster Risk Management Policy (2015)
- National Agriculture Policy (2016)
- National Irrigation Policy (2016)
- National Forestry Policy (2016)
- National Water Policy (2005)
- National Environmental Policy (2004).
- Decentralised Environmental Management Policy (1998)
- National Fisheries and Aquaculture Policy (2016)
- National Resilience Strategy (under preparation)

276. In addition to the five main policy documents that lead on Malawi's approach to climate change, there are another nine policy documents that also incorporate climate change. See below for details of other relevant policies that speak to climate change.

277. **In April 2012, Malawi made its National Appropriate Mitigation Actions (NAMA, 2015) submission to the UNFCCC.** The key sectors that were targeted for the development of NAMAs in Malawi were: agriculture, forestry, and land use (AFOLU), energy (planning and development - i.e. promotion of renewables), waste management (e.g. targeting reductions in methane emissions), industrial production (implementing actions aimed at reducing emissions of CO2 and NO2), and improvement in the efficiency of transport and

communication. The selection of a particular NAMA was guided by its cost-effectiveness, socio-economic and environmental benefits, feasibility of implementation and sustainability.

278. **The National Agriculture Policy (NAP, 2016)** takes cognizance of the fact the sector's productive capacity is being undermined by climate change impacts and risks. These impacts risks affect the national economy, hence the need to ensure that they are properly managed. Realising that climate change has adverse impacts on the agriculture sector, a number of strategies have been put in place to address them through adaptation and mitigation. Adapatation seeks to enhance preparation for and negate the effects of climate change, thereby reducing vulnerability of communities and ecosystems. On the other hand, mitigation seeks to avoid escalating the risk of climate change by reducing further release of Green House Gases (GHGs) and by sequestration of GHGs from the atmosphere. Both adaptation and mitigation are not only relevant in agriculture sector, but also other areas. The other affected areas include environment, forestry, water resources, parks and wild life, women and youth productivity, health, education, energy, industrial production and transportation.

279. The NAP takes into account the fact that projects adressing climate change in agriculture have tended to be small, fragmented and sometimes implemented on a one-off pilot basis. Through the NAP, emphasis is on transition to a systemic approach on large scale and commercial agriculture through sustainable intensification and mechanisation. The NAP seeks to go beyond addressing food and nutritional insecurity to promoting agro-processing, value addition and manufacturing initiatives, while enhancing ecosystem integrity upon which the agriculture sector depends for sustainability. While harnessing water for irrigation, the NAP recognises the need to minimise environmental degradation, social conflicts and health risks.

280. **The National Disaster Risk Management Policy (NDRM, 2017)**, links strongly with the MGDS[121] and provides policy guidance to Malawi's efforts towards disaster resilience. This is done through mainstreaming and integration of DRM in development planning by all sectors in the country. It has an implementation and monitoring and evaluation strategy. It also aims to enhance coordination in the implementation of DRM programmes by various stakeholders. The NDRM Policy is also linked to a number of social, infrastructure, environmental and natural resources policies[122].

281. **The National Irrigation Policy (NIP, 2016)** aims at addressing critical issues affecting the irrigation sector that include spatial and temporal water shortages; customary land tenure disputes; and, poor operation and maintenance of infrastructure. The NIP attempts to provide solutions to these challenges by addressing three priority areas of sustainable irrigation development, management and capacity development. The policy acknowledges several opportunities that exist for accelerated irrigation development, namely; effects of climate change, public private partnerships, improved governance reforms in water and land management, and increasing interest by stakeholders. The NIP is in conformity with the MGDS II, CAADP, IMPIF and the Water and Agriculture SWAps. The Policy is well anchored in the National Water Policy, Agriculture Policy, National Environmental Policy and others.

282. **National Forestry Policy (2016).** The management and protection of forest and trees is the primary responsibility of the MoNREM's Forest Department. Strategies for forest management are set out in the Forest Policy of 2016, focusing on plantation forestry,

[121] http://www.ifrc.org/docs/IDRL/43755_malawidrmpolicy2015.pdf See Section 1.2.2.
[122] National Social Support Policy; Malawi Decentralisation Policy; Health Policy; National HIV and AIDS Policy; Nutrition Policy; Food Security Policy; Gender Policy; Child Protection Policy; Education Policy; Elderly and Disabilities Policy; National Sanitation Policy; National Housing Policy; National Environmental Policy; National Forestry Policy; National Water Policy; and Mining Policy.

community tree planting and forest management, public private partnerships, establishment and management of Village Forest Areas (VFA), and strengthening of Community-based Forest Management (CBFM)[123]. The other ministries and government ministries that play a significant role in Forestry include: Ministry of Justice and Constitutional Affairs; Ministry Responsible for Foreign Affairs; Ministry Responsible for Internal Security; Ministry Responsible for Internal Security; Ministry of Defense; Ministry Responsible for Agriculture and Food Security; Ministry Responsible Economic Planning and Development; Ministry Responsible for Finance; Department of National Parks and Wildlife; Ministry Responsible for Local Government and Rural Development[124]. The National Forest Policy is in line with the country's medium-term development strategy, the MGDS II (expired in 2016), and has strong linkages with other sectoral policies. These include the Medium-Term Development Strategy; National Environmental Policy, 2004; National Land Policy (NLP), 2002; National Decentralisation Policy, 1998; The Water Policy, 2005; National Parks and Wildlife Policy, 2000; Land Resources Management Policy, 2000; Energy Policy, 2003; and The National Population Policy, 2013.

