Climate Investment Funds

PPCR/SC.20/5
May 11, 2017

Meeting of the PPCR Sub-Committee
Washington D.C.
Thursday, June 8, 2017

Agenda Item 5

PPCR STRATEGIC PROGRAM FOR CLIMATE RESILIENCE FOR ETHIOPIA

PROPOSED DECISION

The PPCR Sub-Committee, having reviewed the document PPCR/SC.20/5, *Strategic Program for Climate Resilience for Ethiopia [*endorses] the SPCR.

The Sub-Committee encourages the Government of Ethiopia and the MDBs to actively seek resources from other bilateral or multilateral sources to fund further development and implementation of the projects foreseen in the strategic plan.

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The Federal Democratic Republic of Ethiopia
Ministry of Finance and Economic Cooperation

ቁጥር
Ref.No. _____

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Date _____

CIF Administrative Unit

Washington DC

The United States of America

Subject: Endorsement of Ethiopia's Multi-sector Investment Plan (MSIP) document

The Ministry of Finance and Economic Cooperation (MoFEC), with key sectoral ministries (the Ministry of Agriculture and Natural Resources; the Ministry of Environment, Forest and Climate Change; the Ministry of Livestock and Fisheries; and the Ministry of Water, Irrigation and Electricity) has been spearheading the development of the Multi-Sector Investment Plan (MSIP) for climate resilience to scale up actions related to the 2nd Growth and Transformation Plan (GTP-2), which incorporates many of the elements of the CRGE Strategy. The MSIP development process is being supported by the World Bank Group, the African Development Bank, Climate Investment Fund's (CIF) Pilot Program for Climate Resilience (PPCR) and other partners.

A group of experts from our ministries, which formed the Core MSIP team, was leading the preparation of the plan with active engagement of stakeholders from development partners, CSOs, Private Sector, UN Agencies, Academia, etc. The MSIP preparation was supported with review of the ongoing investment portfolio and gap analysis in the four sectors. Stakeholders were actively engaged in the selection of activity packages, prioritization of the activities and finalization of the MSIP document.

We have been providing guidance and receiving regular updates from the experts during the course of MSIP preparation. In our capacity as Co-chairs of the CRGE Facility Management committee we have endorsed the MSIP document and submission to the CIF Administration.

Sincerely,

For MOFEC

ABMASTI NEBEBE
State Minister

For MEFCC

C.C

- His Excellency Dr. Kaba Urgessa, State Minister, MOANR
- His Excellency Ato Wondimu Tekle, State Minister, MOWIE
- His Excellency Dr. G/egizibeher G/Eyesus, state Minister, MOLF

Addis Ababa

Multi-Sector Investment Plan for Climate Resilient Agriculture and Forest Development 2017-2030

FINAL DRAFT
9 May 2017

PILOT PROGRAM FOR CLIMATE RESILIENCE **ETHIOPIA: Summary of Multi Sector Investment Plan for Climate Resilience**	
1. **Country/Region**:	Ethiopia / Africa
2. **PPCR Funding Request (in USD million):**:	The Government of Ethiopia is requesting funding for the following projects proposed with World Bank and AfDB. • With the World Bank, the GoE is preparing a Resilient Landscapes and Livelihoods operation (US$ 100m IDA, requesting US$ 48.5 m from PPCR, if funds are available) to be delivered in mid-2018. • With the AfDB, the GOE is preparing to increase resilience through affordable access to climate smart energy. To facilitate the project preparation, AfDB is requesting a Project Preparation Grant of USD 0.5 million leading to potential contribution from ADF (amount to be confirmed) and requesting up to USD50 m from PPCR, if funds are available. Both projects are being designed based on inputs from the MSIP process and will seek to leverage financing from multiple sources. The GoE expects to work with the World Bank, AfDB and other development partners to use this MSIP to leverage financing for climate resilience, including from the GCF.
3. **National PPCR Focal Point**:	Zerihun Getu UN Agencies and Regional Economic Cooperation, CRGE Facility MoFEC, Addis Ababa, Ethiopia

4. **National Implementing Agency** (Coordination of Strategic Program)**:**	Ministry of Finance and Economic Cooperation
5. **Involved MDBs**	World Bank, AfDB, IFC

6. **MDB PPCR Focal Point and Project/Program Task Team Leader (TTL)**:	Headquarters-PPCR Focal Point: Kanta Kumari Rigaud (WB) Phillips Gareth (AfDB) Joyita M. Mukherjee (IFC)	TTLs: Stephen Danyo and Timothy H. Brown (WB) Diop Bamba (AfDB) Senait Mekete Ayele (IFC)

7. **Description of SPCR:**

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

Ethiopia aims to become a lower middle-income country by 2025 on a climate resilient and green economic growth path that is socially equitable and inclusive. Ethiopia is both highly exposed to climate shocks and changes, and highly vulnerable. This is due to its rainfall-dependent economy, predominantly rural population, frequent occurrence of droughts and floods, high poverty rates, and limited institutional capacity. Ethiopia's climate vulnerability results mainly from five challenges: (i) adverse impacts on the agriculture and livestock sectors; (ii) effects on the hydropower sector and, hence, power generation; (iii) increased flooding impacting on the transport sector; (iv) effects of drought on government expenditure associated with vulnerability and food insecurity; and (v) impacts on irrigation and hydropower due to conflicts associated with competing demands for water. Changes in the state of forests and woodlands can amplify or ameliorate each of these factors, given the close interactions and inter-dependency between water, energy, forest, and agriculture in the rural landscape.

To overcome these challenges and achieve a more resilient economy, Ethiopia must undertake a structural transformation in line with its ambitious economic development plans which rely heavily on a four-fold increase in the productivity of its rural landscapes, green industrialization and urbanization, and sustainable energy access. Ethiopia requires not only large volumes of strategically coordinated public and private investment, but also policy and regulatory reform, as well as extensive cross-sectoral and multi-stakeholder collaboration. The MSIP captures required investments that can help to build the country's adaptive capacity and tackle specific climate risks.

(b) Areas of Intervention – sectors and themes

To help Ethiopia tackle these challenges and advance the national move toward climate resilient, green growth, this Ethiopian Multi-Sector Investment Plan (MSIP) for Climate Resilient Agriculture and Forest Development defines an investment need of approximately US$ 4 billion in the 2017-2030 period. The MSIP deals with those sectors that are expected to be most affected by climate change in the next 15 years: by strengthening resilience in those important sectors, the MSIP will lay the foundation for future development towards Ethiopia's longer term objectives of a diverse, climate resilient and green economy. Using a broad, inclusive consultative process, the MSIP groups 50 priority Activity Packages into Activity Groups that pursue a multi-sectoral approach to address key challenges in the agriculture, forestry, water, livestock and energy sectors. These Activity Groups aim to address the financial, thematic and spatial gaps identified through an analytical and inclusive process. The five Activity Groups cover the following sectors and themes:

1. Enhancing climate resilience in agriculture, including: Climate smart and gender sensitive agricultural support services; Reduced vulnerability to rainfall variability and water supply uncertainty; Increased resilience through crop productivity improvements and more equal intra-household relationships; Increased resilience through income diversification; Better natural resource management (soil, water, agroforestry).
2. Climate resilient forest and landscape development, conservation and utilization, including: Strengthening the resilience of the forest sector by expanding forest resources and improving their management; Reducing pressure on landscapes from extension of the agricultural frontier; Reducing forest degradation due to fuelwood harvesting; Reducing pressure on landscapes from grazing-related land clearance; Reducing vulnerability of people in the forestry sector through livelihoods diversificationImproved land and water management to deliver economic growth in agriculture, forestry and livestock production.
3. Ensuring climate resilient livestock management and livelihoods, including: Climate smart and gender sensitive extension services; Enhanced resilience through reduced livestock vulnerability and diversification; Reduced environmental impact of livestock production; Better natural resource management (soil, water, agroforestry).
4. Increased resilience through affordable access to climate smart energy including: Reduced reliance on fuelwood for thermal energy; Improved access to low-emissions electricity.
5. Enhanced climate-resilient disaster risk management and early warning systems including: Improved drought and flood risk assessment and early warning systems; Increased resilience through coordinated food and non-food responses; Improved implementation of the Sendai Framework for Disaster Risk Reduction.

(c) Expected Outcomes from the Implementation of the SPCR

The MSIP results are aligned to Ethiopia's CRGE Strategy and the GTP II so that it is fully integrated into the national system both for development planning and for monitoring and evaluation. Implementation of the MSIP is expected to catalyse transformational change by mobilising investment to scale up existing practices and creating a change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Specifically, implementing the activities in the MSIP should contribute to a four-fold increase in the productivity of Ethiopia's rural landscape by harnessing improvements in land and water management that optimize efficiency, balance competing priorities and leverage investment from both the public and private sectors.

The MSIP provides a widely agreed framework for coordinating public financing for investment in climate resilience. Success will require strong implementation mechanisms and cross sectoral coordination at all levels of government, as well as technically qualified human resources to realize investment projects on the

ground. Fortunately, Ethiopia has established the CRGE Facility as a coordinating body that also continues to build capacity and strengthen implementation through its sectoral focal points and links to sectoral agencies and regional implementation structures.

The MSIP process also has analyzed the policy and regulatory incentives for improvements in resilience and identified potential areas for reform. This will guide ongoing dialogue between the FDRE and its development partners, as well as private sector actors. A risk assessment has also identified and categorized key issues along with mitigation measures to manage major risks.

The MSIP expects to support and catalyse transformational change through three levers: 1) Scaling up through enhanced, integrated and coordinated approach to public investment; 2) Creating the enabling conditions for scaling up private investment, including smallholders; and 3) Improving decision-making and delivery within existing large-scale government programmes and investments with targeted policy reforms and better use of data and evidence from the field. The MSIP provides the framework for Ethiopia to achieve the necessary transformation and advance along a pathway to increased resilience.

8. **Expected Key results from the Implementation of the Investment Strategy (consistent with PPCR Results Framework):**
Ethiopia's MSIP for climate resilience directly supports Ethiopia's national development vision and plans. The Growth and Transformation Program (GTP II) sets Ethiopia's vision to become a lower middle income country by 2025. The Climate Resilient Green Economy (CRGE) Strategy is one of the GTP II's strategic pillars and contributes by supporting climate resilient and green economic growth that is socially equitable and inclusive, addressing underlying drivers of vulnerability to climate risks. The CRGE Strategy has four supporting pillars: Agriculture Systems strengthened using low carbon, climate resilient practices, forests and other natural resources protected and sustainably managed, increased energy and electricity generation from diversified climate resilient, renewable sources, and green cities, buildings, transportation and industrial systems developed and safeguarded against climate risks. The MSIP directly and indirectly supports all of these pillars, which are consistent with the PPCR results framework (as shown below and in Section VII and Table 9 of the MSIP Document).
Monitoring and evaluation under the MSIP is built into the system for tracking national development and resilience progress. The CRGE Facility has established a Monitoring and Evaluation (M&E) System that cascades national monitoring requirements into CRGE related investments. This is readily aligned with the PPCR M&E results framework, as indicated below, and in greater detail in Table 9 of the MSIP document. The following table summarizes the alignment between the Expected MSIP Results, the national framework of CRGE Indicators and the PPCR Results and Catalytic Outcomes, as well as project/program results and indicators.

Overarching Objective: To directly support Ethiopia's target of a climate resilient and green economy reaching lower-middle income status by 2025.		
CRGE Strategy	**CRGE Indicators**	**PPCR Results, Catalytic Outcomes & Indicators**
Goal: Resilience of households improved	• Change in climate vulnerability of rural communities • Strengthened adaptive capacity of rural communities and businesses	Improved quality of life of people living in areas most affected by climate variability & CC • % of people classified as poor (women & men) and food insecure in most affected regions
Longer-Term MSIP Outcomes ➢ Enhanced climate responsive and climate resilient development planning	• Evidence of strengthened government capacity to collect, analyze and apply climate information to planning and decision-making • Degree of integration/ mainstreaming of climate change in national and sector planning and coordination	Increased resilience in economic, social, and eco-systems to climate variability & CC through transformed social and economic development • Changes in budgets of all levels of government to take into account effects of climate variability & CC across sectors and regions. • Degree to which development plans integrate climate resilience by subjecting planning to climate proofing and assessments of vulnerability (including gender) and including measures to better manage and reduce risk.
➢ Climate responsive investment opportunities		Scaled-up investments in climate resilience and their replication • Number and value of investments (national and local government, non-government, private sector, etc.) in $ by type of climate resilient investments
➢ Knowledge, skills and capacities: Strengthened gov't capacities to plan, resource and deliver green, climate resilient results	• Extent to which sectors use improved tools, instruments, strategies and activities to respond to climate variability & CC	Increased capacity to integrate climate resilience into country strategies • Evidence of a functioning cross-sectoral mechanism that takes account of climate variability & CC • Evidence of line ministries or functional agencies lead in updating or revising country strategies (country ownership)
Expected MSIP Results	**CRGE Indicators**	**PPCR Project/Program Results and indicators**
Activity Group 1 - Enhancing Climate Resilient Agricultural Production and Food Security	• (Change in) Rainfed crop area under sustainable, climate smart land management practices (ha) – by crop type (private holders only) • (Change in) crop land productivity where modern, climate smart and small-scale irrigation applied (quintal per hectare) for: Major food crops; High value crops • (Change in) Total crop land under modern, climate smart irrigation systems (ha and %) by type: S, M, L • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc • Change in percent change in availability of drought/salt-tolerant, certified seeds/crops • Change in hectares of farms with sustainable access to irrigation and drinking water
Activity Group 2 - Climate Resilient Forest and Natural Resource Management	• Total area (individual & communal) of land under sustainable, climate smart, land management plans	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc

	• Cumulative area of land covered with forest (ha), disaggregated by: Protected (%); Plantation (%), Under improved forest mgmt systems (%) and reduced carbon emissions practices (%) • Change in HH fuelwood use • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed) • Area of land developed with community based watershed program & area rehabilitated	• Change in hectares (ha) of area in project/program area with management plan that integrate climate change considerations
Activity Group 3 - Ensuring Climate Resilient Livestock Management and Livelihoods	• Productivity of communal pasture and rangeland (tons/ha) – feed / forage • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc
Activity Group 4 - Improved access to climate-smart energy	• Annual energy savings: disaggregated by type of energy-saving measure • Installed capacity renewable energy (type, GWh), including from solar, wind, geothermal. biomass	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority infrastructure • Change in # of energy-related infrastructure integrating climate resilience features • Availability of tools to assess climate risks to power plants and other sources of energy
Activity Group 5: Enhanced climate-related disaster risk management and response systems	• Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems • Evidence of strengthened government capacity to collect, analyze and apply climate information to decision-making • Extent to which sectors use improved tools, instruments, strategies and activities to respond to climate variability & CC • Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning system	Increased resilience in economic, social, and eco-systems to climate variability & CC through transformed social and economic development • Existence and effectiveness of early warning system for extreme climate events • Scope of social safety nets; • Existence of risk insurances; • Extent to which development decision making is made based on country-specific climate science, local climate knowledge (regional and eco-regional level), and (gender-sensitive) vulnerability studies • Coverage (comprehensiveness) of climate risk analysis and vulnerability assessments within the limits that current scientific evidence permits.

9. **Project and Program Concepts under the SPCR:**

Ethiopia's MSIP (local name for SPCR) lays out a sound strategic investment framework. Specific project concepts and proposals will be developed at the next stage of seeking financing from specific multilateral and bilateral funds. As a direct result of the MSIP process:

- With AfDB, the GoE is preparing a Ethiopia's Cook Stove Situation Analysis for PPCR Investment Opportunity (US$ 1 million) which derives from the analyses and consultations under the MSIP process. There is a request for project preparation funds of US$ 0.5 million. AfDB will request accompanying MPIS funds.
- With the World Bank, the GoE is preparing a Resilient Landscapes and Livelihoods operation ($100m IDA) to be delivered in mid-2018. This project is being designed based on inputs from the MSIP process and will seek to leverage financing from the PPCR (requesting US$ 48.5, if funds are available), GCF and bilateral donors, though the final amounts are not yet determined. The concept is an annex of the main document. The World Bank is not requesting MPIS funds.

Project/Program Concept Title	MDB	Requested po	Expected co-financing (US$)	Preparation grant request (US$)
Resilient Landscapes and Livelihoods operation	WB	48.5	>400.0	0.0
Ethiopia's Cook Stove Situation Analysis for PPCR Investment Opportunity	AfDB	50.0	tbd	0.5

Project concepts and proposals will be further developed in coming months by the Government together with the MDBs, and possibly with other partners.

Regarding Ethiopia's overall investment need to achieve climate resilience in the target sectors to 2030, the MSIP follows two lines of analysis, one based on high level aggregates, the other based on more detailed cost estimates. For the aggregate level, estimates based on the Government's sectoral climate resilience strategies amount to about US$ 5.9 billion. Noting that these estimates dated from 2011-14, the actual current need could be 20-30 percent higher. Taking the midpoint of 25%, this increases the estimate of the investment gap to about $7.4 billion.

For the detailed analysis, the estimated costs of all activity packages summed to US$ 11.8 billion. These cost estimates are based on more recent data and more current understanding of the resilience needs for each sector. However, this can still be considered an over-estimate of the need because some of the activities will produce other co-benefits (e.g., crop productivity, household energy, infrastructure) that go beyond core climate resilience needs. Further, there will be some synergies among activity packages in different sectors, for example, upstream landscape management activities will lower costs and increase the resilience of water supply and management structures. If these over-estimates and synergies account for a quarter to a third of the costs, then the climate resilience need would be in the range of US$ 8-9 billion. Thus, given the caveats and assumptions, the two estimation approaches yield figures in the same range of US$ 6-8 billion.

In comparison to this need, the total value of the existing portfolio of development partner projects is around US$ 4.8 billion. However, not all of this spending is directly for climate resilience, as it includes water and energy sector infrastructure, as well as agriculture and landscape productivity activities that contribute to broader development objectives. These figures can be adjusted to account for the multiple objectives using a range of assumptions to yield about US$ 1.8 billion. Subtracting the current spending from the estimated need yields a gap of US$ 4-6 billion (based on the two approaches).

10. **Timeframe** (tentative) Milestones

The GoE expects to use the MSIP analysis, prioritization and consensus building as the base for developing specific investment projects with finance blended from multiple sources in the coming months and years and the results framework provides a system for monitoring these milestones. Some of the sources for this financing are identified in the document, including the multi-lateral development banks, bilateral development partners, and a range of international climate finance funds and mechanisms, notably the Green Climate Fund, where Ethiopia is a participating member. It is expected that this strategic and prioritized approach will yield tangible results in terms of scaled up financing within a few years. If the Climate Investment Funds and the PPCR gain access to additional financing for investment of country level investment plans, Ethiopia expects that the funding requests outlined below can be considered. Current time frame for follow on activities:

- 2017 / 12 – AfDB and GOE to submit concept for implementation of project preparation grant for project, Ethiopia's Cook Stove Situation Analysis for PPC Investment Opportunity.
- 2018/12 – AfDB and GOE deliver Ethiopia's Cook stove Project for PPCR Investment Opportunity to AfDB Board.
- 2017 (Q3) – GoE with World Bank will deliver Project Concept Note for Resilient Landscapes and Livelihoods operation ($100m IDA), with parallel financing of US$ 48.5 million requested from PPCR and other sources.
- 2018 (mid) – GoE with World Bank will deliver Resilient Landscapes and Livelihoods operation to WB Board. Additional financing is being sought from the GCF and bilateral partners, amounts to be determined.

- **Other Partners involved in SPCR:**

Besides the MDBs (WBG and AfDB), development partners (such as UK/DFID, Norway/Norway's International Climate and Forest Initiative, UNDP, IFAD, FAO, JICA, EU, Canada, Irish AID, US (State and USAID), Denmark, Germany/KfW, Sweden/SIDA, Austria, Finland, French and Global Green Growth Institute; Korean International Cooperation Agency; CIAT-International Center for Tropical Agriculture.

Contributing Partners

Ministries and Agencies

FDRE Ministry of Finance and Economic Cooperation

FDRE Ministry of Environment, Forest and Climate Change

FDRE Ministry of Water, Irrigation and Electricity

FDRE Ministry of Agriculture and Natural Resources

FDRE Ministry of Livestock and Fisheries

FDRE Ministry of Mines Petroleum and Natural Gas

Ethiopian Agricultural Transformation Agency

Ethiopian Biodiversity Institute

National Meteorological Agency of Ethiopia

Tana and Beles Sub-Basin Organization

Ethiopia Abay Basin Authority

Multilateral Development Banks and their funds/programs

World Bank

African Development Bank

International Finance Corporation (IFC)

Climate Investment Fund (CIF)

Pilot Program for Climate Resilience (PPCR)

Bilateral and Multilateral Development Partners

Austria Development Cooperation

Canada Department of Foreign Affairs, Trade and Development

Canada Embassy

Consultative Group for International Agricultural Research (CGIAR)

Denmark Embassy

EU Ethiopia Office

Finland Embassy

Food and Agriculture Organization of the United Nations (FAO)

France Embassy

International Centre for Tropical Agriculture (CIAT)

International Fund for Agricultural Development (IFAD)

Irish Aid

Japan International Cooperation Agency (JICA)

Korea Trade-Investment Promotion Agency (KOTRA), Republic of Korea

Kreditanstalt für Wiederaufbau (KfW)

Norway's International Climate and Forest Initiative (NICFI)

Royal Norwegian Embassy (RNE)

Switzerland Embassy

UK Department for International Development (DfID)

United States Agency for International Development (USAID)

United Nations Development Programme (UNDP)

NGOs, Civil Society Organizations, and Private Sector

Population, Health and Environment - Ethiopia Consortium, PHE-EC

World Vision-Ethiopia

Care Ethiopia

Climate Change Forum Ethiopia

Forum for Environment

Global Green Growth Institute

Oxfam GB/ACCRA

Universities and Research Institutions

Addis Ababa University Climate Science Centre/Centre for Dryland Management

Ethiopian Environment and Forest Research Institute

Ethiopian Academy of Science

Ethiopian Development Research Institute -- Environment and Climate Research Centre (EDRI/ECRC)

Horn of Africa Regional Environment Center and Network (HoA-REC & N)

Consultancy arrangements to produce this document

A consortium led by LTS International, comprising the UK-based Eco Ltd and Ethiopian limited company, Echnoserve, facilitated completion of the consultation process, developed the portfolio review, gap analysis, and finalized this MSIP document. More information about the process is available in Section IV.

Contents

Contents of the Main Sections of the MSIP

Figures in the Text

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Acronyms

ADF	African Development Fund
AfDB	African Development Bank
AECID	Spanish Agency for International Development
AGP	Agricultural Growth Program
AISE	Agricultural Input Supply Enterprise
ANRSFE	Amhara National Regional State Forest Enterprise
ARC	African Risk Capacity
ATA	Agricultural Transformation Agency
CIF	Climate Investment Funds
CLTSH	Community Led Total Sanitation and Hygiene
CR	Climate Resilience
CRGE	Climate-Resilient Green Economy
CSA	Ethiopian Statistical Agency
DBE	Development Bank of Ethiopia
DFTAD	Department of Foreign Affairs, Trade and Development
DP	Development Partner
DRM	Disaster Risk Management
DRMFSS	Disaster Risk Management and Food Security Sector
DRM-SPIF	Disaster Risk Management Strategic Programme and Investment Framework
DRR	Disaster Risk Reduction
EBI	Ethiopian Biodiversity Institute
ECRC	Environment and Climate Research Center
EDRI	Ethiopian Development Research Institute
EE	Executing Entity
EGTE	Ethiopian Grain Trade Enterprise
EIA	Environmental Impact Assessment
EIAR	Ethiopian Institute of Agricultural Research
EMDIDI	Ethiopian Meat and Dairy Industry Development Institute
EOI	Expression of Interest
EPA	Environmental Protection Authority
EPACC	Ethiopian Programme of Adaptation to Climate Change
ESA	Ethiopian Standards Agency
ESE	Ethiopian Seed Enterprise
ESIF	Ethiopia Strategic Investment Framework for Sustainable Land Management
ESSF	Environmental and Social Safeguards Framework
EWCA	Ethiopian Wildlife Conservation Authority
EWRD	Early Warning and Response Directorate
FCPF	Forest Carbon Partnership Facility
FDRE	Federal Democratic Republic of Ethiopia
FSCD	Food Security Coordination Directorate
FSRE-Fund	Food Security and Rural Entrepreneurship Fund
GATE	Greening Agricultural Transformation in Ethiopia
GCF	Green Climate Fund
GCM	Global Circulation Model
GDP	Gross Domestic Product

GEF	Global Environment Facility
GHG	Greenhouse gas
GoE	Government of Ethiopia
GTP I	First Growth and Transformation Plan (2010/11 – 2014/15)
GTP II	Second Growth and Transformation Plan (2015/16 – 2019 /20)
HABP	Household Asset Building Program
HDI	Human Development Index
IDA	International Development Association
IE	Implementing Entity
IEC	International Electro-technical Commission
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution
IRENA	International Renewable Energy Agency
ISS	(African Development Bank) Integrated Safeguards System
LDC	Least Developed Country
LEAP	Livelihood Early Assessment and Protection
LIAS	Livelihood Impact Assessment Sheet
LIAS data	Laboratory for Imaging Algorithms and Systems
M&E	Monitoring and Evaluation
MDB	Multi-Lateral Development Bank
MDGs	Millennium Development Goals
MoANR	Ministry of Agriculture and Natural Resources
MoCT	Ministry of Culture and Tourism
MoU	Memorandum of Understanding
MEFCC	Ministry of Environment, Forest and Climate Change
MoFEC	Ministry of Finance and Economic Cooperation
MoLF	Ministry of Livestock and Fisheries
MoWIE	Ministry of Water, Irrigation and Electricity
MRV	Measuring Reporting Verification
MSIP	Multi-Sector Investment Plan
NAPA	Climate Change National Adaptation Programme of Action
NBPE	National Biogas Programme of Ethiopia
NBSAP	National Biodiversity Strategy and Action Plan
NDRMC	National Disaster Risk Management Commission
NGO	Non-Governmental Organization
NILUPP	National Integrated Land Use Plan and Policy
NMA	Ethiopia's National Meteorological Agency
NPC	National Planning Commission
NPDRM	National Policy and Strategy on Disaster Risk Management
NSC	National Steering Committee
ODA	Official Development Assistance
OFLP	Oromia Forested Landscape Program
OFWE	Oromia Forest and Wildlife Enterprise
PES	Payment for Ecosystem Services
PFM	Participatory Forest Management
PPCR	Pilot Program for Climate Resilience
PRGA	Portfolio Review and Gap Analysis

PSNP	Productive Safety Net Programme
RED&FS	Rural Economic Development and Food Security
REDD	Reducing emissions from deforestation and forest degradation
RNE	Royal Norwegian Embassy
R-PP	REDD+ Readiness Preparedness Plan
SC	Steering Committee
S4N	Seeds for Needs
SDGs	Sustainable Development Goals
SDPRP	Sustainable Development Poverty Reduction Paper
SLM	Sustainable Land Management
SLMP	Sustainable Land Management Program
SMEs	Small and Medium Enterprises
SNNPR	Southern Nations, Nationalities, and Peoples' Region
SRM	Sectoral Reduction Mechanism
SUNARMA	Sustainable Natural Resource Management Association
TA	Technical Assistance
TC	Technical Committee
UNFCCC	United Nations Framework Convention of Climate Change
VTE	Village Tree Enterprise
WASH	Water, Sanitation and Hygiene
WB	World Bank
WRM	Water Recovery Management
WMO	World Meteorological Organization

Multi-Sector Investment Plan (MSIP) for Climate Resilient Agriculture and Forest Development 2017-2030[1]

Executive Summary

Ethiopia has a vision to become a lower middle-income country by 2025. It aims to do this through climate resilient and green economic growth that is socially equitable and inclusive, and which addresses underlying drivers of vulnerability to climate risks. Due in part to its diverse geography, Ethiopia has always faced a variable climate. The precise, spatially-explicit impacts of future climate change in Ethiopia are still uncertain, but over the coming 15 years increases in climate variability are highly likely. Uncertainty and variability present real challenges to Ethiopia's rapidly growing economy to adapt and build-in resilience. Economic development still relies on a largely rural rain-fed agricultural sector: wide annual variations in seasonal rainfall performance hamper development and dampen growth***.***

Negative impacts of climate change on GDP are assumed to occur as a result of the following five factors: (i) adverse impacts on the agriculture and livestock sectors; (ii) effects on the hydropower sector and, hence, power generation; (iii) increased flooding impacting on the transport sector; (iv) effects of drought on government expenditure associated with vulnerability and food insecurity; and (v) impacts on irrigation and hydropower due to conflicts associated with competing demands for water. Changes in the state of forests and woodlands can amplify or ameliorate each of these factors, given the close interactions and inter-dependency between water, energy, forest, and agriculture in the rural landscape.

As a low-income country, Ethiopia is more vulnerable to current climate variability and future climate changes than are wealthier countries.[2] Ethiopia is both highly exposed to climate shocks and changes, and highly vulnerable. This is due to its rainfall-dependent economy, predominantly rural population, frequent occurrence of droughts and floods, high poverty rates, and limited institutional capacity. [3] To achieve its transformational development goals, Ethiopia must balance investments in vulnerability reduction with response to specific climate impacts. This means investing climate finance in interventions which overlap with traditional development practice as well as in those which target particular climate impacts such as changes in rainfall patterns and temperature increase. In practice, these interventions lie on a broad spectrum of activities with gradations of emphasis on vulnerability and impacts. The MSIP captures required investments along this continuum, which can build the foundations of the country's adaptive capacity and identify and tackle specific climate risks. ***Investment along this spectrum is justified*** because Ethiopia is less able to deal with climate events while it is still developing its institutional, economic or financial capacity to adapt effectively. This justifies the investment of climate finance in both broad-based inclusive growth to boost adaptation demand and improve the efficiency of more targeted adaptation support, while reducing

[1] Throughout this document, years refer to Gregorian calendar years.

[2] The global insight is based partly on forward looking studies that assess the likely impact of future climate change (Tol 2002a, b, Parry et al. 2007) and partly on empirical evidence that looks at the impact of extreme climate events in the past (Kahn 2005, Noy 2009, Toya and Skidmore 2007). More recent papers drawing similar conclusions include Althor, G., Watson, J. E., & Fuller, R. A. (2016). Global mismatch between greenhouse gas emissions and the burden of climate change. Scientific reports, 6. Cariolle, J., Goujon, M., & Guillaumont, P. (2016). Has structural economic vulnerability decreased in Least Developed Countries? Lessons drawn from retrospective indices. The Journal of Development Studies, 52(5), 591-606. Ethiopia-specific literature also notes the gaps in ability to cope with current climate variability, as well as future changes. For example: Cooper, P. J. M., Dimes, J., Rao, K. P. C., Shapiro, B., Shiferaw, B., & Twomlow, S. (2008).

[3] Ethiopian Panel on Climate Change (2015), First Assessment Report, Summary of Reports for Policy Makers, Published by the Ethiopian Academy of Sciences.

fragmentation of climate finance, other forms of development finance, private sector investment, as well as government expenditure.

Fundamentally, to overcome its adaptation deficit and achieve a more resilient economy, Ethiopia must undertake a structural transformation in line with its ambitious economic development plans which rely heavily on a four-fold increase in the productivity of its rural landscapes, green industrialization and urbanization, and sustainable energy access. Ethiopia has set itself ambitious development targets in its second Growth and Transformation Plan (GTPII) development plan; however, it faces inefficiencies in the provision of adaptation services and has to rationally allocate its scarce development resources to more pressing and immediate needs. To overcome its adaptation deficit and achieve a resilient economy, Ethiopia requires a massive effort involving substantial policy and regulatory reform, extensive cross-sectoral and multi-stakeholder collaboration, as well as large volumes of both public and private investment that is strategically coordinated to reduce costly fragmentation.

To help Ethiopia tackle this challenge and support the national objectives of climate resilient, green growth, this Ethiopian Multi-Sector Investment Plan (MSIP) for Climate Resilient Agriculture and Forest Development defines an investment need between approximately US$ 6-8 billion in the 2017-2030 period. The investment plan is presented in terms of: (i) prioritized and costed activity packages; (ii) existing priority large-scale programs of the government that can rapidly direct funds to the ground for quick action; (iii) new strategic investment areas in the forest, agriculture, livestock, energy and water; and (iv) a suite of cross-sector prioritized activities to support these. The MSIP deals with those sectors that are expected to be most affected by climate change in the next 15 years: by strengthening resilience in those important sectors, the MSIP will lay the foundation for future development towards Ethiopia's longer term objectives of a diverse, climate resilient and green economy. The MSIP also contains an analysis of enabling policy and regulatory reforms that can leverage the expected changes from the proposed investments. Not only does the MSIP promise transformation through identifying opportunities for scaling-up existing good practices but it will also leverage change through improving the efficiency of current development spend. This leveraging will be done through building systems for better long-term planning and improved cross-sectoral decision-making, and will be driven by using enhanced climate information, stronger coordination mechanisms for cross-sectoral action, and more conducive conditions for public-private partnership.

The MSIP brings together the Ministry of Finance and Economic Development (MOFEC), four line ministries, and the National Disaster Risk Management Commission (NDRMC) to enhance climate resilience in the agriculture, forestry, water, energy and livestock sectors. The development of the MSIP was led by MoFEC, which is mandated to mobilize both domestic and external resources for the implementation of the Climate Resilient Green Economy (CRGE) Strategy. Financing for preparation has been provided by the Climate Investment Fund's (CIF) Pilot Program for Climate Resilience (PPCR) and Multilateral Development Banks, the World Bank and its BioCarbon Fund, and the partners who are supporting the MoFEC and line ministries in operationalizing the country's CRGE Strategy. The Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Livestock and Fisheries (MoLF), the Ministry of Environment, Climate Change and Forests (MEFCC), the Ministry of Water, Irrigation and Energy (MoWIE), and the NDRMC will lead the implementation of the MSIP activities.

The MSIP is designed to be purposively inclusive. It convenes and helps coordinate a wide variety of financing sources (international financing, climate financing, domestic budget, and private sector investment) to support Ethiopia to scale up climate action. It is meant to support the Federal Democratic Republic of Ethiopia (FDRE) in defining or enhancing large strategic investment programs that can effectively and efficiently further scale up investment action on the ground. Therefore, a detailed consultative process has been followed in the development of the MSIP. It has used an inclusive process of identifying and prioritizing the activities necessary to achieve the targets that Ethiopia has put forward in its CRGE Strategy, Climate Resilience Strategy for Agriculture and Forestry, Climate Resilience Strategy for Water and Energy, UNFCCC Intended Nationally Determined Contribution (INDC),

Climate Change National Adaptation Programme of Action (NAPA), REDD+ Strategy, Agriculture Policy Investment Framework, Ethiopia Strategic Investment Framework for Sustainable Land Management (ESIF), and the Disaster Risk Management Strategic Programme and Investment Framework (DRM SPIF). The prioritization process has been complemented by a gap analysis that identified what additional activities were required to achieve these targets. Through on-going consultation, 50 Activity Packages were prioritized.

Using the consultative MSIP process, the 50 priority Activity Packages have been grouped into five Activity Groups. Each Activity Group focuses on sectoral priorities, pursuing a multi-sectoral approach that identifies priority Activity Packages in the agriculture, forestry, water, livestock and energy sectors that, together, will ***address the financial, thematic and spatial gaps*** that have been identified by the analysis. The five Activity Groups cover the following sectors and themes:

1. ***Enhancing climate resilience in agriculture***
   - Climate smart and gender sensitive agricultural support services
   - Reduced vulnerability to rainfall variability and water supply uncertainty
   - Increased resilience through crop productivity improvements and more equal intra-household relationships
   - Increased resilience through income diversification
   - Better natural resource management (soil, water, agroforestry)

2. ***Climate resilient forest and landscape development, conservation and utilization***
   - Strengthening the resilience of the forest sector by expanding forest resources and improving their management
   - Reducing pressure on Ethiopia's landscapes from extension of the agricultural frontier.
   - Reducing forest degradation due to fuelwood harvesting
   - Reducing pressure on Ethiopia's landscapes from grazing-related land clearance
   - Reducing vulnerability of people in the forestry sector through livelihoods diversificationImproved land and water management to deliver economic growth in agriculture, forestry and livestock production

3. ***Ensuring climate resilient livestock management and livelihoods***
   - Climate smart and gender sensitive extension services
   - Enhanced resilience through reduced livestock vulnerability and diversification
   - Reduced environmental impact of livestock production
   - Better natural resource management (soil, water, agroforestry)

4. ***Increased resilience through affordable access to climate smart energy***
   - Reduced reliance on fuelwood for thermal energy
   - Improved access to low-emissions electricity

5. ***Enhanced climate-resilient disaster risk management and early warning systems***
   - Improved drought and flood risk assessment and early warning systems
   - Increased resilience through coordinated food and non-food responses
   - Improved implementation of the Sendai Framework for Disaster Risk Reduction[4]

[4] The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) was *endorsed by the UN General Assembly* following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR) It is a 15-year, voluntary, It is a non-binding agreement which recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders.

If each Activity Package is counted only once, the total cost of the priority climate resilience measures is estimated at $11.85 billion. However, this can be considered an over-estimate of the need because: some of the activities will produce other co-benefits (e.g., crop productivity, household energy, infrastructure) that go beyond core climate resilience needs; and there will be some synergies between activity packages. If these over-estimates and synergies account for 20% to 30% of the costs, then ***the climate resilience need would be in the range of $8.3 billion – $9.5 billion USD.*** Further; subtracting the estimated $1.85 billion USD (estimated in the portfolio review) that is already being invested in climate resilience; yields an ***unmet climate resilience need in the range of $6.5 billion - $-7.7 billion USD.***

Thus, given the caveats and assumptions, the two estimation approaches (high-level aggregates from Section IV.3 and bottom-up cost estimates from Section X1) yield figures in the same range of $6-8 billion USD.

The MSIP results are closely aligned to the results framework of the CRGE Strategy and the GTP II, which means it will be possible for monitoring and reporting to be integrated into the national system.

Through the envisaged combination of activities, the MSIP can catalyse transformational change through mobilising the investment to scale up existing practices and creating a change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Specifically, the MSIP should contribute to a four-fold increase in the productivity of Ethiopia's rural landscape by harnessing improvements in land and water management that optimize efficiency, balance competing priorities and leverage investment from both the public and private sectors. This requires massive investment as well as extensive policy and regulatory reform.

The MSIP aims to coordinate public financing for investment projects, requiring strong implementation mechanisms at all levels of government as well as the availability of technically qualified manpower to realize investment projects on the ground. Cross-sectoral co-ordination for implementation will be challenging; and significant attention to supporting multi-sectoral planning and coordinated implementation will be necessary. Building on the existing large-scale, long-term government programs that explicitly build climate resilience will allow these multi-sectoral implementation mechanisms to be practically applied and then extended to new and up-scaled investments.

The MSIP process has analyzed the policy and regulatory incentives for improvements in resilience and identified potential areas for reform. This will guide ongoing dialogue between the FDRE and its development partners, as well as private sector actors. Key priorities include:

- The strengthening of capacity for cross-sectoral planning, policy, and investment at all levels of Government.
- Continued regulatory reform and public-private dialogue to enhance the environment for the private sector to scale up investment in land and forest-based sectors and to overcome key barriers to accessing finance , including support to the Forest Fund.
- The management of trade-offs of sectors' claims to land and water through an enhanced land use planning process, update of all major river basin master plans and local level land and water use planning for improved irrigation, afforestation and other infrastructure investments.
- Improved policy for input supply with consideration for greater private involvement, including clearer policies on the registration of new seed varieties and a plan for value chain investments around agro-industrial parks and forest industry.
- Improved regulation to support public-private investments in the forestry sector and to incentivize farmers to use marginal farmlands for afforestation and natural regeneration.
- Improved policy on animal breeding, live animal export and stronger implementation of land use planning that affect feedlot production and pastoral grazing lands.

- Better implementation of VAT and tariff exemption for off-grid renewable energy technologies used for productive purposes, clear regulatory guidelines for imposition of tariffs for off-grid power generation for communal use (e.g. irrigation pumps etc.), inclusion of all off-grid renewable energy devices in financing mechanisms to relieve forex limitations restricting imports, and improved public-private coordination to enhance quality standards and vocational training.
- Enhanced public-private dialogue on Payment for Ecosystem Services (PES) to share lessons from the pilot schemes and to ultimately work towards regulation.
- Stronger institutional arrangements for research and development in the water sector along with more consistent water pricing and implementation of regulations around water allocation.
- Increased dissemination and institutional transparency around the implementation of environmental management legislation.
- Greater investment in the quality and the use of weather and climate data along with new regulations to support the scale-up of weather-indexed insurance.
- Shifting from costly (but often necessary) humanitarian relief to longer-term resilience-building development pathways, in line with the profile of a middle-income country.

A full risk assessment has also been prepared, identifying and categorizing primary risks as well as a suite of mitigation measures to ensure clear plans are in place to manage major risks. The feasibility of this plan rests on the ability to make a change in the way that the FDRE makes decisions and delivers its services. This will include a shift from a *command-and-control* approach where Government plays a lead role in service delivery to one where it takes on a greater facilitation role, creating space for private sector investment and the incentives for behaviour change amongst farmers and rural communities. Transformational change should use three levers to achieve scale:

1. Scaling up through public investment;
2. Creating the incentives for scaling via private investment, including those of smallholder farmers themselves; and
3. Altering decision-making and delivery within existing large-scale government programmes and investments through policy reform and the greater use of climate, hydrological and land use information in decision-making.

The MSIP provides the framework for Ethiopia to achieve the necessary transformation and advance along a pathway to increased resilience.

Part 1: INTRODUCTION AND CONTEXT

I. Introduction and Development Perspective

Upon a request from the Government of Ethiopia's Ministry of Finance and Economic Cooperation (MoFEC), the World Bank Group and African Development Bank are providing support to the development of a Multi-Sector Investment Plan (MSIP) to enhance climate resilience in the agriculture and forestry sectors, taking account of activities in the water, energy and livestock sectors. This section of the MSIP provides an overview of the development perspective and underlying rationale driving the MSIP.

I.1 Introduction

Ethiopia has embarked on an ambitious structural transformation through its successive Growth and Transformation Plans and its Climate Resilient Green Economy (CRGE) Strategy (2011 to 2030). It has experienced strong and inclusive economic development over the past decade, with growth in real gross domestic product (GDP) averaging 10.9% between 2004 and 2014[5], exceeding historical averages for the country as well as regional averages for the same period. This economic growth has been accompanied by significant reductions in poverty, with extreme poverty falling from 55% in 2000 to 33% in 2011[6]. Growth has been driven particularly by improved agricultural practices, the development of new export sectors, strong global commodity demand, and substantial public infrastructure investment. In parallel, substantial advances have been made in the areas of universal primary education, gender parity in education, child mortality, maternal mortality, HIV/AIDS, and malaria, Ethiopia being one of the countries that has made the fastest progress on the Millennium Development Goals (MDGs) and the Human Development Index (HDI) ranking within the last decade.

Unfortunately, climate change represents a key threat to Ethiopia's sustained growth and development. Impacts such as environmental degradation and natural disasters could result in annual GDP losses of 2 to 5 percent per year, with some models predicting annual losses as large as 10% for drier scenarios[7]. Climate projections based on Global Climate Models (GCMs) indicate that the rainfall variability in Ethiopia will increase, with a rising frequency of both severe flooding and droughts due to global warming[8]. Major drought events are estimated to reduce Ethiopia's GDP by 1% to 4% per year[9], causing a drag on economic growth and reducing the speed with which the poor can be lifted out of poverty, in turn slowing achievement of the country's intended middle-income aspiration. By mid-century, climate change might lead to a 20 percent increase in the extent of Ethiopia's dry lands (driest scenario), which would bring more people into environments where the range of resilience options is limited[10].

The clear implication is that Ethiopia's structural transformation requires better integration of environmental and sustainability considerations into the country's policy and institutional frameworks to achieve efficient use of resources that contribute sustainably to economic development, poverty reduction and quality of life. The country faces high population growth and urbanization; significant vulnerability to climate risks, land degradation, and forest loss; and an agrarian economy that is seeking to diversify in the absence a sufficiently strong regulatory environment, aligned incentives, or private sector. Its natural wealth constitutes a potentially large pool of resources that is subject to competing uses but that can be sustainably channeled to enhance physical and human capital if re-invested wisely.

[5] World Bank, World Development Indicators.
[6] World Bank (2016a).
[7] World Bank (2011).
[8] World Bank (2011) *op cit*.
[9] OECD (2014).
[10] Cervigni and Morris (eds.) (2015).

This is particularly important in the context of rural landscapes: transformative change requires that Ethiopia's diverse production landscapes become not only four times as productive, but also more resilient to climate shocks.

Ethiopia's rural livelihoods and development depend significantly on the performance of the forest and agriculture sectors, which are particularly vulnerable to risks associated with climate change. In Ethiopia, 81%[11] of the population lives in rural areas, and is directly dependent upon the performance of the forest and agriculture sectors for income, energy, food, building materials, and water as their principal buffer against drought, floods and other climate or disaster risks. Agriculture accounts for most jobs and about 40 percent of output and exports[12], resulting in the vulnerability of many Ethiopians to climate-related risks such as drought. The forest sector is estimated to have contributed 4% to GDP at the end of the last GTP period [13] through wood and non-wood forest products and ecosystem services. Moreover, approximately 16% of the total population are pastoralists or agro-pastoralists, and are vulnerable to hydro-meteorological hazards such as droughts, which reduce grazing stocks and lead to the starvation of livestock. Local grazing resources are often insufficient to support herds; in the coming decades, feeding deficits are expected to occur in up to 80% of the years[14].

The depletion of natural resources compounds Ethiopia's exposure to climate-related hazards. Forests have been depleting at an unsustainable rate of 1% per year, due largely to demand for fuel wood and agricultural land[15]. With 40% of the crop and pasture land degraded and a further 20% under degradation processes[16], catastrophic droughts and floods caused by greater climate variability represent a significant risk to many Ethiopians whose livelihoods depend on the natural resource base. In the absence of action, climate change is also projected to cause a decline in crop yields under dry and wet scenarios[17], leading to larger income swings among the poor and to large GDP losses[18].

As a recognized global leader on climate action including the CRGE Strategy, the World Bank and International Monetary Fund's Carbon Pricing Leadership Panel, and landscape restoration, the FDRE has made significant progress in advancing its climate resilience agenda, as demonstrated by the development of key policies, projects and programs. The country has prioritized the role of natural capital to help drive and protect growth and prosperity, and help manage climate risks for greater resilience. Advances towards integrating climate change into Ethiopia's national planning processes were made through the development of the Climate Change National Adaptation Programme of Action (NAPA) in 2007. The NAPA, developed by the Ministry of Water Resources (now Ministry of Water, Irrigation and Electricity) and the Meteorological service, was replaced in 2010 by the Ethiopian Programme of Adaptation to Climate Change (EPACC). The EPACC calls for mainstreaming climate change into decision-making at the national level and emphasizes planning and implementation monitoring; it outlines climate change scenarios for Ethiopia and identifies corresponding risks, along with institutions responsible for mitigating these risks.[19]

The FDRE recognized the need to strengthen climate resilience in its Second Growth and Transformation Plan (GTP II, 2015 to 2020) and its CRGE Strategy, which set ambitious climate resilience (CR) goals. The CRGE strategy aims to enhance Ethiopia's resilience to climate change while maintaining 2010 greenhouse gas (GHG) emissions levels.

[11] World Bank, World Development Indicators, 2014.
[12] World Bank (2016a).
[13] World Bank Group (2016d) Ethiopia Commercial Planation Forest Industry Investment Plan
[14] Cervigni and Morris (eds.) (2015).
[15] Drivers of Deforestation and Forest Degradation (2015). Draft study for REDD+ Readiness.
[16] FAO, Global Land Degradation Information System. http://www.fao.org/nr/lada/gladis/glad_ind/.
[17] These scenarios are described more fully in section II.
[18] World Bank (2011).
[19] Nachmany et al. (2015).

To drive forward its climate resilience agenda, the GTP II identified priorities and targets towards strengthening climate resilience for the planning period 2015 to 2020.

Climate-resilience policies and programs are complemented by a national disaster risk management agenda. Given the increasing frequency and severity of disasters due to climate change, in 2013 FDRE developed the National Policy and Strategy on Disaster Risk Management (NPDRM), and has recently developed the Disaster Risk Management Strategic Program and Investment Framework (DRM-SPIF). Key goals of the NPDRM include the enhancement of Ethiopia's capacity to withstand the impact of natural hazards at the national, local, community and household level, and to significantly reduce the damages associated with disasters by 2023. The DRM-SPIF is a tool envisaged to facilitate the National Policy and Strategy on DRM by addressing existing gaps and limitations in Ethiopia's DRM capacity and establishing an integrated DRM system.

There have been other significant advances in strengthening climate resilience and protecting Ethiopia's natural capital. Recent initiatives towards enhancing Ethiopia's climate resilience, such as those conducted under the Ministry of Agriculture and Natural Resources' (MoANR's) Sustainable Land Management Program (SLMP), have focused on improved watershed functions from structural and vegetative measures, leading to water use efficiency gains on plots coupled with a transformation in the livestock production system by shifting from open access to cut-and-carry systems while regenerating vegetation and tree cover. An evaluation showed that in Tigray, household income increased by 161% because of the project, and crop yields increased by 40-189% whether irrigated or not[20]. And unproductive degraded land was brought back into production, helping boost system resilience. A geospatial assessment carried out by the World Bank in 2017 shows a greening trend in SLMP watersheds across a wide area during the 2016 drought.

Notwithstanding these and other initiatives, further investment is required to build Ethiopia's resilience to climate risks and to safeguard Ethiopia's natural capital. Quick action is needed, and existing programs offering a way to quickly scale up action on the ground and channel new funds to do so. Advances such as those made under the SLMP demonstrate the high potential for climate resilience measures to safeguard the large economic gains associated with protection of the natural resource base. However, given the large exposure of the Ethiopian economy to climate-related risks, further investments in resilience enhancing measures are required.

I.2 Rationale

Ethiopia's situation offers both opportunities and challenges that affect the nation's development pathways. Reaching the shorter-term GTP II targets and the longer-term CRGE goals, given environmental and climate risks, will require strong synergies between sectors and careful management of trade-offs of various sectors' claims on the same resources.

Confronting these challenges, the FDRE identified forest and agriculture, as well as the water, energy and livestock sectors, as key sectors to strengthen resilience to climate risks, as highlighted in its Expression of Interest (EOI) to the Climate Investment Fund (CIF)'s Pilot Program for Climate Resilience (PPCR). Based on this EOI and findings from a subsequent broad consultative process including development partner agencies and stakeholders, agreement was reached that investment planning should focus on activities in the agriculture, forest, water, energy and livestock, because safeguarding these sectors from the adverse impacts of climate change is vital to protecting Ethiopia's development gains. This is consistent with the targets and priorities identified in GTP II for these sectors, as follows:

- ***Agriculture:*** Implementing cluster-based agriculture development, improving agricultural input supply and technology adoption, scaling up best practices of model farmers to enhance agricultural productivity among

[20] Draft impact assessment, GIZ (2015).

smallholder farmers, delivering effective extension services and increasing the production of high value crops through increased productivity.

- ***Forests:*** Protecting and rehabilitating forests for their economic and ecosystem services (i.e. forests are water factories), enhancing forest development and utilization, increasing the share of the forest sector in the overall economy and increasing the forest coverage through research-based forest development.
- ***Livestock:*** Improving animal health, animal feed and animal breed with targets to increase productivity, with a view to adequately exploiting the sector's potential for growth, export earnings and job creation.
- ***Water:*** Mitigating flood and runoff impacts, developing and expanding medium and large-scale irrigation, and developing and expanding efficient and sustainable irrigation-based farming.
- ***Energy:*** Expanding electricity power generation from renewable sources of energy (including hydropower, wind power, geothermal power, and solar power) for domestic and regional markets, increasing the national energy generation, transmission and distribution capacity to fully satisfy domestic energy demand with production surplus for export.

To realize the objectives set out in the GTP II and CRGE Strategy, rapid, scaled up action and investments in agriculture, forestry, water, energy and livestock are required. This understanding, combined with recognition of the importance of a coordinated approach, motivated GoE to submit its EOI requesting the World Bank to provide lead support to the development of a Multi Sector Investment Plan (MSIP) to scale up investment and action to achieve the objectives in the CRGE Strategy and GTP-II. In May 2015, Ethiopia was selected to participate, and was allocated a $1.5m preparatory grant from the PPCR.

MSIP Objective

The objective of the MSIP is to help Ethiopia to systematically convene, coordinate and complement financing for resilience objectives in the forest, agriculture, livestock, water and energy sectors from a variety of existing and future sources including the PPCR, the Green Climate Fund (GCF), the Global Environment Facility (GEF), the WB's International Development Association (IDA) and AfDB's African Development Fund (ADF), bilateral financing, GoE budget and CRGE Facility, as well as private sector investment (such as via IFC support to forest and livestock development). The MSIP will convene financing via multiple channels such as blended climate and non-climate financing, private investment, government budget, direct financing to the CRGE Facility, bilateral support, pooled and stand-alone financing, and others. These investments can facilitate the scale-up of FDRE's existing large-scale resilience programs, help fill gaps in resilience responses (e.g. insurance, performance-based payments), strengthen the credibility of investment proposals, plans, programs, projects, and policies, and reduce transaction costs to Ethiopia and partners from overlaps and duplications.

The FDRE's MSIP will directly support Ethiopia's targets articulated in its CRGE Strategy, Climate Resilience Strategy for Agriculture and Forest, Climate Resilience Strategy for Water and Energy, UNFCCC Intended Nationally Determined Contribution (INDC), Climate Change National Adaptation Programme of Action (NAPA), REDD+ Strategy, Agriculture Policy Investment Framework, Ethiopia Strategic Investment Framework for Sustainable Land Management (ESIF), and the Disaster Risk Management Strategic Programme and Investment Framework (DRM SPIF). The MSIP is envisaged to enhance and empower these plans and strategies, as well as existing large-scale WB-financed operations such as the SLMP and forthcoming Resilient Landscapes and Livelihoods operation, Agricultural Growth Program (AGP), Productive Safety Nets Program (PSNP), and the Oromia Forested Landscape Program (OFLP), and the new livestock development operation under preparation.

Development of the MSIP requires a concerted effort to collaborate. With the CRGE strategy and GTP II, Ethiopia articulates the key elements to scale up action on climate change. However, an important factor in ensuring the successful delivery of GTP II goals is coordination. Fragmentation of programs, projects, and policies can hinder the

scale up of financing and reduce its development impact. Moreover, overlapping, unaligned or uncoordinated projects, programs and policies dissipate capacity and carry significant transaction costs. Coordination, as well as consolidating and harmonizing information sharing between the FDRE, its DPs and stakeholders within the wider development community in Ethiopia is therefore crucial in fostering collaboration and reducing costly fragmentation.

By helping to convene resources programmatically for resilient landscapes in Ethiopia, the MSIP can help harness the potential of the natural resource-based sectors to help reduce poverty equitably. Most of Ethiopia's population is rural and directly dependent on natural resources for income, biomass energy (94 percent dependency), food, building materials, and water and as their principal buffer against drought, floods, and other climate or disaster risks. There is therefore a clear link between the renewable natural resource base and how it boosts the prospects and resilience of the bottom 40 percent. This supports Ethiopia's ambition to achieve middle-income status by 2025 through green growth strategies.

The MSIP can also contribute by scaling up existing large-scale programs, which in turn can enhance speed and therefore reduce costs. Action now is more cost-effective than action later, as early action can help in protecting natural capital and the livelihoods that depend on it, and safeguard economic gains associated with the use of natural resources. One of the fastest ways of enabling early action is to scale up existing large-scale government-implemented programs, since existing implementation mechanisms, such as staff, procedures, equipment and knowledge can be deployed. Therefore, scaling up and building on existing programs, such as the SLMP, AGP, PSNP and OFLP represents the fastest and most cost-effective way to deliver climate-resilience objectives.

Reflecting this rationale, in Part 1 this document presents the case for the MSIP, describing the climate risks facing the country and the existing institutional framework in place to manage these, and identifying the extent to which existing investments are meeting the needs for resilience building. Part 2 then presents the conclusions and recommendations drawn from the MSIP process.

II. Climate Risks Facing the Forest and Agriculture Sectors

Ethiopia is more vulnerable to current climate variability and future climate changes than wealthier countries. This section describes how Ethiopia is both highly exposed to climate shocks and changes, and highly vulnerable due to its rainfall-dependent economy, predominantly rural population, frequent occurrence of droughts and floods, high poverty rates and limited institutional capacity.

II.1 Summary of Ethiopia's Climate Challenges

Ethiopia has a complex and varied terrain and climate. The terrain spans from hot arid desert of the Danakil lowland to the mountainous ranges of the Simien. Ethiopia's rainfall patterns range from arid regions to those that experience rainfall of 2,000 mm per year, with the west of the country experiencing greatest rainfall. Ethiopia's rainfall is determined by seasonal changes in large-scale global circulation systems that create distinct rainy seasons in different regions of the country. As a result, there are broadly three hydrological regimes: West with one long rainy season (June-Sept), Central and Eastern with June-Sept as the main rainy season preceded by smaller

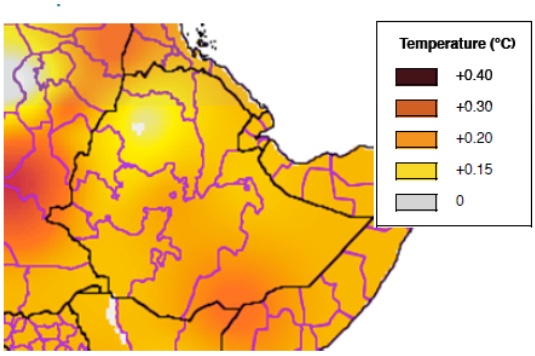


Figure 1: °C per decade relative to 1960s average. Trends for March – June, reproduced from FDR Ethiopia, (2014).

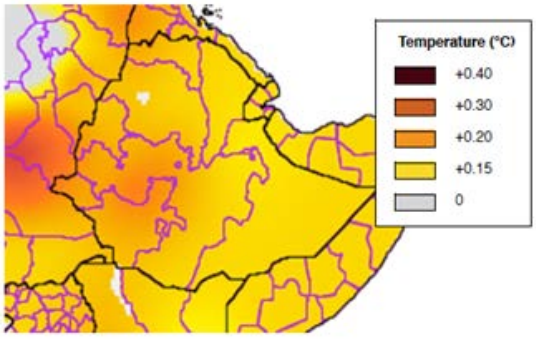


Figure 2: °C per decade relative to 1960s average. Trends for June – Sept, reproduced from FDR Ethiopia, (2014).

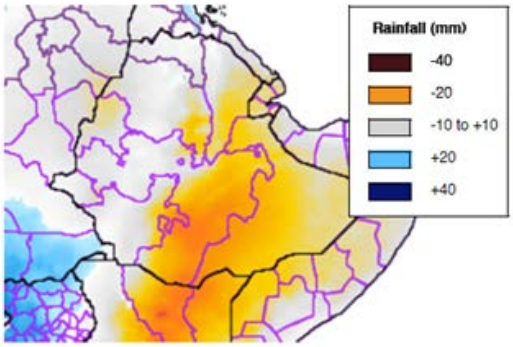


Figure: 3 mm per decade relative to 1960s average. Trends for March – June, reproduced from FDR Ethiopia, (2014).

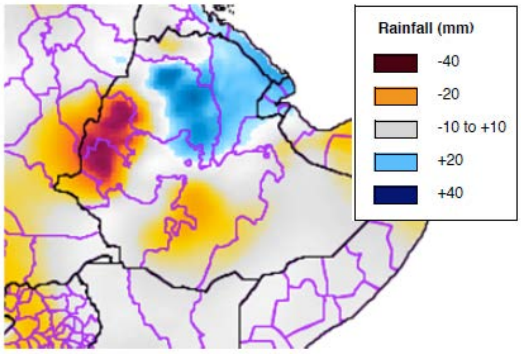


Figure 4: mm per decade relative to 1960s average. Trends for June - Sept, reproduced from FDR Ethiopia, (2014).

rains (March-May), and South and South-Easter with February-May as the main rain season and a secondary rainy season in October-November. There is evidence that climate change has already been happening in Ethiopia for at least the last 50 years. At the national level, temperatures have increased by an average of around 1°C since the 1960s (Figure 1 and 2). The changing climate may have increased weather variability and incidence of droughts and floods in the last 10 years relative to the decade before (Figure 3 and 4).[21]

Climate risks in Ethiopia are linked to high rainfall variability between years, seasons and regions. Yearly variation around mean rainfall levels of 25% is normal, and can increase to 50% in some regions. Weather variability leads to extreme events and hazards, especially droughts and floods, and associated soil erosion (Figures 5, 6, and 7). Drought frequently occurs: 60% of the country is dryland. Major floods have occurred in 1988, 1993, 1994, 1995, 1996, and 2006. Forest fires and pests and diseases have also been linked to increase of temperature, and humidity and moisture available.

[21] FDR Ethiopia, (2014). Climate Resilience Strategy Agriculture and Forestry.

Figure 5: Frequency of droughts by Woreda for 1990 to 1999 (left map) and 2000-2009 (right map), reproduced from FDR Ethiopia, (2014)

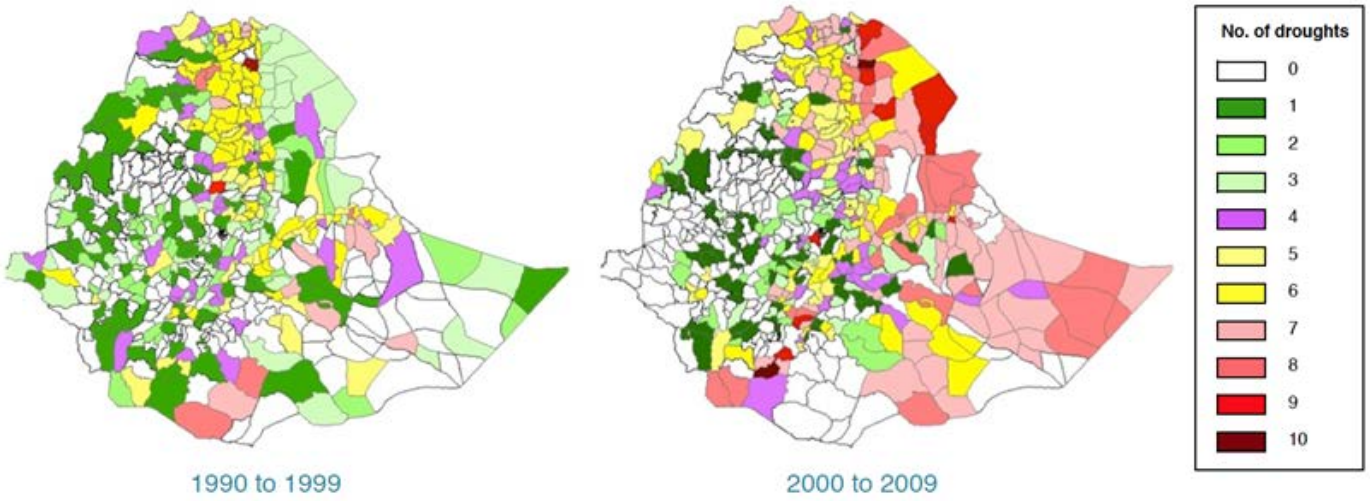


Figure 6: Frequency of floods by Woreda for 1990 to 1999 (left map) and 2000 to 2009, reproduced from FDR Ethiopia, (2014)

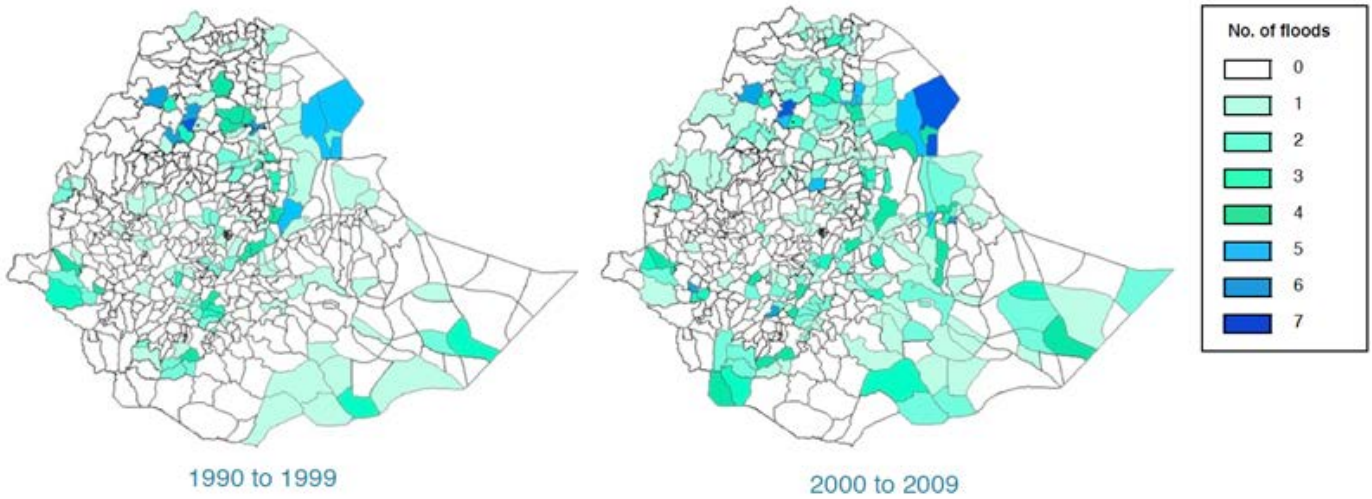
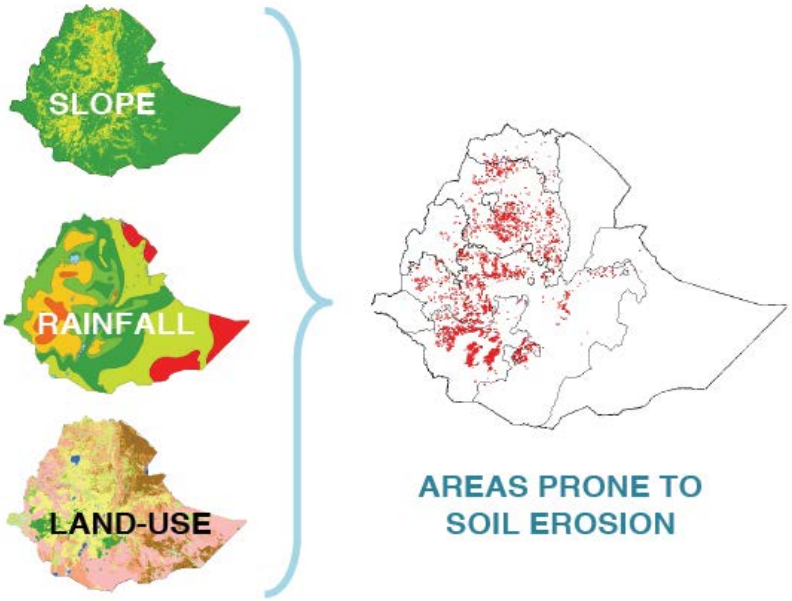


Figure 7: Soil Erosion Risk, reproduced from FDR Ethiopia, (2014). Areas at potential risk from current soil erosion have been estimated by analyzing slope, rainfall, and land-use. The analysis reproduced here suggests that 6% of Ethiopia is at high risk of erosion, particularly the west of the country



***Under current climate, Ethiopia is vulnerable to weather variability*:** Historic weather variability, extreme events and hazards result in lost agricultural output, lower export earnings and reduced foreign direct investment, which have a substantial negative impact on economic growth, particularly for agriculture and forestry, and poverty. Severe losses in agricultural crops, livestock, and rural infrastructures resulting from drought and floods have also food security implications. The economic impact depends on the extent of the variability and extreme events but droughts alone can reduce total GDP by 1% to 4%. The cost of recent major floods range from $3.5 m-$ 6 m per event, though this only capture direct costs. Floods and drought impact millions of people in ways that cannot be evaluated in simple outputs terms alone[22]. In addition, soil erosion is a key hazard for agriculture with up to 6% of the country at risk, and has been estimated to reduce agricultural GDP by 2% to 3% (around 1% of total GDP). Impact on agriculture and land-use activities are extremely diverse by region, a reflection of the variation in climate, soil type and cultural practices across the country, but it is consistently more severe for vulnerable groups such as children, the elderly, the disabled and women.

Increasing climate and weather variability seems likely: Future climate change in Ethiopia is uncertain, although scenarios of change show the range of possible outcomes, and climate variability is likely to increase across all of them. The most recent climate projections support the conclusion that future temperatures will rise in Ethiopia within a range of 0.5 °C to 1.5 °C by the 2020s, and 1.5° to 3° by the 2050s relative to the period 1961-1990 (Figure 8).[23] All projections indicate substantial increases in the frequency of days and nights that are considered 'hot' in the current climate. Days that are considered 'hot' for their season are projected to increase the most rapidly in July to September (JAS), occurring on 38-93% of days in JAS by the 2090s.[24] Due to the complexity of Ethiopia's climate, projections of future rainfall are uncertain and, across the range of models, include both wetter and drier scenarios with projected changes in annual rainfall from -25% to +30% by the 2050s (Figure 9 and 10).

[22] FDR Ethiopia, (2014a)
[23] FDR Ethiopia, (2014b)
[24] LTS International; AEA; Common Futures; B&M Development Consultant, (2012)

Figure 8: Historic and future temperature simulations show a clear warming trend. Reproduced from FDR Ethiopia, (2014)

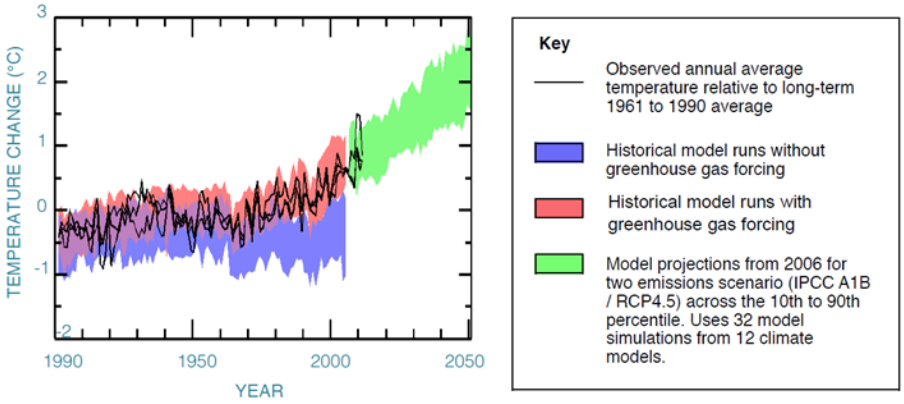


Figure 9: Historic and future rainfall simulations show mixed results and uncertainty. Reproduced from FDR Ethiopia, (2014)

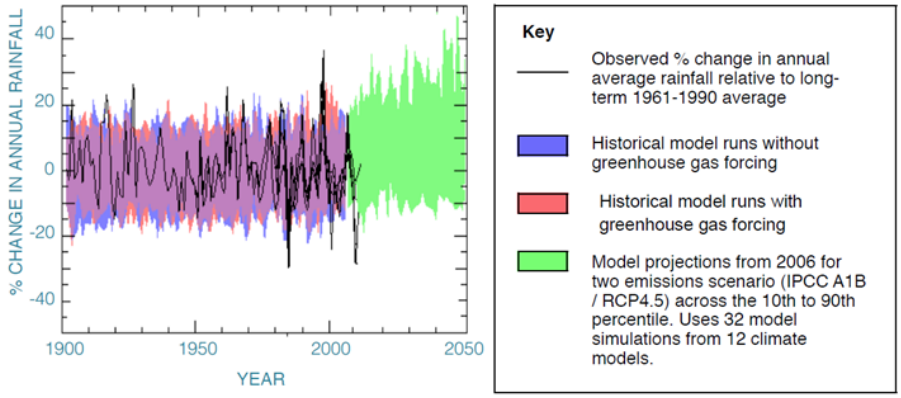
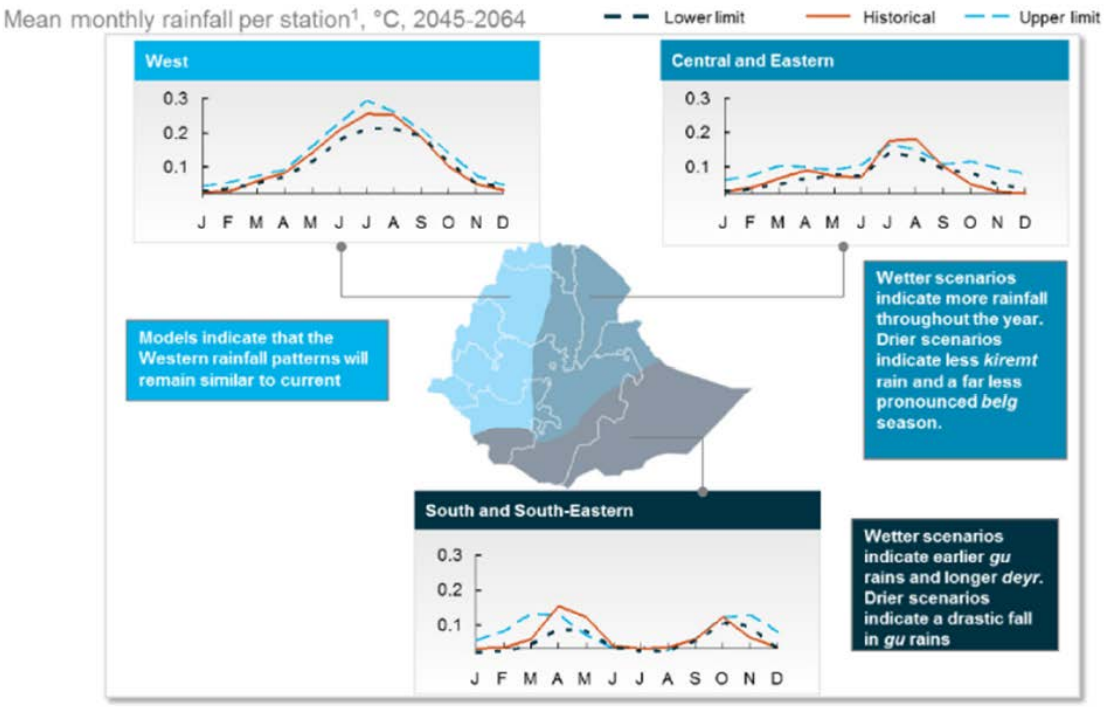


Figure 10: Rainfall projections for Ethiopia by region. Reproduced from FDR Ethiopia, (2015)

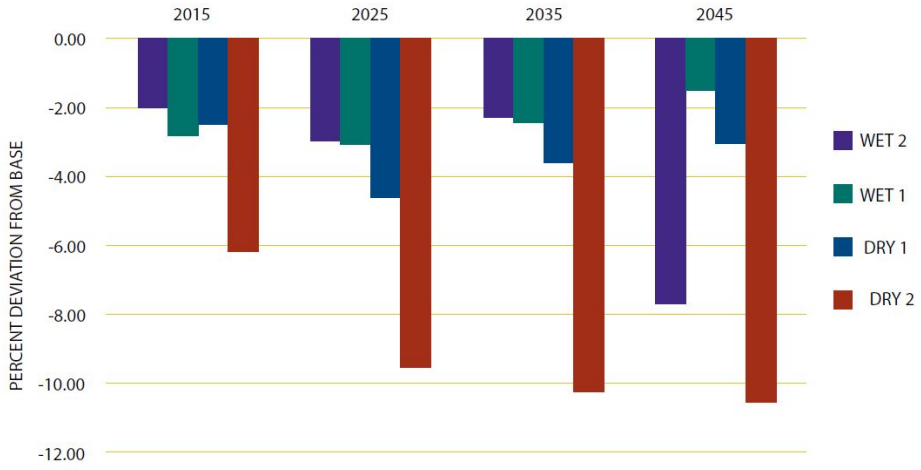


1 Historic data extrapolated for 7% of missing data-points, *West* includes Debre Markos, Gondar, Gore, Jimma, Nekemte. *Central and Eastern* includes Addis Ababa, Awassa, Combolcha, Dire Dawa, Mekele, Metehara, Robe. *South and South-Eastern* includes Gode, Neghele
Source: NMA (historic); CSAG Scenarios (future)

Yet, parts of the country could see more changes in key seasonal rainfall and in long-term mean rainfall, which would have major implications for rural livelihoods and food security, particularly in Somali, South Oromia and parts of SNNPR. Across all scenarios, year-to-year rainfall variability is the most significant climate variable and rainfall is likely to be less predictable with more frequent extremes in future as indicated for example by increases in the proportion of total rainfall that falls in 'heavy' events.[25] Based on Global Climate Models, in conjunction with assumptions about adaptation strategies, it is possible to identify four different climate change scenarios for Ethiopia that cross changes in the temperature and rainfall variables (labeled Dry1, Dry2, Wet1 and Wet2). Thereby, Dry1 and Wet1 refer to scenarios developed in preparation of the World Bank's Economics of Adaptation to Climate Change report, whereas Dry2 and Wet2 refer to specific scenarios to capture climate uncertainty in Ethiopia. A baseline scenario for economic growth and structural change in Ethiopia in absence of climate change has also been estimated. Under the Dry2 scenario, rainfall is likely to decrease over 2045 – 55 (i) by 10 to 25% in the central highlands, (ii) by 0 to 10% in the south and (iii) by more than 25% in the north of the country. Under the Wet2 scenario, rainfall is projected to increase (i) by 10 – 25% in the south and central highlands, (ii) by more than 25% in most of the rest of the country. Moreover, for the Wet2 scenario, an increase in the rainfall variability of the short rains would be associated with an increase in severe flooding due to storm runoff in the highlands.

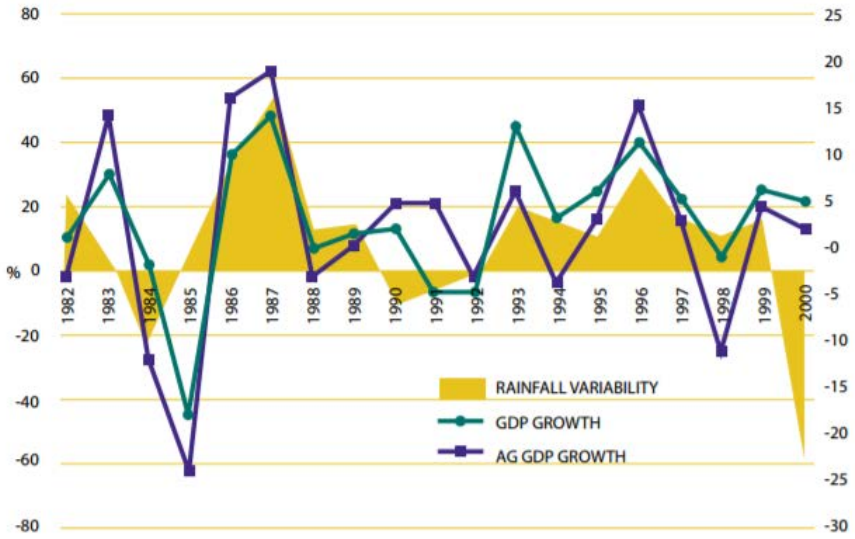
Climate change causes a toll on development and dampens growth. Based on the scenarios identified above, it is possible to estimate the impacts of climate change on GDP (see Figure 11), where a comparison is made between the baseline scenario where no climate change occurs and the four identified climate change scenarios. Negative impacts of climate change on GDP are assumed to occur as a result of the following five factors: (i) adverse impacts on the agriculture and livestock sectors, (ii) effects on the hydropower sector and, hence, power generation, (iii) increased flooding impacting on the transport sector, (iv) effects of drought on government expenditure associated with vulnerability and food insecurity, and (v) impacts on irrigation and hydropower due to conflicts associated with competing demands for energy. Under the *Dry2* scenario, losses associated with climate change would represent 6 to 10% of GDP. Under the *Wet2* scenario, losses would amount to nearly 8% of GDP, occurring towards the mid-century. The link between growth and climate variability is shown in Figures 11 and 12.

Figure 11: Deviations of GDP from baseline Scenario. Reproduced from World Bank, 2011



[25] LTS International; AEA; Common Futures; B&E Development Consultant, (2012).

Figure 12: Economic growth and climate. Reproduced from World Bank, 2011



II.2 Climate Challenges for the Natural Resource Sectors

The agriculture, forestry and livestock sectors are particularly vulnerable to climate change. Under the drier scenarios, increases in temperature, decreases in rainfall, and increases in weather variability are associated with reductions in agricultural productivity, leading to estimated declines of agricultural and livestock productivity of 3% to 30% by 2050 (Figure 13).[26] Two key risks from future climate change relate to coffee and irrigated crops, which are both linked to future economic growth. For irrigated crops, water availability should be seen in the context of rising water demand from an increase in population, rising incomes, and industrial demand, and reduced supply linked to lower rainfall. Coffee, one of Ethiopia's main export commodities, is sensitive to temperature; estimates suggest that due to global warming, the areas suitable for wild coffee production could be reduced by 40% to 90% by the 2080s[27]. If similar reductions would occur for commercial coffee, this could translate into reductions of 30% in export value by 2030[28]. The livestock sector is particularly sensitive to increases in temperature, with estimates suggesting that livestock revenues could decrease by 50% by 2050, potentially jeopardizing the livelihoods of pastoralists. Temperature increases and decreases in rainfall may also lead to the disappearance of certain types of forest (e.g. montane and lower montane wet forest and subtropical desert scrub), as well as shifts in the climatic zones suitable for forestry. These changes may have significant impacts on the production of timber and non-timber forest products and ecosystem services such as water, soil catchment management, flood protection, and availability of wood-fuel (Figure 14).[29] In Figure 15, the main impact of climate change on livelihoods are summarized[30].

[26] FDRE (2015c).
[27] FDRE (2015c).
[28] FDRE (2015c).
[29] FDRE (2015c).
[30] LTS (2012) *op. cit*.