283. **The goal of the National Water Policy (2005), is to ensure sustainable management and utilisation of water resources.** This is to provide water of acceptable quality in sufficient quantities, and ensure availability of efficient and effective water and sanitation services that satisfy the basic requirements of every Malawian. The policy recognises that population growth over the years has increased demand for water for domestic consumption, irrigation, power, transport and other uses. In addition, the policy takes cognizance of the fact that water resources are being continuously threatened from climate change, over-exploitation, mismanagement, environmental degradation and pollution. The policy seeks to set up an appropriate environment for water resources management, that adequately and strategically promotes the realisation of maximum social and economic benefits from water, and at the same time conserves and protects the resources against degradation and pollution.

284. **The National Environment Policy**, which dates back to 2004, was developed to guide all stakeholders in integrating environmental considerations in the national socio-economic development policies, programmes and plans to ensure sustainable development. (GoM, Ministry of Natural Resources and Environmental Affairs, 2004) Its objectives include promotion of efficient utilisation and management of natural resources; facilitation of rehabilitation and management of essential ecosystems and ecological processes; enhancement of public awareness on the importance of sound environmental management; promotion of cooperation between government, local communities, civil society organisations (CSOs) and private sector in the management and sustainable utilisation of natural resources and the environment. The policy also calls for the institution responsible for environmental affairs – at this time the EAD - to play a facilitating, coordinating and advisory role on all environmental issues. However, the EAD has not been able to play that role because it lacks the authority to do so.

285. The Decentralised Environmental Management Policy (DEMP) (1998) seeks to achieve the following objectives:

- To create a democratic environment and institutions in Malawi for governance and development at the local level which will facilitate the participation of the grassroots in decision making;

[123] Environmental Affairs Department (2010). Malawi State of Environment and Outlook: Environment for Sustainable Economic Growth. Environmental Affairs Department, Lilongwe.
[124] Malawi Forestry Policy, 2016.

- To eliminate dual administrations (field administration and local government) at the district level with the aim of making public service more efficient, more economical and cost effective;
- To promote accountability and good governance at the local level to help Government reduce poverty; and
- To mobilise the masses for socio-economic development at the local level.

286. The decentralisation discourse is facing many challenges as the central government still retains some level of authority over local government. District councils and subsequent local development structures have limited capacity to effectively implement and monitor climate change activities. In addition, district councils have limited budgeting and financial monitoring capacity.

287. The Area Development Committees (ADCs) and Village Development Committees (VDCs) lack appropriate skills and mandate and only function where there are NGOs supporting activities[125]. Activity conspicuously missing from the tasks that the key local governance stakeholders play in Malawi are the roles of facilitating citizen participation/involvement in decision making and making information about council business available/known to citizens. The district council structure does not have an office or responsible officer for establishing and maintaining liaison between the community structures and the DC's office[126].

288. Institutionalising local committees is a challenge due to political influence, inadequate financial resources, management capacity constraints and shortfall of capable human resource at the local level. Sub-district structures have often been challenged and overtaken by structures established by non-state actors. In addition, local council secretariats need to be able to manage that whole complex process for the benefit of development and service provision in the district. Yet this is clearly lacking[127].

289. Although implementation is constrained by governance systems, decentralisation principles have been integrated into other Policies, Acts and strategies relevant to environmental management. These include Land Policy (2002), Water and Sanitation Policy (2005), Parks and Wildlife Technology Policy (2001), and the National Biodiversity Strategy and Action Plan (2006). Guidance for environmental governance is founded in the Malawi Constitution (1995) and is duly reflected in the Malawi Growth and Development Strategy (2006).

290. Under the Decentralisation Policy, the rural communities have established structures that can be the avenue for informing the district planners on adaptation needs. Committees such as Village Development Committees (VDCs) and Civil Protection Committees (CPCs) could play a leading role in reporting articulation of disaster and adaptation. Furthermore, some communities can be source of indigenous knowledge since they have lived with the impacts for many years and they have developed their own innovative approaches that have enhanced their resilience to the negative impacts.

291. **The new National Fisheries and Aquaculture Policy (NFAP, 2016)** is explicit about the contribution of fisheries to food and nutrition security and the national economy. Unlike NFAP (2001) whose objectives were conservation focused, NFAP 2016 has a strong economic

[125] Chinsinga, B (2008) "Decentralisation and Poverty Reduction in Malawi.".
[126] Report on a political economy analysis of local governance in Malawi 2013.
[127] Chaweza, A.L, (2010), A Review of the Malawi Decentralisation Process: Lessons Learned from Selected Districts.

focus with quantitative targets for increasing production (increasing annual production from capture fisheries from 90, 000 tons to 110,000 tons[128]).

292. Limited financing for extension activities at local level makes puts this policy at risk. The national budgetary allocations towards the fisheries sector in general and local fisheries offices in particular are particularly low. This negatively impacts on the enforcement of fisheries legislation, extension service delivery, ongoing support to local fisheries management authorities (LFMAs) and enforcement activities such as protecting key breeding areas (sanctuaries and other no-take zone areas)[129].