Figure 13: Standard deviation in agricultural year to year growth rates. Reproduced from World Bank, 2011

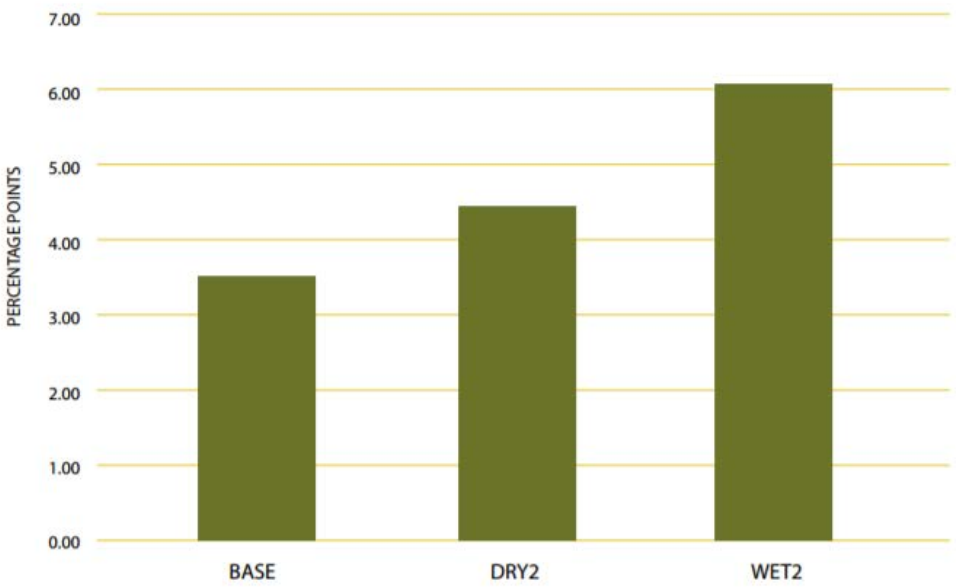


Figure 14: Biomass availability risk. Reproduced from FDR Ethiopia, (2015)

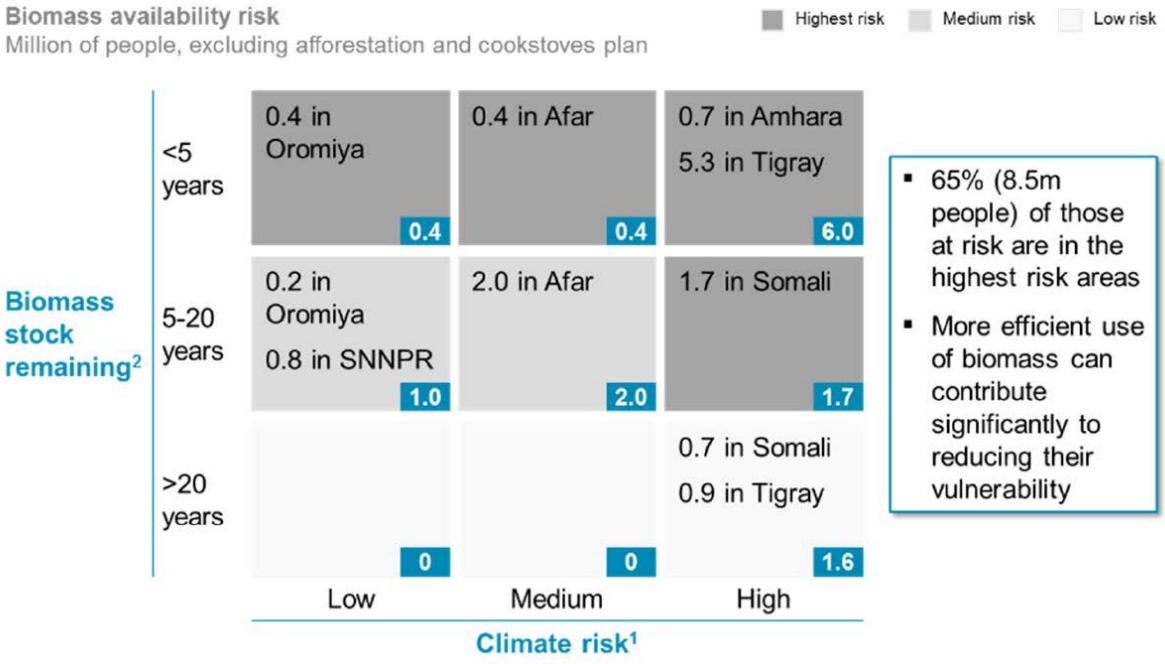
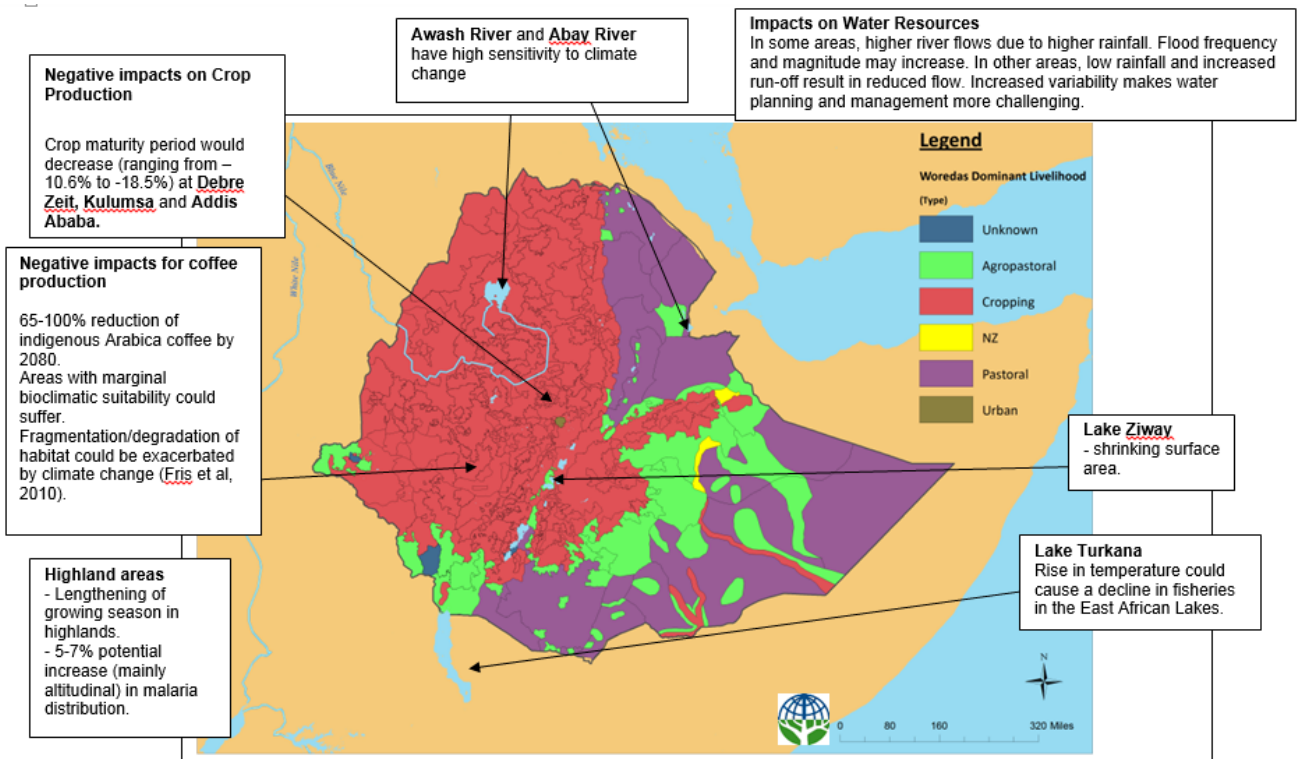


Figure 15: Summary of projected climate impact on livelihoods. Reproduced from LTS (2012)



Pressures on Ethiopia's ecosystems and natural resources will combine with climate change. Over 80 percent of Ethiopians are rural, depending on rain-fed smallholder agriculture as their primary income source. Agriculture is the backbone of Ethiopia's economy, now and in the foreseeable future, and a key focus of the country's economic policy. How landscapes are managed affects food security, water security, drought security, climate security, and livelihoods security[31]. Ethiopia is frequently affected by recurring droughts, and has experienced a high rate of deforestation, soil degradation and loss as well as over-grazing. Unsustainable land management practices, such as over-cultivation and over-grazing, have already led to severe land degradation[32]. With population pressures, annual wood fuel consumption is expected to rise by 65% between 2010 and 2030, outstripping current supply and leading to forest degradation of more than 22 million tons of woody biomass.[33] In the highlands, pressures on land resources have led to an expansion of the agricultural frontier into forest areas and steep slopes, which has accelerated environmental degradation and made agricultural production vulnerable to weather shocks.[34]

Climate change could adversely impact the water and energy sectors through increased water stress and increased uncertainty surrounding energy supply. Increased rainfall variability, as well as an increased incidence of floods and droughts may lead to uncertainty of water supply for human use, livestock production and crop irrigation[35]. This may in turn reduce crop and livestock productivity and jeopardize livelihoods. While climate change may affect the

[31] Danyo, S. *et al.* (2017).
[32] OECD (2014).
[33] FDRE (2011a).
[34] OECD (2014).
[35] FDRE (2015b).

generation of hydropower, studies indicate that the overlap between the life span of current hydropower projects and the time when the effects of climate change will materialize is relatively limited[36]. A study investigating 122 different climate change scenarios suggests that in approximately one third of the scenarios, hydropower production is less than in the no-climate change case, whereas in the remaining scenarios production could be higher if investment in turbine generation is adequate and market arrangements for evacuating the excess power are established[37]. Continued land degradation also reduces reservoir life through sediment loading of surface water bodies, and the feedback loop between land degradation and climate change processes amplifies the impact.[38]

The frequency and severity of disasters such as droughts and floods is likely to increase with climate change, leading to food insecurity among the affected population and prejudicing the livelihood strategies of many Ethiopians. Ethiopia is frequently and severely affected by drought, with 70%[39] of the Ethiopian population at risk of disasters and climatic variability. Droughts are associated with high economic costs, reducing Ethiopia's GDP by 1% to 4% in major events years[40], slackening the speed with which the poor can rise from poverty. Since 2000, approximately 6.2 million[41] people have been affected by drought every year, with the 2015 drought associated with the global El Niño weather phenomenon causing food insecurity among 10.2 million Ethiopians[42]. The 2003 drought led to a decline in 3.8% in GDP, a 15% inflation rate, a decline in agricultural productive, and widespread food and energy insecurity, and has changed physical, chemical and biological conditions of the country's lakes (box 1).[43]

Box 1: The impact of the 2002/03 drought on the Ethiopian economy *Mulat Demeke (2004)*

- The drought in 2002/03 led to a 3.8% decline in the country's GDP and a 15% inflation rate.
- Agricultural production declined by 12% and nearly 11.3 million people required food assistance; an additional 3 million needed close monitoring (World Bank).
- The coffee harvest is estimated to have declined by 30% in 2002/03 due to drought in coffee producing areas of the western, southwestern and eastern parts of the country (Fewsnet).
- Drought can damage quality and quantity of production. The volume of water in the hydro dams is also affected by drought. For instance, the 2002/03 drought reduced the water level of the Koka dam by unprecedented 3 to 4 meters.
- The performance of the non-agricultural sector is also affected by power interruption in years of severe drought (shortage of water for hydroelectric power generation). For instance, the drought in 2002/03 led to power interruptions that lasted about four months with a one day/week complete interruption throughout the country. A one day interruption was estimated to result in a loss of 10-15% of GDP of the day.
- Drought, along with siltation and sedimentation, has changed the physical, chemical and biological conditions of the country's lakes. A case in point is the 2002/03 sharp drop in the depth of Lake Tana (source of the Blue Nile), which seriously disrupted boat transport in the area.
- Millions of dollars are spent on importing food that does not build up a capital stock to foster economic growth. For example, the United States alone gave 500 million USD worth of food aid to Ethiopia in 2002/03.

[36] World Bank (2011).
[37] World Bank (2016a).
[38] TerrAfrica. Land and Climate (2010)
[39] World Bank (2014a).
[40] OECD (2014).
[41] EM-DAT average number of people affected by drought, taking into account droughts in 2003, 2005, 2008, 2009, 2011 and 2015. D. Guha-Sapir, R. Below, Ph. Hoyois - EM-DAT: The CRED/OFDA International Disaster Database. www.emdat.be. Université Catholique de Louvain, Brussels, Belgium.
[42] FDRE and Humanitarian Partners (2016).
[43] LTS (2012) *op. cit*.

II.3 Vulnerability to Climate Change

Overcoming the adaptation deficit. Ethiopia is more vulnerable to current climate variability and future climate changes than wealthier countries.[44] Section II.1 describes how Ethiopia is both highly exposed to climate shocks and changes, and highly vulnerable due to its rainfall-dependent economy, predominantly rural population, frequent occurrence of droughts and floods, high poverty rates and limited institutional capacity. Ethiopia has to use climate finance to reduce climate vulnerability and respond to impacts.[45,46,47] This adaptation continuum [48] has at one end the most vulnerability-oriented adaptation efforts: these overlap almost completely with traditional development practice. At the opposite end, activities are designed to target distinct climate change impacts, and fall outside the realm of development as traditionally defined. In between lies a broad spectrum of activities with gradations of emphasis on vulnerability and impacts. The MSIP captures required investments along this continuum which can build the foundations of the country's adaptive capacity and identify and tackle specific climate risks.

Figure 16: The Adaptation Continuum. Reproduced from McGray (2009)

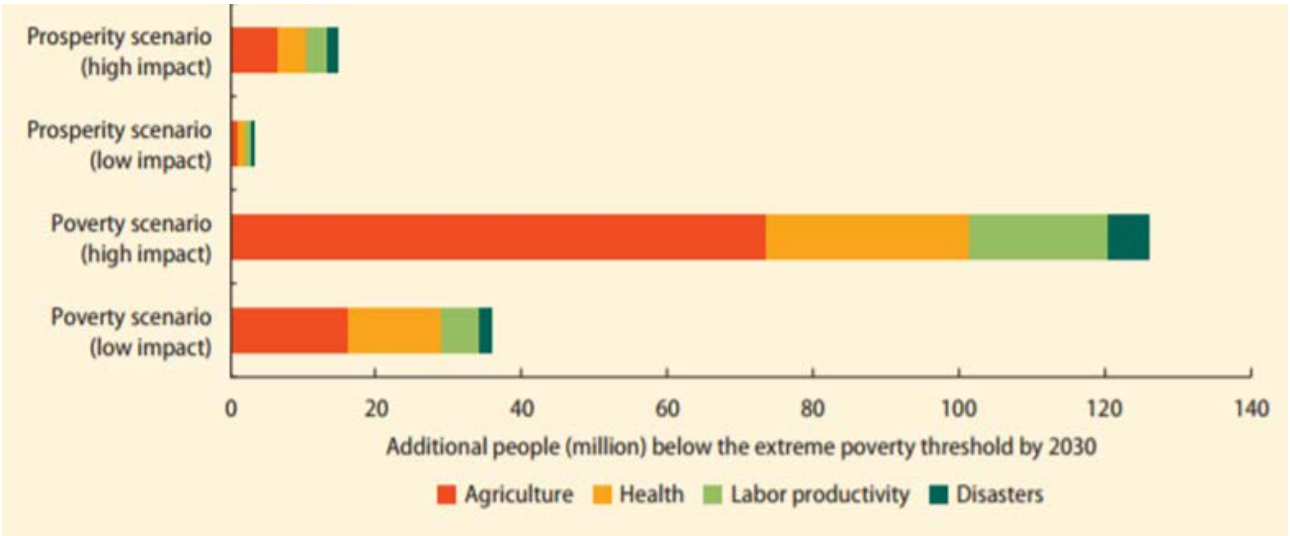
The importance of investments in vulnerability reduction for least developed countries is justified by research and experience tackling the 'adaptation deficit.'[49] This term reflects the fact that low-income countries are less able to deal with climate events because they lack the institutional, economic or financial capacity to adapt effectively. The adaptation deficit occurs both because of inefficiencies in the provision of adaptation services but also because of the rational allocation of scarce resources to more pressing and immediate needs. Sound institutions, high regulatory standards and good public services are more likely to be available in richer countries and these both enhance welfare in their own right, but also make the outcomes of climate change adaptation more efficient. This justifies the investment of climate finance in both broad-based inclusive growth to boost adaptation demand and improve the efficiency of more targeted adaptation support.[50]

To achieve a resilient economy, Ethiopia must undertake a structural transformation in line with its ambitious economic development plans which rely heavily on green industrialization, urbanization and a four-fold increase in the productivity of its rural landscapes. This requires a massive effort involving substantial policy and regulatory reform, extensive cross-sectoral and multi-stakeholder collaboration, as well as large volumes of both public and private investment.

[44] The insight is based partly on forward looking studies that assess the likely impact of future climate change (Tol 2002a, b, Parry et al. 2007) and partly on empirical evidence that looks at the impact of extreme climate events in the past (Kahn 2005, Noy 2009, Toya and Skidmore 2007).
[45] Adger WN, Agrawala S, Mirza MMQ, Conde C, O'Brien K, Pulhin J, . (2007)
[46] Fankhauser, S., & Burton, I. (2011). Spending adaptation money wisely. Climate Policy, 11(3), 1037-1049
[47] Schipper, E. L. F., & Burton, I. (Eds.). (2009).
[48] McGray (2009)
[49] Burton, I. (2009).
[50] Fankhauser, S., & McDermott, T. K. (2014).

Vulnerability assessments show that climate-related shocks, such as drought and food price increases, represent a significant consumption poverty risk to many Ethiopians. The 2016 "Shockwaves" report by the World Bank argued that climate conditions or climate events are already involved in many cases where households fall into poverty. They can be linked to price shocks due to lower agricultural production, natural disasters that destroy assets and livelihoods and affect health and education, and health shocks that are influenced by climatic and environmental conditions. The World Bank estimates that unaddressed climate change could dump up to 122 million people worldwide below the poverty line under the worst-case scenario (Table 1). Agricultural output losses are the main driver of climate-related poverty, followed by health shocks and disasters (Figure 17)[51]. Studying the vulnerability to consumption poverty resulting from adverse shocks, Hill and Porter (2015) find that many Ethiopians are unable to protect their consumption against large covariate shocks such as drought and food price increases. The authors find that 42% of the population is vulnerable to absolute poverty (compared to 29% currently defined as poor), where vulnerable households are defined as those having a probability greater than 50% of falling below the poverty line. Food price shocks disproportionately affect urban uneducated households, whilst rural households are particularly affected by drought shocks. Moreover, Hill and Porter (2013) find that vulnerability is concentrated in the geographic areas targeted by the PSNP. Half of the population in PSNP woredas (districts) is vulnerable, whereas 27% of the population in non-PSNP woredas is vulnerable. On the other hand, of the 27 million identified as vulnerable to absolute poverty, 12.2 million live in non-PSNP woredas, as vulnerability is determined not only by geographic location, but also by factors such as individual access to assets, or lifecycle events.

Figure 17: Agriculture is the key driver for climate change's impact on poverty. Reproduced from World Bank, 2016



[51] Hallegatte, S. et al (2016).

Table 1: Climate change threatens to worsen poverty, but good development can help. Reproduced from World Bank, 2016

Policy choices	Climate change scenario				
	No climate change	Low-impact scenario		High-impact scenario	
	Number of people in extreme poverty by 2030	Additional number of people in extreme poverty due to climate change by 2030			
Prosperity scenario	142 million	+3 million		+16 million	
		Minimum +3 million	Maximum +6 million	Minimum +16 million	Maximum +25 million
Poverty scenario	900 million	+35 million		+122 million	
		Minimum −25 million	Maximum +97 million	Minimum +33 million	Maximum +165 million

Source: Rozenberg and Hallegatte, forthcoming.
Note: The main results use the two representative scenarios for prosperity and poverty. The ranges are based on 60 alternative poverty scenarios and 60 alternative prosperity scenarios.

While overall, climate change represents a significant risk to economic development and growth, climate change may have positive impacts on growth in certain sectors. Research by the EDRI shows that some weather scenarios may have positive impacts in specific sectors. For instance, while an increase in annual average temperature could lead to a decrease in net revenue from crop agriculture and from total agriculture (crop and livestock), it may lead to an increase in net revenue from the livestock production sector alone. Moreover, an increase in annual rainfall would have significant positive effects on crop net revenues, but a negative impact on livestock net revenue. Given that decreases in annual rainfall are more likely than increases in rainfall under climate change scenarios, it is likely that climate change will lead to a decrease in net revenue from both crops and livestock[52]. While climate change is expected to lead to an increased frequency and severity of disaster events, disasters may in turn drive technological change that partly mitigates the adverse economic impacts of disasters[53].

III. The Enabling Policy Environment to Manage Climate Risks and Mobilize and Leverage Investment: Institutions, Incentives and Information to Manage Climate Risks

To achieve greater climate resilience, the FDRE is deploying and increasingly coordinating efforts to enhance institutions, incentives, and information that can help build climate resilience. The key aspects of these efforts to improve the enabling policy environment and most relevant to the MSIP are summarized below. Additional information has been included in Annex 3.

III.1 Institutions

The MSIP builds on Government of Ethiopia's existing response to climate change. The Ethiopian Constitution (1995) sets out the rights of Ethiopian citizens to sustainable development, to improve their standard of living, and to a clean and healthy environment. This is further reinforced by the National Environmental Policy (1997) which recognizes, *inter alia* the need to seek financial support for climate action, plan over long time horizons and ensure community participation.

Ethiopia is guided by five-year development plans. The Second Growth and Transformation Plan (GTP II) covers the period 2015/6 to 2019/20. It aims to sustain the broad-based inclusive growth achieved under GTP I, while placing

[52] Gebreegziabher et al. (2014).
[53] Hallegatte and Dumas (2009).

greater emphasis on the links between the national development plan and the CRGE Vision, citing CRGE as one of its nine pillars. Launched in 2011, the CRGE Vision sets the goal for Ethiopia to become a middle-income country by 2025 with zero net increase in annual carbon emissions and a climate resilient economy. The National Adaptation Plan of Ethiopia summarizes adaptation strategies, with respect to agriculture, forestry, water, energy, transport, urban, industry, health and education requirements. Climate Resilience (CR) Strategies also provide more detail for the Agriculture and Forestry (2014) and Water, Irrigation and Electricity (2015) sectors. CR commitments are outlined in Ethiopia's Nationally Determined Contribution (NDC) submitted to the UNFCCC[54].

The cross-sectoral nature of climate resilience investments implies a need for coordination across sectoral boundaries. MSIP will build capacity throughout Ethiopia's coordination and delivery systems. At present, inter-agency coordination on climate change is facilitated through the establishment of an inter-ministerial council, as well as through the CRGE Technical Committee, the National Planning Commission, and the CRGE Facility Secretariat. Additionally, CRGE units or focal points exist within most line ministries to promote and manage mainstreamed CRGE activities. However, further strengthening of inter-institutional coordination will be key to unlocking the potentially large cross-sectoral synergies of investment activities prioritized through the MSIP. This is particularly important at regional level, since most regions have not yet created mechanisms for inter-sectoral coordination.

Sustainable management of natural resources requires an integrated and holistic approach, defining landscapes, eco-regions or watersheds as planning and implementation areas. These landscapes usually embrace farmland, rangeland, forests and others forms of land use. While the FDRE has made substantial progress with implementation of its land policy through certification, it has not undertaken comprehensive macro-level land use planning in the past.[55] The responsibility for management of Natural Resources has been split: MoANR is responsible for the overall Land Administration and Use Policy, as well as SLM on farmlands and rangeland, whereas the forest areas are under the responsibility of MEFCC. Basin Master Plans and cross-sectoral coordination at Basin level has been designated the responsibility of River Basin Authorities under MoWIE, but only two are functioning.

The MSIP has the potential to catalyse transformational change through mobilising the investment to scale up existing practices and creating a step-change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Ethiopia and most of its development partners and civil society share an understanding that climate resilient development requires economic transformation. The MSIP aims to contribute to a four-fold increase in the productivity of Ethiopia's rural landscape by harnessing improvements in land and water management that optimise efficiency, balance competing priorities and leverage investment from both the public and private sectors. This requires massive investment as well as extensive policy and regulatory reform. Transformational change should use three levers to achieve scale: 1) Scaling up through public investment; 2) Creating the incentives for self-scale via private investment, including those of smallholder farmers; and 3) Altering decision-making and delivery within existing programmes and investments through policy reform and the greater use of climate, hydrological and land use information in decision-making.

III.2 Incentives

A sound policy and regulatory framework can unlock transformative investment and represents a critical element of a resilient economy. Ethiopia's Federal system and ambition for inclusive, broad-based growth through the

[54] FDRE(2015) See http://www4.unfccc.int/submissions/INDC/Published%20Documents/Ethiopia/1/INDC-Ethiopia-100615.pdf

[55] Except in urban centres with master plans and land zoning in place. See Haddis, Bekure, Belete, Gebremeskel and Tafare (2017) Ethiopia's Move To A National Integrated Land Use Policy And Land Use Plan for more information. Available at: https://www.land-links.org/wp-content/uploads/2017/03/USAID_Land_Tenure_WB17_Ethiopia_Move_Land_Use_Plan.pdf

Growth and Transformation Plans create scope for resilient growth. The National Disaster Risk Management and Social Protection policies aim to prepare for shocks and promote equity. However, there are still some limitations. Developing a coherent and comprehensive policy framework will facilitate climate resilience enhancing investments.

Ethiopia is well-endowed with natural resources but they are subject to competing uses. Managing environmental risks and enabling economic transformation is key to Ethiopia's ability to achieve its climate resilience objectives. Reaching the shorter-term GTP II targets and the longer-term CRGE goals, given environmental and climate risks, will require strong synergies between sectors and careful management of trade-offs between various sectors' claims on the same resources.[56]

Land holding certificates are an important form of land tenure that can drive household and community reinvestment in land resources. The MOANR Directorate of Rural Land Use and Administration is committed to strengthening tenure security through a land certification program. This has been supported by investments in the SLMPII, and has given farmers increased security and an incentive to invest in land and water resources, agroforestry, and climate-smart agriculture. This is an important foundation for MSIP actions.

Participatory land use planning, watershed management and forest management are important drivers of rational resource use, poverty reduction and shared benefits, but greater investment in high level integrated level land and water use planning is essential. Participatory watershed management is well established in Ethiopia with National Guidelines developed under the SLMPII and used across Ethiopia's agriculture sector programs. Similarly, Participatory Forest Management (PFM) has been initiated to ensure that local communities benefit from the forests they manage. However, these local-level land use approaches are not situated within a high level spatial plan that can manage competing demands from crop and livestock production, forestry, ecosystem services and biodiversity conservation. Neither are such plans integrated with an overall assessment of water availability and water-use planning.

The involvement of the private sector is important for national resilience, but continued progress on regulatory reform will be required to enhance the enabling environment for resilience investments. GTP II sets out an ambitious plan for attracting private sector investment in the agricultural and industrial sectors, and has made extensive investment in market infrastructure. However, Ethiopia remains a challenging location for private sector development, ranking 159th out of 190 countries in the World Bank's Ease of Doing Business index. The tightly controlled financial services sector creates limitations on the availability of finance, particularly foreign exchange and short term loans. Enhanced modalities for public private partnerships in the land-based sectors could be developed but require prior investments in appropriate land use planning. Public-private dialogues at a high-level should be expanded to all relevant sectors to ensure an appropriate framework for public private partnership is developed. Lessons from the implementation of the World Bank's Climate Innovation Centre to support micro and small enterprises could also be relevant.

Improved policies can foster more resilient economic growth in the forest sector. The forest sector contributes 4% of Ethiopia's GDP and this is expected to grow to 8% by 2020. The expansion and modernization of the forest sector is in the center of the government's development strategy, with forest cover is to be increased from 15% to 20% through the rehabilitation of existing forests. A forest sector roadmap is under development setting out strategies to encourage a substantial increase in the area under forest cover, continued growth in the share of forestry's contribution to national GDP and the promotion of proven approaches such as area closures, participatory forest management, plantation development and improvements, agroforestry and the management of dry forests.

[56] Danyo, S. *et al* (2017) *op cit*.

Substantial growth is expected from foreign direct investment in plantation development and processing but this requires improvements to the enabling environment, including (i) developing arrangements for Public Private Partnerships; (ii) enabling access to land (e.g., leasing, certificates) to encourage long-term forest investments; and (iii) creating economic incentives for forest investments, such as credit facilities, loan guarantees, duty-free imports of relevant machinery, or delayed taxes, recognizing the long time horizon for these investments.[57] Public-private dialogue initiated by the World Bank Group in Ethiopia and involving high level Government representatives as well as current and potential forest sector investors has created the foundation for this action. Plans to establish a formal Forestry and Timber Processing Industry Association will create a stronger platform for information sharing and dialogue with the private sector. MEFCC is working on the establishment of a Forest Fund to incubate domestic and foreign investment in the sector. Payments for ecosystem services could also help to create incentives for forest conservation, especially in high value areas, however the regulatory framework is limited. The identification of stakeholders willing to pay for the services, and the development of regulations for implementers are needed to enable scale up.

Box 2: Way forward for private sector engagement

MSIP contains numerous opportunities for public-private partnership. FDRE efforts to foster private investment and smallholder commercialization can also be supported by civil society organizations which can act as facilitators to strengthen the capacity of cooperatives and ensure institutional arrangements are environmentally and socially sustainable. Investment opportunities include:

- **Attracting foreign direct investment to the forest sector as per the Commercial Plantation Forest Industry Investment Plan:** This plan proposes the allocation of land for commercial plantation establishment in four key regions, alongside the establishment of an integrated panel (plywood, MDF and particleboard) and sawnwood production cluster. This should also enhance the productivity of existing Government-owned plantations. Government will build on its existing investment promotion strategy to create incentives for commercial forestry. This requires the interpretation and application guidelines of land tenure and environmental regulations, the introduction of improved technology for harvesting and transportation of timber, upgrading the vocational and higher education provision in subjects relevant to plantation management and timber processing, the easing of export logistics and cross-border procedures.[58]
- **Strengthening value chain development in the agricultural and livestock sectors:** Ethiopia's second Growth and Transformation Plan contains ambitious targets to attract commercial investment, with a further 500,000 hectares identified for agricultural investments between 2015-2020 and an attractive investment policy for agricultural and livestock investments.[59] The enabling environment for land allocation will be supported by the macro-level land use planning proposed under MSIP and by proactive implementation of the investment and smallholder commercialization policies, including through ongoing and high-level public-private dialogue. One example is the partnership between IFC, Nespresso and the World Bank's BioCarbon Fund which aims to boost environmental sustainability in the coffee value chain through farmer training and improvements to wet mill operations in the Oromia Region.

Improvements in the policy environment for agricultural and livestock commercialization and value chain development are required. Ethiopian farmers are inhibited from commercial production due to weak access to working capital, inputs, poor market integration and volatile prices. Seed supply is a key barrier to improved production and the development of policy to register new varieties and regulate imported seed are important. In the

[57] Danyo, S. *et al*. (2017) *op. cit.*

[58] Indufour Oy (2016) Ethiopia Commercial Plantation Forest Industry Investment Plan. Final Report. July 2016. Addis Ababa.

[59] See the Investment Promotion of Act 375/1996, Act 249/93, 543/2007; labor act 466/1997 and 456/1997 land administration and land use proclamation.

livestock sector, gaps relate to the lack of enforcement of meat quality standards, weak implementation of the animal breeding policy, and weak implementation of land policies that affect feedlot production. FDRE's recent initiative to establish four Integrated Agro-Industrial Parks offers an opportunity to attract private investment but complementary improvements in the technical support offered to cooperatives, input supply and finance for cooperatives and their members are needed.

The deployment of renewable technologies for resilience can be supported by improvements in regulatory and financial support. Recommended improvements include effective implementation of VAT and tariff exemption and its application to parts and appliances; the creation of a policy to guide the implementation of Pay-As-You-Go solar businesses; and improved enforcement of quality standards for solar products used for productive purposes (for example, solar pumps).

Harnessing the country's rural growth potential requires much greater capacity for research and development in water use management, and more consistent water pricing. The establishment of more hydraulic infrastructure to store and distribute water and to buffer rainfall variability will stimulate growth and reduce vulnerability to climate change. [60] However, this is hampered by weak knowledge of resource conditions, patterns of water use, and a lack of capacity to plan water allocation and assess the impacts and trade-offs of water resources development. Water permits are issued by competing state and federal authorities, often outside the scope of Basin Master Plans (when these exist). Flood and drought management are also not well integrated into the Water Recovery Management (WRM) system. Substantial investment in WRM capacity is required, including in research and development.

Greater access to higher quality meteorological information can improve investment decision-making at all levels. Whilst both MoWIE and MoANR have internal systems for distributing regular meteorological bulletins generated by the National Meteorological Agency, improvements can be made both in the quality of the information and the capacities of decision-makers to use it. Furthermore, communication to farm level is also currently patchy, with the opportunity to build on and scale up mobile services such as the MoANR/EIAR collaboration on "8028", Ethiopia's first agricultural hotline.

Improvements in cross-sectoral coordination for disaster risk management will improve economic resilience and reduce the cost of humanitarian response. Ethiopia's disaster management infrastructure is well-developed, with a continuously improving annual humanitarian assessment process and a system of clusters coordinating food and non-food responses. Interaction between the NDRMC and the Productive Safety Net Programme (PSNP) ensures that the risk financing mechanism of the PSNP is triggered to allow rapid scale-up of transfers during drought years. However, key gaps include weak assessment methods for non-food responses, particularly in the agriculture and water sectors, and a lack of coordination in relation to managing rapid-onset disasters, such as floods. In addition, there is weak uptake of risk assessment data by sector line ministries, and inadequate coordination between DRM and CRGE mainstreaming processes and institutions.

Greater investment in the enabling environment for weather-indexed insurance could help manage risks, but there is a long way to go for insurance to become a viable large-scale option. A range of weather-indexed and multi-peril insurance products are offered to farmers and livestock keepers on a pilot basis in Ethiopia. Key challenges to scale-up include the costs of premiums,[61] the lack of historic weather data upon which to base risk calculations, and lack of financial infrastructure to sell products and collect payments cheaply.[62] There is, therefore, a continued need for

[60] Mosello, B., *et al*. (2015) *op. cit*.
[61] Tadesse, M. A., *et al.* (2015).
[62] MeheRette, E (2009)

subsidy which compromises sustainability. Further analysis of the relative costs of subsidy in comparison to other forms of public sector response to shocks is needed.

The MSIP can strengthen the implementation of FDRE policy commitments on gender equality. Ethiopian legislation via the Constitution and Family Code (213/2000) give men and women equal rights in most areas. There remain, however, significant differences in access to extension services, inputs and finance between men and women, and particularly stark differences by region. [63, 64] Complementary activities to narrow the gender gap may include the provision of specific training for women, social communications on behavior change, encouraging financial inclusion through the creation of savings and credit groups, and the establishment of women-only self-help groups.

III.3 Information

Better data on the economic value of Ethiopia's natural resources would improve decision-making and efficient resource allocation. One recommendation of the on-going Country Environment Analysis is that Ethiopia could consider incorporating natural capital measures into its system of national accounts to provide quantitative evidence of achievements toward the CRGE vision. Other critical information gaps are related to ground water resources, options for electrification, biofuel, and air pollution, as well as climate, hydrology and weather data. This requires investment in the capacities and technologies to generate such information.[65]

Investment in hydrological research and mapping groundwater resources will result in better investment in new water infrastructure. Due to limited understanding of the complex nature of groundwater resources in Ethiopia and limited data about water availability and use, it is not possible to effectively plan for sustainable water use. Filling knowledge gaps and identifying the likely outcomes of climate scenarios is a key priority prior to investment in further water extraction.

It is necessary to conduct empirical studies on the analysis of demand, costs and benefits of biofuel production. Ethiopia has an ambitious strategy for biofuel development, but this was produced in 2007 and does not draw on latest data.

Investment in climate information services represents an opportunity to enhance Ethiopia's resilience to climate change. Due to Ethiopia's diverse geography and topography, climate modeling is particularly challenging. This is compounded by limitations in capacity, as well as resource constraints within key institutions[66]. One constraint is insufficiently rich weather data related to the distribution of weather stations which are mainly in cities or along the main roads.[67]

To address its exposure to climate-related events, Ethiopia has developed early warning systems that enable a timely response to drought events but these focus on assessing food needs and could be strengthened to ensure livelihoods are also protected in humanitarian responses. Ethiopia uses drought early warning tools to guide its response to the onset of a drought, including triggering contingency plans and risk financing through the PSNP. However, the predictive power of the existing early warning tools could be enhanced with more and better data. Furthermore, much of the early warning system is geared towards the assessment of food needs, with less resource invested into the identification of non-food support in the agriculture and water sectors.

[63] Kumar, N., & Quisumbing, A. R. (2015).
[64] Kasa et al (2015)
[65] Danyo *et al* (2017) *op. cit*.
[66] OECD (2014).
[67] Dinku *et al*. (2014); OECD (2014).

Improved program monitoring, in conjunction with rigorous impact assessments would help to improve the implementation of investment programs. Enhancing the capacity to monitor investment projects and developing rigorous impact assessments could inform the design of future investment programs, improve program implementation, and enhance the effectiveness of existing programs to yield development and poverty results.

IV. Process for Preparing the MSIP: Collaboration, Iteration, Evidence across Sectors and Stakeholders

IV.1 Summary of Overall Process

The MSIP was developed to convene, coordinate, and scale up funding, investment actions and enabling policies to build climate resilience in key rural sectors. The MSIP is a strategic financing document to advance the goals of the country's CRGE Strategy, and was prepared with support from the PPCR of the Multilateral Development Banks and CRGE support funds from the BioCarbon Fund of the World Bank.

Recognizing the importance of a coordinated approach, MoFEC requested the World Bank, in concert with numerous partners including the African Development Bank and International Finance Corporation, to provide lead support to the development of the MSIP. In May 2015, Ethiopia submitted an Expression of Interest for support in investment for resilient forest and agriculture, which led to it being selected by the Climate Investment Fund to participate in the PPCR, and being allocated a $1.5m preparatory grant from the PPCR for investment planning.

The MSIP will focus on the forest and agriculture sectors, and will incorporate activities in the water, energy and livestock sectors. The MSIP will consist of a pipeline of large scale, programmatic investments that serve to contribute to the GoE priorities and the achievement of the goals under the Government's GTP-2 (2015-2020) and CRGE Strategy (2011-2030). To enhance inclusivity of the MSIP development process, the WB and AfDB committed to support joint missions and national workshops to validate the agreed upon investment plans and specific investment projects, and worked closely with the four line ministries to convene numerous development partners interested in a coordinated, multi-sectoral, programmatic approach to scaling up investment in climate resilience.

The MSIP preparation process is Government-owned, led by MoFEC along with a core set of line ministries including the Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Environment and Climate Change (MEFCC), the Ministry of Water, Irrigation and Electricity (MoWIE), and the Ministry of Livestock and Fisheries (MoLF). To ensure cohesion, it also involves the National Disaster Risk Management Commission. The collaborating entities are briefly described in Box 3.

MoFEC, which is mandated to mobilize both domestic and external resources for the implementation of the FDRE's CRGE strategy, upon which the MSIP builds, has acted as the lead agency in designing, and will oversee the delivery of, the MSIP. Almost 50 organizations have been continually engaged in MSIP preparations and dialogues. The process built upon sector plans and helped to harness cross-sectoral synergies, strengthen

Box 3: Background on MSIP collaborating entities

The **Ministry of Finance and Economic Cooperation (MoFEC)** is mandated to mobilize both domestic and external resources for the implementation of the FDRE's GTPII and CRGE strategy. MoFEC is the lead agency in the process of designing and overseeing the delivery of the MSIP. In 2016, MoFEC created the *Climate Change Facility and UN Agencies*

Directorate in 2016 to formally reflect that, since 2011, this Directorate has managed the country's national climate finance facility - the CRGE Facility - and has worked closely with MEFCC to coordinate cross-sectoral plans to integrate climate change. The Management Committee of the CRGE Facility has also acted as a coordination mechanism bringing together sector representatives to discuss CRGE issues at policy level.

The Ministry of Environment, Forest and Climate Change (MEFCC) is mandated to coordinate Ethiopia's technical implementation of FDRE's CRGE Vision, and is also responsible for the implementation of the Forest Development, Conservation and Utilization Proclamation (542/2007), the subsequent Forest Development, Conservation and Utilization Policy and Strategy and Climate Resilience Strategy for Agriculture, which includes the forestry sector. This requires coordination with Regional bodies. Many forest areas in the regions fall under the responsibilities of Forest Enterprises such as the Oromia Forest and Wildlife Enterprise (OFWE), others are located within National Parks under the Ethiopian Wildlife Conservation Authority (EWCA) under the Ministry of Culture and Tourism (MoCT).

The **Ministry of Agriculture and Natural Resources (MoANR)** implements climate action related to agriculture. It is guided by the 10-year Policy and Investment Framework (PIF) (2010-2020), the Agricultural Development Led Industrialization (ADLI approach) and the Climate Resilience Strategy for Agriculture (also covering Livestock and Forestry) (2014). MoANR is divided into three sectors covering Agricultural Development (plant health, agricultural extension, input marketing and managing private investment), Natural Resources (land administration and utilization, natural resource development) and Food Security (implementation of the productive safety net program). The *Ethiopian Strategic Investment Framework for Sustainable Land Management* (2010) provides a holistic framework under which all stakeholders can work to promote and sustain land management, including the flagship Sustainable Land Management Programme. Other major programs include the Productive Safety Net Programme and the Agricultural Growth Programme. Relevant agencies and government-owned enterprises include the Agricultural Transformation Agency, Federal Cooperative Agency, Agricultural Input Supply Enterprise (AISE), Ethiopian Seed Enterprise (ESE) and Ethiopian Grain Trade Enterprise (EGTE).

The **Ministry of Livestock and Fisheries (MoLF)** was recently created as a separate entity from MoANR and is advancing FDRE's agenda with respect to livestock productivity as part of FDRE's GTP II targets, the National Livestock Master Plan and livestock-components of the Climate Resilience Strategy for Agriculture. Regulations established the Ethiopian Meat and Dairy Technology Institute (143/2008) and the Ethiopian Meat and Dairy Industry Development Institute (EMDIDI) (295/2013) to increase milk production and supply to processing industries, upgrade the capacity of milk processing companies in product development and processing, and to reduce dependence on milk imports. The draft Animal Breeding Policy and Strategy (2014) covers all livestock species reared in Ethiopia and supports the previously developed "Guideline on Import and Export of Animals and Animal Genetic Materials" (2012).

The **Ministry of Water, Irrigation and Energy (MOWIE)** leads the implementation of FDRE's Climate Resilience Strategy for Water and Energy, which identifies key resilience enhancing actions in the water and energy sectors, such as enhancing energy efficiency, strengthening irrigated agriculture and accelerating access to WASH. The Ethiopian Water Resources Management Policy (1999) set out the basis for contemporary integrated water resource management in Ethiopia, this including large-scale basin management and utilization of water for irrigation. In 2001, the Ethiopian Water Strategy was adopted with the stated aim of translating the 1999 Policy into action. The River Basin Councils and Authorities Proclamation (534/2007) marked the beginning of a process to a decentralized and basin-level approach, but only two of Ethiopia's eight major basins had functional river basin authorities in 2016.[68] The Energy Policy (1994) describes GoE's intention to increase access to modern energy sources and to avoid adverse environmental impacts. The Electricity Feed-in-Tariff Law (2012) encourages the diversification of the power mix in the national grid whereas the Energy Proclamation (2013) sets out the responsibilities of the Ethiopian Energy Agency and establishes standards for licensed generators and energy efficiency standards. The Rural Electrification Fund was established in 2003 (Proclamation No 317/2003) to provide loans and technical assistance for rural electrification. MoWIE has several

[68] Mosello, B., *et al*. (2015).

alternative energy programs for increasing access to modern fuels including the National Biomass Energy Strategy (2013),[69] National Biogas Program for Ethiopia (2007)[70], Biofuel Program and Sustainable Energy For All Action Plan.[71]

The **National Disaster Risk Management Commission (NDRMC)** was created in 2015. It is guided by the 2013 National Policy and Strategy on Disaster Risk Management and the 2014 Strategic Programme and Investment Framework (DRM-SPIF). NDRMC works closely with the National Meteorological Agency in the generation and dissemination of agro-met data and the provision of early warning information to all sectors.

investment proposals, programs, policies and projects, and thus build the capacity of relevant stakeholders to participate in the MSIP.[72]

To enable effective collaboration, the development of the MSIP has been conducted in four steps: (i) scoping to define the MSIP process and to determine boundaries of the investment plan; (ii) analysis and stocktaking to conduct evidence-based assessments to address gaps identified during the scoping and to agree on criteria to identify priority investments; (iii) prioritization to identify bankable activities, projects, programs and policies, starting with each sector's plans; and (iv) the finalization of a comprehensive, unified, realistic, costed, multi-sector investment plan (MSIP). Throughout the development of the MSIP, consultations with stakeholders have been conducted as part of a participatory and inclusive process.

Development of the MSIP has utilized three distinct but inter-related tools:

- ***Portfolio Review:*** A stock-taking of relevant existing donor-supported projects has been undertaken in the relevant sectors, to understand what investments have so far been made in the context of climate resilience in agriculture and forestry.
- ***Gap Analysis:*** The portfolio of existing projects has been analyzed to identify any gaps in investments, based on key parameters. Specifically, the existing portfolio has been analyzed with respect to: its alignment with GTP II targets; the degree to which it meets projected investment requirements, in aggregate and disaggregated by sectors and themes; and the extent to which investment flows have met the spatial needs of Ethiopia.
- ***Investment Prioritization Framework:*** A tool for prioritizing activities was developed by the World Bank collaboratively with partners and government, and then adopted by the consultants to help finalize preparations. Using this tool, and the gap analysis findings, a range of identified activities were prioritized in an iterative and inclusive manner by the line ministries, and informed by partners and stakeholders.

All tools have been applied in highly participatory ways. The relevant line ministries provided the data that has been used in the portfolio review and gap analysis, and have engaged in consultations and workshops designed to enable review of and feedback on the results of the analysis. They have also been closely involved in the design of the Investment Prioritization Framework, and have used this to assess the importance of the Activity Packages that they have identified as being most important to achieving climate resilience in the targeted sectors. The creation of the outputs that have been combined to form the MSIP document has been iterative to ensure it has stakeholder agreement and ownership. MSIP preparation has thus helped to consolidate and harmonize information sharing, foster collaboration, reduce costly fragmentation and enhance coordination, which should then strengthen capacity to implement the MSIP.

[69] http://www.euei-pdf.org/sites/default/files/field_publication_file/Ethiopia_Biomass_Energy_Strategy_and_Action_Plan_Final_2014_02_06.pdf
[70] http://www.africabiogas.org/countries/ethiopia/
[71] https://www.se4all-africa.org/se4all-in-africa/country-data/ethiopia/
[72] See the list of Contributing Partners at the beginning of this document.

Together these stakeholders have collaborated to deliver an MSIP that is responsive to multiple potential international climate finance opportunities. Potential sources include the Green Climate Fund (GCF) and the Global Environment Facility (GEF), as well as financing sources not conventionally thought of as "climate finance" including the WB's International Development Association (IDA) and AfDB's African Development Fund (ADF). The MSIP also aims to enhance coordination of public financing for investment projects, as well as create a framework for work with public and private banks and insurance companies, microfinance institutions and savings and credit cooperatives to create new financing mechanisms for resilience building.

The MSIP process is in many ways the product, having enabled preparation of credible climate financing proposals by: (i) centering on an inclusive and consultative process with numerous DPs and other stakeholders; and (ii) largely building on and incorporating all major strategies, programs, projects and analytics for Ethiopia. Using these climate finance proposals, the MSIP process aims to leverage and create a multiplier effect in scaling up investment and action through 2030 using new and additional financing from multiple sources – complementing existing financing and proven government programs for efficient impact – to support Ethiopia to achieve its climate resilience objectives in key sectors. By doing so, the MSIP process will boost GoE's capacity for cost-effective and efficient scaled-up action on the ground.

The final version of the MSIP document has benefitted from and been modified in response to an external independent peer review. Annex 4 includes details of this independent review.

The remainder of Part 1 of the MSIP summarizes the portfolio review and gap analysis, to lay a foundation for the investment prioritization and planning to be described in detail in Part 2. More detailed descriptions of the preparation and consultation processes, and summaries of participation, have been provided in Annex 5. The investment prioritization tool and process are described in Part 2.

IV.2 Portfolio Review

The portfolio review was undertaken to establish a clear, evidence-based baseline that could inform future-focused multi-sectoral investment planning. The review was designed to ensure that a sufficiently reliable picture of past and on-going investments was produced, bearing in mind available time and resources. The review has been performed so that it can continually be refined, should this be considered necessary. The portfolio review methodology and conclusions are more fully described in Annex 6 of the MSIP document.

The review comprised a sequence of desk research and stakeholder consultation activities, and identified projects in the prioritized sectors, namely agriculture, forestry, water, energy and livestock. In the case of water and energy, only projects related to agriculture, forestry and/or livestock were considered. Approximately 146 potentially relevant projects were identified. To focus on those that would be most material to the gap analysis, the following filters were applied:

- ***Project budget equal to or greater than US$3 million:*** Given the nature of the review, projects below this scale are unlikely to be material to the conclusions of the portfolio review and gap analysis.
- ***Projects implemented starting from 2010.*** As 2010 marks commencement of GTP I, any projects implemented prior to this would be difficult to analyze in a way that is meaningful to relevant FDRE strategies and plans.
- ***Sufficient project data available.*** Minimum data requirements are a summary of the budget and the primary activities or outputs. Without this, even a basic project review would not be possible.

These filters reduced the portfolio for detailed analysis to 102 projects. Most of the remaining projects did not meet the minimum budget requirement. It was recognized that, while smaller projects were unlikely to change the results of the portfolio review and gap analysis exercise, there would likely be useful lessons to be learned from some of

these, which could inform MSIP preparation in qualitative ways. For this reason, quick case studies have been prepared for two projects[73] that offer useful learning in each of the following areas (one of these projects has been highlighted in Box 4):

- ***Scaling-up potential:*** A priority for FDRE is to identify successful approaches that can be rapidly scaled-up by extending them to new areas. These two small project case studies could help identify potential approaches.
- ***Multi-sector synergies:*** The MSIP seeks to identify opportunities for linking approaches across sectors to accelerate the building of climate resilience, and to reduce costly fragmentation of financing and projects. These two small project case studies could help identify potential linkages.

Box 4: Integrating Farmer and Scientist Knowledge

In 2009, Biodiversity International introduced the "Seeds for Needs" (S4N) initiative in Ethiopia to help increase farmers' resilience to climate change through agricultural biodiversity. Currently, the project has several sites in 11 countries involving a range of crop varieties. The project received an initial World Bank development marketplace award of US$200,000 over a three-year period. The distinctive approach of this project is that it focused on using or (re) introducing a diversity of superior landraces available in genebanks rather than focusing on breeding and introducing new varieties. The S4N initiative was judged a winner in the World Bank's Development Marketplace 2009, for its innovative and low-cost strategy to understanding the needs of farmers, particularly women, and improving access to crop varieties that could help them enhance their resilience to climate change impacts. The project was successful in addressing its objective by reducing the vulnerability and enhanced the adaptive capacity in smallholder farming communities by increasing the intraspecific diversity of important food security crops using barley and durum wheat.

For those projects included in the detailed portfolio review, data collection focused on the following:

- ***Project budget:*** Data was sought on the total project budget, as well as by project activities and/or outputs, and by areas (woredas) in which the project activities would be implemented.
- ***Project activities:*** Data was sought on the type and location of specific project activities.
- ***Project outputs:*** Data was sought on the outputs (results) that the project intended to achieve.
- ***Beneficiaries:*** Information was sought on the number of beneficiaries targeted in the different project locations.

It was not possible to collect data on project impact; in some cases, projects are still being implemented, while in others impact evaluation data was not available. Consequently, project budget has to be used as an indicator of project impact (the assumption being that all projects achieved their intended results with the funds made available).

For relevant categories of data, only partial information was available for many projects. Only a small number of available project documents provided information on targeted beneficiaries or spatially explicit project boundaries. In addition, a small minority of project documents disaggregated budget information by activities, outputs and/or location. In other cases, different documents provided conflicting information about budgets or targets. Where disaggregated data was unavailable, the project review assumed that total budget was allocated evenly across the targeted outputs, and in proportion to the populations within each of the woredas it targeted. Where conflicting data sources were discovered, the project review considered the size of the discrepancy and balanced efforts to

[73] See Addendum 1 of Annex 6 for details.

collect more data against the expected increase in accuracy. Another small set of project documents did have better data on financing and project boundaries.

The characteristics of the portfolio of projects selected for gap analysis are summarized in Figures 18 and 19. The need to make basic assumptions given a lack of detailed data means that some of the figures for investment by thematic or spatial area may be inexact. However, the overall results remain valid for highlighting trends in investment across resilience themes and geographic areas of the country. The analysis tool is designed to accommodate additional data as it becomes available.

Figure 18: Share of project portfolio investment by sector

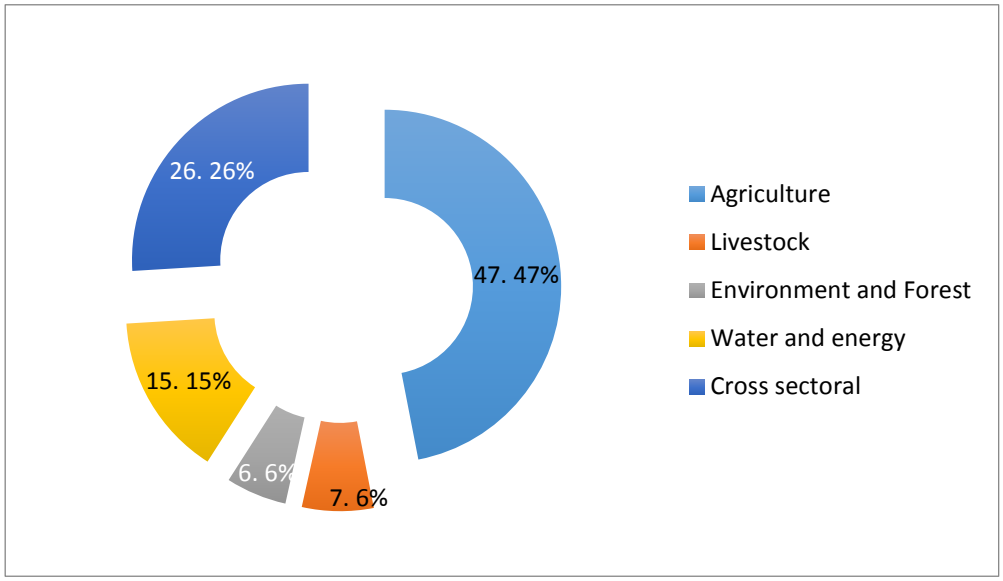
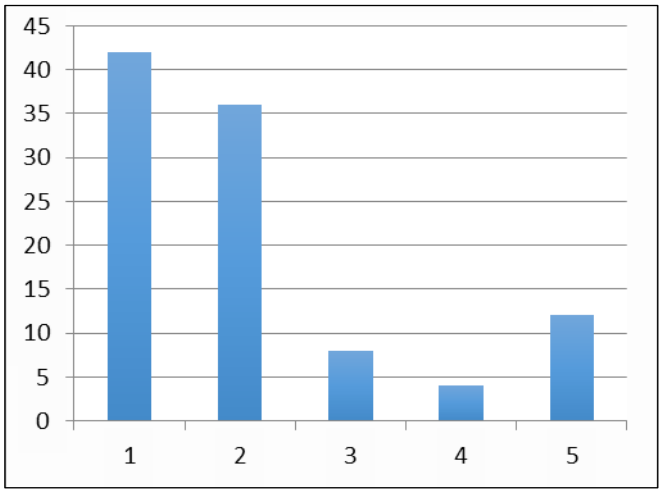


Figure 19: Number of projects in portfolio, by size category



Total Project Budget	Size Category	Number of Projects
100M+	5	12
75 to 99M	4	4
50 to 74M	3	8
11 m to 49M	2	36
3 to 10M	1	42

IV.3 Investment Gap Analysis: Spatial, Thematic, Financial

The gap analysis was undertaken to establish a clear, evidence-based assessment of where current committed investments would and would not meet Ethiopia's projected climate resilience requirements. This analysis could then be used to help inform future-focused multi-sectoral investment planning. The gap analysis was designed to ensure that a sufficiently accurate assessment of investment gaps was produced, bearing in mind available time and

resources. The analysis has been performed so that it can continually be refined, should this be considered necessary. In future iterations of the assessment, it may be useful to also include a detailed public expenditure review to complement analysis of external financing.

The gap analysis was performed using the parameters described in Table 2. Each of these parameters provides a different method for assessing how well existing investments meet the strategic objectives established for building climate resilience in the prioritized sectors. By combining the findings from the different methods of gap analysis it is expected that a reliably nuanced understanding of existing investment levels will be achieved. For this reason, all parameters are treated as equally important and no weighting has been applied.

Table 2: Parameters for Gap Analysis

Parameter	Definition
Gaps against GTP II targets	The assessment of how much activity is addressing climate resilience objectives stated in GTP II.
Financial gaps	The assessment of the difference between the level of investment that has been projected as being required to achieve climate resilience, and the investment that has currently been committed.
Thematic gaps	Assessment of gaps in activities that are necessary to achieve the CR strategy looked at through each of the CR themes of agricultural and forest as well as water and energy.
Spatial gaps	The assessment of how much activity is addressing climate resilience objectives in relation to relative levels of vulnerability to climate change, by woreda.

All gap analysis activity has been performed using data gathered by the portfolio review. The portfolio review concentrated on project activity between 2010 and 2020 (very few projects under implementation have commitments beyond 2020, although pipeline projects do, such as the new IDA-financed Resilient Landscapes and Livelihoods operation of MOANR that aims to begin implementation in July 2018.). All analysis has been performed on a "Business as Usual" basis; that is, it has been assumed that underlying conditions remain the same, without any unforeseen changes in climate science, the availability or terms of climate finance and other forms of ODA, or Ethiopia's enabling policy environment, etc.

In all cases, the analysis has attempted to identify gaps between identified need as expressed in the CR strategies, and existing investment commitments. In most cases, the needs expressed in different planning documents were not directly comparable, thus requiring specific approaches to be developed to generate a consistent evaluation of the gap for each parameter of analysis (as defined in Table 2). For analysis of gaps against GTP II targets, the gap analysis assessed the extent to which each activity was relevant to the target. For financial and thematic gaps, analysis focused on the difference between the financial needs as identified in the government's Climate Resilience Strategies for (i) Agriculture and Forestry, and (ii) for Water and Energy, and the total investments that have so far been committed. In all cases, assumptions must be made to enable effective and reliable gap analysis. The gap analysis methodologies have been more fully described in Annex 7 of the MSIP document; appreciation of these methodologies will aid interpretation of the findings and conclusions, which are summarized below. As well as reviewing the data from the gap analysis, conclusions are also drawn by cross-referencing the MSIP Activity Package list previously developed during the preparatory work, to help connect the portfolio gap analysis to the next phase of investment prioritization and planning.

Conclusions from the analysis of gaps against GTP II targets:

The analysis of gaps in activity levels compared to CR relevant objectives established by GTP II was inconclusive. The analysis identified specific GTP II targets that are the major focus of donor investment, and others that receive little or no financial support from donors. However, it may not be appropriate to conclude that the latter areas should receive more donor attention. The areas that receive relatively little donor support are activities that are (or could be) pursued profitably by the commercial sector. Evidence of a gap is not always evidence of a direct funding need. It may indicate that measures to enable or incentivize private sector investment could be appropriate. In some cases, some private sector investment is underway, such as in forest coffee in Oromia via the new IFC-Nespresso forest coffee project with World Bank BioCarbon Fund support as part of the government's new umbrella Oromia Forested Landscape Program.

Looking ahead at the Activity Packages developed through the original MSIP stakeholder consultation process, it appears that there are no listed activities in the portfolio of ongoing donor supported projects that do not contribute to the goals of GTP II in some way. Hence, the GTP II criterion provides very limited guidance to the development of the MSIP.

Conclusions from the Analysis of Financial Gaps:

Given that it was not possible to use impact data in the gap analysis, investment flows are a proxy for intensity of activity for each of the other analyses. The detailed conclusion from the analysis of financial gaps is therefore reflected in the conclusions of each of the other gap analyses.

Determining the extent of the investment gap is difficult. Based on data in the CR strategies of the concerned sectors, the total investment required by 2030 to achieve climate resilience in forest and agriculture is estimated to be about $5.9 billion.[74] Noting that these estimates dated from 2011-14, it is likely that not all climate resilience requirements were fully anticipated and that the actual current need could be 20-30 percent higher. Increasing the current number by 25% suggests that the total investment requirement is about $7.4 billion.

Some of this investment need has been met by the existing investments in the targeted sectors. The total value of all 102 projects included in the portfolio is around $4.8 billion. However, not all these project expenditures were committed to climate resilience. Available data makes it difficult to determine how much of the total amount has been invested in climate resilience. Based on the rationale outlined in the box below, it is estimated that $1.85 billion was invested in climate resilience between 2010 and 2020.

> To estimate how much of the project portfolio's total expenditure of $5.9 billion was committed to climate resilience, the MSIP referred to a 2014 report on "Climate Finance in Ethiopia",[75] which found that between 40-50% of agriculture sector expenditure and (depending on the year) 35-80% of MoWIE budget was considered "climate change" relevant. Taking the 2011/12 budget year as a benchmark, the MSIP assumes that 40% of investment in the forest and agriculture sectors and 35% of the spend in the water and energy sectors was relevant to climate resilience. On this basis, and given the sectoral

[74] The estimate does require qualification. The sectoral calculations of investment need included commitments made by on-going major programs at the time. Such amounts will likely have also been included in the portfolio review, and thus will already have been subtracted from total requirement. This introduces an element of inconsistency. Nevertheless, $5.9 billion is considered a valid assessment of investment need for the purpose of this analysis.

[75] Eshetu, Z. Simane, B. Tebeje, G., Negatu, N. Amsalu, A. Berhanu, A. Bird, N., Welham, B., and Canales Trujillo, N. (2014). *Climate finance in Ethiopia.* Overseas Development Institute, London and the Climate Science Centre, Addis Ababa University, Addis Ababa.

split of the 102 projects in the portfolio, the assessed investment in climate resilience in the target sectors is calculated as follows:

- 72% of the total portfolio (thus $3.4bn of the total of $4.8bn) falls within the forest and agriculture sectors. By applying a weight of 40% it can be deduced that about $1.38bn has been invested in CR.
- 28% of the total portfolio ($1.3bn) falls within the water and energy sectors. By applying a weight of 35% it can be deduced that about $470mn has been invested in CR.
- Thus, the total assessed investment in CR across the target sectors is around $1.85bn.

From these calculations, the high-level conclusion from the financial gap analysis is that Ethiopia requires around $5.5 billion of additional, incremental investment to reach its 2030 climate resilience targets. While these calculations could be challenged, the benefit of limiting them to the amounts specific to climate resilience (and thus distinguished from more traditional development finance) is that the cases become more relevant to providers of climate finance. In addition, financing adaptation and resilience must catalyze larger financial support to make a difference at scale. For example, the Adaptation Fund, the GEF, the GCF and the PPCR currently have limited bandwidth and so are focused on achieving the greatest possible impact per transaction. These funds tend to invest tens of millions of US dollars per project, with co-financing requirements that may result in a total budget of upwards of $100 million. Even larger financiers such as IDA seek to leverage the impact of large scale investment projects by crowding in the private sector and government budget. These examples illustrate why fragmented financing is an opportunity lost for leveraging additional financing.

These observations indicate that the overall climate resilience financial gap is more likely to be filled – and large-scale impact achieved – by investments in, for example, 10 $100 million USD projects, rather than for example 100 $10 million projects. The FDRE and its development partners have developed several investments to enhance resilience to climate change in Ethiopia. Existing large-scale, long-term government programs that explicitly build climate resilience are the most promising bets for scaling climate action, including, *inter alia*, the OneWash programme, Sustainable Land Management Programme (SLMP), Rural Electrification Fund, Productive Safety Net Programme (PSNP), and Oromia Forested Landscape Programme (OFLP). Further scale-up and strengthening of these programs can represent a cost-effective and quick solution to further advance toward Ethiopia's resilience objectives in the GTP II.

A recent expenditure review of climate financing in Ethiopia[76] indicates that public climate change expenditures were mainly concentrated in MoANR and MoWIE, which accounted for approximately three quarters of the total climate change relevant programmes in 2011/12. In contrast to overall government expenditure, which has high budget execution rates, budget execution rates for climate change-relevant expenditure was found to be concentrated in areas that may need additional capacity and efficiency, a factor that might be relevant to efforts to scaling-up of existing investments.

Conclusions from the Analysis of Thematic Gaps Related to Ethiopia's Climate Resilience Strategy Documents:

The thematic analysis identified nine themes from the Agriculture and Forestry CR strategy as well as four strategic priorities from the Energy and Water CR strategy relevant to the MSIP. The analysis then ranked the relative investment requirements for each theme as indicated in the strategy documents, and compared this to the relative levels of donor support identified in the Portfolio Review. The gap analysis was performed by comparing the difference in relative importance of each resilience theme, as indicated by CR funding request on the one hand and actual donor funding on the other hand. The difference between these two relative rankings can be considered an

[76] Ibid.

indication in the perceived gap in importance of each theme by financiers. The relative rank of each theme is indicated in the following table, along with the difference in scores.

Table 3: Relative Thematic Gap Analysis

Climate Resilience Theme	CR Financial Priority	Donor Spending Rank	Relative Gap (Priority minus Spending)
Agriculture / Land Management	1	7	-6
Natural Resources, Conservation, Biodiversity	2	3	-1
Crop and water management (on-farm)	3 (tied)	1	+2
Disaster Risk Reduction	3 (tied)	8	-5
Social Protection	5 (tied)	6	-1
Livestock	5 (tied)	5	0
Value Chain and Market Development	5 (tied)	10	-5
Information and Awareness	5 (tied)	4	+1
Capacity Building and Institutional Coordination	5 (tied)	2	+3
Improved Biomass Efficiency	10	11	-1
Non-Grid Access	11	9	+2

One conclusion that can be drawn from this analysis is that the CR strategy would benefit from a relative reprioritization of donor investment towards activities that support agriculture / land management, and value chain / market development. However, this requires careful interpretation. As forestry was part of the former Ministry of Agriculture when the Agriculture Sector CR strategy was prepared, forest and biodiversity conservation initiatives were covered under the agriculture theme of the CR strategy. Forest sector investment had been low (about 6% of total donor funding) but has recently increased. Furthermore, previous forest sector investments were part of natural resource management and rehabilitation programs. Recent forest sector investment had focused on developing national and regional level polices and guidelines to lay the necessary foundation for REDD+ and afforestation activities. Bearing in mind the significance of forest sector development, including through private sector activity, as a contribution to rapid industrialization of the country and the growth of the construction sector, ICF has prepared the *Ethiopia Commercial Plantation Forest Industry Investment Plan.* The World Bank, Ethiopian Chamber of Commerce and MEFCC has made private sector forest development one of the key elements of Public Private Partnership Dialogue.

The GoE has set ambitious forestry targets in GTP II and in its international commitments. These include increasing agroforestry coverage from 6.06 to 16.21 million hectares of land, increasing the area of forestland protected with management plans from 0.07 million to 2.2 million hectares, and increasing the total land covered with forests from 12 million hectares to 18 million hectares. The GoE has also made a pledge through the Bonn Challenge to restore 15 million hectares of degraded land by 2030 through reforestation and forest restoration, including agroforestry.

Thematic gap assessments have also revealed key intervention areas that seem to require increased attention if Ethiopia is to achieve climate resilience. One such thematic gap that is cross cutting and stands out is climate and market information as well as relevant scientific data, which are relevant for policy making as well as smallholder farmers. Timely and relevant data is essential for planning purposes as well as monitoring progress towards achieving targets. While there have been efforts to create a standardized data collection and transfer system, it remains weak, particularly on climate and markets. The National Meteorology Agency has infrastructure as well as capacity limitations inhibiting its ability to collect, analyze and disseminate important climate information. While some efforts have been made to address these issues, to date these have largely been pilot programs which need to be scaled-up once complete. Climate and market information are key as they address multiple climate resilient themes.

Note that this analysis does not focus on absolute amounts of funding. It does not say that donors are spending too much money on a thematic area, nor does it say by how much donors should increase support for other areas. Rather, the analysis highlights the areas of greatest apparent disconnect between the government's stated climate resilience priorities and the distribution of donor funding. This disconnect provides a strong rationale for new adaptation related funding that goes beyond business as usual and fills clearly identified gaps. Therefore, it may be useful to identify and prioritize investment activities aligned with those highlighted resilience themes.

Conclusions from the Analysis of Spatial Gaps:

The spatial gap analysis compares actual levels of investment to measures of climate change across woredas in Ethiopia. This analysis attempts to answer the question, "Where is additional adaptation related investment most needed?" To answer the question three stages of assessment were made.

First, an assessment is made of areas with the greatest change in rainfall and temperature since 1970. The geospatial analysis looked at existing climate changes mainly in terms of the past 46-year trends in increased average temperature and decreased average rainfall and using that as an indication of near future changes. An intensification of those two variables generates climate stress via more frequent and severe droughts. Figure 20 shows those areas of Ethiopia that have been most affected by changing climate since 1970 . It is acknowledged that these areas may not be where the people or land is most vulnerable: this is more complex and relates to a range of interacting infrastructural, agro-ecological and socio-economic factors. We have not tried to model these but refer to the secondary analysis presented in Section II.2.

Second, additional climate adaptation related investment is more likely to be needed in areas with a larger number of affected people. For any given climate impact, a greater number of people affected requires a greater response. The spatial distribution of Ethiopia's population is well known – it is higher in the central areas around

Figure 20: Climate change impacts (rainfall and temp)

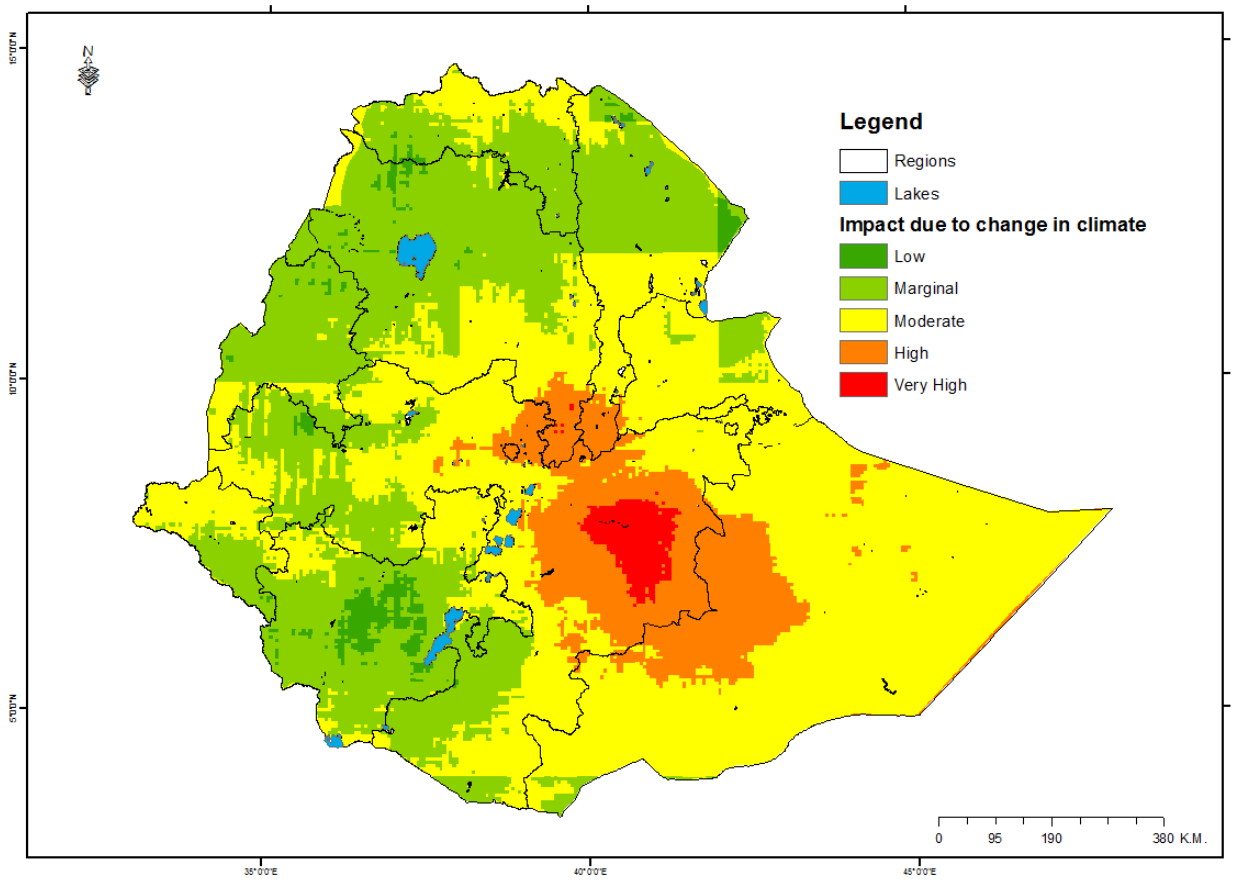


Figure 21: Indicative Approach to Spatial Prioritization

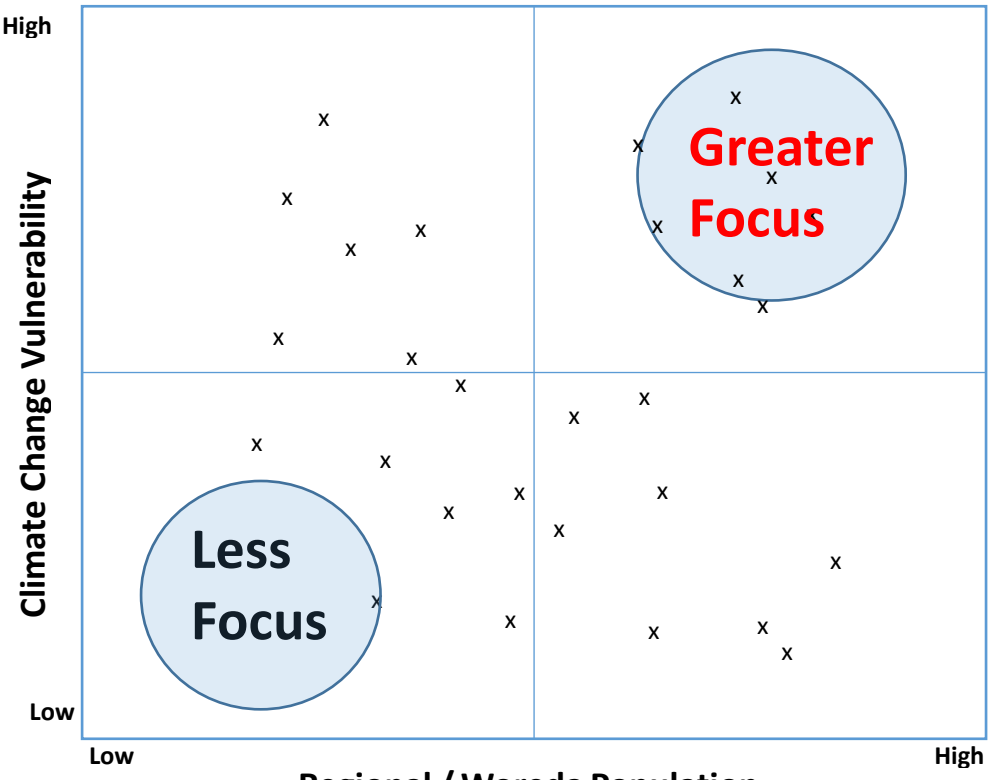
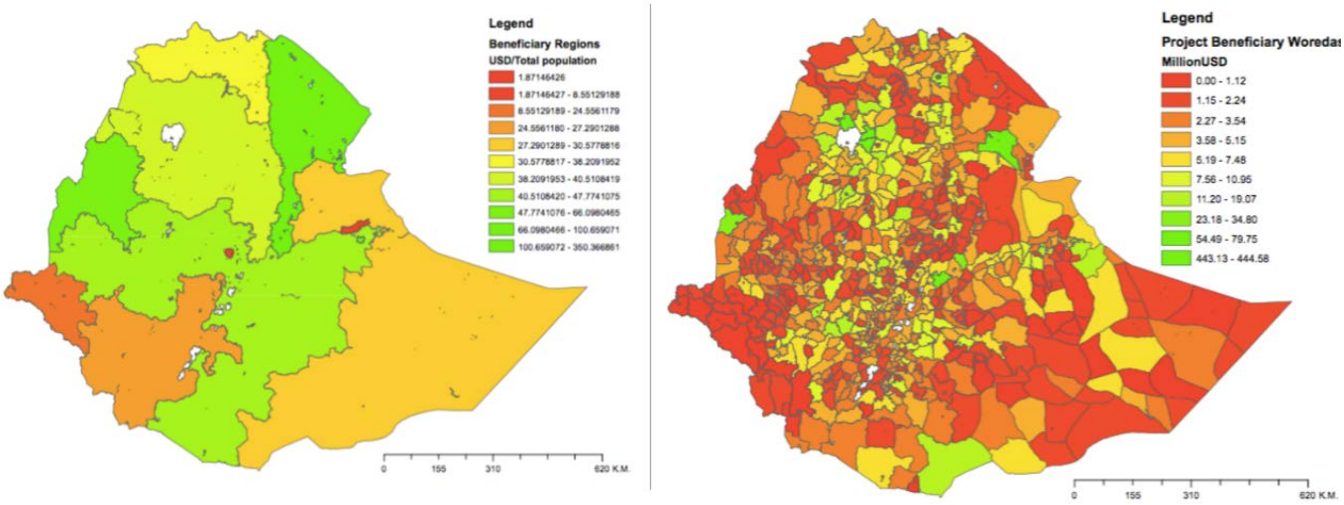


Figure 22: Regional Fund Flow Per Population

Figure 23: Spatial Representation of Donor Funding



Addis Ababa and in the wetter agricultural regions to the west, and lower in the drier eastern and northern regions of the country.

Figure 21 illustrates how these two spatial factors combine to indicate which rural areas should be prioritized for climate resilience investment. The top right quadrant indicates areas with a high degree of vulnerability and relatively large populations – this area would be a clear target for prioritization. The bottom left quadrant has less vulnerability and relatively low populations – impacts are less likely to be severe and will not affect as many people. The top left and bottom right quadrants are middle cases.

Third, additional climate resilience investment is more likely to be needed in areas that currently receive relatively less investment from traditional sources. Geospatial analysis enables calculation of total and per capita donor funding flows per region or woreda, as indicated in Figures 22 and 23.By combining Figures 21, 22 and 23, it is possible to draw initial conclusions from the spatial analysis. The central regions are likely to experience the most severe climate impacts due to large climate shifts and a large population. This indicates that this region might fall into the upper right quadrant of the chart in Figure 20. The eastern region of the country has relatively high vulnerability under existing conditions of variability and moderate climatic shifts may have high impacts on livelihoods and food security. They have relatively low levels of per capita donor support and the region has a relatively lower population as well, which might indicate that it belongs in the upper left quadrant of Figure 21.

Implications of Gap Analysis for Investment Planning:

The gap analysis has been conducted to provide inputs for the MSIP and feed into more informed program design, by providing broader indication of where (thematically and geographically) increased flows/allocation of investment in CR might be most required. Of itself, it does not provide a definitive basis for determining investment prioritization, as other factors will likely come into play. These issues are explored more fully in Part 2 of this document.

Based on the findings, the lessons that should be drawn and potentially integrated into the MSIP include the following.

1. ***Climate and market information as well as relevant scientific data is a major gap both for policy making as well as smallholder farmers.*** Timely and relevant data is essential for planning purposes as well as monitor progress towards achieving targets. While there have been efforts to create a standardized data collection and transfer system, it remains weak, particularly on climate related variables and markets. The National

Meteorology Agency has infrastructure as well as capacity limitations inhibiting the collection, analysis and dissemination of important climate information. The Ministry of Water, Irrigation and Electricity, Hydrology and Water Quality Directorate is responsible for collecting, storing, disseminating hydrology data information. Both NMA and MoWIE have limited capacity in use of climate and hydrological data. While few efforts are being made to address these issues, the attempts are largely pilot programs and need to be scaled up once complete. Climate and market information are key as they address multiple climate resilience themes.

2. ***The gap assessment found that a small number of GTP II output areas have not directly received sufficient external (development co-operation) support. The gap areas are 1) agricultural mechanization, 2) productive export crops, coffee and spices, and 3) water access in rural areas.*** These are gaps where there is potential for private sector involvement as well as public sector support for public goods (such as watershed function) that enable private benefits and natural wealth to accrue. Conventional development partner funded grants rarely fund the private sector, and financial regulations in Ethiopia do not generally encourage private enterprises to access funds from donors.[77] On the other hand, gaps such as agricultural mechanization are actions that both the GTP II and CRGE have prioritized as being important for resilience building and GHG reductions, if well-managed. Thus, a review of the policy and legal framework for rural investment and consideration of alternative financing approaches are required to trigger private sector actions. Examples of programs such as risk guarantees, which will also leverage and could therefore expand financing, could be considered in the MSIP.

3. ***The GoE has recognized the need for improving Disaster Risk Management and has invested in the sector.*** To respond to food insecurity, largely caused by climate change, the GoE has implemented several key programs. The Sustainable Development Poverty Reduction Paper (SDPRP) was one of the earlier policies devised which recognized food security as a central element. In the last decade a major programmatic shift has been taking place in Ethiopia concerning food security. This is based on the development of the Productive Safety Net Programme (PSNP), now in its fourth phase. The PSNP is framed within the long-standing Rural Economic Development and Food Security coordinating platform of MOANR, in which SLMP and AGP are also placed as flagship programs. The stated rationale for the PSNP is to address the food needs of the chronically food insecure through multi-year predictable resources, rather than through a system dominated by emergency humanitarian aid. This involves a shift from food to cash as the primary input. Another key milestone in GoE's response to food security is the transformation of the Disaster Risk Management and Food Security Sector (DRMFSS) to a Commission, the National Disaster Risk Management Coordination Commission (NDRMCC) now under the Ministry of Agriculture and Natural Resources with its own state minister. As stated in its strategic plan, the aim of DRMFSS is, among several others, to improve identification and assessments of disaster risk; to enhance knowledge management for DRR; and to integrate DRR in emergency response management.[78] The NDRMCCC was established with three strategic objectives: to save lives and reduce morbidity related to drought, to protect and restore livelihoods, and to prepare for and respond to other humanitarian shocks, including natural disasters, conflict and displacement.

   However, one of the key findings of the gap assessment is that there is currently inadequate investment in disaster risk reduction, both financially and thematically. One of the bottlenecks identified here is that resilience and resilience building have yet to be clearly articulated in program level interventions. Furthermore, investment in climate information collection, analysis and dissemination focusing on key parameters such as rainfall, temperature, which are essential in disaster risk management, has been limited to pilot interventions only. Based

[77] The GoE VAT (Value Added Tax) regulation does not distinguish income from sales and grants and thus private sector entities that access grants are also subjected to VAT as the tax authority also views grant as income.
[78] FDRE (2014a)

on outcome of pilots and capacity building at NMA and other institutions, use of climate information needs to be scaled up, and information delivered efficiently to land and water users through a variety of mechanisms and a variety of existing and future programs and projects throughout the country.

4. ***Comparing the gap analysis to prioritized Activity Packages identified during MSIP preparation, it was found that about 85% of the activities help fill key financial or thematic gaps.*** The identified activities are either new activities that will build resilience of households and communities, or scalable activities from on-going pilot initiatives. To help highlight the degree to which Activity Packages meet identified gaps each one has been categorized into four groups. This identified 34 Activity Packages that fall into the category of "only in pilot stage or not yet being addressed", and 20 that need "to be geographically scaled up and/or allocated increased funds".

The process of performing the portfolio review and gap analysis also generated knowledge that may help contextualize the findings and further inform investment planning. The following points are considered material.