293. Implementing the policy is also hampered by the centralised licensing and control of trawler operators. This results in conflict between trawlers and artisanal fishers. Currently licenses for trawler operators are issued at the Department of Fisheries (DoF) headquarters by the Director of Fisheries. Centralised control has resulted in local authorities, specifically District Councils and LFMAs, having limited regulatory responsibility for their fishery areas. Consequently, there is rampant non-compliance of trawl operators to Fisheries Conservation and Management Regulations (2000)[130]. These include fishing in non-designated areas such as shallow waters of less than 18 meters deep, use of illegal mesh sizes, non-adherence to daily fishing times and use of higher capacity engine sizes. The resulting conflict with artisanal fishers, reduces productive capacity and adversely affects biodiversity, with resultant negative impacts on the fishery resource and the livelihoods of thousands of poor fishing families living near the lake shore.

[128] NFAP 2016.
[129] Njaya, F.J (2006) Overview of the Fisheries and Aquaculture in Malawi.
[130] http://www.fao.org/fi/oldsite/FCP/en/mwi/profile.htm

Annex 5: Institutional assessment of government agencies, sectoral adaptation challenges & opportunities

Sector	Climate change challenges and opportunities
The Ministry of Finance, Economic Planning and Development (MoFEPD)	MoFEPD has multiple commitments
The Ministry of Natural Resources, Energy and Mining (MoNREM).	MoNREM's main constraint lies in its ability to convene other powerful Ministries, like the Ministry of Local Government. MoNREM also has a relatively weak presence in the field, unlike MoAWID or Department of Disaster Management Affairs, and has not yet fully absorbed CCFU into its structure.
The Environmental Affairs Department (EAD)	As above
The Department of Disaster Management Affairs	The Department of Disaster Management Affairs addresses all types of disasters (including refugee issues) and has not historically been at the lead in climate change issues
Agriculture	The biggest adaptation challenge is Malawi's heavy reliance on rainfed agriculture despite abundance of fresh water resources. Erratic rainfall, droughts and sometimes floods have been the major challenge affecting rural smallholder farmers. Malawi has abundant water resources that could be harnessed for irrigation at both small and large-scale levels. Climate change also requires farmers to adapt to new agronomic practices such as conservation agriculture, growing of drought tolerant crops, precision agriculture and agro-forestry amongst others in order to improve productivity.
Water	Despite the abundant water resources, there some challenges relating to harmonisation of policies and Strategies for catchment area protection, water conservation and sustainable utilisation. The adaptation actions that Malawi is implementing in this sector include: the construction of multipurpose dams, implementation of water harvesting technologies, capacity building in integrated water resources management (IWRM), catchment management, promotion of irrigated agriculture, fish farming, and water supply development for domestic and livestock use.
Human health	Various studies have shown that under climate change scenario, the spread of climate-sensitive diseases such as malaria and diarrhoea would increase, and food production would decline resulting in malnutrition. Years of below-normal rainfall have correspondingly led to higher incidents of malnutrition. These issues are highlighted in the NAPA.
Wild life	Erratic rainfall, delayed onset of rains and droughts pose a major threat to wildlife in terms of availability of forage and water. Adaptation interventions are meant to prevent the extinction of the animal species while ensuring optimal population sizes are retained based on carrying capacity of the reserve.

Energy	Over 98% of Malawi's grid electricity is from hydro power which is under threat and vulnerable to droughts and delayed onset rains that affect Lake Malawi levels resulting in massive load shedding. Malawi needs to invest in alternative energy sources. Biomass briquettes and bio-fuels provide alternative energy sources in place of charcoal and firewood as the national forest stand is simultaneously under pressure from unsustainable wood extraction and climate change effects.
Forestry	Forest productivity will be greatly affected by erratic rainfall and extended droughts. Overtime, communities may adapt by planting tree species that are drought tolerant and fast growing such as bamboos. This would reduce pressure on standing forests since communities would be harvesting wood for fuel from their own woodlots. Some mitigation interventions in the forestry sector also have adaptation co-benefits elements.
Fisheries	Fish provide about 60% of animal protein intake in Malawi and is a source of employment for many Malawians. Unfortunately, fish population is declining rapidly due to climate change as well as non-climate factors such as rapid population growth resulting in unsustainable levels of fish harvesting. Aquaculture provides an alternative fish production potential.
Gender	Vulnerable groups, especially women and girls, carry the burden of the impacts of climate change. They walk longer distances in search of food, firewood and water. Culturally, most women do not have authority of production resources including land. There is need to mainstream this in all planning processes and all sectors.
Infrastructure	Adaptation measures under this subsector are meant to provide physical barriers for flood prevention and control and facilitate the revision of construction and building standards and guidelines in line with the changes in climate-based design parameters. The interventions are also meant to contribute to green and climate-resilient buildings.

Source: Malawi NAP stocktaking report 2017.

Annex 6: Decentralisation in Malawi

294. The Decentralisation Policy, among other things, provides for provision of environmental services such as refuse disposal, sewerage removal and disposal. Environmental reclamation, and environmental education. These are some of the devolved functions that these guidelines have addressed in the Implementation of decentralised environmental management within the District Development Planning System (DDPS).