1. ***Deficiencies in cross-sectoral coordination: in the process of data collection many donors have indicated that limited cross-sectoral coordination is a challenge that adds cost to the government and its partners, and can reduce project effectiveness.*** This difficulty could be a challenge and burden in designing and implementing multi-sectoral programs and projects. The MSIP is expected to be implemented by four key ministries that have their own mandates, targets and goals. Though donors have indicated that they have a preference to work sectorally or coordinate their work with a single Ministry, they also understand the benefits of a multi-sectoral approach. Some even have emphasized that under the current climate change trend, unless programs have multiple components, their likelihood of transformational outcomes is limited. Whilst the advantages of multi-sectoral program approaches are acknowledged, the GoE, and particularly MOFEC's CRGE Facility, which will oversee MSIP implementation, needs to design and implement a strong, effective co-ordination mechanism, and this work has begun with a small grant from PPCR through the World Bank, as well as existing government coordination for a such as the REDD+ Steering Committee, the REDFS platform, and the SLMP Steering Committee. Without a more robust coordination mechanism (and careful not to "over-coordinate"), the natural forces of sector ministry budgeting, prioritizing and implementation will hinder the success of a multi-sector approach.

2. ***Lack of policy guidance and plans to realize GTP II targets.*** Though the GoE has a well-articulated vision expressed in the CRGE strategy and the development targets defined in GTP II, there is much less guidance on how these targets should be achieved. There is limited guidance given by the GoE, at Federal level, on how GTP II should be operationalized and implemented. Among issues that have not been addressed, and as was often made clear by stakeholders, there is a need to improve the coherence of program design and implementation, and of co-ordination between government ministries. The poor coordination among sector ministries during planning and implementation is also caused by absence of a systematic coordination mechanism and high turnover of staff. The GoE has clearly understood the climate change agenda and the need for sustained implementation at scale; however, there are only a small number of tangible and sustainable models for scale-up and replication to achieve developmental goals. This must be taken into consideration when planning future investments. Lessons from successful large-scale programs such as SLMP, AGP and PSNP can be drawn when looking to scale-up best practices. The SLM Program has emphasized scaling-up of successful practices, approaches and technologies. The approach to scaling-up best practices has been incorporated into the long-term Ethiopian Strategic Investment Framework for Sustainable Land Management (ESIF), which was developed in 2008-2010 with the leadership of the MoANR, and involvement and contributions of development partners, civil society organizations and other stakeholders.

3. ***While the GoE has set up the CRGE Facility to mobilize and disperse climate finance, it can play a greater role in ensuring cross-sectoral coordination in planning and implementation.*** Co-managed by MEFCC and MOFEC, the Facility has already started to function with financial assistance from the UK, Austria, Denmark and Norway, and advisory services from the World Bank and others. The Facility has systems in place and guidance provided by the comprehensive CRGE Operations Manual. It has established and operationalized an Environmental and Social Safeguard Framework, and a Monitoring and Evaluation framework that will be used to monitor and evaluate CRGE initiatives implemented on ground. The MEFCC also provides a wide range of systems to monitor and evaluate including the reporting, lesson learning and knowledge management systems. The governance arrangement of the CRGE Facility brings sector ministries together on regular basis to discuss and decide on climate change related issues, including cross-sectoral projects and programs.

   Recently, the Management Committee of the CRGE Facility, which comprises the State Ministers of the key CRGE Sectors, took the decision to revitalize the scope of work of the CRGE Facility and to coordinate all forms of climate finance channeled to Ethiopia, and collaborate with and provide support to Multilateral Development Banks and UN Agencies to mobilize and solicit climate finance from bilateral and multilateral climate finance sources. The Committee also decided to enhance the sub-national engagement of the CRGE Facility and ensure active engagement of the Bureaus of Finance and Economic Cooperation and Bureaus of Environment and Forest on climate change issues. It further decided that the CRGE Facility put in place and manage a climate finance tracking system and strengthen collaboration with research, academia and other stakeholders for generation, management and communication of sectoral and cross-sectoral climate change related data and dissemination of knowledge and lessons. The committee also decided that the CRGE Facility should support sectors to develop MRV systems, engage in result based payment, carbon finance, focus on mainstreaming climate actions into sector programs, and continuously monitor, evaluate and report on compliance to environmental and social safeguard standards. The MSIP will benefit from the re-defined functions and scope of the CRGE Facility. The current PPCR and the TA support from the World Bank are helping the CRGE Facility deliver some of these renewed responsibilities. However, further capacity building and Technical Assistance for the CRGE Facility – particularly in promoting cross-sectoral coordination at Federal, regional and woreda levels – is crucial. Other coordination mechanisms currently functioning in Ethiopia include the RED&FS in the agriculture sector. The CRGE Facility might draw lessons from these to help it strengthen its co-ordination between donors and government entities. The new Oromia Forested Landscape Program is planning to support improved multisector investment planning and implementation of forest and agriculture actions at local levels.

4. ***The approach to monitoring and evaluation (M&E) and reporting should become more systematic.*** The CRGE Facility should strengthen its monitoring, evaluation and reporting functions, to ensure generation of evidence necessary for learning and improvement, and that can guide on-going investment planning, so that progress towards targets cannot easily be measured.

Part 2: MULTI-SECTOR INVESTMENT PLAN

V. Summary and Added Value of the Investment Plan

Part 1 of this document provided an overview of the climate challenges facing the agriculture and forestry sectors in Ethiopia, reviews the existing portfolio of relevant climate resilience projects and programs, and analyzes the key thematic, financial and spatial gaps in investment. The objective of the MSIP is to help mobilize the resources that will fill these critical gaps in Ethiopia's climate resilience agenda for the agriculture and forestry sectors.

The MSIP can catalyze transformational change through mobilizing the investment to scale up existing practices and creating a step-change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Both Ethiopia and her development partners share an understanding that climate resilient development requires economic transformation and the MSIP has identified high priority investment activities that will contribute to this transformational change. Given Ethiopia's development context and vulnerability to climate change, these activities strongly include vulnerability-oriented adaptation that enhance and support existing resilience building efforts, and activities are designed to target distinct climate change impacts.

Beyond this MSIP, the FDRE is committed to green industrialization and creating the levers for urbanization and growth in jobs in the manufacturing and service sectors. Managing the rural to urban transformation sustainably is critical to rural resilience and well-functioning production landscapes that in turn affect the rural-to-urban transition. To support this process, one role of the MSIP is to contribute to a four-fold increase in the productivity and resilience of rural landscapes by harnessing improvements in land and water management that optimize efficiency, balance competing priorities and leverage investment from both the public and private sectors. This requires massive investment as well as extensive policy and regulatory reform as set out in the MSIP. The feasibility of this plan rests on the ability to make a change in the way that the FDRE makes decisions and delivers its services. This will include a shift from a *command-and-control* approach where Government plays a lead role in service delivery to one where it takes on a greater facilitation role - creating space for private sector investment and the incentives for behavior change amongst farmers and rural communities. Transformational change should use three levers to achieve scale, namely: 1) Scaling up through public investment; 2) Creating the incentives for self-scale via private investment, including those of smallholder farmers; and 3) Altering decision-making and delivery within existing programs and investments through policy reform and the greater use of climate, hydrological and land use information in decision-making.

Thus, the MSIP will add value by identifying and filling gaps in Ethiopia's climate resilience agenda for agriculture and forest development – including important aspects from the livestock, energy and water sectors. The Activity Packages identified in the MSIP are intended to build on, enhance or complement existing programs and projects across sectors as identified in Part I of this document. The MSIP Activity Packages have been developed as part of a collaborative process involving the sectoral ministries comprising the CRGE Facility Core Team. These Activity Packages have been prioritized through an inclusive stakeholder process, and assembled into cross-sectoral Activity Groups that generate synergies between activities to better address the major financial, thematic and spatial gaps identified through the portfolio review and gap analysis.

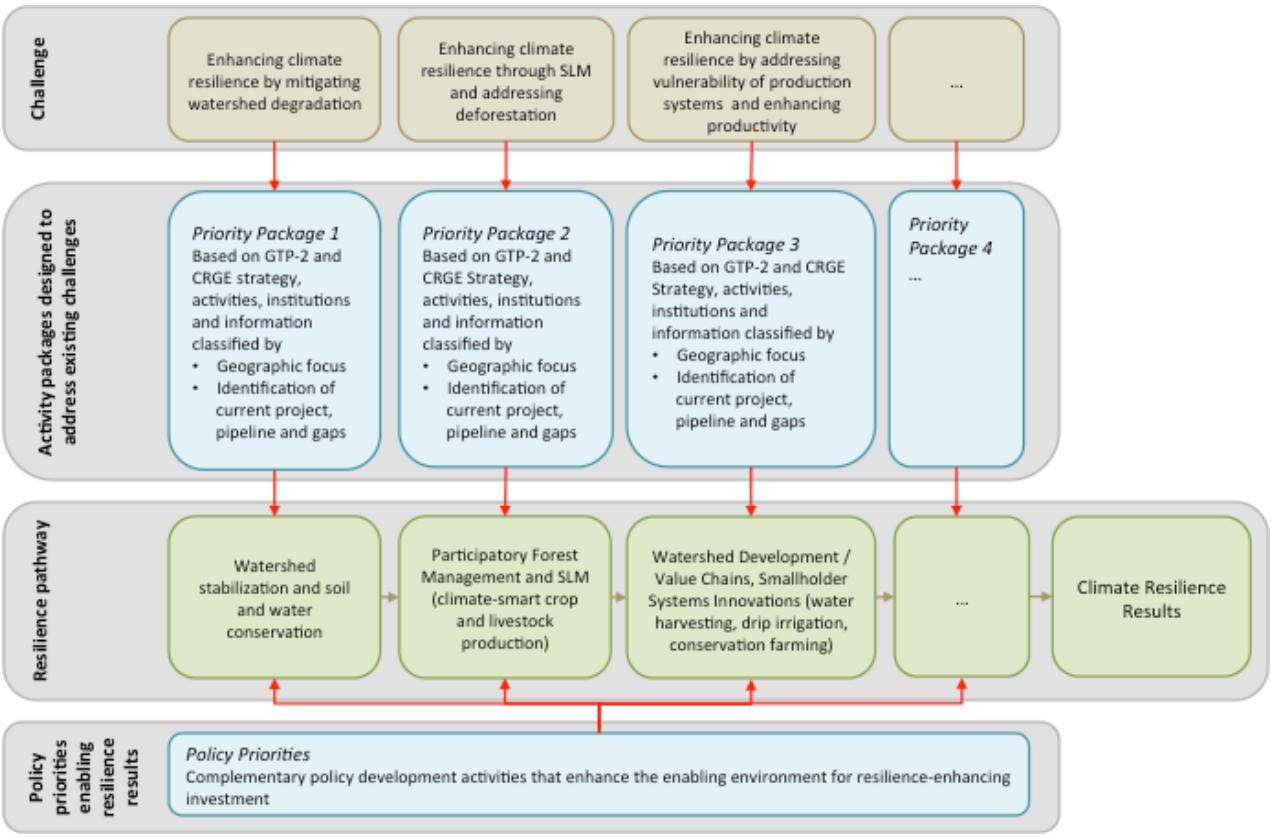
The MSIP describes the process for developing and prioritizing the individual Activity Packages via a participatory stakeholder process. It then presents an overview of the cross-sectoral Activity Groups that are made up of combinations of Activity Packages and describes how each Group addresses important climate resilience gaps. The

MSIP further describes an approach to monitoring results, managing risks for sustainability, and identify new and additional sources of potential funding for the Activity Packages and Groups that comprise the MSIP.

VI. Investment Prioritization Framework

The prioritization framework was developed to help assess possible investment activities based on their relative importance for Ethiopia to progress along a development pathway toward greater climate resilience (see Figure 24). The prioritization process will result in a pipeline of new financing proposals for investment support to Ethiopia, building on existing programs and opportunities across sectors.

Figure 24: Resilience pathways and corresponding Activity Packages for investment



VII.1 Approach to Prioritization of Investment and Financing Activities

The individual elements of the investment framework / approach to prioritization, as applied to the MSIP, are elaborated below.

Multi-criteria analysis: To assess key climate resilience enhancing investments, possible investment activities are compared and ranked using multi-criteria analysis. The prioritization process has involved development, discussion and consensus building on: (i) criteria to evaluate possible investments; (ii) scales to measure the relative merit of investments; (iii) weights to assess the relative importance of criteria; (iv) indices to rank investment opportunities based on the criteria, scales and weights; and (v) selection of the highest priority investment activities based on the indices interpreted and refined through a consultative process.

Possible criteria: As part of the first MSIP Joint Scoping Mission (February 2016), possible criteria for prioritization of investment activities were discussed during a stakeholder consultation. Based on the criteria proposed during the consultation, as set out in the Joint Scoping Mission Aide Memoire and based on further analysis of possible and relevant criteria, an initial set of criteria was developed. As part of the second MSIP Joint Mission (June 2016), the initial list of criteria was discussed and revised as part of a technical workshop to ensure the prioritisation of activities that together would deliver high potential for the transformational effects articulated in the country's GTP II. Based on discussions during the workshop, the following criteria were agreed to be helpful to the evaluation of investment activities (the operational definitions of which are elaborated in Table 4 below):

1. Contribution to GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF targets
2. Impact on poverty and distributional issues
3. Impact on climate resilience
4. Impact on climate change mitigation
5. Cross-sectoral synergies and co-benefits (positive impacts)
6. Cross-sectoral trade-offs (negative impacts)
7. Value for money
8. Readiness to implement
9. Planning horizon
10. Scale-up potential
11. Social inclusiveness

Table 4: Operational definition of prioritization criteria

No.	***Criterion***	***Definition***
1	Contribution to GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF targets	Impact of Activity Package on one or more of the climate resilience targets set out in the GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF.
2	Impact on poverty and distributional issues	Impact of Activity Package on consumption poverty or food insecurity, or impact on consumption of bottom 40%.
3	Impact on climate resilience	At either the household or macro-economic level, impact of the Activity Package on ability to generate income (household or GDP) under a different climate change / global warming scenarios.
4	Impact on climate change mitigation	Impact of the Activity Package on Ethiopia's GHG emission targets.
5	Cross-sectoral synergies and co-benefits	Positive impact of Activity Package on more than one sector, directly or via positive externalities.
6	Cross-sectoral trade-offs	Positive impact of the Activity Package on one sector and negative externalities in one or more other sectors.
7	Value for money	Cost-effectiveness of Activity Package, as measured by expected development results relative to Activity Package costs.
8	Readiness	Capacity at all level of governments and across participating institutions to implement the Activity Package on the ground.
9	Planning horizon	Feasibility of Activity Package in the immediate future, based on existing institutions, information and investments.

No.	*Criterion*	*Definition*
10	Scale-up potential	Applicability of investment activity across regions in Ethiopia.
11	Social inclusiveness	Impact of Activity Package on vulnerable groups including women, youth, elderly, disabled, minorities.

Scales for measuring merit. For each of the criteria, a scale is needed to designate the evaluation of possible investment opportunities. The measurement scale or score could be binary (yes / no), qualitative (high, medium or low), quantitative (a measured value, like dollars). Criterion 1, "Contribution to GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF targets", is used as a filtering criterion to verify whether the considered investment activity meets the basic requirement of contributing to the Government's key targets set out in the GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF. Criteria 2 to 11 are scored from 1 to 6, with 1 indicating the lowest value and 6 the highest.

Weights for the criteria. Weights can be assigned to the criteria, reflecting their relative importance in the evaluation of investment opportunities. Examples of possible weights are given below (Table 5). The first scheme gives equal weights across the criteria. The second scheme gives half the weight to an investment proposal's impact on poverty and climate resilience. The third scheme gives half the weight to measures of the proposal's potential to be operationalized quickly. The fourth scheme gives 33% of the weight to criteria in each of the categories "impact", "implementation" and "inclusiveness", as detailed below.

Table 5: Weights applied to prioritization criteria

Nr.	Criteria	Weighting 1	Weighting 2	Weighting 3	Weighting 4
2	Impact on poverty and distributional issues	10%	25%	7.1%	5.6%
3	Impact on climate resilience	10%	25%	7.1%	5.6%
4	Impact on climate change mitigation	10%	6.3%	7.1%	5.6%
5	Cross-sectoral synergies and co-benefits	10%	6.3%	7.1%	5.6%
6	Cross-sectoral trade-offs	10%	6.3%	7.1%	5.6%
7	Value for money	10%	6.3%	7.1%	5.6%
8	Readiness	10%	6.3%	16.7%	11.1%
9	Planning horizon	10%	6.3%	16.7%	11.1%
10	Scale-up potential	10%	6.3%	16.7%	11.1%
11	Social inclusiveness	10%	6.3%	7.1%	33%
	TOTAL	**100%**	**100%**	**100%**	**100%**

Determining a basic prioritization index. The criteria, along with the numeric measurement scales and the weights assigned to the criteria, can be used to construct an index, representing a combination of the numerical scales and rankings that reflects different prioritization schemes. A simple index would multiply the weight times the measure for each criterion, then add the resulting values. An example of how weights and measurements on each of the criteria are combined to form an index is given in the Table 6 below.

Table 6: Example of the creation of a prioritization index

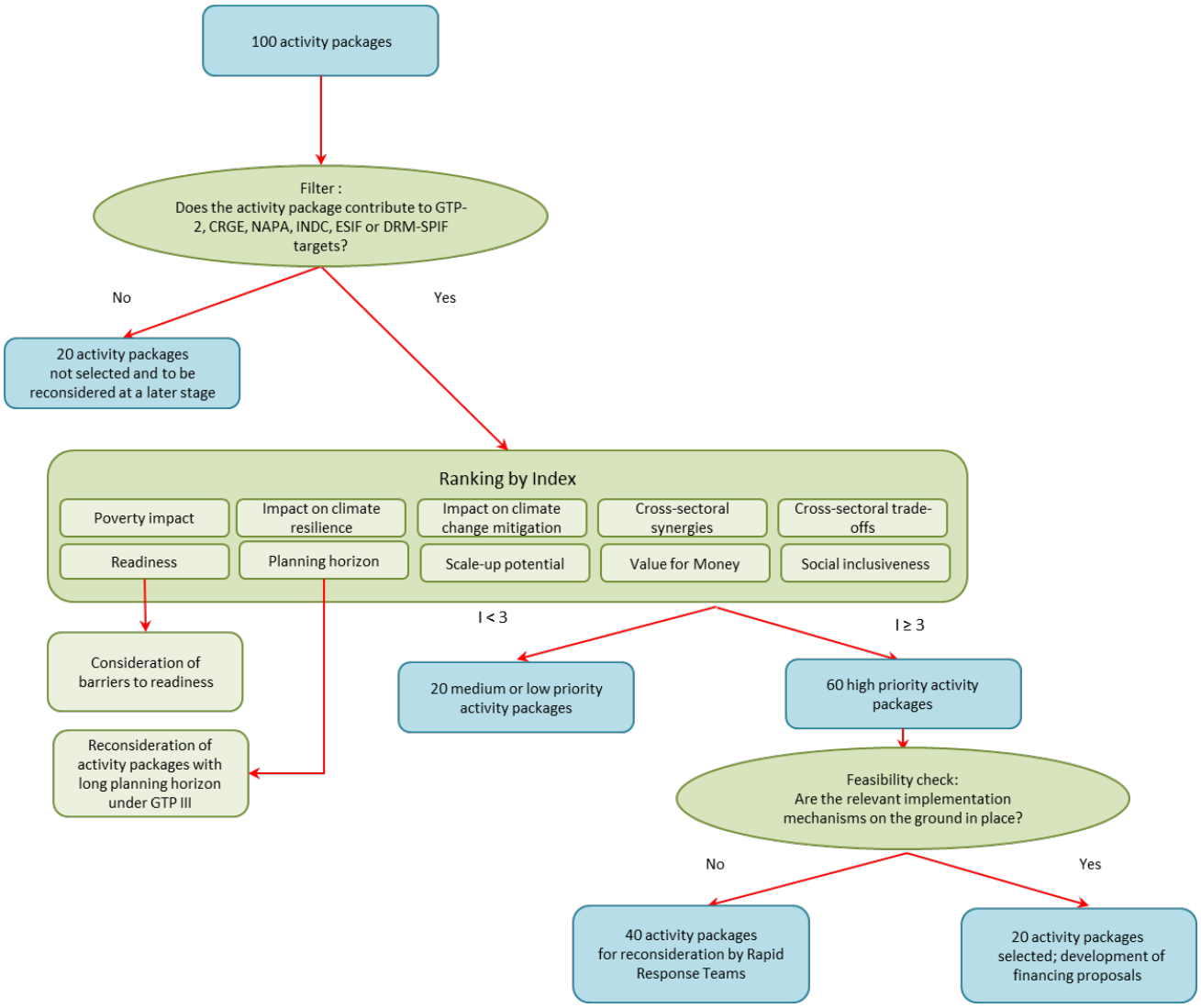
Example of Scoring and Weighting for an Investment Activity Package (e.g. soil and water conservation)			
Criterion	**Weight**	**Measurement (scale from 1 to 5)**	**Weight x Measurement**
Impact of poverty and distributional issues	10%	4	0.1 x 4 = 0.4
Impact on climate change resilience	10%	5	0.1 x 5 = 0.5
Impact on climate change mitigation	10%	1	0.1 x 1 = 0.1
Cross-sectoral synergies and co-benefits	10%	5	0.1 x 5 = 0.5
Cross-sectoral trade-offs	10%	5	0.1 x 5 = 0.5
Value for money	10%	3	0.1 x 3 = 0.3
Readiness	10%	4	0.1 x 4 = 0.4
Planning horizon	10%	3	0.1 x 3 = 0.3
Scale-up potential	10%	5	0.1 x 5 = 0.5
Social inclusiveness	10%	3	0.1 x 3 = 0.3
Index		**Sum = 38**	**Average = 3.8**

Alternative indices: By combining different weights and scores for each criterion, different indices can be defined that will generate different overall rankings. The following are examples of indices that could be used to prioritize Activity Packages:

1. **Basic Index 1 (illustrated above): Average.** This index assigns equal weights to all criteria, and would average across the scores a given Activity Package has for all criteria.
2. **Alternative Index 2: Poverty and climate resilience.** This index assigns half the weight to the criteria "poverty and distributional issues" and "climate resilience", and half the weight to all other criteria. The resulting index will prioritize investments that score higher in terms of focus on poverty alleviation and climate resilience.
3. **Alternative Index 3: Operational relevance.** This index assigns half the weight to the criteria "readiness", "planning horizon" and "scale-up potential" and half the weight to all other criteria. The resulting index will prioritize investments that score higher on readiness, planning horizon and scale-up potential – and so may be more operationally ready for implementation.
4. **Alternative Index 4**: **Impact, implementation and inclusiveness**. This index assigns criteria 2 to 11 into the categories "impact", "implementation" and "inclusiveness", and assigns a third of the weight to each category. Within each category, criteria are given equal weights. Criteria are classified as follows:
    - *Impact criteria (33%):*
        - Impact of poverty and distributional issues
        - Impact on poverty and distributional issues
        - Impact on climate resilience
        - Impact on climate change mitigation
        - Cross-sectoral synergies and co-benefits
        - Cross-sectoral trade-offs
        - Value for money
    - *Implementation criteria (33%):*
        - Readiness to implement
        - Planning horizon
        - Scale-up potential
    - *Inclusiveness criteria (33%):*
        - Social inclusiveness

Threshold values for the index. To use the index to select investment opportunities, it is necessary to set thresholds that enable the classification of investment activities into the categories high priority / medium priority / low priority. For example, opportunities with a value of the index greater than 3 could be considered high priority, those with a value between 2 and 3 could be considered a medium priority, and those with a value less than 2 could be considered low priority. Figure 25 provides an illustration of this approach.

Figure 25: Flowchart for prioritization of investment and financing activities (single time-period)



A framework / tool for organizing the ranking process. These aspects of the investment prioritization process – investment opportunities, criteria, scoring systems, weights and indices – can be combined into a framework or tool to facilitate the MSIP planning and consultation process. An example framework is illustrated in Figure 26,

Figure 26: Example framework / tool for MSIP prioritization

					Criteria											Indices			
Primary Economic Sector and Key Theme (From GOE Climate Resilience Strategies)	**Activity Group (from GOE Climate Resilience Strategies, GTP-2)**	**Activity Package (sub-component of a project proposal) (focus of prioritization exercise)**	**Example activities (e.g., individually costed items in a project proposal)**	**Agroecological Zone [Zone 1 to 5]**	**Contribution to GTP-2, CRGE Strategy, NAPA, INDC, ESIF and/or DRM-SPIF targets [YES / NO]**	**Impact on poverty and distributional issues [Scale of 1 to 6]**	**Impact on climate resilience [Scale of 1 to 6]**	**Impact on climate change mitigation capacity [Scale of 1 to 6]**	**Cross-sectoral synergies and co-benefits [Scale of 1 to 6]**	**Cross-sectoral trade-offs [Scale of 1 to 6]**	**Readiness [Scale of 1 to 6]**	**Planning horizon [Scale of 1 to 6]**	**Scale-up potential [Scale of 1 to 6]**	**Value for money [Scale of 1 to 6]**	**Social inclusiveness [Scale of 1 to 6]**	**INDEX 1 - Average**	**INDEX 2 - Poverty and Climate Resilience**	**INDEX 3 - Operational relevance**	**INDEX 4 - Impact, implementation and inclusiveness**
Weighting for Index 1 - Average					YES / NO	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10				
Weighting for Index 2 - Poverty and Climate Resilience					YES / NO	25.0%	25.0%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%				
Weighting for Index 3 - Operational Relevance					YES / NO	7.1%	7.1%	7.1%	7.1%	7.1%	16.7%	16.7%	16.7%	7.1%	7.1%				
Weighting for Index 4 - Impact, implementation and inclusiveness					YES / NO	5.6%	5.6%	5.6%	5.6%	5.6%	11.1%	11.1%	11.1%	5.6%	33.3%				
Sector X	*Activity Group Y*	***Activity Package Z***	*Activity 1, 2, 3,...*	3	YES	2	3	4	5	2	2	4	5	3	2	3.20	2.94	3.33	2.94
Sector: Agriculture, Forest Theme: Information and decision support	Decision support systems	**Market information**	Pricing and exchange system and access													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Water Theme: Information and decision support	R&D	**Water resources R&D**	Carry out research on resilience related issues and connect with extension services													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Forest Theme: Information and decision support	Enhanced extension services	**Forest extension**	DA outreach on topics such as PFM, land use planning													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture Theme: Information and decision support	Enhanced extension services	**Agriculture (crop and livestock) extension**	DA outreach on topics such as CSA, build and staff FTCs, SWC structures, land use planning, microwatershed planning													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Energy, Forest Theme: Information and decision support	Enhanced extension services	**Energy extension**	DA outreach on topics such as cookstoves, biogas, solar home systems													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Water, agriculture Theme: Crop and water management on-farm	Irrigation	**Medium and large-scale irrigation**	Reservoirs, dams, diversions, channels, water user associations													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture Theme: Sustainable agriculture and land management	Land and water management	**SWC structures/measures (landscape restoration and prevention of land degradation)**	* Terraces and bunds * Gully rehabilitation *Low tillage where applicable * Afforestation/Reforestation													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture Theme: Sustainable agriculture and land management, sustainable forest management, watershed management	Crop management and intensification, livestock management, forest management, water resources management	**Planned rangeland and grazing management**	* Rangeland planning * Rangeland development including boreholes, stocking, fodder and pens * Area closures (livestock exclusion zones) plus assisted natural regeneration and pens/rope * Rotational grazing * Grazing corridors, * Setting paddocks aside in case of drought													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture Theme: Sustainable agriculture and land management, and land use	Crop management and intensification, livestock management, market development	**Post-harvest systems and practices**	* Storage of harvest and processing methods to reduce food losses that improve land use efficiency (also women's workloads and food safety) * Dairy/meat refrigeration * Processing technologies (huskers, etc.)													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture, Forest Theme: Sustainable agriculture and land management, and land use	Land tenure and access	**Land holding certification**	* Individual land holding certificate issuance (crop) * Communal land holding certificate issuance (forest, grazing)													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Energy Theme: Sustainable energy, forest, and land use	Energy access	**Off-grid household energy**	* Biogas (community or household) * Improved cook stoves * Solar power lighting * Woodlots (link to forest/ag)													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Forest, water, agriculture Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Water management, forest management, crop management and intensification, livestock management	**Land use planning**	* Land use planning and enforcement at woreda and kebele levels													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Forest, water, agriculture Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Water management, forest management, crop management and intensification, livestock management	**Watershed planning**	* Watershed planning at microwatershed and critical watershed levels													not prioritized	not prioritized	not prioritized	not prioritized

with some examples from various sectors provided. Implementation of the ranking procedure entails completing the scores for each proposed activity, then the spreadsheet tool could calculate various indices. Threshold values could be incorporated into the framework by color coding, or flagging, items where the index score is below 2 or above 3, for example, to direct the attention of reviewers/ users of the tool to those aspects of the ranking. The tool is a framework for organizing and presenting the ranking process. It is important to note that the tool does not make decisions; rather, it provides critical input to them.

VI.2 Applying the Prioritization Framework Tool

The prioritization framework tool allows users to assign a "Yes/No" score to indicate whether the proposed Activity Package contributes to GTP II and other key policies. The tool then allows users to score each Activity Package on a scale of 1-6 against ten different criteria relating to climate resilience, scalability, investment readiness and other factors. The prioritization tool includes brief definitions for each of the criteria, and an indication of what each of the scores (1 to 6) should signify regarding the extent to which an Activity Package met that criterion. The tool uses these individual scores to generate an average score (Index 1). The tool also weights this average score in three different ways (Index 2, Index 3, and Index 4) to reflect potential GoE priorities related to climate resilience, operational relevance, and inclusion.

During the June / July 2016 MSIP process, representatives from MEFCC, MoANR, MoWIE and MoLF were asked to score the Activity Packages relevant to their Ministries. The intent was to use the combined scores to develop a shortlist of activities that would be included in the MSIP for near-term investment, and another list of activities that would be considered for future investment planning.

The 77 Activity Packages listed in the prioritization framework tool covered a range of sectors, as described in the "Primary Economic Sector" column of the tool. A summary of the sectors covered by the Activity Packages is indicated in Table 7 below:

Table 7: Summary of Activity Packages in the prioritization framework tool

No. of sectors addressed	Sectors	Number of Activity Packages
All	Agriculture, Water, Forestry, Energy, Livestock	5
3	Agriculture, Water, Forestry	9
3	Agriculture, Forestry, Livestock	1
3	Agriculture, Water, Livestock	1
2	Agriculture, Forestry	11
2	Agriculture, Water	1
2	Energy, Forestry	1
2	Forestry, Livestock	1
1	Agriculture	17
1	Energy	10
1	Forestry	9
1	Livestock	8
1	Water	3

Based on these groupings, the expected number of Activity Packages scored by each of the sector Ministries would be as follows:

- MoANR: 40
- MEFCC: 32
- MoWIE: 25
- MoLF: 10

Note that 30 activities address more than one sector and were scored by more than one Ministry.

A review of the scoring submissions from each Ministry revealed that differing approaches had been applied to using the prioritization framework tool. The number of Activity Packages scored by each Ministry was as follows:

- MoANR: 76
- MEFCC: 77
- MoWIE: 21
- MoLF: 12

Consequently, all 77 Activity Packages received multiple scores.

A detailed analysis of the results indicates that the four Ministries interpreted the scoring system differently. This means the top scores for the four ministries vary widely, from a low of 3.7 to a high of 5.5. Table 8 shows the top five average scores from each sectoral Ministry using Index 1.

Table 8: Top five scores using index 1

MoANR	MoWIE	MEFCC	MoLF
3.7	5.7	4.6	5.5
3.6	5.5	4.1	5.3
3.6	5.5	4.0	5.1
3.5	5.3	3.9	4.9
3.4	5.3	3.8	4.9

Taking the Ministries' combined submissions at face value indicates that the highest priority Activity Packages would overwhelmingly represent the scores generated by MoWIE, even though stakeholder comments from the 2016 and 2017 consultations indicate the need for a more balanced outcome. Therefore, further interpretation is required to use the results of the prioritization framework tool.

The next stage of the prioritization process was intended to generate a short-list of priority investment packages, but not to result in a strict numerical ranking. This stage of the investment prioritization process involved two approaches:

1. Applying the prioritization tools against the combined Ministry scores; and
2. Review of Activity Packages against the findings of the gap analysis (the findings of the portfolio review and gap analysis have been summarized in section IV of the current working draft of the MSIP).

For the first of these, the prioritization tool was used to identify activities:

a) …ranked high priority by at least one sector Ministry
b) …across all three weighted indices defined in the prioritization framework.

This analysis found that:

- Index 1 (Average) – 64 activities ranked "high priority" by at least one Ministry
- Index 2 (Poverty & Climate Resilience) – 73 activities ranked "high priority" by at least one Ministry
- Index 3 (Operational Relevance) – 62 activities ranked "high priority" by at least one Ministry
- Index 4 (Impact, Implementation & Inclusiveness) – 50 activities ranked "high priority" by at least one Ministry.

This analysis established a high degree of consensus across the sectors:

- Approximately half of all Activity Packages were ranked "high priority" by experts from 2-3 sectoral Ministries. This high degree of overlap indicates significant cross-cutting potential across the identified Activity Packages.
- 50 Activity Packages were ranked "high priority" by experts in at least 1 Ministry using all three weighted indices.

Using the gap analysis described in Part 1 of this document, it was found that:

- Nearly all Activity Packages fill thematic gaps
- Approximately 85% of Activity Packages (65) fill key spatial / financial gaps

Combining the results from the portfolio review and gap analysis yielded significant overlap. The gap analysis identified 65 Activity Packages as being priorities to address investment gaps; 45 of these Activity Packages were also included in the 50 prioritized by the sector Ministries, reflecting their practitioner assessment of what is important. Thus, two different approaches yielded essentially the same conclusions as to where investment priorities lie. Because the prioritization tool scores reflect the expert opinion of Ministry staff, the final list includes those five "outlier" Activity Packages.

The resulting list of 50 high priority Activity Packages addresses the key gaps identified by the gap analysis exercise, and reflects the results of the prioritization framework analysis, and forms the basis of the Activity Groups described in the next section of the MSIP.

VII. Portfolio of Priority Activity Groups

VII.1 Overview of the Activity Groups

The list of prioritized climate resilience activities for the targeted sectors initially prepared by the sectoral ministries has been refined and further developed based on the outputs from the prioritization framework tool, the findings of the Project Review and Gap Analysis (PRGA), and feedback received during the Stakeholder Workshops conducted on 22nd/23rd February and 30 March 2017. The prioritized list of Activity Packages was created using the results from sector Ministry scores of the original list of 77 Activity Packages in the MSIP Prioritization Framework Tool, which were evaluated against the Tool's three weighted indices and the findings of the MSIP gap analysis.

The resultant Activity Groups comprise the 50 Activity Packages that this process identified as "priority", meaning that they address the conclusions drawn from the initial financial, thematic and spatial gap analysis. These were supplemented with a small number of complementary Activity Packages suggested by participants in the stakeholder workshops. Thus, based on currently available data, each Activity Group has been conceived as far as possible to

address the key climate challenges for agriculture, livestock and forestry, as described in Part I, Section II of the MSIP document.

This updating ensures identified projects are aligned with assessed gaps and provide an opportunity for scaling-up and exploiting cross sectoral synergies. The updated list of Activity Groups is presented below. Brief overview descriptions of the component Activity Packages have been provided in Annex 8. A summary of the costing information on which the cost estimates have been based has been provided in Annex 9.[79]

It is important to note that the proposed Activity Groups are not projects or project proposals at this point. The Activity Groups suggest investment opportunities for a landscape approach to addressing the expected climate impacts facing the agriculture, livestock and forestry sectors, that involves collaboration across the sectoral ministries including energy and water. Therefore, there is some overlap in the individual discrete priority activities that comprise each Activity Group. Each priority Activity Group is described below.

VII.2 Activity Group 1: Enhancing Climate Resilience in Agriculture

This Activity Group comprises a suite of incremental activities that reduce vulnerability to climate related shocks and increase climate resilience in the agricultural sector.

Figure 27: Summary Description of Activity Group 1 (Enhancing Climate Resilience in Agriculture)

Development objectives: The component activities in this Activity Group aim to enhance climate resilient agricultural production in four ways:

1. Improving agricultural support services, especially extension services to better respond to the resilience needs of a broad range of farmers, including women, the poor and vulnerable; and market information systems to strengthen the private sector response to climate change, helping farmers better access agricultural inputs and sell their products.
2. Reducing vulnerability to rainfall variability and uncertain water supplies – namely, providing improved meteorological services, encouraging enhanced water conservation, supporting integrated land-use and basin resources planning and management, and increasing the use of solar and wind-powered pumps to access groundwater supplies.
3. Improving resilience by encouraging climate-smart crop intensification and diversification, crop productivity improvements through participatory research, more equal intra-household relationships, and greater engagement of the private sector in climate resilient agricultural activities,. Key activities include protection against crop losses (post-harvest loss and crop disease), increased mechanization and provision of new technology, and support for lending to encourage investment in productivity improvements.
4. Improving resilience through income diversification – using mechanisms like payments for environmental services, coupled with promotion of non-farm livelihoods activities to help farmers reduce reliance on potentially vulnerable crops and provide a base of support in the event of climate events.

Components and activities: The specific activity packages comprising this Activity Group are:

- Improved AgroMet and HydroMet Services, spatial data and data storage and sharing platforms including historical data analysis and projections (Activity Package 1)
- Enhanced market information systems (Activity Package 2)
- Agricultural R&D to identify climate resilient crop varieties and production methods (Activity Package 3)
- Water resources R&D to address climate change (Activity Package 6)

[79] An Excel spreadsheet including the more detailed cost estimate methodology and calculations has been provided separately.

- Enhanced agriculture extension services that are responsive to all (including poor, vulnerable and female farmers) (Activity Package 8)
- Sustainable small, medium and large-scale irrigation (Activity Package 10 & 11)
- Soil and Water Conservation (SWC) structures / measures (Activity Package 13)
- Integrated land use planning (involving spatial planning, agriculture, forest, livestock, etc.) (Activity Package 25)
- Basin/Sub-basin Resources Planning and Management (Activity Package 27)
- Develop payments for environmental services (PES) (Activity Package 33)
- Promote non-farm livelihoods to increase resilience (Activity Package 40)
- Pre- and post-harvest plant protection (Activity Packages 20 and 41)
- Mechanization / small-scale mechanization to reduce reliance on livestock for farming (Activity Package 42)
- Value chain development and efficiency (Activity Package 47)
- Home gardens (Activity Package 54)
- Solar and wind pumps for small-scale irrigation, water supply and sanitation (Activity Package 70)
- Water pricing to encourage efficient use and cost recovery (Activity Package 71)
- Sustainable land management practices *(new Activity Package)*
- De-risking commercial lending for pro-poor and resilient agricultural investment *(new Activity Package)*

Rationale for investment:

This Activity Group contributes to the goals of Ethiopia's agriculture Climate Resilience strategy, which addresses the impact of rising temperatures and decreased rainfall on crop production. GTP II includes an objective to increase agricultural productivity per hectare of 8% per annum as part of the effort to achieve middle income country status for 2020. At the same time, climate change scenarios anticipate an increased likelihood and frequency of high temperatures and reduced rainfall in many key agricultural regions. These conditions lead to crop stress and reduced crop productivity. As described in Part I of the MSIP document, the FAO reports that 40% of cropland and pasture land is degraded, and a further 10% is in the process of becoming degraded. Low crop productivity per hectare means that the agricultural frontier is being extended into forested areas and onto steep slopes. The resulting loss of watershed services further increases the vulnerability of farmers and agricultural communities to drought and flooding. While there are existing projects like SLMP and AGP that address these issues, the magnitude and range of potential climate impacts in the agricultural sector indicates a need to scale up these initiatives and take a more cross-sectoral approach to implementing these activities.

Gender lens:

This activity group was designed with specific consideration of the differing impacts on women and men resulting from climate variability and weather extremes in agriculture. Women and men in rural areas in developing countries are especially vulnerable when they are highly dependent on local natural resources for their livelihood. Those charged with the responsibility to secure water, food and fuel for cooking and heating face the greatest challenges. Secondly, when coupled with unequal access to resources and to decision-making processes, limited mobility places women in rural areas in a position where they are disproportionately affected by climate change[80]. Vulnerable women, such as widows, have a particular need for more tailored livelihoods support. Climate change has serious ramifications in four dimensions of food security: food availability, food accessibility, food utilization and food systems stability. Therefore, it is important that this Activity Group ensures that the rights of rural women are ensured with respect to food security, non-discriminatory access to resources, and equitable participation in decision-making processes where climate resilience activities are implemented.

[80] UN Womenwatch (2009)

Synergies with ongoing projects:

Many of the activities included in this Activity Group are being implemented as parts of projects like SLMP and AGP. Those projects demonstrate the effectiveness of the prioritized activities. The financial and economic analysis of AGP showed good profitability outcomes and attractive financial internal rates of return, and a similar analysis of SLMP showed that net benefits from the program greatly exceed program costs. As described in Part 1 of this document, climate change is expected to have a net negative impact on agricultural productivity. As a result, this Activity Group demonstrates cost effectiveness by helping to reinforce and scale up the outputs from existing climate resilience projects, improve linkages with other sectoral initiatives, and enhance their sustainability.

Synergies with other Activity Groups:

Climate smart crop intensification activities are designed to increase agricultural productivity without depleting water resources or degrading soils and the natural resource base. Agricultural intensification also reduces pressure to extend the agricultural frontier to forested areas. Both effects generate synergies with Activity Group 2. Measures to rationalize the use of livestock in on-farm production highlights strong synergies with the livestock focused activities in Activity Group 3. Meanwhile, agricultural resilience is enhanced through integrated natural resource and basin management activities, which feature in all Activity Groups, but especially Activity Group 2.