Table 17. Roles of district level policy & legal mechanism for climate change management

National Decentralisation Policy (1998)	Local Government Act (amended 2009)	2nd Schedule of Local Government Act
• Devolves administration and political authority to the district level • Integrates governmental agencies at the district and local levels into one administrative unit • Aims to create a democratic environment and institutions in Malawi for governance and development at the local level which will facilitate the participation of the grassroots and decision-making	• The local Governance Act provides for the formulation of development plans for local authorities including environmental development	• The Act mandates the councils in addition to other functions, to undertake environmental protection services as stated in the 2nd Schedule. • Additional Function of the Assembly: "2-(1) An assembly may: establish and maintain and manage services for the collection and removal and protection treatment of solid and liquid waste, and the disposal thereof."

Source: Local Government Act (2009).

295. **The Local Government Act (Amended 2009)** provides for the formulation of development plans for local authorities including environmental development. Specifically, it stipulates that [6-(I)], the Assembly shall perform the following functions:

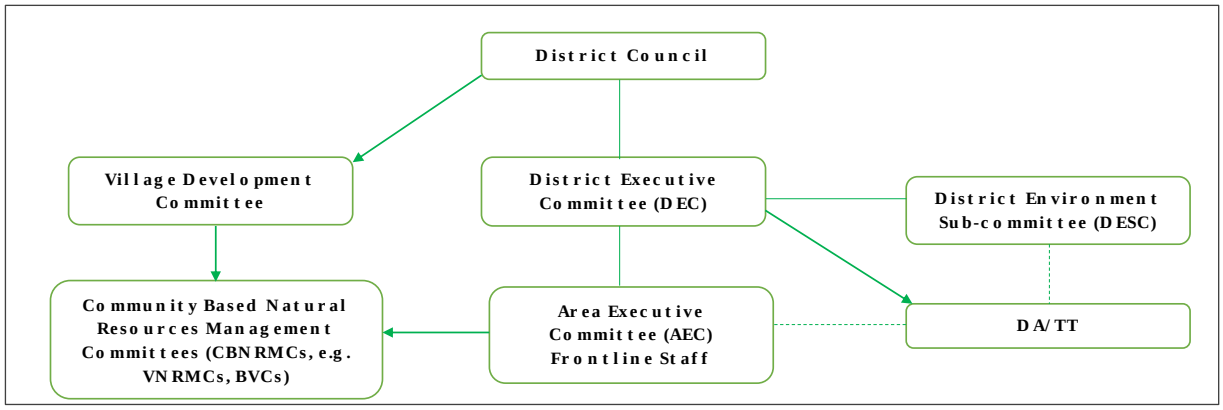
> (c) to promote infrastructural and economic development through the formulation, approval and execution of district development plans";
>
> 21-(I) An Assembly shall have a duty to draw up plans for social, economic and environmental development of the area for such periods and in such form as the Minister may prescribe.
>
> (2) Development plans shall be prepared in conjunction and consultation with other agencies having a public responsibility for or charged with producing plans for development whether generally or specifically and affecting the whole or a substantial part of the Assembly.

296. The Local Government Act provides for local governance structures through which these guidelines should be implemented. The Act stipulates that: [4.-(I)] for the administration of local government, there shall be local government areas which shall comprise the areas respectively described in the first column of the First Schedule.

297. The Local Government Act mandates the councils, in addition to other functions, to undertake environmental protection services, as stated in Second Schedule "Additional Functions of the Assembly. The Act establishes local government areas for administration of local government such as district, town, municipality and city assemblies (amended as district,

municipality and city councils). The Act also provides for establishment of committees and sub-committees (Section 14(I)) at district and sub-district levels as illustrated in Figure 21.

Figure 21. District Level Climate change management structures



Source: Decentralisation Policy, 1998.

298. **The District Executive Committee (DEC)** is the technical arm of the District Council composed of representatives from all government ministries and departments, NGO's represented at the district and co-opted members. It is responsible for implementation of all aspects of the District Development Planning System (DDPS). The District Commissioner or in his absence the Director of Planning and Development chairs this committee.

299. The functions of DEC are to:

- Provide technical advice to the District Council on Socio-Economic Profile (SEP) development of the district;
- Facilitate the mobilisation of resources for socio-economic development;
- Appraise community project proposals;
- Monitor and co-ordinate the implementation of community projects;
- Produce the Socio-Economic Profile for the district in which the State of Environment Report is a chapter;
- Produce the District Development Plan where Environmental Action Plans are integral; and
- Build awareness on development issues at both District and community levels.

300. **District /Environment Sub-Committee (DESC)** is the DEC focal point on issues of the environment. It acts as a multi-disciplinary forum for environmental management and comprises environmental and NRM sector district officers. The Director of planning and Development chairs the DESC with secretarial services provided by the Environmental District Officer. The functions of DESC are as follows:

- Assess and analyse the statues of the environment and produce the SOER and DEAPs for the District Council;
- Provide technical advice to the District Council on issues of the environment and natural resources;
- Appraise micro-projects and facilitate their development;

- Conduct awareness campaigns on environmental and natural resources management; and
- Develop capacity on sustainable environmental management at community level so that issues of environment are integrated into decision-making process and planning systems.

301. **The Development Advisory Team (DAT)** is responsible for supervising the implementation of projects and programmes. Its functions are to:

- Co-ordinate activities of all projects assigned to the team.
- Conduct monitoring and on-going evaluation visits for all projects and project sites.
- Recommend technical modifications to projects as may be required.
- Submit regular reports to the DEC/District Council regarding the project status.

302. **District Training Team (DTT)** is responsible for conducting all training required at the district. Its functions are to:

- Co-ordinate training activities assigned to the team;
- Assess district training requirements; and
- Submit regular reports to the DEC/District Council regarding the project status.

303. **Area Development Committee (ADC)** are located at area level (at the level of the Traditional Authority). Under the current (ongoing) institutional structure, the Area Development Committee is the decision-making institution. The Composition of ADC includes:

- Traditional Authority
- Group Village Headmen
- Sub Traditional Authority
- Members of Parliament
- Councillors
- District Council Representatives

304. The ADC has the following management tasks:

305. Responsibility for SOER and EAP at area level

- Identification and prioritisation of environmental issues that need immediate mitigation actions.
- Development of EAPs (at TA level) and subsequent micro-projects.
- Facilitate formation of VDC Environmental working groups.
- Collate and approve VDC EAPs.
- Mobilise community resources and solicit funds.
- Monitor SOE and implementation of EAPs.

306. **Village Development Committee/ Community Development Committees (VDCs)** are at the village levels (i.e. at the level of the Group Village Headman). The advisory executives are the front-line staff at VDC level. The VDC has the following environmental management tasks:

- Organise NRM meetings in the villages;
- Lead the EAP process at village level;
- Co-ordinate CBNRM activities with the ADC and communicate feedback from ADC; Formulation of micro-projects addressing environmental issues and solicit funding for such activities through the DDP;
- Facilitate the mobilisation of community resources for CBNRM self-help projects; and
- Supervise and monitor SOE and implementation of NRM micro-project at VDC level.
- In cities and municipalities, the functions undertaken by VDCs are done by Community Development Committees (CDCs) under one neighbourhood led by an elected chairperson.

307. **The Area Executive Committee (AEC)** is the technical body of the ADC. It comprises frontline staff (FL'S) and plays the advisory role to the ADC. As executive body, it is responsible for day-to-day technical advice on projects within the area and even lower to the VDC. The AEC has the following environmental management tasks:

- Facilitate the SOER and EAP processes at area level.
- Facilitate the process to develop micro-projects.
- Community Based Natural Resources Management Committees

308. **At community level** environment and natural resources management is done by several Community Based Natural Resources Management Committees (CBNRMCs) some of which include Village Natural Resources Management Committees (VNRMCs), Beach Village Committees (VBCs), Catchment Protection Committees, Water Point Committees and Village Health and Sanitation Committees (VHSC) as well as Civil Protection Committees.

309. **Project implementation committees (PICs)** are project specific committees responsible for overseeing implementation of projects at district and sub-district levels.

Annex 7: Existing programmes, projects and potential partners

Civil society and non-governmental organisations

310. Non-governmental and civil society organisations (CSOs) are highly active in climate change-related issues in Malawi at community, district and national levels. CSOs are expected to contribute towards implementation of the National Climate Change Management Policy (NCCMP) and the Policy Implementation Plan that has already earmarked specific activities to be undertaken by CSOs. They are also actively involved in policy analysis and advocacy processes. They include, among others, the Civil Society Network on Climate Change (CISONECC) which represents more than 41 NGOs and CSOs involved in climate change issues; the Centre for Environmental Policy and Advocacy (CEPA) a local environmental policy think-tank with local and international links, the Leadership in Environment and Development (LEAD) focuses on Natural Resources and Climate Change Management around the Lake Chilwa Basin, the Network for Youth Development (NFYD) an active advocacy youth group that has organised a series of Climate Change Youth Conferences and Symposia in Malawi and is actively involved in the preparations for the Conference of Parties.

311. **CISONECC** members work in various areas which include livelihoods-related interventions and capacity building and awareness. This includes providing inputs such as seedlings; fertilisers, cassava cuttings, potato vines; early warning systems; exchange visits; tree planting; provision of health interventions; youth engagements; generation of energy efficient technology; and land administration. CISONECC has particularly highlighted the plight of the urban poor; women and girls are vulnerable groups whose needs should be taken on board in adaptation plan.

312. As the NCCMP is established CSOs, NGOs and government will need to collaborate more efficiently. NGO interventions will need to be optimised according to their comparative advantages and distinctive competencies and the capacity of CISONECC, youth groups and other organisations should continue to be reinforced. It is expected that NGOs will be actively involved in the SPCR at two levels: at the national level, through advocacy, awareness, and information promotion; and at the field level in the target areas, as facilitators of community adaptation. The choice of partners is expected to be facilitated by the fact that NGOs are already specialised by region/district

International aid agencies

313. **The Nordic Development Fund (NDF)** promotes Climate Smart Agriculture Technologies through the Lead Farmer Extension Approach targeting 140,000 farmers in the Northern and Central Regions.