Institutional arrangements:

MoANR would likely have primary responsibility for this Activity Group. However, one of its key features is its landscape approach, and the consequent need for active coordination and implementation support across sector Ministries. For example, while the Activity Group focuses on enhancing resilience and improving crop production, its success depends on support from MoWIE to develop irrigation infrastructure and the data required for sustainable wind and PV-powered groundwater pumping. Enhanced commercial lending to enable farmers and private sector investors to access productivity enhancing equipment and supplies would require the support from the Central Bank of Ethiopia. At the same time, effective land use planning and basin-level resources planning and management requires coordinated action between all four sectoral Ministries. Public-private dialogue would help ensure that public investments in value chain development will leverage commercial investment around key value chains and agro-industrial parks. Private sector processors and buyers may expand their contribution to resilience in the sector through the provision of services to smallholders and development of contract farming or outgrower arrangements. An active role for farmers and their cooperatives is expected in value chain development actions. Non-governmental organisations can also support value chain facilitation, build the capacity of cooperatives, test new varieties, support institutional strengthening in irrigation projects and build on their existing models of good practice in private sector engagement and Payment for Ecosystem Services.

Enabling environment and policy development:

The current policy framework creates an enabling environment for many of these activities via the Agricultural Program Investment Framework, the Ethiopia SLM investment Framework, and Climate Resilience Strategies for Water, Agriculture, Livestock and Forestry Sectors. Some areas for improvement include:

- Engage private sector in dialogue to develop a framework for public-private partnerships and joint investments in value chain development associated with agro-industrial parks
- Strengthen policy for the registration of new seed varieties and regulation of imported seed and build capacity for seed management.
- Create a policy framework for a technology / input distribution system that places greater emphasis on the role of the private sector through establishing public-private lines of finance for farmers
- Create the mandate for a National Water Research body and ensure it is responsive to policy priorities.

- Create incentives for EIAR and its network to undertake "climate resilient" research more closely linked to the implementation of resilience activities.
- Establish River Basin Authorities where they do not exist and complete Basin Master Plans, where required, including greater climate scenario planning.
- Climate change and related spatial information more accessible for decision makers (Activity 67)
- Ensure water use permits are issued based on hydrological research and limit maximum extraction during peak irrigation demand to protect downstream users. Engage private sector water users in dialogue to set tariffs at an appropriate level and to link where possible to the development of payments for ecosystem services. ☐
- Ensure productive wind/solar technologies are covered by same improvements in import regulations, quality assurance and foreign exchange facilitation as household devices. Create stronger regulatory framework to encourage private sector engagement in the distribution, installation and maintenance of solar/wind irrigation pumps.

Cost estimates:

The indicative cost of this Activity Group through 2030 is approximately USD $5.99 billion (of which about $5 billion is indicated for climate resilient irrigation activities that contribute also to forest, livestock and water sector outcomes). Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings.

Indicators: The results indicators for Activity Group 1 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. (Change in) rainfed crop area under sustainable, climate smart land management practices (ha) – by crop type (private holders only)	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2. (Change in) crop land productivity where modern, climate smart and small-scale irrigation applied (quintal per hectare) for: Major food crops; High value crops	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 3. (Change in) total crop land under modern, climate smart irrigation systems (ha and %) by type: Medium and large-scale; Small-scale	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 4. Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity

Financing strategy:

A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below already support climate resilience agriculture work in Ethiopia, or have publicly expressed interest in the overall goal within Ethiopia of enhancing climate resilience in agriculture, or in some combination of the constituent Activity Packages:

Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • European Investment Bank • Food and Agriculture Organization of the United Nations • Global Environment Facility Least Developed Countries Fund • Green Climate Fund • International Finance Corporation • International Fund for Agricultural Development • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Canada Department of Foreign Affairs, Trade and Development • EU Ethiopia Office • Finland Embassy • Agence Française de Développement (AfD) • Kreditanstalt für Wiederaufbau (KfW) • Norwegian Agency for Development Cooperation (NORAD) • Switzerland Embassy • UK Department for International Development (DfID) • US Agency for International Development (USAID)

VII.3 Activity Group 2: Climate Resilient Forest and Landscapes for Development, Conservation and Utilization

This Activity Group helps to address the multiple challenges facing Ethiopia's forested landscapes – forests, woodlands, grasslands, thickets, wetland and bamboo. The Activity Group aims to reduce the vulnerability of forests and other landscapes to climate shocks and maintain their ability to provide economic and ecosystem services.

Figure 28: Summary Description of Activity Group 2 (Climate Resilient Forest and Landscape Development, Conservation and Utilization)

Development objectives: The component activities in this Activity Group aim to enhance climate resilience in forestry and natural resource management in five key ways:
1. Strengthening the resilience of the forest sector by expanding forest resources and improving their management. These measures aim to support a sustainable increase in the forest sector's contribution to GDP (including the value of firewood, industrial wood and non-timber forest products) by encouraging sustainable private and public sector utilization and development of forests. These measures will support a net increase in the number of hectares of forest land, tree plantations and urban greenery across Ethiopia, thereby reducing pressure on those forested areas most vulnerable to climate change related temperature increases and rainfall reductions, and helping reduce net greenhouse gas emissions. 2. Reducing pressure on Ethiopia's landscapes from extension of the agricultural frontier. These agricultural support measures encourage crop intensification and improved market access to help boost farmer's incomes from existing agricultural land, reducing the need to clear forests and other landscapes.

3. Reducing forest degradation due to fuelwood harvesting. These measures aim to reduce the use of wood and charcoal fuel by promoting more efficient charcoal production, efficient cook stoves and alternative sources of cooking energy like biofuels.
4. Reducing pressure on Ethiopia's landscapes from grazing-related land clearance. As with agriculture, these measures aim to improve the productivity of the livestock sector so that incomes can be maintained or increased without requiring more land for grazing.
5. Reducing vulnerability of people in the forestry sector through livelihoods diversification. These measures promote alternative sources of income in the forest sector beyond cutting trees for fuel and timber, which helps to protect forests and help people cope with the effects of climate shocks on forests.

Components and activities: The specific activity packages comprising this Activity Group can be classified by their contribution to forest landscape development, sustainable utilization, and conservation :

Climate Resilient Development

- Land tenure and communal forest land certification to encourage sustainable natural resource management (Activity Package 21)
- Forestry R&D (Activity Package 4)
- Enhanced climate focused forestry and resource management extension services (Activity Package 7)
- Basin/Sub-basin Resources Planning and Management (Activity Package 27)
- Forest development (expansion) by smallholders and communities (Activity Package 28)
- Develop payments for environmental services (PES) (Activity Package 33)
- Bamboo agro-forestry (Activity Package 48)
- Tree nursery investment (Activity Package 57)
- Urban greening (Activity Package 61)
- Assisted natural regeneration (ANR) *(new Activity Package)*
- Development of out-grower schemes *(new Activity Package)*
- Use of climate change and related spatial information in landscape planning for medium and large-scale commercial forest development *(new Activity Package)*

Building resilient livelihoods through sustainable utilization

- Enhanced market information systems (Activity Package 2)
- Apiculture and sericulture development (Activity Package 18)
- Silvo-pastoral production systems (i.e., multi-purpose trees on rangeland and farmland) (Activity Package 49)
- Strengthened commercial plantation forestry into PFM model *(new Activity Package)*
- Design and implementation of Forest Fund *(new Activity Package)*
- Support to link forest sector with micro enterprises *(new Activity Package)*
- Promote small and medium scale wood processing industries *(new Activity Package)*

Building more resilient natural habitats and maintenance of ecosystem services through landscape conservation

- Enhanced agriculture extension services that address climate change and are responsive to all (including poor, vulnerable and female farmers (Activity Package 8)
- Land tenure and communal forest land certification to encourage sustainable natural resource management (Activity Package 21)
- Integrated land use planning (including Agriculture, Forest, Livestock, etc.) (Activity Package 25)
- R&D for energy to address climate change (Activity Package 69)

- Energy efficiency to reduce wood and charcoal consumption (Activity Package 68)
- Promotion of non-food biofuel sources such as biogas and ethanol as alternatives to wood and charcoal (Activity Package 66)
- Off-grid household energy access (Activity Package 24)
- Improved on-farm and rangeland livestock production practices and manure management (Activity Package 16)
- Planned rangeland and grazing management (Activity Package 19)
- Livestock value chain and market development and efficiency (Activity Package 73)
- Livestock related infrastructure development (Activity Package 74)
- Livestock payments for environmental services (reduced ruminant numbers, destocking, etc.) (Activity Package 75)

Rationale for investment:

The Government of Ethiopia has prioritized an increase in the forest sector's contribution to the economy, rising from 4% of GDP to 8% by the end of GTP II (2020), and potentially higher by 2030. There is a parallel target for forest cover to expand to 30% of the country by 2030. Increasing the forest sector's economic contribution while simultaneously expanding forest cover will require a significant incremental investment in the sustainable development and utilization of forest resources, and will require increasing support for private sector involvement.

Forest destruction and degradation is a major source of greenhouse gas emissions in Ethiopia, representing 37% of total emissions in 2010. In addition, the forestry sector is particularly vulnerable to climate change. Climate related temperature increases and reduced rainfall could lead to the disappearance of montane and lower montane wet forest and subtropical desert scrub, and affect the ability of forested areas to provide ecosystem services such as water and soil catchment and flood protection.

While initiatives like the SLMP show promise in preserving forests' ability to deliver ecosystem services, the magnitude of climate and other pressures requires expanded investment to ensure the resilience of Ethiopia's forest sector while meeting national targets. At the same time, additional investment is needed to address the drivers of forest degradation and loss. Extensive agriculture and livestock production is a major contributor to landscape degradation in Ethiopia. Agriculture and livestock activities and fuelwood collection are the main drivers of deforestation. Inefficient production techniques mean that farmers continually extend the agricultural frontier, a practice responsible for 50% of annual forest loss in Ethiopia. Similarly, wood and charcoal remain the primary source of energy in rural areas, with forest degradation due to inefficient fuelwood consumption responsible for 46% of annual forest loss. Further investment in climate resilient agriculture, livestock and energy activities will help make a major contribution to Ethiopia's forest conservation efforts. The coordinated response highlighted by this Activity Group aims to deliver a greater and more transformative climate resilience response than would standalone efforts.

Gender lens:

Women's domestic roles often make them disproportionate users of natural resources such as water, firewood and forest products. Women and girls spend a significant amount of time collecting firewood – time they could otherwise spend on more productive activities. As wood resources become scarcer, women experience an increased work burden and may fall further into poverty as a result[81]. This activity group was designed with specific

[81] Kangas, A., Haider, H., and Fraser, E. (2014).

consideration of the differing impacts on women and men resulting from the need to build resilience in forest landscapes. The activities within this group must account for the different effects that they can have on women and men, and consider how to mitigate the short-term trade-offs of resilience building activities (that often have medium to long-term objectives). There is evidence that since women in many parts of Ethiopia have primary domestic responsibility of providing for their families, they are more reliant on natural resources and are thus more careful stewards of them and the environment. Resilience building activities in the forested landscape can therefore offer opportunities empower women through their traditional roles as stewards of natural resources.

Synergies with ongoing projects:

The component activities in this Activity Group share useful synergies with existing projects. Most notable of these are the Ethiopia Oromia Forested Landscape Project, SLMP (which finances bamboo development with INBAR via the World Bank, as well as agroforestry and PFM as part of watershed rehabilitation), REDD Readiness TA, a new Norway financed REDD operation at MEFCC via the CRGE Facility, JICA and NGO engagements on PFM and/or REDD, and the National Programme for Improved Household Biomass Cook Stoves Development & Promotion. The financial and economic analysis of SLMP showed that net benefits from the program greatly exceed program costs. Similarly, a review and assessment of the Rural Energy Program showed that the program has raised awareness and played a supportive role for improved utilization of renewable energy with emphasis on biomass, which will foster its sustainable development in view of the expected high population growth in combination with low agricultural productivity. As described in Part 1 of this document, climate change is expected to have a net negative impact on Ethiopia's forests and landscapes. This Activity Group is therefore expected to demonstrate cost-effectiveness both due to the direct benefits of the component activity packages as described above, and also due to preserving the benefits of existing forest and landscape related projects against climate impacts.

Synergies with other Activity Groups:

As described above, the success of this Activity Group is closely tied to sustainable intensification of crop production (Activity Group 1), intensification of livestock production (Activity Group 3), and reduction in the use of fuelwood as a source of household energy (Activity Group 4).

Institutional arrangements:

While MEFCC has primary responsibility for the forestry sector, the primary risks facing the sector come from agricultural, livestock and energy related activities. In addition, MoANR has responsibility for natural resource management. At the same time, measures to protect upland forest areas affect the ability of watersheds to protect against flooding, recharge groundwater supplies and feed rivers, while biofuels promotion lies within the mandate of the Ministry of Petroleum and Natural Gas. As a result, many of the individual activities described above would be managed by MoANR, MoLF or MoWIE, and would require close coordination with those Ministries from initial planning stages. The CRGE Facility is expected to ensure close coordination between these agencies.

Private sector investors are expected to take on plantation development, management and the establishment of timber processing operations such as integrated panel and sawnwood production. Such investors can also establish outgrower arrangements with smallholder woodlot growers. Local communities and their organizations (e.g. CBOs, cooperatives, etc.) are expected to participate in forest development plans, establish local bylaws and contribute to value chain development through involvement in forest development cooperatives. NGOs can support through supporting the development of capacity in forest development, organising and building the capacity of community cooperatives and facilitating mutually beneficial commercial relationships between communities, forest investors and Government forest enterprises.

Enabling environment and policy development:

Developing the economic contribution of the forest sector and attracting private investment will require:

- Continuing public-private dialogue and developing arrangements for public-private partnerships in both plantations and smallholder outgrower schemes
- enabling access to land (e.g., leasing, certificates) to encourage long-term forest investments
- creating economic incentives for forest investments, such as credit facilities, loan guarantees, duty-free imports of relevant machinery, or delayed taxes, recognizing the long time horizon for these investments.
- Formation of a forestry and timber-processing industry association to share information with Government
- Further the development of the Forest Fund to incubate private sector forest investment

Effective land management requires balancing priorities across sectors, making long-term decisions which are continually enforced. Whilst GoE has made progress on implementation of the land policy, the development of Land Use Policy and National Land Use Plan is only just beginning and should be implemented in the 3rd GTP (2020-2025). To ensure this huge undertaking is done in a way that supports climate resilience, it will be important to consider:

- Requirements to consider future climate and population scenarios in land use planning and resource for this research.
- A mandate for a cross-sectoral body to link land use planning and water use planning to ensure water uses are balanced across priorities. This should link to river basin authorities and existing Basin Master Plans.
- Massive investments in capacity for local level development and enforcement of plans and cross-sectoral monitoring and learning about trade-offs in land use planning.
- Creation of a regulatory framework for Payments for Ecosystem Services in forests and rangelands, based on existing studies and lessons.
- Ensure future climate scenarios are considered in forestry R&D.

Cost estimates:

The indicative cost of this integrated suite of Activity Packages through 2030 is estimated at $5.41 billion USD. Of this total, about $2 billion USD is indicated for agriculture and livestock-related activities in recognition of the pressure these sectors place on Ethiopia's forests. A further $0.56 billion USD is targeted at reducing the impact of fuelwood collection. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings

Indicators: The results indicators for Activity Group 2 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. Total area (individual & communal) of land under sustainable, climate smart, land management plans	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2, Cumulative area of land covered with forest (ha), disaggregated by: Protected (%); Plantation (%); Under improved forest management systems and reduced carbon emissions practices (%)	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 3. Change in household fuelwood consumption	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity

Result Indicator 4. Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 5. Area of land developed with community based watershed program	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 6. Area of land rehabilitated	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Financing strategy:	
A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support climate resilience forest and landscape initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:	
Multilateral Banks, Funds and Agencies:	• Adaptation Fund • Climate Investment Funds – Pilot Program for Climate Resilience • European Investment Bank • Food and Agriculture Organization of the United Nations • Global Environment Facility Least Developed Countries Fund • Green Climate Fund • International Fund for Agricultural Development • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Finland Embassy • Kreditanstalt für Wiederaufbau (KfW) • Norway's International Climate and Forest Initiative (NICFI) • Norwegian Agency for Development Cooperation (NORAD)

VII.4 Activity Group 3: Ensuring Climate Resilient Livestock Management and Livelihoods

This Activity Group helps to improve the climate resilience and reduce the climate impact of Ethiopia's livestock sector.

Figure 29: Summary Description of Activity Group 3 (Ensuring Climate Resilient Livestock Management and Livelihoods)

Development objectives: The component activities in this activity group aim to achieve increased resilience in the livestock sector in three key ways:

1. Developing climate smart livestock extension services that factor in measures to reduce climate vulnerability and impacts for women, men, and poor farmers;
2. Reducing the vulnerability of farmers and livestock to climate shocks through measures that intensify livestock production, increase the market value of livestock and reduce vulnerability to disease;
3. Reducing the environmental impact of livestock production, especially by reducing overall methane emissions per head of livestock and reducing the need to clear forest land for grazing.

Components and activities: The specific activity packages comprising this Activity Group are:

- Livestock R&D to address climate change (Activity Package 5)
- Improved resilience-focused livestock extension services that are responsive to all (including poor, vulnerable and female farmers) (Activity Package 8)
- Livestock management (Activity Package 16)
- Improved fisheries practices and aquaculture development / value chain development, including encouraging aquaculture in reservoirs (Activity Package 17)
- Planned rangeland and grazing management (Activity Package 19)
- Integrated land use planning (involving agriculture, livestock, forestry, water, etc.) (Activity Package 25)
- Basin/sub-basin resources planning and management (e.g., integrating feed production and grazing management into watershed management) (Activity Package 27)
- Transboundary disease monitoring for livestock (Activity Package 52)
- Climate change and related spatial information more accessible for decision makers (Activity 67)
- Livestock value chain efficiency, specialization and commercialization (Activity Package 73)
- Livestock related infrastructure development (Activity Package 74)
- Livestock payment for environmental services – reducing ruminant numbers, destocking, switching to poultry, etc. (Activity Package 75)
- Enhanced livestock diversification / biodiversity (Activity Package 76)
- Capacity development (institutional, organizational and HR resources development – to improve readiness) (Activity Package 77)
- Improved on-farm and rangeland livestock practices to improve productivity for rangeland and mixed farming agro-ecologies *(new Activity* Package*)*
- Manure management to support biogas production *(new Activity* Package*)*

Rationale for investment:

The livestock sector is particularly vulnerable to climate related weather events, especially increased temperature and reduced rainfall. Livestock are used for animal traction on farms across Ethiopia, in addition to rangeland herds that make Ethiopia Africa's largest livestock producer. Climate related shocks that affect livestock therefore have the potential to damage livelihoods across the country. This Activity Group promotes an integrated approach to building resilience against climate shocks, and provides a framework for scaling up climate-smart livestock production activities.

Gender lens:

Ethiopia has both full pastoralist and agro-pastoralist systems. In the former cattle and larger stock (camels) are usually owned by men and men may undergo seasonal migration with their stock whilst women stay with (younger) children at the homestead. In the latter, livestock activities are normally integrated into the existing farming systems; sheep and goats can be kept on small farms without large fodder and these; and backyard poultry

which are kept near the house; are more women's domain. Access to and tenure of rangeland or fodder resources, and differential access to markets also must be considered. This Activity Group should be implemented with specific consideration of the differing climate change impacts and livelihoods responses on women and men in livestock.

Synergies with ongoing projects:

The component activities in this Activity Group complement a number ongoing initiatives, most notably the SLMP, and the Ethiopia Oromia Forested Landscape Project, and a new IDA-financed livestock program under preparation. A review of the SLMP showed that it has helped reduce the negative impact of livestock overgrazing in communal hillside areas and improved livestock productivity. The cost effectiveness and value added of this Activity Group will be determined by its direct contribution to enhancing climate resilience in the livestock sector, and helping to ensure the continued provision of benefits from other projects and programs in the context of a changing climate.

Synergies with other Activity Groups:

Intensification of livestock production may reduce the need to clear forest land for grazing, and therefore contributes to the objectives of Activity Group 2. Conversely, expanding forest cover under Activity Group 2 can provide increased shade for livestock, reducing vulnerability to increased temperatures under climate change. Activity Groups 1 and 2 also include land use planning and basin / sub-basin resources planning and management activities, which could be implemented most effectively across Activity Groups and sector ministries.

Institutional arrangements:

Public-private dialogue would help ensure that public investments in value chain development will leverage commercial investment around key livestock value chains and can strengthen links to the new agro-industrial parks. An active role for farmers and their cooperatives is expected in value chain development actions. Non-governmental organizations can also support value chain facilitation, build the capacity of cooperatives, test new livestock extension packages, broker partnerships with private sector traders or meat processors, and build capacity for the implementation of the animal breeding policy.

Primary responsibility for this Activity Group would lie with the Ministry of Livestock and Fisheries (MoLF). At the same time, intensifying livestock production can reduce competition with farmers for land and reduce the need to clear forested areas and other landscapes for grazing. Successful scale-up of these activities will therefore require a landscape approach with close coordination between MoLF, MoANR and MEFCC for effective land use and basin resources planning and management. The CRGE Facility is expected to ensure close coordination between these agencies.

Enabling environment and policy development:

The MoLF is guided by the Livestock Master Plan (2015-2020), which indicates the importance of livestock activities contributing to both climate change adaptation and mitigation as outlined in the CRGE Strategies. The Climate Resilience strategy indicates specific resilience measures for the livestock sector, which could be enhanced if:

- Implementation of the newly developed Animal Breeding Policy should consider future climate scenarios and prioritize those characteristics that will allow higher yields under uncertain conditions and increased temperatures.
- Ensure that land use planning guidance considers strategic feedlot creation alongside irrigation for agriculture to preserve the integrity of extensive grazing systems.
- Strengthen the implementation of meat quality standards and improve control on live animal export to enhance investment in domestic meat processing where it is profitable.

- Review policies impacting livestock feed and create incentives for domestic feed production, including limiting the oilseed export, encouraging domestic grain production and integrate livestock feed production in newly developed Agro-Industrial Park Clusters.
- Greater investments are made in research and development for livestock production systems in areas with a high level of vulnerability to climate change.
- Create a forum for public-private sector dialogue to ensure Government investments in value chain development leverage a greater role for private sector.

Cost estimates:

The indicative cost of this cross-sectoral Activity Group through 2030 is approximately $2.63 billion USD. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings.

Indicators: The results indicators for Activity Group 3 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. Area of pasture under improved pastureland management	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2, Productivity of communal pasture and rangeland (tons/ha) – feed / forage	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 3. Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity

Financing strategy:

A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support climate resilience livestock initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:

Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • Food and Agriculture Organization of the United Nations • Green Climate Fund • International Fund for Agricultural Development • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Canada Department of Foreign Affairs, Trade & Development • Finland Embassy • Kreditanstalt für Wiederaufbau (KfW) • Switzerland Embassy • United States Agency for International Development (USAID)

VII.5 Activity Group 4: Improved Resilience through Affordable Access to Climate-Smart Energy

This Activity Group promotes affordable energy access as an enabler of other livelihood and resilience goals.

Figure 30: Summary Description of Activity Group 4 (Improved Resilience through Affordable Access to Climate-Smart Energy)

Development objectives: This Activity Group includes measures that reduce reliance on energy resources like fuelwood that are vulnerable to climate shocks, while also reducing pressure on forest resources. The component activities in this activity group aim to enhance access to climate smart energy in two ways:
1. Reducing reliance on increasingly uncertain fuelwood supplies as a source of energy, by improving the efficiency of the biomass energy value chain – including charcoal production and wood / charcoal stoves – and by developing alternative sources of household energy; 2. Improving livelihoods and reducing vulnerability through increased access to electricity in a climate smart manner. These activities promote renewable energy-based electrification while addressing the potential longer term impact of climate change on hydropower resources over the longer term.
Components and activities: The specific activity packages comprising this Activity Group are:
• Enhanced energy extension services (Activity 9) • Promotion of non-food biofuel sources – biogas, ethanol as alternatives to wood and charcoal (Activity 66) • Energy efficiency throughout the value chain to reduce wood and charcoal consumption (Activity 68) • LPG as an alternative to wood and charcoal • R&D for energy to address climate change (Activity 69) • Off-grid household energy access (Activity 24) • Micro-hydropower (Activity 45) • Pico-, micro-, mini- and meso-scale grid electricity (Activity 63, 64, 65) • Introduction and adoption of energy tariffs (Activity 72)
Rationale for investment:
This Activity Group builds on the existing work of projects like SREP and the National Programme for Improved Household Biomass Cook Stoves Development & Promotion. Given the significant role that fuelwood consumption plays in forest degradation, it is important to further scale up those existing initiatives, promote sources of clean energy that are not emphasized by existing projects, and encourage enhanced coordination with activities in other sectors.
Gender lens:
Energy has significant links to gender equality: Women and girls are often primarily responsible for collecting fuel and water at the community level. Also, poor women tend to participate in the informal economic sector, which relies strongly on biomass as its main energy source and climate induced scarcity of natural resources can exacerbate women's time poverty[82]. This Activity Group was designed with specific consideration of the differing ways that women and men access and use energy, and the implications of climate change on rural energy in Ethiopia. Gender disaggregated baseline data and inclusion of women in discussions on energy plans and policies will inform gender mainstreaming of resilience building programs for rural energy.

[82] Habtezion, S. (2012)

Synergies with ongoing projects:

This Activity Group complements several existing projects, including the National Programme for Improved Household Biomass Cook Stoves Development & Promotion in Ethiopia, the Ethiopia Oromia Forested Landscape Program, SLMP (which supports household energy), and the Scaling-Up Renewable Energy Program Ethiopia Investment Plan (SREP). The Household Biomass Cook Stoves project and SREP have contributed to an increase in the number and improvement in the quality and cost of more efficient cooking devices. The cost-effectiveness of this Activity Group will be determined both by its direct contribution to reducing reliance on vulnerable energy resources and its contribution to preserving the benefits of ongoing projects in the context of a changing climate.

Synergies with other Activity Groups:

Improved energy access contributes to or depends upon the successful execution of each of the other Activity Groups. The off-grid household energy and biofuels activities support the goals of Activity Group 2, by reducing degradation from fuel wood collection. Conversely the sustainability of micro-hydropower initiatives depends on improved HydroMet services and the climate resilient watershed and basin management activities described in Activity Groups 1 and 2.

Institutional arrangements:

The household energy activities described above depend on close coordination between MEFCC and MoWIE. Similarly, hydropower based mini-grids, while the responsibility of MoWIE, often rely upon the same water resources as irrigation activities, and depend on well-functioning watersheds. As a result, taking a landscape approach means that coordinating closely with MoANR and MEFCC will be important to satisfying the needs of all users and achieving economies of scale and scope. The CRGE Facility is expected to ensure close coordination between these agencies.

Regulatory improvement will ensure an attractive environment for private sector investors which are expected to play an important role in the development of micro-hydro schemes, the sale of pico/micro solar products and in the installation and maintenance of mini and meso solar installations. Civil society may have a role in promoting renewable energy and energy efficiency measures to rural communities and in supporting the development of local bylaws and institutions for sustainable management of off-grid generators. NGOs may also build on their prior experience with the implementation of biogas or ethanol stoves to strengthen Government and private sector capacity for promoting these technologies on a wider scale.

Enabling environment and policy development:

Several enabling policies exist, including The Energy Policy (1994), the Electricity Feed-in-Tariff Law (2012) and the Energy Proclamation (2013). The Rural Electrification Fund also exists to provide loans and technical assistance for rural electrification. MoWIE has several alternative energy programs for increasing access to modern fuels including the National Biomass Energy Strategy (2013), National Biogas Program for Ethiopia (2007), Biofuel Program and Sustainable Energy For All Action Plan. Priorities under the Sectoral Climate Resilience strategy include a need to diversify the energy mix, improve energy efficiency, improve the efficiency of biomass use and accelerate off-grid energy access. It also highlights the importance of balancing water demands between those for human and agricultural uses as well as those for power generation. However, there is still scope for further improvements to the policy environment and the capacity to implement existing provisions. These include:

- Develop regulatory framework for off-grid energy tariffs.
- Ensure Land and Water Use procedures balance water and land demands across personal, productive and energy uses.
- Ensure VAT-exemption on renewable technologies is implemented consistently and applies to product parts and appliances.
- Strengthen institutions for managing and maintaining public systems and consider creating regulations to manage private sector involvement and sustainable operations.

- Equip the Ethiopian Standards Agency (ESA) to quality assure all renewables products and not just those covered by the Lighting Africa standards.
- Continue to invest in vocational training for renewable energy technicians and ensure curricula reflect appropriate quality standards and consider environmental impacts and safe disposal.

Cost estimates:

The indicative cost of this cross-sectoral Activity Group through 2030 is approximately $0.65 billion USD. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings.

Indicators: The results indicators for Activity Group 4 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. Quantity of wood fuel displaced (tons): disaggregated by type of energy-saving or alternative fuel measure	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2: Installed capacity renewable energy, including from solar, wind, hydropower and/or biomass (type, GWh, number of connections)	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 3: Annual energy savings: (GWh) disaggregated by type of energy-saving measure	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity

Financing strategy:

A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support energy access and energy efficiency initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:

Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • European Investment Bank • International Finance Corporation • Global Environment Facility Least Developed Countries Fund • Green Climate Fund • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Agence Française for Développement • DANIDA • Finland Embassy • Norwegian Agency for Development cooperation (NORAD) • United States Agency for International Development (USAID

Development objectives: This Activity Group includes measures that reduce reliance on energy resources like fuelwood that are vulnerable to climate shocks, while also reducing pressure on forest resources. The component activities in this activity group aim to enhance access to climate smart energy in two ways:

3. Reducing reliance on increasingly uncertain fuelwood supplies as a source of household energy, by improving the efficiency of wood stoves and developing alternative sources of household energy;
4. Improving livelihoods and reducing vulnerability through increased access to electricity in a climate smart manner. These activities promote renewable energy-based electrification while addressing the potential longer term impact of climate change on hydropower resources over the longer term.

Components and activities: The specific activities comprising this Activity Group are:

- Enhanced energy extension services (Activity 9)
- Promotion of non-food biofuel sources – biogas, ethanol as alternatives to wood and charcoal (Activity 66)
- Energy efficiency to reduce wood and charcoal consumption (Activity 68)
- LPG as an alternative to wood and charcoal
- R&D for energy to address climate change (Activity 69)
- Off-grid household energy access (Activity 24)
- Micro-hydropower (Activity 45)
- Pico-, micro-, mini- and meso-scale grid electricity (Activity 63, 64, 65)
- Introduction and adoption of energy tariffs (Activity 72)

Rationale for investment:

This Activity Group builds on the existing work of projects like SREP and the National Programme for Improved Household Biomass Cook Stoves Development & Promotion. Given the significant role that fuelwood consumption plays in forest degradation, it is important to further scale up those existing initiatives, promote sources of clean energy that are not emphasized by existing projects, and encourage enhanced coordination with activities in other sectors.

Gender lens:

Energy has significant links to gender equality: Women and girls are often primarily responsible for collecting fuel and water at the community level. Also, poor women tend to participate in the informal economic sector, which relies strongly on biomass as its main energy source and climate induced scarcity of natural resources can exacerbate women's time poverty[83]. This Activity Group was designed with specific consideration of the differing ways that women and men access and use energy, and the implications of climate change on rural energy in Ethiopia. Gender disaggregated baseline data and inclusion of women in discussions on energy plans and policies will inform gender mainstreaming of resilience building programs for rural energy.

Synergies with ongoing projects:

This Activity Group complements several existing projects, including the National Programme for Improved Household Biomass Cook Stoves Development & Promotion in Ethiopia, the Ethiopia Oromia Forested Landscape Program, SLMP (which supports household energy), and the Scaling-Up Renewable Energy Program Ethiopia Investment Plan (SREP).

Synergies with other Activity Groups:

Improved energy access contributes to or depends upon the successful execution of each of the other Activity Groups. The off-grid household energy and biofuels activities support the goals of Activity Group 2, by reducing degradation from fuel wood collection. Conversely the sustainability of micro-hydropower initiatives depends on

[83] Habtezion, S. (2012)

improved HydroMet services and the climate resilient watershed and basin management activities described in Activity Groups 1 and 2.

Institutional arrangements:

The household energy activities described above depend on close coordination between MEFCC and MoWIE. Similarly, hydropower based mini-grids, while the responsibility of MoWIE, often rely upon the same water resources as irrigation activities, and depend on well-functioning watersheds. As a result, taking a landscape approach means that coordinating closely with MoANR and MEFCC will be important to satisfying the needs of all users and achieving economies of scale and scope. The CRGE Facility is expected to ensure close coordination between these agencies.

Enabling environment and policy development:

Several enabling policies exist, including The Energy Policy (1994), the Electricity Feed-in-Tariff Law (2012) and the Energy Proclamation (2013). The Rural Electrification Fund also exists to provide loans and technical assistance for rural electrification. MoWIE has several alternative energy programs for increasing access to modern fuels including the National Biomass Energy Strategy (2013), National Biogas Program for Ethiopia (2007), Biofuel Program and Sustainable Energy For All Action Plan. Priorities under the Sectoral Climate Resilience strategy include a need to diversify the energy mix, improve energy efficiency, improve the efficiency of biomass use and accelerate off-grid energy access. It also highlights the importance of balancing water demands between those for human and agricultural uses as well as those for power generation. However, there is still scope for further improvements to the policy environment and the capacity to implement existing provisions. These include:

- Develop regulatory framework for off-grid energy tariffs.
- Ensure Land and Water Use procedures balance water and land demands across personal, productive and energy uses.
- Ensure VAT-exemption on renewable technologies is implemented consistently and applies to product parts and appliances.
- Strengthen institutions for managing and maintaining public systems and consider creating regulations to manage private sector involvement and sustainable operations.
- Equip the Ethiopian Standards Agency (ESA) to quality assure all renewables products and not just those covered by the Lighting Africa standards.
- Continue to invest in vocational training for renewable energy technicians and ensure curricula reflect appropriate quality standards and consider environmental impacts and safe disposal.

Cost estimates:

The indicative cost of this cross-sectoral Activity Group through 2030 is approximately $654 million USD. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings.

Indicators: The results indicators for Activity Group 4 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. Quantity of wood fuel displaced (tons): disaggregated by type of energy-saving or alternative fuel measure	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2: Installed capacity renewable energy, including from solar, wind, hydropower and/or biomass (type, GWh, number of connections)	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
	Frequency of Collection: Baseline, mid-term and end of program

Result Indicator 3: Annual energy savings: (GWh) disaggregated by type of energy-saving measure	Monitoring & Reporting Responsibility: Implementing Entity
Financing strategy:	
A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support energy access and energy efficiency initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:	
Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – PPCR • European Investment Bank • International Finance Corporation • Global Environment Facility Least Developed Countries Fund • Green Climate Fund • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Agence Française for Développement • DANIDA • Finland Embassy • Norwegian Agency for Development cooperation (NORAD) • United States Agency for International Development (USAID)

VII.6 Activity Group 5: Enhanced Climate-Resilient Disaster Risk Management and Early Warning Systems

This Activity Group aims to improve the capacity to anticipate and manage climate related disaster risks as part of Ethiopia's existing DRM Strategic Program and Investment Framework.

Figure 31: Summary Description of Activity Group 5 (Enhanced Climate-Resilient Disaster Risk Management and Early Warning Systems)

Development objectives: This Activity Group aims to enhance climate-related disaster risk management in three main ways:
1. Enhancing prevention, mitigation and preparedness activities, including by building DRM elements into development strategies, policies and programs. This involves improving drought and flood risk assessment and early warning systems, including historical data analysis, prediction and early warning. These activities reflect the increased need for meteorological and hydrological systems that integrate changing climate projections into agriculture and forestry development and disaster risk management planning as climate related shocks become more frequent and severe. 2. Increasing resilience through coordinated food and non-food responses to climate related disasters. These measures are intended to reduce the stress that climate shocks place on government and civil society response capacities.

3. Enhanced adoption of post-disaster risk reduction and resilience approaches. These measures are meant to address long-term risks as part of disaster risk assessment and ensure that households and communities can "build back better" after an event.

Components and activities: The specific activity packages comprising this Activity Group are:

- Improved Spatial, AgroMet and HydroMet monitoring services and data storage and information sharing platforms, including historical data analysis and projections (Activity 1)
- Capacity building for the collection and analysis of drought and flood early warning information (e.g. LIAS data, bottom up data including indigenous knowledge), spatial data and creation of data storage and sharing platform (Activity 34)
- Climate change and related spatial information more accessible for decision makers (Activity 67)
- Enhanced data sharing to ensure climate projections and weather forecasts reach the woreda planners who can interpret and advise extension agents and farmers (Activity 34).
- Risk financing via weather index based agriculture, livestock, and forest crop insurance (Activity 36)
- Improved coordination between administrative, humanitarian and insurance-based disaster response systems *(new activity package)*
- Long-term risks considered in non-food responses to contribute to reduce vulnerability (e.g. infrastructure is "built back better" and non-food response funds are used to incentivize households to adopt more resilient livelihood options) *(new activity package)*

Rationale for investment:

Ethiopia has an established DRM Strategic Program and Investment Framework and a well-functioning disaster management system. However, there is insufficient knowledge of climate risks to enable long term planning. Given the expected increase in the frequency and severity of climate related weather events such as floods and drought, it is important to increase the quality and availability of meteorological and hydrological forecasts and early warning systems. In addition, there is very limited support for potential private sector measures like insurance that can help reduce the government's disaster response burden.

Gender lens:

Women often have a strong body of knowledge and expertise that can be used in climate change mitigation, disaster reduction and adaptation strategies. Furthermore, women's responsibilities in households and communities, as stewards of natural and household resources, positions them well to contribute to livelihood strategies adapted to changing environmental realities[80]. Key supporting activities for this group include: Increase the understanding of gender concerns and needs in disaster risk reduction; Develop government capacity to address gender issues in disaster risk reduction; Encourage governments to take action to integrate gender perspectives into disaster risk reduction legislation, policies and programs[84]. Gender sensitive risk assessments are required to determine the differentiated exposure to risk and climate vulnerability of women and men.

Synergies with ongoing projects:

The disaster risk management and response activity packages described above align with and build climate resilience into each of the seven pillars of the Government of Ethiopia Disaster Risk Management Strategic Programme and Investment Framework (DRM-SPIF). They also complement the approach taken in the UNDP led Disaster Risk Management and Livelihood Recovery Programme. The mid-term evaluation of the UNDP program found that it to be a highly relevant intervention that helped Ethiopia respond to a drought crisis in 2011, and that it has been effective in advancing policy actions at Federal Level. The cost-effectiveness of this Activity Group will

[84] UNISDR (2009).

be determined by the extent to which incremental funding focused on climate resilience preserves and enhances the performance of Ethiopia's DRM system in the context of more frequent and severe droughts and floods.

Synergies with other Activity Groups:

Disaster management and response has strong synergies with activities to promote climate resilient livelihoods. Enhancing the success achieved by those climate resilient livelihoods activities means that people can cope with manageable climate stresses and shocks with less need for DRM. What is more, the long-term climate and weather forecasts that are a featured part of this Activity Group can improve decision making across the Activity Groups, making all of them more effective.

Institutional arrangements:

The NDRMC has primary responsibility for ensuring that DRM is mainstreamed in the sector Ministries, and would be expected to be have a strong role in this Activity Group. However, the success of the component activities is also heavily dependent upon the work of the National Met Agency, MoANR, MEFCC, MoWIE and a range of other government and research institutions. The CRGE Facility is expected to ensure close coordination between these agencies.

Private Sector insurance providers are expected to deliver existing weather-indexed products to a larger number of clients whilst developing new products as required. Civil Society will continue to play a role in supporting the collection of early warning data and building national capacity for the use of risk data in planning and the implementation of non-food responses during crises.

Enabling environment and policy development:

The 2013 National Policy and Strategy on Disaster Risk Management and the 2014 Strategic Program and Investment Framework (DRM-SPIF) set out the requirements for a national DRM system. However, since the NDRMC is newly created and has historically focused on Disaster Management and Food Security, there are capacity gaps in its ability to coordinate and push for Disaster Risk Management across sectors. Some priority areas for improvement include:

- Create formal mechanisms to link NDRMC and RBAs to coordinate flood management activities and ensure sufficient capacity on hydrological issues within NDRMC.
- Create systematic and cross-sectoral guidelines on the use of agro-meteorological and hydro-meteorological data, risk analyses and livelihood data and improve links to contingency planning and action.
- Continue to invest in the data and meteorological systems required for the insurance industry.
- Ensure capability for national-level contingency planning is available to allow access to the African Risk Capacity and systems for learning and improvement to expand its coverage if appropriate.
- Improve the communication infrastructure and develop regulatory frameworks to enhance the use of mobile banking to facilitate the scale-up of farmer/herder focused insurance products.

Cost estimates:

The indicative incremental cost of this cross-sectoral Activity Group through 2030 is approximately USD $107 million. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield cost savings.