314. **Concern Worldwide** is implementing an ongoing project supported by the European Commission (ECHO), focusing on food security and aiming to benefit more than 174,000 people. With funding from the Office of Foreign Disaster Assistance (OFDA), Concern is also supporting more than 22,000 people in Nsanje district to strengthen their ability to meet their immediate food and nutrition needs, improve livelihoods and increase resilience.

315. **Biodiversity Conversation Initiative** is working in the Northern Region of Malawi to conserve agrobiodiversity, the World Fish Centre, with an active programme of technical assistance to fisheries and aquaculture in Malawi; and Total Land Care (TLC) is assisting poor and vulnerable farmers with livelihood diversification and sustainable agriculture.

316. **Christian Aid** has been implementing the Enhancing Community Resilience Programme (ECRP), which runs until 2016 and was funded by the UK's Department for International Development (DFID), Irish Aid and the Norwegian Embassy.

317. **CARE** established operations in Malawi in 1998. CARE Malawi's programmes include food security, agriculture, health, education, and social and economic empowerment, especially for women.

318. **The Lilongwe University of Agriculture and Natural Resources** is implementing the *"Capacity Building for Managing Climate Change in Malawi (CABMACC)".* Supported financially by the Royal Norwegian Embassy, the overall goal of the programme is to improve livelihoods and food security through innovative responses and enhanced capacity for adaptation to climate change in Malawi. Its three main goals are to:

- Build capacity of Lilongwe University of Agriculture and Natural Resources (LUANAR) in research and teaching for climate change mitigation and adaptation
- Develop new knowledge, technologies and systems to enhance climate change adaptation and mitigation
- Enhance capacity of the University and relevant key stakeholders in in climate change outreach and advocacy enhanced.

319. **Concern Universal leads the Developing Innovative Solutions with Communities to Overcome Vulnerability (DISCOVER)** a four-year consortium project seeking to support 900,000 rural households to mitigate and adapt to the effects of climate change in the districts of Karonga, Salima, Dedza, Balaka and Nsanje.

320. **The Shire River Basin Management Programme Project** (2012–2018) has developed a Shire River Basin planning framework and established a Shire River Basin Organisation, to improve land and water management for ecosystem and livelihood benefits in target areas. There are three components to the project. The first component of the project is Shire Basin planning. This component finances development of a modern integrated Shire Basin knowledge base and analytical tools, as well as well-planned structured stakeholder consultation processes, to facilitate investment planning and systems operation. The second component of the project is catchment management. The targeted sub-catchments and protected areas are rehabilitated and managed for reduced erosion and improved livelihoods. The third component of the project is water related infrastructure.

321. **Humanitarian Assistance - Emergency Cash Transfer Programme – Save the Children** The objective of the Emergency Cash Transfer Programme is to save lives, build resilience and protect the livelihoods of food insecure individuals, including children. It covers 451,711 families that were affected by floods and drought in the previous cropping season in 33 Traditional Authorities of Kasungu, Mchinji, Dedza, Lilongwe, Machinga, Nkhotakota, Mulanje and Nsanje districts.

322. **Development of Thermal Electric Generator (TEG) Stoves.** The overarching objective of the programme is to demonstrate the appropriateness of the TEG Stove technology for national rollout for rural off-grid Malawi thus greatly contributing to the energy requirement of the rural off the grid communities. This project, by TCD with Concern Universal, is for the development of a prototype and medium-scale deployment in rural Malawi with the ultimate aim for the technology of national roll-out. By providing low cost energy access with low or

zero carbon emissions, this project supports climate change mitigation. This will then greatly contribute to the energy requirement for rural off-grid communities at low or net-zero carbon emissions.

323. **Concern Universal Accelerating Uptake of Improved Cookstoves.** The programme proposes to reach a target of 2 million low emission and energy efficient stoves by 2020. In addition, the project aims to provide technical support and carbon financing services to other organisations and both local and national stakeholders. As a result of the emissions saved from reduced burning of biomass in fuel efficient stoves and consequent reduced emissions from deforestation and degradation, this project contributes towards climate change mitigation. Due to the reduced pressures on woodland and forests for biomass harvesting this project also contributes towards biodiversity.

324. **Enhancing Community Resilience (ECRP)** goal of the 'Enhancing Community Resilience' project is to help eradicate extreme poverty and hunger in Malawi, whilst enabling households to build resilient, sustainable and profitable livelihoods. The programme reduces existing and future risks caused by natural hazards and climate change and strengthens the capacity of vulnerable 14 communities to cope with current risks and adapt to new ones. ECRP aims to reach 600,000 people in eleven vulnerable districts in central and southern Malawi to build their capacity to increase resilience to climatic risks.

325. **Strengthening Community Disaster Resilience (SCDR)** programme targets 4,000 vulnerable households living in flood and drought prone areas in Chikhwawa, Malawi. It is planned to run over a period of four years and is being implemented by the Evangelical Association of Malawi. The programme aims to strengthen community-based disaster and climate change resilience through food security, livelihood diversification, environmental management and integration of disaster risk reduction and climate change adaptation into policies and developmental planning. The programme is purposely situated within the Hyogo Framework for Action and uses the framework as a means to align and organise diverse activities. In terms of implementation, the programme includes specific initiatives in food security and livelihood diversification. Activities undertaken include; small scale irrigation, conservation agriculture, seed production of drought tolerant and short-cycle crops, training in conservation agriculture, establishment of community grain and seed banks, improved storage, dietary diversification, community based natural resource management committees, afforestation, non-agriculture forest activities, fuel efficient stoves, early warning systems and the training of targeted groups in flood management. Through these activities, the programme aims to strengthen community-based disaster and climate change resilience of targeted households, in addition to informing national level policy development.

326. **Agroforestry Food Security Programme (AFSP PHASE II).** The second phase of the Agroforestry Food Security Programme (AFSP II) aims to contribute towards the uptake of climate-smart agriculture in Malawi. Climate-Smart Agriculture has three main pillars: sustainable intensification that ensures food security; building resilience through climate change adaptation; and a reduction of greenhouse gas emissions (mitigation) through agro-forestry innovations. Agro-forestry innovations are namely: 1) fertiliser trees and conservation agriculture to build an evergreen agriculture that enhances accumulation of soil organic matter thus enhancing crop productivity and resilience to climate risks; 2) fruit trees to improve household nutrition, health and income; 3) Fodder trees to improve milk yields for smallholder dairy farmers to enhance nutrition, health and income; and 4) woodlots for firewood and timber production. This project was designed, with input from government departments, to be closely aligned with Malawi's National Adaptation Programme of Action (NAPA), Nationally

Appropriate Mitigation Action (NAMA), and the Agriculture Sector Wide Approach Programme (ASWAP).

327. **Agriculture Sector Wide Approach Support Project (ASWAP).** The objectives of this Agriculture Sector Wide Approach Support Project (ASWAP) are to improve the effectiveness of investments in food security and sustainable agricultural growth and strengthen the natural resource base in agricultural lands. In order to strengthen the natural resource base, the project aims to double the area under sustainable land management as a basis for securing ecosystem services and sustainable agricultural productivity. 16 The programme supports institutional capacity building in districts for planning, agricultural policy, land administration and financial management. The programme also supports capacity building of smallholder farmers in inter alia nutrient management and conservation agriculture techniques, diversified crops including agro-forestry and expansion of farmer advisory services. It also provides support to market based agricultural risk management strategies including payment of weather derivative contracts and insurance premiums to cover agricultural production and studies on macro- and micro-weather insurance schemes. The programme supports sustainable water management such as rainwater conservation and early warning systems for droughts and floods. By supporting conservation agriculture and agro-forestry, this project protects and enhances sinks and thus contributes to climate change mitigation and combats land degradation. By supporting and researching agricultural weather-based risk management, early warning systems and sustainable water management, this project also supports long-term adaptation to climate change. Risk management and early warning systems also contribute to Disaster Risk Management. Ireland has placed particular emphasis on the integration of drought resistant legume seed, principally ground nuts, pigeon peas and beans, into the national agricultural systems, to improve soil fertility management and nutritious food production.

328. Promoting Selected Conservation Agriculture Techniques and Sustainable Crop Production Practices in Smallholder Farming Systems, National Smallholder Farmers' Association of Malawi (NASFAM). The overall objective of the project is to improve sustainable crop production, productivity and marketing through adoption of Climate-Smart Agriculture principles and practices under smallholder farmer conditions in the context of climate change. Climate-smart agriculture practices can help shield farmers from the adverse effects of climate change and variability and also improve farm yields and household incomes, resulting in stronger and more resilient communities besides delivering environmental benefits. The project specifically aims at: increasing adoption of CSA practices in smallholder farming systems; promoting agricultural diversification; promoting sustainable land and water management practices; providing improved access to stable and profitable markets for legumes; and increasing adoption of energy saving technologies NASFAM describes conservation agriculture as an ecologically sound means of helping achieve food security and as resource-saving production that strives to achieve acceptable profits while simultaneously conserving the environment. Conservation agriculture contributes both to mitigation of, and adaptation to climate change. Through minimal soil disturbance and maintenance of soil cover, conservation agriculture also combats land degradation. Capacity building for conservation agriculture is an important dimension of this project with training of trainers (1,500 NASFAM farmer trainers), training of 60 field officers, use of demonstration plots, development of conservation agriculture resource centres, and field days all planned. The aims of conservation agriculture, in contrast to other modern agricultural methods, are to achieve mitigation and adaptation to climate change and preservation of soil.

329. **Rooting Out Hunger Phase II.** The Rooting Out Hunger Phase II project, in collaboration with the national Root and Tuber Crops Innovation Platform (RTCIP) and other

key stakeholders, aims to develop a countrywide programme to transform the production and utilisation of a number of key crops in southern Malawi. The program focuses specifically on the production and uptake of sweet potato, potato, and cassava and the expansion in the seed and production value chains of orange flesh sweet potato (OFSP). OFSP's flexible planting times, harvest times, drought resistance and relatively short maturing period means that it is more resilient to climatic variability than others. This project aims to conduct diagnostic studies of sweet potato, potato, and cassava value chains in Malawi through identification of entry points for research and development support. Through this research, it should be possible to transform these value chains for enhanced nutrition, improved incomes and climate resilience.