Indicators: The results indicators for Activity Group 5 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

	Frequency of Collection: Every 5 years

Result Indicator 1: Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems	Monitoring & Reporting Responsibility: Disaster Risk Management and Food Security Sector
Result Indicator 2: Evidence of strengthened government capacity to collect, analyze and apply climate information to decision-making	Frequency of Collection: Annually Monitoring & Reporting Responsibility: Responsibility: CRGE Secretariat and CRGE priority Ministries under the program

Financing strategy:

A portion of the estimated cost of this Activity Group may be met GoE co-financing. Note also that the activity package focused on de-risking the provision of livestock, agriculture and forest crop insurance is intended to leverage a significantly larger private sector contribution to resilience. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support climate resilience livestock initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:

Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • Food and Agriculture Organization of the United Nations • Green Climate Fund • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Austria Development Agency • DANIDA • EU Ethiopia Office • Kreditanstalt für Wiederaufbau (KfW) • Norwegian Agency for Development Cooperation (NORAD) • Switzerland Embassy • UK Department for International Development (DfID) • United States Agency for International Development (USAID

Development objectives: This Activity Group aims to enhance climate-related disaster risk management in three main ways:

4. Improving drought and flood risk assessment and early warning systems, including historical data analysis, prediction and early warning. These activities reflect the increased need for meteorological and hydrological systems that integrate changing climate projections into disaster risk management planning as climate related shocks become more frequent and severe.
5. Increasing resilience through coordinated food and non-food responses to climate related disasters. These measures are intended to reduce the stress that climate shocks place on government budgets.

6. Enhanced adoption of the Sendai Framework for Disaster Risk Reduction. These measures are meant to address long-term risks as part of disaster risk assessment and ensure that households and communities can "build back better" after an event.

Components and activities: The specific activities comprising this Activity Group are:

- Improved Spatial, AgroMet and HydroMet monitoring services and data storage and information sharing platforms, including historical data analysis and projections (Activity 1)
- Capacity building for the collection and analysis of drought and flood early warning information (e.g. LIAS data, bottom up data including indigenous knowledge), spatial data and creation of data storage and sharing platform (Activity 34)
- Climate change and related spatial information more accessible for decision makers (Activity 67)
- Enhanced data sharing to ensure climate projections and weather forecasts reach the woreda planners who can interpret and advise extension agents and farmers (Activity 34).
- Risk financing via weather index based agriculture, livestock, and forest crop insurance (Activity 36)
- Improved coordination between administrative, humanitarian and insurance-based disaster response systems *(new activity package)*
- Long-term risks considered in non-food responses to contribute to reduce vulnerability (e.g. infrastructure is "built back better" and non-food response funds are used to incentivize households to adopt more resilient livelihood options) *(new activity package)*

Rationale for investment:

Ethiopia has an established and well-functioning disaster management system. However, there is insufficient knowledge of risks to enable long term planning. Given the expected increase in the frequency and severity of climate related weather events such as floods and drought, it is important to increase the quality and availability of meteorological and hydrological forecasts and early warning systems. In addition, there is very limited support for potential private sector measures like insurance that can help reduce the government's disaster response burden.

Gender lens:

Women often have a strong body of knowledge and expertise that can be used in climate change mitigation, disaster reduction and adaptation strategies. Furthermore, women's responsibilities in households and communities, as stewards of natural and household resources, positions them well to contribute to livelihood strategies adapted to changing environmental realities[80]. Key supporting activities for this group include: Increase the understanding of gender concerns and needs in disaster risk reduction; Develop government capacity to address gender issues in disaster risk reduction; Encourage governments to take action to integrate gender perspectives into disaster risk reduction legislation, policies and programs[85]. Gender sensitive risk assessments are required to determine the differentiated exposure to risk and climate vulnerability of women and men.

Synergies with ongoing projects:

The disaster risk management and response activities described above reinforce and complement several ongoing projects, most notably the Disaster Risk Management Strategic Programme and Investment Framework (DRM-SPIF).

[85] UNISDR (2009).

Synergies with other Activity Groups:

Disaster management and response has strong synergies with activities to promote climate resilient livelihoods. Enhancing the success achieved by those climate resilient livelihoods activities means that people can cope with manageable climate stresses and shocks with less need for DRM. What is more, the long-term climate and weather forecasts that are a featured part of this Activity Group can improve decision making across the Activity Groups, making all of them more effective.

Institutional arrangements:

The NDRMC has primary responsibility for ensuring that DRM is mainstreamed in the sector Ministries, and would be expected to have a strong role in this Activity Group. However, the success of the component activities is also heavily dependent upon the work of the National Met Agency, MoANR, MEFCC, MoWIE and a range of other government and research institutions. The CRGE Facility is expected to ensure close coordination between these agencies.

Enabling environment and policy development:

The 2013 National Policy and Strategy on Disaster Risk Management and the 2014 Strategic Program and Investment Framework (DRM-SPIF) set out the requirements for a national DRM system. However, since the NDRMC is newly created and has historically focused on Disaster Management and Food Security, there are capacity gaps in its ability to coordinate and push for Disaster Risk Management across sectors. Some priority areas for improvement include:

- Create formal mechanisms to link NDRMC and RBAs to coordinate flood management activities and ensure sufficient capacity on hydrological issues within NDRMC.
- Create systematic and cross-sectoral guidelines on the use of agro-meteorological and hydro-meteorological data, risk analyses and livelihood data and improve links to contingency planning and action.
- Continue to invest in the data and meteorological systems required for the insurance industry.
- Ensure capability for national-level contingency planning is available to allow access to the African Risk Capacity and systems for learning and improvement to expand its coverage if appropriate.
- Improve the communication infrastructure and develop regulatory frameworks to enhance the use of mobile banking to facilitate the scale-up of farmer/herder focused insurance products.

Cost estimates:

The indicative cost of this cross-sectoral Activity Group through 2030 is approximately USD $53 million. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield cost savings.

Indicators: The results indicators for Activity Group 5 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1: Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems	Frequency of Collection: Every 5 years Monitoring & Reporting Responsibility: Disaster Risk Management and Food Security Sector
Result Indicator 2: Evidence of strengthened government capacity to	Frequency of Collection: Annually Monitoring & Reporting Responsibility: Responsibility: CRGE Secretariat and CRGE priority Ministries under the program

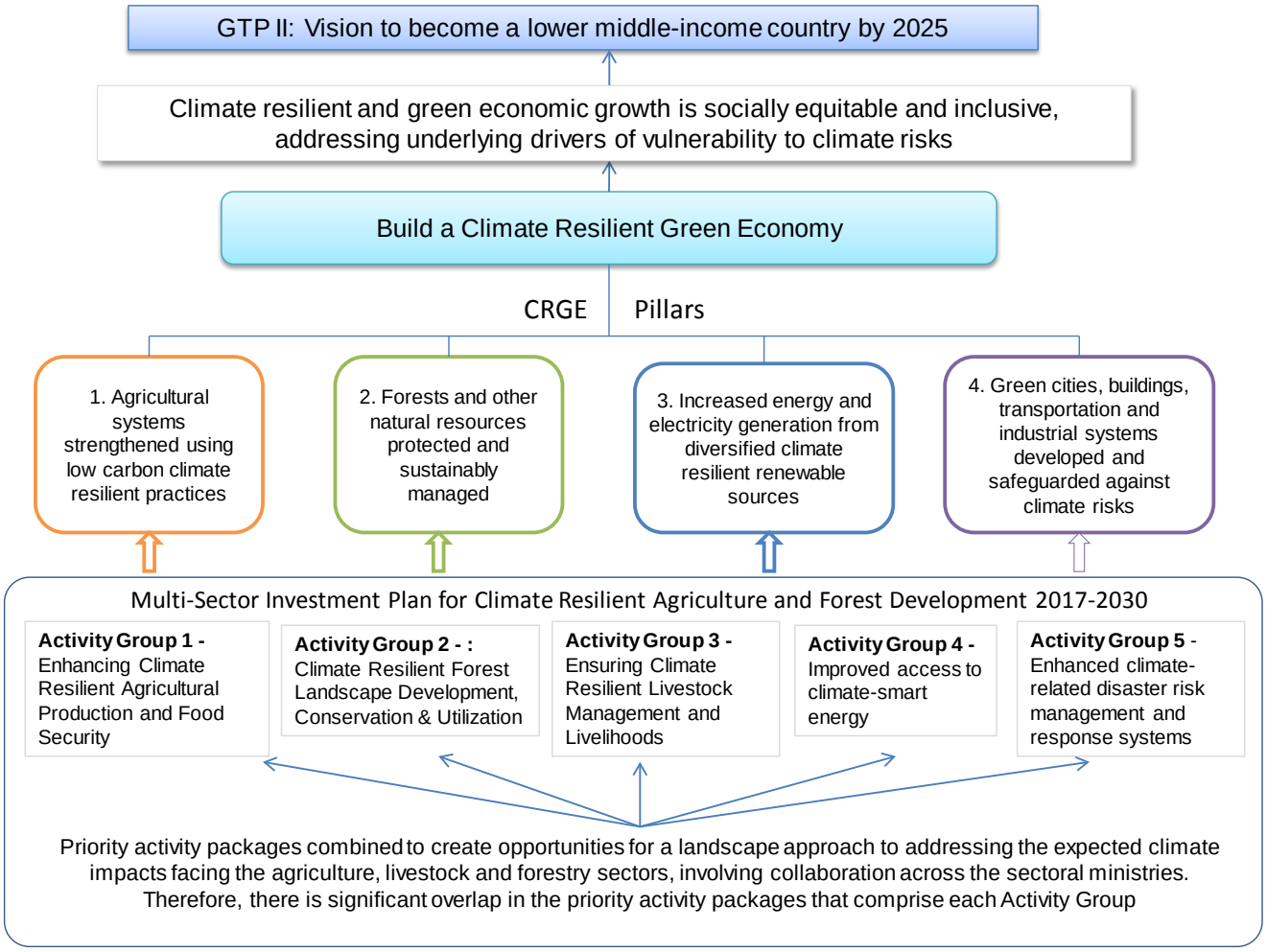
collect, analyze and apply climate information to decision-making	
Financing strategy:	
A portion of the estimated cost of this Activity Group may be met GoE co-financing. Note also that the activity package focused on de-risking the provision of livestock, agriculture and forest crop insurance is intended to leverage a significantly larger private sector contribution to resilience. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support climate resilience livestock initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:	
Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • Food and Agriculture Organization of the United Nations • Green Climate Fund • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Austria Development Agency • DANIDA • EU Ethiopia Office • Kreditanstalt für Wiederaufbau (KfW) • Norwegian Agency for Development Cooperation (NORAD) • Switzerland Embassy • UK Department for International Development (DfID) • United States Agency for International Development (USAID

VIII. Monitoring and Evaluation

VIII.1 The Objective Hierarchy

The MSIP directly supports Ethiopia's targets articulated in its Climate Resilient Green Economy (CRGE) Strategy, Climate Resilience Strategy for Agriculture and Forest, Climate Resilience Strategy for Water and Energy, and related sectoral investment frameworks in pursuance of the GTP II transformational objective of reaching lower-middle income status by 2025. The CRGE is one of nine strategic pillars of the GTP II and contributes by supporting climate resilient and green economic growth that is socially equitable and inclusive, addressing underlying drivers of vulnerability to climate risks (Figure 32). As shown in Figure 32, the MSIP will directly support three of the CRGE Strategic Pillars and indirectly support the fourth by supporting the climate sensitive development of the rural-urban interface.

Figure 32: Objective Hierarchy for MSIP to contribute to the GTP II



Monitoring and evaluation under the MSIP is part of an ongoing effort to track national development and resilience progress. The objective hierarchy proposed here is based on the national Growth and Transformation Plan. The CRGE Facility will coordinate and support improvements needed in sector monitoring systems to respond to CRGE priorities. However, it will not be responsible for producing monitoring data. This is provided by existing investment projects, ongoing sector reports and annual surveys conducted by the Central Statistics Agency. Studies conducted by development research groups such as the EDRI will also be used to measure impact and explore learning priorities in relation to effective resilience investment. Investment is required to improve the quality of routine monitoring data and to ensure surveys and impact studies meet the requirements of the CRGE.

VIII.2 Integrated M&E System

The CRGE Facility has established a Monitoring and Evaluation (M&E) System that cascades national monitoring requirements into CRGE related investments. This can be aligned with the PPCR M&E results framework, as required (and as indicated in Table 9). The priority for the MSIP is a strong nationally led process to prepare and report

evidence. However, should PPCR resources become available, this will ensure consistency with PPCR M&E requirements within existing national monitoring, evaluation and reporting systems.

Table 9 provides a range of indicators that may be used to monitor and evaluate the MSIP. At the Goal level, both the CRGE and PPCR set out indicators for measuring the improvements in climate resilient development of people. At the outcome level, the MSIP will catalyze transformational change through mobilizing the investment to scale up existing practices and creating a step-change in the use of landscape-level cross-sectoral planning, implementation and monitoring and through this; the greater use of spatial, climate, hydrological and land use data and tools in cross-sectoral decision-making. This is consistent with PPCR transformational objectives, and will be measured by CRGE indicators with respect to:

- Integration of climate resilience into development planning.
- Increased capacity, knowledge and skills.

Ethiopia does not yet have an indicator for or data to track climate-responsive investment and private sector development. However, this is a strong component of the GTP II, and the MSIP may measure the number and value of investments (national and local government, non-government, private sector, etc.) for each type of climate resilient investments as this will contribute to the IEs GTP II reporting.

The result-level indicators will be monitored by the responsible implementing entities and reported through the FDRE M&E system as well as directly to project investors through the relevant sector-level management units or via the CRGE Facility depending on implementation arrangements. At the results level, several possible indicators may be selected by IEs depending on the final configuration of any activity group investment, as long as these are consistent with the FDRE M&E system requirements.

There is a lot of potential to use remote-sensed satellite imagery for monitoring progress. For this to be effective all investments across sectors would need to use the same spatial and mapping standards for reporting, starting with a set of common 'base maps' using agreed data sources. The National Spatial Data Infrastructure will provide the basis for this spatial monitoring platform.

VIII.3 Implementation of the M&E Framework

FDRE achievements in relation to CRGE will be monitored and reported on a regular basis using the indicators selected from the CRGE and GTP II Framework. The CRGE Facility will coordinate and support this process to encourage mainstreaming of CRGE-relevant indicators into the sectoral monitoring processes. In turn, the IEs must select relevant outcome-level indicators and ensure new investments contain appropriate resources to monitor these or explain how existing data collection exercises will allow monitoring.

Under the national monitoring system, the following process will be followed in ensuring appropriate indicators are reported via MSIP investments (as summarized in Box 5).

Box 5: Background on MSIP collaborating entities

Level-1: Woredas report on a quarterly and annual basis to regional sector bureaus. Where there are Executing Entities working with regional sector bureaus, they should also report in the same way. However, where Executing Entities (EEs) operate at the federal level, they report instead to federal Implementing Entities.

Level-2: Regional sector bureaus consolidate the quarterly and annual reports received from woredas and Executing Entities, and submit this to the respective federal Implementing Entity (IEs). This may take place through routine GTPII progress reporting or through investment/project specific processes. In the case of climate-focused investments, regional sector bureaus also send a copy of this collated report to regional CRGE focal points; these will be BOFED and Environment and Forest Bureau (names may differ from region to region).

Level-3: Federal Implementing Entities aggregate the reports received from Executing Entities and from regional sector bureaus into one report. This is used for investment/project specific processes or may be submitted to the CRGE Facility if they are playing the financial intermediary role. In both cases, the CRGE Facility must receive copies to aggregate reporting against key CRGE indicators for the Management Committee.

Level-4: The CRGE Facility presents quarterly reports to the CRGE Facility Management Committee for review and approval. This committee is used to further the process of mainstreaming climate action and climate data into ongoing sector action and progress reviews as well as resolve problems associated with climate finance investments.

Level-5: If the CRGE Facility acts as the program intermediary for any investments under MSIP, they will be responsible for sending the report to contributors, development partners and interested parties. Otherwise, they will produce regular reviews of climate-relevant results produced with FDRE data with the goal of promoting improved data quality and better sectoral decision making.

Annex 10 provides a Logical Framework. At the Activity Group level, proposed indicators have been included in the summaries for each Group, as documented in section VII. These have been aligned with the MSIP Logical Framework.

Table 9: The MSIP Results and Outcomes integrated with CRGE Indicators, compared to relevant PPCR Indicators

General Objective: To directly support Ethiopia's target of a climate resilient and green economy reaching lower-middle income status by 2025.			
CRGE Narrative	**CRGE Indicators**	**PPCR Results and Catalytic Outcomes**	**PPCR Indicators**
Goal: Resilience of households improved	• Change in climate vulnerability of rural communities • Strengthened adaptive capacity of rural communities and rural businesses	Improved quality of life of people living in areas most affected by climate variability and climate change	• Percent (%) of people classified as poor (women and men) and food insecure (women and men) in most affected regions • Change in Global Adaptation Index
Longer-term MSIP outcomes	**CRGE Indicators**	**PPCR Results and Catalytic Outcomes**	**PPCR Indicators**
Enhanced climate responsive and climate resilient development planning	• Evidence of strengthened government capacity to collect, analyze and apply climate information to planning and decision-making • Degree of integration/ mainstreaming of climate change in national and sector planning and coordination	Increased resilience in economic, social, and eco-systems to climate variability and climate change through transformed social and economic development	• Changes in budget allocations of all levels of government to take into account effects of climate variability and climate change across sectors and regions. • Degree to which development plans integrate climate resilience by subjecting planning to climate proofing and assessments of vulnerability (including gender) and including measures to better manage and reduce related risk.
Climate responsive investment opportunities		Scaled-up investments in climate resilience and their replication	• Number and value of investments (national and local government, non-government, private sector, etc.) in $ by type of climate resilient investments
Knowledge, skills and capacities: Strengthened government capacities to plan, resource and deliver green, climate resilient development results	• Extent to which sectors use improved tools, instruments, strategies and activities to respond to climate variability and climate change	Increased capacity to integrate climate resilience into country strategies	• Evidence of a functioning cross-sectoral mechanism that takes account of climate variability and climate change • Evidence of line ministries or functional agencies lead in updating or revising country strategies (country ownership)

Expected MSIP results	CRGE Indicators	PPCR Project/Program Results	PPCR Indicators
Activity Group 1 - Enhancing Climate Resilient Agricultural Production and Food Security	• (Change in) Rainfed crop area under sustainable, climate smart land management practices (ha) – by crop type (private holders only)	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc	• Change in percent change in availability of drought/salt-tolerant, certified seeds/crops
	• (Change in) crop land productivity where modern, climate smart and small-scale irrigation applied (quintal per hectare) for: Major food crops; High value crops		• Change in hectares of farms with sustainable access to irrigation and drinking water
	• (Change in) Total crop land under modern, climate smart irrigation systems (ha and %) by type: Medium and large-scale; Small-scale		
	• Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)		
Activity Group 2 - Climate Resilient Forest and Landscapes for Development, Conservation and utilization	• Total area (individual & communal) of land under sustainable, climate smart, land management plans	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc	• Change in hectares (ha) of area in project/program area with management plan that integrate climate change considerations
	• Cumulative area of land covered with forest (ha), disaggregated by: Protected (%); Plantation (%), Under improved forest management systems (%) and reduced carbon emissions practices (%)		
	• Change in household fuelwood consumption		
	• Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)		

	• Area of land developed with community based watershed program		
	• Area of land rehabilitated		
Expected MSIP results	**CRGE Indicators**	**PPCR Project/Program Results**	**PPCR Indicators**
Activity Group 3 - Ensuring Climate Resilient Livestock Management and Livelihoods	• Productivity of communal pasture and rangeland (tons/ha) – feed / forage		
	• Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)		
Activity Group 4 - Improved access to climate-smart energy	• Annual energy savings: disaggregated by type of energy-saving measure	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority infrastructure	• Change in number of energy-related infrastructure integrating climate resilience features
	• Installed capacity renewable energy (type, GWh), including from solar, wind, geothermal and/or biomass		• Availability of tools to assess climate risks to power plants and other sources of energy
Activity Group 5: Enhanced climate-related disaster risk management and response systems	• Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems • Evidence of strengthened government capacity to collect, analyze and apply climate information to decision-making • Extent to which sectors use improved tools, instruments, strategies and activities to respond to climate variability and change • Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning system	Increased resilience in economic, social, and eco-systems to climate variability and climate change through transformed social and economic development	• Existence and effectiveness of early warning system for extreme climate events • Scope of social safety nets; • Existence of risk insurances; • Extent to which development decision making is made based on country-specific climate science, local climate knowledge (regional and eco-regional level), and (gender-sensitive) vulnerability studies • Coverage (comprehensiveness) of climate risk analysis and vulnerability assessments within the limits that current scientific evidence permits.

IX. Managing Risks for Sustainability

IX.1 Background

The MSIP will use existing FDRE and MDB risk management systems to effectively manage implementation, and associated political, social and environmental risks. This includes due attention to the following issues:

***Ensuring political support for MSIP through using participatory approaches at all stages*:** MSIP has been designed using participatory approaches, consulting stakeholders at all levels and bringing together FDRE and development partners. This approach will continue as activities are rolled out to sub-national levels of Government ensuring that, at each level, strong Government ownership is developed and key actors are engaged to ensure feasibility. Ultimately participatory planning with communities will build ownership and sustainability at the local level.

Using existing Operational Manuals and Public Financial Management Systems: The CRGE Facility Operational Manual contains clear guidance to ensure effective fund mobilization, allocation and management. Extensive capacity building support has been provided by the World Bank and other development partners to ensure Ethiopia's Financial Management Systems continue to improve. Consequently, the FDRE has experience in delivering billions of dollars of international development assistance per year. The MSIP will continue to build on this by using FDRE systems to deliver resilience finance but exploring the possibility for innovative financial mechanisms to create new public-private partnerships where possible.

Using best practices in Human Resource Management, Technical Assistance and Capacity Development: A key risk to sustainability is the high staff turnover in the Ethiopian civil service, which suffers from weak career and salary incentives, particularly when contrasted with market-level salaries provided to contracted staff. The MSIP will support the deployment of contracted staff and provide additional incentives for existing staff to enhance delivery prospects and promote sustainability. System improvements for human resources management within the civil service will also be essential to complement this.

Effectively Applying Social and Environmental Safeguards: Ethiopia has a robust legislative framework to ensure application of appropriate social and environmental safeguards. These are underpinned by the Constitution and include the Environmental Policy (1997), Environmental Impact Assessment Proclamation (299/2002), Environmental Pollution Control Proclamation (300/2002), Solid Waste Management Proclamation (513/2007), the Expropriation of Land Holdings for Public Purposes and Payment of Compensation Proclamation (455/2005) and (135/2007), Proclamation on Rural Land Administration and Land Use Proclamation on Research and Conservation of Cultural Heritage (209/2000). Ethiopia is also a signatory to several Multilateral Environmental Agreements and has experience in the application of the World Bank, the Global Environmental Facility, and the African Development Bank safeguards systems for specific project investments.

Effectively mobilizing and supporting CRGE Facility and Line Ministry Staff within dedicated units for social and environmental safeguards. The CRGE Facility has developed an Environmental and Social Safeguards Framework (ESSF). This draws on the World Bank's policies related to: Environmental Assessment, Indigenous Peoples, and Involuntary resettlement; the African Development Bank Integrated Safeguards System (ISS), including provisions for gender equality, climate risk management and civil society engagement; and the GEF safeguarding strategies related to natural habitats, pest management and the safety of dams. The ESSF documents a seven-step process applied to all new investments. This starts with screening projects, scoping and conducting environmental and social impact assessments as required, reviewing the assessment, making decisions about the future of the project and the required mitigation measures, monitoring and reporting on

their implementation and finally auditing completed projects as required. As well as the environmental requirements, the ESSF places a requirement on all projects to identify under-served and vulnerable peoples and develop appropriate measures to meet their specific requirements. A Resettlement Policy Framework is also available to guide CRGE initiatives requiring small scale resettlement (less than 200 people) and those with larger scale resettlement requirements.

Several of the proposed activities under MSIP present safeguarding risks stemming from possible changes of land use, introduction of new technologies, and generation of new waste streams. However, these risks will be effectively managed through implementation of the FDRE ESSF as well as associated World Bank procedures. Ongoing World Bank support to the FDRE's safeguards and risk management system will also be used with any grants awarded under the MSIP incorporating specialist safeguards support. This will complement other Bank-supported activities in the same area, such as the similar safeguards component of the Enhancing Shared Prosperity through Equitable Services (ESPES)/Promoting Basic Services (PBS) project, and ongoing safeguards training provided to MoFEC's CRGE Facility (dedicated climate fund).

Social mobilization will be a key feature of community based activities and grievance redress systems and mechanisms will be put in place where needed. FDRE has a long experience of social mobilization and can also draw on successful NGO pilots in participatory land use management to deliver MSIP. It has managed grievance redress systems in the context of large World Bank managed programmes and been subject to international due diligence on safeguarding implementation. Continued improvement of such systems will be supported through the MSIP investment projects.

MSIP is intended to support resource mobilization for the delivery of inclusive resilience building activities. Detailed feasibility work will be undertaken prior to the implementation of activity packages. This will allow the phased delivery of activities as soon as sufficient resources are available for a particular group of activity packages. Resource mobilization must ensure sufficient funds are available for required capacity development and technical assistance activities, and to mitigate any project risks or adverse environmental and social impacts identified during feasibility assessments.

IX.2 Risk Assessment

The MSIP risk assessment differentiates between numerous risk types. The overall summary of risks is available in Table 10 with an explanation of these risk ratings in the subsequent text.

Table 10: MSIP Risk Rating Summary

Risk categories	Rating
1. Political and governance	High
2. Macroeconomic	Moderate
3. Regulatory Risks: Sector strategies and policies	Substantial
4. Technical design and program development risks	Substantial
5. Operational risks: Institutional capacity for implementation and sustainability	High
6. Operational risks: Fiduciary	Moderate
7. Environment and social	High

8. Stakeholders	Substantial
9. Outcome Risks	Moderate
10. Other	-
Overall	High

The MSIP's overall risk is rated *high,* but effective application of mitigation measures described in section IX.1 and in more detail in section IX.3 can mitigate these risks. Risk mitigation measures seek to manage and eliminate preventable risks, whilst monitoring external risks to ensure MSIP implementation can respond to changing circumstances and maximize its impact on climate resilient and inclusive growth in Ethiopia.

IX.3 Summary of key risks and mitigation measures

IX.3.1 Political and Governance *(High risk)*

Governance arrangements for inter-sectoral coordination could be insufficient

Ethiopia does not have extensive experience of implementing cross-sector investments. Conflict between sectors on the use of land or water or inadequate collaboration in the development of land use plans could threaten the achievement of MSIP objectives. Mitigation measures include the development of a robust multi-sector implementation approach. This will build on FDRE's existing capacity, including the inter-ministerial Management Committee of the CRGE Facility and the National Planning Council. The NPC brings together sector ministries with Regional Leaders and this forum can be used to ensure inter-sectoral arrangements for cross-sectoral coordination are replicated at Regional Levels. Furthermore, it is envisaged that sufficient resources would be mobilized under MSIP to incentivize the creation of woreda level groups for planning and implementation as was done under the recent CRGE Facility Fast Track Initiative.

Political instability prevents implementation or results in reputational damage

In October 2016, FDRE declared a six-month State of Emergency as a result of widespread disturbances and protests, which were particularly concentrated in Oromia and Amhara Regions and included destruction of government and private investor's property. The situation has since stabilized, but local grievances regarding broad governance issues, land use and land conversions remain. This situation is in part a legacy issue that requires a political resolution by the FDRE, and which the World Bank is unable to influence via MSIP. The disturbances were not related directly to forest, agriculture, energy or water issues and therefore are outside the scope or influence of MSIP. However, they pose both implementation and reputational risks.

Risks to implementation include security concerns, limitations on access to communities and unavailability of key FDRE implementation staff. The situation will be monitored and mitigated through (i) carefully planned missions that take security into account, (ii) implementing sound safeguards monitoring, (iii) effective communications and outreach, and (iv) enhanced transparency in project-supported activities.

Risks to reputation may occur from false associations. For example, if actors misunderstand the nature of the MSIP and allege that it is responsible for financing activities that lead to protests or underlying complaints. Key mitigating measures include: a) implementation of a proactive communication strategy to clarify what the operation does and does not finance, and articulate MSIP and the WB's distance from the causes of the protests, should they re-emerge; (b) MSIP's participatory approach to land use, forest and land management will benefit affected communities and help reduce residual reputational risks to the Bank; (c) extensive local consultations

and the inclusion of dedicated activities to strengthen the FDRE's safeguards system to promote inclusiveness and sustainability should be a key design principle of investments under MSIP.

IX.3.2 Macro-economic risk (moderate risk)

MSIP assumes Ethiopia's growth trajectory will continue as projected. However, slower growth in the off-farm and industrial sectors could result in increased pressure on land-use and inhibit MSIP delivery.

Ethiopia's overarching macro-economic policy focuses on structural transformation including massive growth in the industrial sector, creating jobs and creating space for land consolidation and more productive land uses. This will happen over a long timescale and slower progress during the GTPII period is unlikely to pose an operational risk to the MSIP. However, ultimately climate resilience will be harder to achieve without some transition to less weather-dependent sectors. World Bank engagement with FDRE via the *Country Environmental Analysis (CEA)* process and in wider macro-economic dialogue will mitigate this risk to the extent possible.

IX.3.3 Regulatory Risks: Sector Policies and Strategies (substantial risk)

Necessary improvements to policy and regulations are not introduced or successfully implemented

The MSIP has proposed numerous areas where regulatory reform is needed to create an enabling environment for resilience building. These reforms cut across four sector line ministries and one national commission and are ambitious in scope, requiring substantial FDRE capacity and political will. The MSIP will be supported by ongoing donor-Government dialogue through the Development Assistance Group and its sector working groups, as well as the option to provide technical assistance and capacity building components within investment projects under MSIP. The World Bank will also work with other providers of technical assistance (GGGI, USAID, DFID) to ensure that FDRE personnel receive sufficient support to design and implement new regulatory arrangements

Private sector investors do not respond to new incentives

Currently, private sector aversion to risk is high, the country suffers from some restrictions on international investment and the domestic private sector is less developed than other countries in the region. However, there is an improving infrastructure, a number of incentives in the investment policy and low costs of labor and electricity which can attract investment and help make Ethiopia competitive in export markets. The MSIP has recommended a series of regulatory incentives, public-private sector dialogues and complementary private investments to help address this. However, there is still a risk that private sector will be crowded out due to FDRE's strong role in resilience sectors. This will be managed through strong dialogue and through the creation of appropriate financial instruments to attract private sector and develop sound frameworks for public-private partnerships.

Weak land tenure at the individual and community levels inhibits investment in land-based enterprises

Communities and landholders still face a perception of land tenure insecurity in Ethiopia. This is particularly important in forested areas and rangelands, since individual land certificates are not issued. Although participatory forest or rangeland management can go some way to mitigate this risk, FDRE is also planning legal reforms to improve the community tenure arrangements but it may take time for these to be implemented at local level. In rangeland areas, weaker Government capacity and competing claims to rangeland may inhibit progress. MSIP will actively seek to mitigate these risks through support to macro land and water use planning and the implementation of participatory land management planning at multiple levels. Lessons from FDRE and NGO experiences in implementing rangeland and forest management plans will also be used to strengthen capacity in this area.

IX.3.4 Technical Design and Program Development Risks (substantial risk)

More detailed water and natural resource assessments may reveal finite limits requiring trade-offs and limiting progress for some activities.

FDRE's development plans, reflected in MSIP are extremely ambitious and suggest a four-fold productivity increase from Ethiopia's rural landscapes. Detailed and spatially explicit feasibility studies for MSIP activities have not yet been undertaken. This is an activity under MSIP and will result in the development of specific investment projects which will contain their own nested risk assessments. However, it is possible that there will be insufficient resources for all sectors to achieve all their growth objectives in all locations. Water or land availability may be a constraint to growth in commercial agriculture, forest plantation establishment or renewable energy development. MSIP will allow the best possible decision-making in the event of such trade-offs by improving data availability and creating multi-sector fora for decision-making. Nevertheless, continued efforts to improve transparency and to commit to partnership and dialogue with international partners will also support the effective management of such trade-offs and can minimize minimum operational or reputational risk to the World Bank and the FDRE.

Not all private sector and civil society implementing partners have been identified.

Since MSIP is an overarching investment framework and not a detailed investment project, FDRE has not yet identified all the private sector and CSO partners which will be expected to participate in MSIP implementation. There is therefore a risk that appropriate partners will not be available or willing to contribute. However, MSIP can mitigate this risk by building on existing forums for public-private dialogue and using existing coordination arrangements that regulate civil society activity in the country. The FDRE Charities and Societies Agency will be responsible for regulating NGO contributions to the MSIP and all NGOs will be expected to negotiate agreements with FDRE at Regional and National level before beginning implementation. For funds channeled through the CRGE Facility, the national climate finance facility, further arrangements are in place to ensure NGO contributions are managed through Sector Line Ministries. It is therefore expected that sectors will also play a key role in identifying the most appropriate technical areas where CSOs can cost-effectively add value to FDRE capacity. Suggestions are also included in each Activity Group in the MSIP. Historically FDRE has a strong record of effectively engaging with a range of development partners, including private sector and CSOs.

IX. 3.5 Operational risks: Institutional capacity for implementation and sustainability

Inadequate operational capacity within Government to implement the proposed activities and high staff turnover limits capacity development efforts.

The MSIP has identified several capacity limitations that currently constrain improvements in resilience in the country – these cover all sectors and technical areas. However, MSIP has been designed to address such limitations. It will embed support to system building and mobilize additional human and financial resources as part of its implementation. Appropriate priority must be given to this during implementation design, with consideration of the resources and working conditions most likely to support the retention of staff given consideration. It is possible that capacity limitations at local levels could cause implementation delays if they are not effectively managed. Support from other service providers may be helpful in filling capacity gaps.

Monitoring and reporting capacity may be insufficient for accountability and learning, inhibiting resource mobilization and adaptive management.

The MSIP will only continue to leverage financial resources if it is able to demonstrate its results and provide strong evidence of its efficiency and effectiveness. Some of its work will be innovative and will require in-built learning to continuously adapt to changing contexts and emerging lessons. Investment in data gathering and in

strengthening the capacity for monitoring, evaluation and learning is therefore essential for successful implementation. Prior experience suggests there are insufficient numbers of trained staff able to complete monitoring and evaluation tasks to a donor-compliant standard, particularly in some reasons. There is a need for greater attention to the maintenance of records. This can be mitigated through the provision of technical assistance for monitoring and evaluation alongside MSIP investment projects.[86]

IX 3.6 Operational risks: Fiduciary (High)

FDRE must mobilize sufficient financial resources to implement the MSIP

MSIP is an investment framework and whilst it contains a financial mobilization strategy, this will need to be successfully implemented as the FDRE does not currently have committed resources to meet the financing gap outlined in the MSIP. However, this is considered a manageable risk as the CRGE Facility exists to mobilize and allocate available resources and, via the MSIP process, has begun a process of stakeholder engagement for resource mobilization. It is proposed that detailed feasibility studies set out more detailed geographic priorities for specific Activity Packages and that FDRE then only launches implementation once sufficient resources are available for integrated implementation in a particular area.

Weak application of procurement systems limit or delay the availability of key resources

Both the CRGE Facility and the World Bank have experience of supporting Sector Line Ministries and Regions with procurement planning and implementation. However, there are limitations at sectoral and regional level where a lack of qualified procurement staff has caused delays and quality issues. There are also wider procurement issues such as the shortage of foreign exchange for imported goods. These risks will be monitored closely and continual training and close implementation support will be needed to ensure these do not impair the achievement of MSIP objectives.

IX 3.7 Environment and social (Substantial risk)

Social or environmental safeguards are insufficient or poorly applied

MSIP will work in a changing and fragile environment with complex social relationships and will likely face social concerns from undeserved and vulnerable groups in its intervention areas. This is compounded by: (a) inadequate understanding of relevant social issues, and (b) weak capacity and expertise within the government structures to deal with both social and environmental risks to properly implement and document safeguards instruments. The risk mitigation measures will rely on carefully designed safeguards management plans and capacity-building measures to strengthen the implementation capacity of the implementing agency. The CRGE Facility has developed an Environmental and Social Sustainability Framework (ESSF) which is compliant with World Bank and AfDB requirements. Safeguards Specialists have also been recruited in both MEFCC and MoFEC, and there is an ongoing collaboration with the World Bank to build capacity at all levels.[87] Legislation mandates the completion of assessments but they are not routinely applied and impact assessments are not publicly available. MSIP will ensure that all feasibility work for MSIP investments complete environmental and social impact assessments in line with these procedures and any risks are appropriately addressed in collaboration with the FDRE. Additional technical assistance or safeguards support should be embedded in implementation projects. If safeguards implementation is solely the responsibility of FDRE without external oversight it will be hard to assure risks are minimized.

[86] Ibid.

[87] LTS (2016b) Review of Climate High Level Investment Programme. Report submitted to DFID.

IX 3.8 Stakeholder-related risks (substantial risk)

If MSIP targeting is not transparent and benefits are not equitably distributed, there is a risk of conflict. Not all households in a given area may benefit equally from MSIP support. Evidence from community consultations suggest the potential for conflict if benefits are seen to be distributed unfairly. Transparent and fair process are particularly important given the continued risk of civil disturbances. It is therefore suggested that detailed project planning should draw on lessons from existing interventions and use clear targeting guidance. Such guidance must prioritize transparency and equity and include strong communication measures to mobilize and inform local communities, strengthen consultation/participatory development models, and enhance transparency in project-supported activities and safeguard implementation. Sufficient resources must be made available to train local level implementing staff in the implementation of such guidelines and their application must also be continually monitored with course corrections rapidly applied. Capacity for the management of complaints and feedback mechanisms will also be strengthened.

IX 3.9 Outcome Risks (moderate risk)

Resilience outcomes from proposed approaches do not materialize or do not reach the most vulnerable Ethiopians

Whilst MSIP has largely selected interventions where there is already evidence of their efficacy from Ethiopian pilots or from other contexts, there remains a risk that not all projected benefits will materialize due to potential conflicts with other land uses, elite capture, political disturbance or broader macro-economic conditions. To ensure efficacy, MSIP will continue to improve data availability, both from routine monitoring and via specially commissioned impact assessments to understand how these activities can best deliver resilience in the Ethiopian context. Such data will identify quickly whether interventions are proceeding as planned and allow appropriate course correction. Decision makers at all levels will be trained to use data appropriately for adaptive management. Ethiopia has committed itself to an inclusive and broad-based growth trajectory, it also has proven capability to deliver programmes that target and meet the needs of vulnerable groups – for example the Productive Safety Net Programme (PSNP). Whilst all targeting approaches have limitations, joint Government-donor dialogue and effective use of complaints and grievance mechanisms have mitigated some of these risks in other programmes and would continue to be applied and strengthened in MSIP. Overall, the risk to Ethiopia of not implementing the MSIP is ultimately the most significant. Without measures to build climate resilience, Ethiopia will experience GDP losses as a result of climatic changes and the food security and livelihoods of rural communities will suffer.

IX.3 The Critical Role of Coordination

The MSIP requires FDRE to deliver at scale and to adopt new ways of cross-sectoral working to improve the quality of results delivered. This will require substantial investment in building coordination capacity, especially at sub-national levels. The cross-sectoral approach proposed by MSIP requires new data, increased capacity to analyze and use this data, and continuously improving skills and relationships for decision making. This will need to be supported by strong management and a more transparent and learning-focused approach to results measurement and monitoring. Such capacities need to be developed at all levels of Government, including within meso-level coordination groups such as River Basin Authorities and in dialogue with external bodies such as through public-private partnerships.

The CRGE Facility anticipates playing a key role in the "recipient executed" aspects of the MSIP. Through existing FDRE financial management and coordination systems, MOFEC will hold the relevant line ministries and

commissions accountable for the delivery of "recipient executed" activities under MSIP. It is likely that the recruitment of dedicated personnel to lead on the delivery of MSIP activities will be a core part of the FDRE approach but it will ensure these personnel are paired with existing Government staff to promote skill transfer and sustainability.

The CRGE Facility has substantial capacity for fund mobilization and management, and both MoANR and MoWIE already manage large, multi-donor programs. However, MSIP must build further capacity within FDRE systems for effective delivery, monitoring and reporting. To do this, it should utilize existing fora for donor-Government policy dialogue. FDRE has invested in the CRGE Facility, substantially expanding its personnel and using seconded staff provided by Development Partners to train staff and embed systems. This Facility can also work closely with Sectors to strengthen their ability to deliver climate finance. MSIP will continue to support these efforts by providing opportunities to use CRGE Facility systems and strengthen staff capacity in sectors through recruitment, training and technical assistance. Political incentives within Sectors and Regions are also extremely important to the creation of functional systems. Use of the Inter-ministerial Steering Group, the National Planning Council and existing FDRE-Development Partner dialogue will help push for regulatory reform and for sufficient priority to be given to MSIP objectives.

Delivery and inter-sectoral coordination capacity at regional and sub-national level varies considerably. Federal Government's use of political levers to influence this may also vary. This may require different delivery mechanisms to ensure quality is not compromised. To ensure high value for money of all funds invested, sufficient attention needs to be given to Emerging Regions where FDRE capacity for high quality delivery is weaker. In some Regions, it may also not be possible to influence the political incentives that are required for system improvements over the lifetime of this investment. Options to build capacity within the system may need to be paired with greater investment in functional capacity of more independent project delivery units but this should be investigated in more detail during the feasibility assessment for specific project investments.

The MSIP can benefit from well-equipped delivery systems for existing major multi-donor programs such as the Agricultural Growth Programme, Productive Safety Net Programme, Sustainable Land Management Programme, Oromia Forested Landscape Programme and One Wash initiative. Work with USAID-led initiatives such as the Land Administration to Nurture Development (LAND) and the Program for Pastoralist Resilience Improvement and Market Expansion (PRIME) could also be considered. Such programs are already making capacity development investments and are supported by a well-established Government-Donor coordination mechanism that supports the utilization of monitoring data, adaptive management of the program delivery and coordination with components delivered by non-governmental entities. For example, Working Groups for Rural Economic Development and Food Security (RED&FS SWG), Water and Private Sector Development and Trade provide Government-Donor coordination platforms relevant to MSIP. These groups promote continuous improvement in the delivery of flagship multi-donor programs and enable policy dialogue, including in relation to climate resilience themes. These Sector Working Groups can support the leveraging of investments in existing programs to support the MSIP as well as mobilization of additional climate finance, which can then be managed either by the CRGE Facility or through the existing sector-led approaches.