330. **Local Development Support Programme.** The aim of the Local Development Support Programme, in collaboration with Concern Universal, is to contribute to a reduction in the levels of poverty and vulnerability in Malawi. The programme focuses on a number of areas including food and nutrition security; agribusiness; water and sanitation; disaster risk reduction; and cross-cutting issues including gender, environmental management, rights and capacity building. The programme supports priority activities in disaster preparedness and management plans identified in the district for Dedza, Ntcheu, Balaka, and Phalombe and to support implementation of priority activities identified in environmental outlook reports and plans. The programme supports Village Natural Resource Management Committees (VNRMCs), in the efficient use and management of natural resources and the rehabilitation and management of essential ecosystems and ecological processes. As part of this, the programme promotes soil and water conservation and management as well as sustainable agricultural practices. In addition, the programme implements important key activities highlighted in Malawi's National Adaptation Plan of Action (NAPA).

331. **Malawi Seed Industry Programme, ICRISAT.** Improved seeds provide a package of technologies that once unlocked through agronomy, secure farmers' livelihoods against food and nutrition insecurity and climate change. These 18 projects are an extension of, and builds on, the Malawi Seed Industry Development Project (MSIDP) whose objective was to increase smallholder crop productivity and incomes by using improved certified seed. The objectives of the extension are to strengthen (i) the seed supply chains of selected legumes and cereals; and (ii) productivity enhancing research for development.

Table 18. Synergies with key ongoing relevant investments in Malawi[131]

Project name	Financing	Donor	Year	Implementing agency	Link to SPCR
Shire River Basin Management Programme	$136 million	World Bank	2012–2018	Ministry of Agriculture, Water Development and Irrigation	Water resources, catchment management, climate services
The Malawi Drought Recovery and Resilience Project	$104 million	World Bank	2016-2021	Ministry of Finance, Economic Planning and Development	Climate services, catchment management
Africa Agriculture Development Company	£99 m	DFID	n/a	n/a	AgDevCo's facility to leverage private sector investment in Africa agribusiness

[131] Sources include: WBG, DFID, AFDB, UNDP, GCF, NDF, GEF, Climate Change Risk Profile (USAID 2017), etc.

Humanitarian Preparedness and response & Enhancing Community Resilience	£70 m & £27 m	DFID	n/a	DoDMA	Humanitarian program post 2015-floods and Resilience building
Malawi Floods Emergency Recovery	$80 million	World Bank (linked to GDFRR programme)	2015-2019	Ministry of Finance, Economic Planning and Development	Restoration of agricultural livelihoods; public infrastructure and capabilities
Water Supply and Sanitation Project	$78	AfDB, AusAid	2013-Ongoing	Ministry of Agriculture, Water Development and Irrigation	Water resources management
Feed the Future Malawi Agriculture Diversification Activity	$48 million	USAID	2016–2021	Palladium	Agriculture
Fisheries Integration of Society and Habitats Project (FISH)	$15 million	USAID	2014–2019	PACT, University of Rhode Island Coastal Resources Center	Fisheries
Adaptation for Rural Livelihood and Agriculture (CARLA)	$3 million	GEF, AfDB	2012–Ongoing	Ministry of Agriculture, Water Development and Irrigation	Agriculture
Protecting Ecosystems and Restoring Forests in Malawi (PERFORM)	$15 million	USAID	2014–2019	Tetra Tech ARD	Catchment management
Scaling up of Modernised Climate Information and Early Warning Systems in Malawi	$12.3 million	Green Climate Fund	2016–2022	Department of Disaster Management Authority	Climate Services
Building Climate Change Resilience in the Fisheries Sector in Malawi	$5.4 million	GEF/ LDCF, FAO	2016–2019	Department of Fisheries	Fisheries
Climate Proofing Local Development Gains in Rural and Urban Areas of Machinga and Mangochi Districts	$5.3 million	GEF, UNDP	2014–Ongoing	Ministries of Agriculture, Development Planning, and Public Works	Agriculture
Implementing Urgent Adaptation Priorities Through Strengthened Decentralised and National Development Plans	$4.5 million	GEF, UNDP	2014–2019	Ministry of Development Planning and Cooperation	Climate governance
Strengthening Climate Information and Early Warning Systems in Malawi to Support Climate Resilient Development and Adaptation to Climate Change	$4 million	GEF, UNDP	2013–2016	Department of Disaster Management Affairs, Office of the President and Cabinet	Climate Services

Africa Research in Sustainable Intensification for the Next Generation	$2 million	USAID	2016–2018	IITA	Agriculture
Mainstreaming Climate-Smart Agriculture in Solar Irrigation Schemes for Sustainable Local Business Development in Malawi	€0.6 million	Nordic Development Fund	2013–2015	Churches Action in Relief and Development, Christian Service Committee of the Churches in Malawi and Kusamala Institute of Agriculture & Ecology	Agriculture
Other key sources for overviews of ongoing investments	• International climate initiatives (http://www.climatefundsupdate.org/data). • UNDP database of climate change projects in Malawi. • Mapping aid in Malawi project. (https://www.strausscenter.org/ccaps-adaptation-aid-news/mapping-aid-in-malawi.html)				