Decisions about institutional arrangements for delivery must be made once funding sources have been identified and detailed feasibility work undertaken. However, these should ensure maximum FDRE ownership and leadership, and contribute to lasting delivery capacity within Government systems. This MSIP does not propose arrangements for project level funding, but assumes that detailed investment planning will take place once funding sources for specific Activity Groups are identified. Given existing capacity within FDRE systems and the importance of continuing to build and sustain that capacity, delivery arrangements which prioritize the

strengthening of Government systems are considered paramount. Different investors have different risk tolerance and varied appetite for what proportion of their investment should be spent on direct delivery of results rather than on long-term systems building. Investment into existing mechanisms may be an efficient way to deliver results but may offer less scope for innovation, problem-solving or building systems which lie outside of those programs. The CRGE Facility must play a key role in negotiating with donors to ensure that MSIP investments meet priority investment needs.

X. Financing Plan and Instruments

X.1 Summary of Costs Associated with Activity Packages and Activity Groups

Cost estimates for the Activity Groups have been derived based on an analysis of similar interventions undertaken in Ethiopia and other countries, and scaled to address the regional or national climate challenges facing the country, designed to ensure they can support Ethiopia's transformational objectives under GTP II. This is a bottom-up approach to identifying the climate resilience investment gap, and provides an alternate approach to the "top-down" financial gap analysis described in Section IV.3.

As described in Section VII, the five Activity Groups combine prioritized Activity Packages to address the spatial and thematic gaps identified through the Portfolio Review and Gap Analysis. The Activity Groups represent a programmatic, landscape approach to ensuring climate resilience, and emphasize the benefits of cross sectoral collaboration between sector Ministries to maximize impacts at the national, regional and woreda level. Investment in these cross-sectoral responses will require implementation at a landscape scale, necessitating multi-stakeholder coordination in spatial land-use planning which requires using climate, hydrological and land use data in cross-sectoral decision-making.

Many of the climate resilience activities covered by the MSIP reflect established national priorities and are already being supported by existing projects and programs. At present, however, more than 50% of priority Activity Packages are supported only at pilot stage or need to be scaled up to fully address the resilience challenges faced. In other cases, there are critical gaps that would significantly increase the effectiveness of ongoing initiatives, for example via improving agriculture related weather forecasting and information services. The MSIP creates the opportunity for substantially scaling these up.

Table 11 summarizes the estimated cost of the Activity Packages associated with each of the five, climate resilience-focused Activity Groups.[88]

Table 11: Summary of Activity Group Costings

Title	Main Components	Est. overall cost (USD)
Activity Group 1 - Enhancing Climate Resilience in Agriculture	1. Climate smart and gender sensitive agricultural support services	$5,992 million

[88] See Annex 9 for more detailed costing information.

Title	Main Components	Est. overall cost (USD)
	2. Reduced vulnerability to rainfall variability and water supply uncertainty 3. Increased resilience through crop productivity improvements and more equal intra-household relationships 4. Increased resilience through income diversification	
Activity Group 2 – Climate Resilient Forest and Landscapes for Development, Conservation and Utilization	1. Enhanced climate resilience through expansion of forest resources, effective joint management, more inclusive benefit sharing, and sustainable utilization 2. Reduced pressure on forests from extensive agriculture 3. Reduced pressure on forests from fuelwood collection 4. Reduced pressure on forests from livestock activities 5. Enhanced resilience through livelihood diversification	$5,414 million
Activity Group 3 – Ensuring Climate Resilient Livestock Management and Livelihoods	1. Climate smart and gender sensitive extension services 2. Enhanced resilience through reduced livestock vulnerability and diversification 3. Reduced environmental impact of livestock production	$2,628 million
Activity Group 4 – Increased Resilience through Affordable Access to Climate Smart Energy	1. Reduced reliance on fuelwood and charcoal for thermal energy 2. Improved access to low-emissions electricity	$654 million
Activity Group 5 – Enhanced Climate-Resilient Disaster Risk Management and Early Warning Systems	1. Enhancing prevention, mitigation and preparedness activities, including through improved drought and flood risk assessment and early warning systems 2. Increased resilience through coordinated food and non-food responses 3. Enhanced adoption of post-disaster risk reduction and resilience approaches	$107 million

Many key Activity Packages contribute to the resilience goals of more than one Activity Group, therefore any attempt to add the costs of the Activity Groups would overestimate the cost of these cross-sectoral resilience measures. For example, improved livestock management practices (Activity Package 16) has an indicative cost of $545 million USD. This Activity Package is included in costings for Activity Groups 2 and 3 due to this measure's contribution to conservation of forests and landscapes and to improved livelihoods in the livestock sector.

If each Activity Package is counted only once, the total cost of the priority climate resilience measures is estimated at $11.85 billion. However, this can be considered an over-estimate of the need because some of the activities will produce other co-benefits (e.g., crop productivity, household energy, infrastructure) that go beyond core climate resilience needs. Further, there will be some synergies among activity packages in different sectors. For example, upstream landscape management activities will lower costs and increase the resilience of

water supply and management structures. Similarly, improving agriculture, livestock and forest management and related livelihoods can improve people's ability to mitigate and cope with drought and flood risks without costlier reliance on disaster risk response.

If these over-estimates and synergies account for 20% to 30% of the costs, then the climate resilience need would be in the range of $8.3 billion – $9.5 billion USD.

Further subtracting the estimated $1.85 billion USD that is already being invested in climate resilience, as described in Section IV.3 from this figure yields an unmet climate resilience need in the range of $6.5 billion - $7.7 billion USD.

Thus, given the caveats and assumptions, the two estimation approaches (high-level aggregates from Section IV.3 and bottom-up cost estimates from this Section) yield figures in the same range of $6-8 billion USD.

X.2 Mapping of Priority Investments to Possible Funding Sources

There are over 20 multilateral and bilateral institutions including development banks, funds and assistance agencies that currently support agriculture, forest and livestock resilience activities in Ethiopia, or else have publicly indicated an interest in supporting these activities. A review of these agencies has identified:

- 20 funders that could potentially support components of Activity Group 1;
- 13 funders that could potentially support components of Activity Group 2;
- 13 funders that could potentially support components of Activity Group 3;
- 14 funders that could potentially support components of Activity Group 4; and
- 15 funders that could potentially support components of Activity Group 5;

The amount of financial support that each provides ranges from technical assistance grants of less than $1 million to programmatic investments of well over $1 billion for agriculture, land management, watersheds, safety nets, tenure, livestock and forest. Funding support comprises a mixture of in-kind assistance, grants, concessional loans and equity investment. Note that these figures do not include private sector and / or IFC investments. Public / private partnerships have the potential to unlock and leverage public financing, both domestic and international. However, detailed information on large-scale private sector investment in agriculture, forest and livestock were not available for this analysis.

The potential funding available through these institutions, coupled with end user contributions and GoE co-financing, would be sufficient to meet the incremental investment requirement of the Activity Groups. While some funding sources may be capable of fully funding an Activity Group, there may be advantages to combining funding from several potential sources to better match the programmatic focus, time horizon and administrative requirements with needs at the woreda, regional or national level. A preliminary framework to help match funding sources to investment priorities has been provided in Annex 11.

The GoE expects to use the MSIP analysis, prioritization and consensus building as the base for developing specific investment projects with finance blended from multiple sources in the coming months. Sources for this financing include the multi-lateral development banks, bilateral development partners, and a range of international climate finance funds and mechanisms, notably the Green Climate Fund. It is expected that this strategic and prioritized approach will yield tangible results in terms of scaled up financing within a few years. If the Climate Investment Funds and the PPCR gain access to additional financing for investment of country level investment plans, Ethiopia expects that the funding requests outlined below can be considered. Specific project concepts and proposals will be developed at the next stage of seeking financing from specific multilateral and bilateral funds, including the PPCR if funding becomes available. As a direct result of the MSIP process:

- With AfDB, the GoE is preparing a Ethiopia's Cook Stove Situation Analysis for PPCR Investment Opportunity (US$ 1 million) which derives from the analyses and consultations under the MSIP process. There is a request for project preparation funds of US$ 0.5 million. AfDB will request MPIS funds.
- With the World Bank, the GoE is preparing a Resilient Landscapes and Livelihoods operation ($100m IDA) to be delivered in mid-2018. This project is being designed based on inputs from the MSIP process and will seek to leverage financing from the PPCR (requesting US$ 48.5, if funds are available), GCF and bilateral donors, though the final amounts are not yet determined. The World Bank is not requesting MPIS funds.

XI. Essential Learning from the MSIP Process

XI.1 The Value of the MSIP Process

The MSIP was established to address particularly the climate resilience needs of the forest and agriculture sectors, taking account of activities in the water, energy and livestock sectors. While this document focuses on work specific to these sectors, it was recognized at the early stages that the "product is the process", and the process could be applied equally to other sectors in the country, and indeed in other countries tackling risks caused by climate change. The MSIP can therefore add further value through lesson learning and dissemination.

The MSIP process has featured two core approaches to the preparation of credible climate financing proposals, namely: (i) centering on an inclusive and consultative process with numerous DPs and other stakeholders; and (ii) largely building on and incorporating all major strategies, programs, projects and analytics for Ethiopia. The two approaches are somewhat mutually reinforcing; without the high level of participation and inclusiveness, it will be difficult for the analysis and conclusions to fully and properly reflect the strategic priorities of Ethiopia. The combination of these two approaches is essential to generating the buy-in and commitment of the most influential and concerned stakeholders.

In themselves, these two approaches are not new to development or unique to climate change programs. Participation and ownership have for some time been understood as essential to effective process of technical assistance and change management. They have perhaps been even more important than might otherwise be the case, given that the MSIP process aims to leverage and create a multiplier effect in scaling up investment and action through 2030 using new and additional financing from multiple sources to support Ethiopia to achieve its climate resilience objectives. This requires a high level of clarity on the current state of play as well as the case for change, and one that is unlikely to emerge from a more traditional (or "expert") approach to programming, where the essential realities and interests of the country unfortunately can get overlooked.

As highlighted elsewhere in the MSIP, the three essential components of the process have been preparation, consultation and participation. Lessons learned in the context of each one are worth consideration.

XI.2 The Value of Preparatory Work

Preparation has been a continual element of the MSIP process. In many ways, the extensive strategic planning and institutional adaptation pursued by GoE to tackle climate resilience provided the strong foundation for the work. Without this, the consultation and participation would have been harder to facilitate, as it would have lacked both an organizing framework and material data.

In the context of the MSIP itself, the first Joint Scoping Mission, conducted in February 2016, represented the foundation point for the work and engaged with over 40 different entities intensively in investment and policy dialogue. The second mission brought in regional actors to deepen the dialogue. This provided the important base of understanding for stakeholders, which could continually be referenced to guide on-going work and

ensure consistency. The creation of an early "zero draft" of the MSIP document provided a line of sight for participants, establishing a framework under which the process could inform the product.

Thus, preparation was essential to the effectiveness and efficiency of the process, and hence the robustness of the product. As usually the case, hindsight provides lessons on how preparation could have been strengthened. The main ones relate to the elements of consultation and participation, as described below.

XI.3 The Value of Consultation

Consultation has been the bedrock of the MSIP, this document incorporating data and information collected from, and analysis and conclusions that have been jointly reviewed and refined with, stakeholders. While external parties have helped develop the MSIP their role has been to sustain rather than substitute for such consultations. The consultants engaged in the latter part of the MSIP preparation were required to add capacity in data collection, analysis and reporting, while ensuring that stakeholders remained the owners of the process.

The involvement of the consultants on this basis was enabled by the preparatory work that had gone before. There was a clear starting point that limited the risk of either duplication or digression of work. Regular consultations between the consultants and the Core MSIP team ensured that this remained the case.

While consultation was essential to the MSIP, it should always be recognized that this comes at a cost. Extensive and inclusive consultations such as those that have been practiced inevitably take time. The submission of the MSIP to the PPCR will be almost two years after Ethiopia was selected to participate in the PPCR. For some, this might seem too long, particularly in a context where there is an understandable sense of urgency driving resource mobilization to support the CRGE initiative.

Ensuring such urgency does not overtake the consultative process is essential. The end-product can only derive from full consultations around each step of the process, if it is to be robust and owned by those that will take it forward. The lesson is that there must be, from the outset, a strongly shared vision of the nature and value of - the end-product, so that any urge for short-term progress can be overcome.

This lends emphasis to the vital role of thorough preparation, as it is this that will help create the shared vision. While acknowledging the effort that had gone into early preparation, the consultants observed some inconsistencies in stakeholder understanding of the purpose of the MSIP. Such inconsistencies did not prevent the work from going forward, but did at times slow the process down. Totally removing divergence of understanding is extremely difficult, particularly when involving many people with differing interests. Nevertheless, the critical lesson is that substantial time must be spent communicating the vision, ensuring that stakeholders really do share an understanding and thus are able to contribute fully to the consultative process.

XI.4 The Importance of Participation

Participation is essential if consultation is to be effective. To work the fullest extent, participation must be inclusive and engaged.

The essence of the MSIP is that it takes a multi-sectoral approach and melds together the interests of the different groups that can contribute to and will likely be affected by the MSIP. The importance of involving the different sectors, as well as the donors and potential executing agencies, was recognized at the outset, the formation of the Core MSIP Team being instrumental in bringing them together in constructive dialogue. The inclusiveness of the participation is indicated by the recording of over 230 contributors to the MSIP process (see Annex 5 for more details).

For participants to be engaged the opportunity to contribute is necessary but not sufficient; for real engagement to occur people must feel that their input can make a difference, and will be considered as seriously as those of other stakeholders. Key to this has been both the openness of the consultative process and transparency achieved through the regular updating and sharing of information. Outputs have resulted from each step in the process, and it is possible to see from these how consultations have influenced the development of the MSIP. This seems to have encouraged continual and constructive participation.

Effective (engaged) participation also requires continuity, otherwise progression is difficult to achieve. The records of stakeholder participation (see Annex 5) reveal that there were many individuals that participated in only one or two steps, and few outside the Bank that have been involved in all, which implies lack of continuity. Participating organizations might counter this by ensuring that, even if different people are involved, they have all been fully briefed and thus have the necessary shared understanding. While in theory this is possible, the observation of the consultants was that such briefing had not always adequately taken place, with some participants at workshops seeming to have limited understanding of previous steps. This slowed down progress and reduced the value of the consultations. Given demands on participant time, safeguarding against this lack of continuity is always difficult. However, it is important to address this as much as possible, including by making the organizations involved understand that they are accountable for the ability of the individuals that represent them to properly engage in – and therefore for the success of – the process.

If this continuity in organizational engagement can be achieved, then in fact there are benefits of inclusivity from involving a larger number of people. The more people that participate in the preparations and consultations, the broader the base of understanding of and, potentially, buy-in to the MSIP. In this way, the MSIP process can achieve one of its aims, by boosting GoE's capacity for cost-effective and efficient scaled-up action on the ground.

In taking the MSIP forward it should be noted that there has been limited participation of the private sector, and none of the communities intended to benefit from investments in climate resilience. The latter seems appropriate, as community involvement will be more constructive when considering the design of specific projects developed under the MSIP. The lack of engagement of the private sector is potentially more problematic, given how important their contribution will be to some investment areas. The lack of participation of this group probably reflects its current low levels of investment in activities that contribute to climate resilience in natural resources in Ethiopia, and will need to be addressed as the MSIP is used to mobilize necessary resources, some of which must come from the private sector.

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The Federal Democratic Republic of Ethiopia
Ministry of Finance and Economic Cooperation

ቁጥር
Ref.No. _____

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Date _____

CIF Administrative Unit

Washington DC

The United States of America

Subject: Endorsement of Ethiopia's Multi-sector Investment Plan (MSIP) document

The Ministry of Finance and Economic Cooperation (MoFEC), with key sectoral ministries (the Ministry of Agriculture and Natural Resources; the Ministry of Environment, Forest and Climate Change; the Ministry of Livestock and Fisheries; and the Ministry of Water, Irrigation and Electricity) has been spearheading the development of the Multi-Sector Investment Plan (MSIP) for climate resilience to scale up actions related to the 2nd Growth and Transformation Plan (GTP-2), which incorporates many of the elements of the CRGE Strategy. The MSIP development process is being supported by the World Bank Group, the African Development Bank, Climate Investment Fund's (CIF) Pilot Program for Climate Resilience (PPCR) and other partners.

A group of experts from our ministries, which formed the Core MSIP team, was leading the preparation of the plan with active engagement of stakeholders from development partners, CSOs, Private Sector, UN Agencies, Academia, etc. The MSIP preparation was supported with review of the ongoing investment portfolio and gap analysis in the four sectors. Stakeholders were actively engaged in the selection of activity packages, prioritization of the activities and finalization of the MSIP document.

We have been providing guidance and receiving regular updates from the experts during the course of MSIP preparation. In our capacity as Co-chairs of the CRGE Facility Management committee we have endorsed the MSIP document and submission to the CIF Administration.

Sincerely,

For MOFEC

ABMASTI NEBEBE
State Minister

For MEFCC

C.C

- His Excellency Dr. Kaba Urgessa, State Minister, MOANR
- His Excellency Ato Wondimu Tekle, State Minister, MOWIE
- His Excellency Dr. G/egizibeher G/Eyesus, state Minister, MOLF

Addis Ababa

Multi-Sector Investment Plan for Climate Resilient Agriculture and Forest Development 2017-2030

FINAL DRAFT
9 May 2017

PILOT PROGRAM FOR CLIMATE RESILIENCE **ETHIOPIA: Summary of Multi Sector Investment Plan for Climate Resilience**	
1. **Country/Region**:	Ethiopia / Africa
2. **PPCR Funding Request (in USD million):**:	The Government of Ethiopia is requesting funding for the following projects proposed with World Bank and AfDB. • With the World Bank, the GoE is preparing a Resilient Landscapes and Livelihoods operation (US$ 100m IDA, requesting US$ 48.5 m from PPCR, if funds are available) to be delivered in mid-2018. • With the AfDB, the GOE is preparing to increase resilience through affordable access to climate smart energy. To facilitate the project preparation, AfDB is requesting a Project Preparation Grant of USD 0.5 million leading to potential contribution from ADF (amount to be confirmed) and requesting up to USD50 m from PPCR, if funds are available. Both projects are being designed based on inputs from the MSIP process and will seek to leverage financing from multiple sources. The GoE expects to work with the World Bank, AfDB and other development partners to use this MSIP to leverage financing for climate resilience, including from the GCF.
3. **National PPCR Focal Point**:	Zerihun Getu UN Agencies and Regional Economic Cooperation, CRGE Facility MoFEC, Addis Ababa, Ethiopia

4. **National Implementing Agency** (Coordination of Strategic Program)**:**	Ministry of Finance and Economic Cooperation
5. **Involved MDBs**	World Bank, AfDB, IFC

6. **MDB PPCR Focal Point and Project/Program Task Team Leader (TTL)**:	Headquarters-PPCR Focal Point: Kanta Kumari Rigaud (WB) Phillips Gareth (AfDB) Joyita M. Mukherjee (IFC)	TTLs: Stephen Danyo and Timothy H. Brown (WB) Diop Bamba (AfDB) Senait Mekete Ayele (IFC)

7. **Description of SPCR:**

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

Ethiopia aims to become a lower middle-income country by 2025 on a climate resilient and green economic growth path that is socially equitable and inclusive. Ethiopia is both highly exposed to climate shocks and changes, and highly vulnerable. This is due to its rainfall-dependent economy, predominantly rural population, frequent occurrence of droughts and floods, high poverty rates, and limited institutional capacity. Ethiopia's climate vulnerability results mainly from five challenges: (i) adverse impacts on the agriculture and livestock sectors; (ii) effects on the hydropower sector and, hence, power generation; (iii) increased flooding impacting on the transport sector; (iv) effects of drought on government expenditure associated with vulnerability and food insecurity; and (v) impacts on irrigation and hydropower due to conflicts associated with competing demands for water. Changes in the state of forests and woodlands can amplify or ameliorate each of these factors, given the close interactions and inter-dependency between water, energy, forest, and agriculture in the rural landscape.

To overcome these challenges and achieve a more resilient economy, Ethiopia must undertake a structural transformation in line with its ambitious economic development plans which rely heavily on a four-fold increase in the productivity of its rural landscapes, green industrialization and urbanization, and sustainable energy access. Ethiopia requires not only large volumes of strategically coordinated public and private investment, but also policy and regulatory reform, as well as extensive cross-sectoral and multi-stakeholder collaboration. The MSIP captures required investments that can help to build the country's adaptive capacity and tackle specific climate risks.

(b) Areas of Intervention – sectors and themes

To help Ethiopia tackle these challenges and advance the national move toward climate resilient, green growth, this Ethiopian Multi-Sector Investment Plan (MSIP) for Climate Resilient Agriculture and Forest Development defines an investment need of approximately US$ 4 billion in the 2017-2030 period. The MSIP deals with those sectors that are expected to be most affected by climate change in the next 15 years: by strengthening resilience in those important sectors, the MSIP will lay the foundation for future development towards Ethiopia's longer term objectives of a diverse, climate resilient and green economy. Using a broad, inclusive consultative process, the MSIP groups 50 priority Activity Packages into Activity Groups that pursue a multi-sectoral approach to address key challenges in the agriculture, forestry, water, livestock and energy sectors. These Activity Groups aim to address the financial, thematic and spatial gaps identified through an analytical and inclusive process. The five Activity Groups cover the following sectors and themes:

1. Enhancing climate resilience in agriculture, including: Climate smart and gender sensitive agricultural support services; Reduced vulnerability to rainfall variability and water supply uncertainty; Increased resilience through crop productivity improvements and more equal intra-household relationships; Increased resilience through income diversification; Better natural resource management (soil, water, agroforestry).
2. Climate resilient forest and landscape development, conservation and utilization, including: Strengthening the resilience of the forest sector by expanding forest resources and improving their management; Reducing pressure on landscapes from extension of the agricultural frontier; Reducing forest degradation due to fuelwood harvesting; Reducing pressure on landscapes from grazing-related land clearance; Reducing vulnerability of people in the forestry sector through livelihoods diversificationImproved land and water management to deliver economic growth in agriculture, forestry and livestock production.
3. Ensuring climate resilient livestock management and livelihoods, including: Climate smart and gender sensitive extension services; Enhanced resilience through reduced livestock vulnerability and diversification; Reduced environmental impact of livestock production; Better natural resource management (soil, water, agroforestry).
4. Increased resilience through affordable access to climate smart energy including: Reduced reliance on fuelwood for thermal energy; Improved access to low-emissions electricity.
5. Enhanced climate-resilient disaster risk management and early warning systems including: Improved drought and flood risk assessment and early warning systems; Increased resilience through coordinated food and non-food responses; Improved implementation of the Sendai Framework for Disaster Risk Reduction.

(c) Expected Outcomes from the Implementation of the SPCR

The MSIP results are aligned to Ethiopia's CRGE Strategy and the GTP II so that it is fully integrated into the national system both for development planning and for monitoring and evaluation. Implementation of the MSIP is expected to catalyse transformational change by mobilising investment to scale up existing practices and creating a change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Specifically, implementing the activities in the MSIP should contribute to a four-fold increase in the productivity of Ethiopia's rural landscape by harnessing improvements in land and water management that optimize efficiency, balance competing priorities and leverage investment from both the public and private sectors.

The MSIP provides a widely agreed framework for coordinating public financing for investment in climate resilience. Success will require strong implementation mechanisms and cross sectoral coordination at all levels of government, as well as technically qualified human resources to realize investment projects on the

ground. Fortunately, Ethiopia has established the CRGE Facility as a coordinating body that also continues to build capacity and strengthen implementation through its sectoral focal points and links to sectoral agencies and regional implementation structures.

The MSIP process also has analyzed the policy and regulatory incentives for improvements in resilience and identified potential areas for reform. This will guide ongoing dialogue between the FDRE and its development partners, as well as private sector actors. A risk assessment has also identified and categorized key issues along with mitigation measures to manage major risks.

The MSIP expects to support and catalyse transformational change through three levers: 1) Scaling up through enhanced, integrated and coordinated approach to public investment; 2) Creating the enabling conditions for scaling up private investment, including smallholders; and 3) Improving decision-making and delivery within existing large-scale government programmes and investments with targeted policy reforms and better use of data and evidence from the field. The MSIP provides the framework for Ethiopia to achieve the necessary transformation and advance along a pathway to increased resilience.

8. **Expected Key results from the Implementation of the Investment Strategy (consistent with PPCR Results Framework):**
Ethiopia's MSIP for climate resilience directly supports Ethiopia's national development vision and plans. The Growth and Transformation Program (GTP II) sets Ethiopia's vision to become a lower middle income country by 2025. The Climate Resilient Green Economy (CRGE) Strategy is one of the GTP II's strategic pillars and contributes by supporting climate resilient and green economic growth that is socially equitable and inclusive, addressing underlying drivers of vulnerability to climate risks. The CRGE Strategy has four supporting pillars: Agriculture Systems strengthened using low carbon, climate resilient practices, forests and other natural resources protected and sustainably managed, increased energy and electricity generation from diversified climate resilient, renewable sources, and green cities, buildings, transportation and industrial systems developed and safeguarded against climate risks. The MSIP directly and indirectly supports all of these pillars, which are consistent with the PPCR results framework (as shown below and in Section VII and Table 9 of the MSIP Document).
Monitoring and evaluation under the MSIP is built into the system for tracking national development and resilience progress. The CRGE Facility has established a Monitoring and Evaluation (M&E) System that cascades national monitoring requirements into CRGE related investments. This is readily aligned with the PPCR M&E results framework, as indicated below, and in greater detail in Table 9 of the MSIP document. The following table summarizes the alignment between the Expected MSIP Results, the national framework of CRGE Indicators and the PPCR Results and Catalytic Outcomes, as well as project/program results and indicators.

Overarching Objective: To directly support Ethiopia's target of a climate resilient and green economy reaching lower-middle income status by 2025.		
CRGE Strategy	**CRGE Indicators**	**PPCR Results, Catalytic Outcomes & Indicators**
Goal: Resilience of households improved	• Change in climate vulnerability of rural communities • Strengthened adaptive capacity of rural communities and businesses	Improved quality of life of people living in areas most affected by climate variability & CC • % of people classified as poor (women & men) and food insecure in most affected regions
Longer-Term MSIP Outcomes ➢ Enhanced climate responsive and climate resilient development planning	• Evidence of strengthened government capacity to collect, analyze and apply climate information to planning and decision-making • Degree of integration/ mainstreaming of climate change in national and sector planning and coordination	Increased resilience in economic, social, and eco-systems to climate variability & CC through transformed social and economic development • Changes in budgets of all levels of government to take into account effects of climate variability & CC across sectors and regions. • Degree to which development plans integrate climate resilience by subjecting planning to climate proofing and assessments of vulnerability (including gender) and including measures to better manage and reduce risk.
➢ Climate responsive investment opportunities		Scaled-up investments in climate resilience and their replication • Number and value of investments (national and local government, non-government, private sector, etc.) in $ by type of climate resilient investments
➢ Knowledge, skills and capacities: Strengthened gov't capacities to plan, resource and deliver green, climate resilient results	• Extent to which sectors use improved tools, instruments, strategies and activities to respond to climate variability & CC	Increased capacity to integrate climate resilience into country strategies • Evidence of a functioning cross-sectoral mechanism that takes account of climate variability & CC • Evidence of line ministries or functional agencies lead in updating or revising country strategies (country ownership)
Expected MSIP Results	**CRGE Indicators**	**PPCR Project/Program Results and indicators**
Activity Group 1 - Enhancing Climate Resilient Agricultural Production and Food Security	• (Change in) Rainfed crop area under sustainable, climate smart land management practices (ha) – by crop type (private holders only) • (Change in) crop land productivity where modern, climate smart and small-scale irrigation applied (quintal per hectare) for: Major food crops; High value crops • (Change in) Total crop land under modern, climate smart irrigation systems (ha and %) by type: S, M, L • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc • Change in percent change in availability of drought/salt-tolerant, certified seeds/crops • Change in hectares of farms with sustainable access to irrigation and drinking water
Activity Group 2 - Climate Resilient Forest and Natural Resource Management	• Total area (individual & communal) of land under sustainable, climate smart, land management plans	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc

	• Cumulative area of land covered with forest (ha), disaggregated by: Protected (%); Plantation (%), Under improved forest mgmt systems (%) and reduced carbon emissions practices (%) • Change in HH fuelwood use • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed) • Area of land developed with community based watershed program & area rehabilitated	• Change in hectares (ha) of area in project/program area with management plan that integrate climate change considerations
Activity Group 3 - Ensuring Climate Resilient Livestock Management and Livelihoods	• Productivity of communal pasture and rangeland (tons/ha) – feed / forage • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc
Activity Group 4 - Improved access to climate-smart energy	• Annual energy savings: disaggregated by type of energy-saving measure • Installed capacity renewable energy (type, GWh), including from solar, wind, geothermal. biomass	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority infrastructure • Change in # of energy-related infrastructure integrating climate resilience features • Availability of tools to assess climate risks to power plants and other sources of energy
Activity Group 5: Enhanced climate-related disaster risk management and response systems	• Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems • Evidence of strengthened government capacity to collect, analyze and apply climate information to decision-making • Extent to which sectors use improved tools, instruments, strategies and activities to respond to climate variability & CC • Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning system	Increased resilience in economic, social, and eco-systems to climate variability & CC through transformed social and economic development • Existence and effectiveness of early warning system for extreme climate events • Scope of social safety nets; • Existence of risk insurances; • Extent to which development decision making is made based on country-specific climate science, local climate knowledge (regional and eco-regional level), and (gender-sensitive) vulnerability studies • Coverage (comprehensiveness) of climate risk analysis and vulnerability assessments within the limits that current scientific evidence permits.

9. **Project and Program Concepts under the SPCR:**

Ethiopia's MSIP (local name for SPCR) lays out a sound strategic investment framework. Specific project concepts and proposals will be developed at the next stage of seeking financing from specific multilateral and bilateral funds. As a direct result of the MSIP process:

- With AfDB, the GoE is preparing a Ethiopia's Cook Stove Situation Analysis for PPCR Investment Opportunity (US$ 1 million) which derives from the analyses and consultations under the MSIP process. There is a request for project preparation funds of US$ 0.5 million. AfDB will request accompanying MPIS funds.
- With the World Bank, the GoE is preparing a Resilient Landscapes and Livelihoods operation ($100m IDA) to be delivered in mid-2018. This project is being designed based on inputs from the MSIP process and will seek to leverage financing from the PPCR (requesting US$ 48.5, if funds are available), GCF and bilateral donors, though the final amounts are not yet determined. The concept is an annex of the main document. The World Bank is not requesting MPIS funds.

Project/Program Concept Title	MDB	Requested po	Expected co-financing (US$)	Preparation grant request (US$)
Resilient Landscapes and Livelihoods operation	WB	48.5	>400.0	0.0
Ethiopia's Cook Stove Situation Analysis for PPCR Investment Opportunity	AfDB	50.0	tbd	0.5

Project concepts and proposals will be further developed in coming months by the Government together with the MDBs, and possibly with other partners.

Regarding Ethiopia's overall investment need to achieve climate resilience in the target sectors to 2030, the MSIP follows two lines of analysis, one based on high level aggregates, the other based on more detailed cost estimates. For the aggregate level, estimates based on the Government's sectoral climate resilience strategies amount to about US$ 5.9 billion. Noting that these estimates dated from 2011-14, the actual current need could be 20-30 percent higher. Taking the midpoint of 25%, this increases the estimate of the investment gap to about $7.4 billion.

For the detailed analysis, the estimated costs of all activity packages summed to US$ 11.8 billion. These cost estimates are based on more recent data and more current understanding of the resilience needs for each sector. However, this can still be considered an over-estimate of the need because some of the activities will produce other co-benefits (e.g., crop productivity, household energy, infrastructure) that go beyond core climate resilience needs. Further, there will be some synergies among activity packages in different sectors, for example, upstream landscape management activities will lower costs and increase the resilience of water supply and management structures. If these over-estimates and synergies account for a quarter to a third of the costs, then the climate resilience need would be in the range of US$ 8-9 billion. Thus, given the caveats and assumptions, the two estimation approaches yield figures in the same range of US$ 6-8 billion.

In comparison to this need, the total value of the existing portfolio of development partner projects is around US$ 4.8 billion. However, not all of this spending is directly for climate resilience, as it includes water and energy sector infrastructure, as well as agriculture and landscape productivity activities that contribute to broader development objectives. These figures can be adjusted to account for the multiple objectives using a range of assumptions to yield about US$ 1.8 billion. Subtracting the current spending from the estimated need yields a gap of US$ 4-6 billion (based on the two approaches).

10. **Timeframe** (tentative) Milestones

The GoE expects to use the MSIP analysis, prioritization and consensus building as the base for developing specific investment projects with finance blended from multiple sources in the coming months and years and the results framework provides a system for monitoring these milestones. Some of the sources for this financing are identified in the document, including the multi-lateral development banks, bilateral development partners, and a range of international climate finance funds and mechanisms, notably the Green Climate Fund, where Ethiopia is a participating member. It is expected that this strategic and prioritized approach will yield tangible results in terms of scaled up financing within a few years. If the Climate Investment Funds and the PPCR gain access to additional financing for investment of country level investment plans, Ethiopia expects that the funding requests outlined below can be considered. Current time frame for follow on activities:

- 2017 / 12 – AfDB and GOE to submit concept for implementation of project preparation grant for project, Ethiopia's Cook Stove Situation Analysis for PPC Investment Opportunity.
- 2018/12 – AfDB and GOE deliver Ethiopia's Cook stove Project for PPCR Investment Opportunity to AfDB Board.
- 2017 (Q3) – GoE with World Bank will deliver Project Concept Note for Resilient Landscapes and Livelihoods operation ($100m IDA), with parallel financing of US$ 48.5 million requested from PPCR and other sources.
- 2018 (mid) – GoE with World Bank will deliver Resilient Landscapes and Livelihoods operation to WB Board. Additional financing is being sought from the GCF and bilateral partners, amounts to be determined.

- **Other Partners involved in SPCR:**

Besides the MDBs (WBG and AfDB), development partners (such as UK/DFID, Norway/Norway's International Climate and Forest Initiative, UNDP, IFAD, FAO, JICA, EU, Canada, Irish AID, US (State and USAID), Denmark, Germany/KfW, Sweden/SIDA, Austria, Finland, French and Global Green Growth Institute; Korean International Cooperation Agency; CIAT-International Center for Tropical Agriculture.

Contributing Partners

Ministries and Agencies

FDRE Ministry of Finance and Economic Cooperation

FDRE Ministry of Environment, Forest and Climate Change

FDRE Ministry of Water, Irrigation and Electricity

FDRE Ministry of Agriculture and Natural Resources

FDRE Ministry of Livestock and Fisheries

FDRE Ministry of Mines Petroleum and Natural Gas

Ethiopian Agricultural Transformation Agency

Ethiopian Biodiversity Institute

National Meteorological Agency of Ethiopia

Tana and Beles Sub-Basin Organization

Ethiopia Abay Basin Authority

Multilateral Development Banks and their funds/programs

World Bank

African Development Bank

International Finance Corporation (IFC)

Climate Investment Fund (CIF)

Pilot Program for Climate Resilience (PPCR)

Bilateral and Multilateral Development Partners

Austria Development Cooperation

Canada Department of Foreign Affairs, Trade and Development

Canada Embassy

Consultative Group for International Agricultural Research (CGIAR)

Denmark Embassy

EU Ethiopia Office

Finland Embassy

Food and Agriculture Organization of the United Nations (FAO)

France Embassy

International Centre for Tropical Agriculture (CIAT)

International Fund for Agricultural Development (IFAD)

Irish Aid

Japan International Cooperation Agency (JICA)

Korea Trade-Investment Promotion Agency (KOTRA), Republic of Korea

Kreditanstalt für Wiederaufbau (KfW)

Norway's International Climate and Forest Initiative (NICFI)

Royal Norwegian Embassy (RNE)

Switzerland Embassy

UK Department for International Development (DfID)

United States Agency for International Development (USAID)

United Nations Development Programme (UNDP)

NGOs, Civil Society Organizations, and Private Sector

Population, Health and Environment - Ethiopia Consortium, PHE-EC

World Vision-Ethiopia

Care Ethiopia

Climate Change Forum Ethiopia

Forum for Environment

Global Green Growth Institute

Oxfam GB/ACCRA

Universities and Research Institutions

Addis Ababa University Climate Science Centre/Centre for Dryland Management

Ethiopian Environment and Forest Research Institute

Ethiopian Academy of Science

Ethiopian Development Research Institute -- Environment and Climate Research Centre (EDRI/ECRC)

Horn of Africa Regional Environment Center and Network (HoA-REC & N)

Consultancy arrangements to produce this document

A consortium led by LTS International, comprising the UK-based Eco Ltd and Ethiopian limited company, Echnoserve, facilitated completion of the consultation process, developed the portfolio review, gap analysis, and finalized this MSIP document. More information about the process is available in Section IV.

Contents

Contents of the Main Sections of the MSIP

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Acronyms

ADF	African Development Fund
AfDB	African Development Bank
AECID	Spanish Agency for International Development
AGP	Agricultural Growth Program
AISE	Agricultural Input Supply Enterprise
ANRSFE	Amhara National Regional State Forest Enterprise
ARC	African Risk Capacity
ATA	Agricultural Transformation Agency
CIF	Climate Investment Funds
CLTSH	Community Led Total Sanitation and Hygiene
CR	Climate Resilience
CRGE	Climate-Resilient Green Economy
CSA	Ethiopian Statistical Agency
DBE	Development Bank of Ethiopia
DFTAD	Department of Foreign Affairs, Trade and Development
DP	Development Partner
DRM	Disaster Risk Management
DRMFSS	Disaster Risk Management and Food Security Sector
DRM-SPIF	Disaster Risk Management Strategic Programme and Investment Framework
DRR	Disaster Risk Reduction
EBI	Ethiopian Biodiversity Institute
ECRC	Environment and Climate Research Center
EDRI	Ethiopian Development Research Institute
EE	Executing Entity
EGTE	Ethiopian Grain Trade Enterprise
EIA	Environmental Impact Assessment
EIAR	Ethiopian Institute of Agricultural Research
EMDIDI	Ethiopian Meat and Dairy Industry Development Institute
EOI	Expression of Interest
EPA	Environmental Protection Authority
EPACC	Ethiopian Programme of Adaptation to Climate Change
ESA	Ethiopian Standards Agency
ESE	Ethiopian Seed Enterprise
ESIF	Ethiopia Strategic Investment Framework for Sustainable Land Management
ESSF	Environmental and Social Safeguards Framework
EWCA	Ethiopian Wildlife Conservation Authority
EWRD	Early Warning and Response Directorate
FCPF	Forest Carbon Partnership Facility
FDRE	Federal Democratic Republic of Ethiopia
FSCD	Food Security Coordination Directorate
FSRE-Fund	Food Security and Rural Entrepreneurship Fund
GATE	Greening Agricultural Transformation in Ethiopia
GCF	Green Climate Fund
GCM	Global Circulation Model
GDP	Gross Domestic Product

GEF	Global Environment Facility
GHG	Greenhouse gas
GoE	Government of Ethiopia
GTP I	First Growth and Transformation Plan (2010/11 – 2014/15)
GTP II	Second Growth and Transformation Plan (2015/16 – 2019 /20)
HABP	Household Asset Building Program
HDI	Human Development Index
IDA	International Development Association
IE	Implementing Entity
IEC	International Electro-technical Commission
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution
IRENA	International Renewable Energy Agency
ISS	(African Development Bank) Integrated Safeguards System
LDC	Least Developed Country
LEAP	Livelihood Early Assessment and Protection
LIAS	Livelihood Impact Assessment Sheet
LIAS data	Laboratory for Imaging Algorithms and Systems
M&E	Monitoring and Evaluation
MDB	Multi-Lateral Development Bank
MDGs	Millennium Development Goals
MoANR	Ministry of Agriculture and Natural Resources
MoCT	Ministry of Culture and Tourism
MoU	Memorandum of Understanding
MEFCC	Ministry of Environment, Forest and Climate Change
MoFEC	Ministry of Finance and Economic Cooperation
MoLF	Ministry of Livestock and Fisheries
MoWIE	Ministry of Water, Irrigation and Electricity
MRV	Measuring Reporting Verification
MSIP	Multi-Sector Investment Plan
NAPA	Climate Change National Adaptation Programme of Action
NBPE	National Biogas Programme of Ethiopia
NBSAP	National Biodiversity Strategy and Action Plan
NDRMC	National Disaster Risk Management Commission
NGO	Non-Governmental Organization
NILUPP	National Integrated Land Use Plan and Policy
NMA	Ethiopia's National Meteorological Agency
NPC	National Planning Commission
NPDRM	National Policy and Strategy on Disaster Risk Management
NSC	National Steering Committee
ODA	Official Development Assistance
OFLP	Oromia Forested Landscape Program
OFWE	Oromia Forest and Wildlife Enterprise
PES	Payment for Ecosystem Services
PFM	Participatory Forest Management
PPCR	Pilot Program for Climate Resilience
PRGA	Portfolio Review and Gap Analysis

PSNP	Productive Safety Net Programme
RED&FS	Rural Economic Development and Food Security
REDD	Reducing emissions from deforestation and forest degradation
RNE	Royal Norwegian Embassy
R-PP	REDD+ Readiness Preparedness Plan
SC	Steering Committee
S4N	Seeds for Needs
SDGs	Sustainable Development Goals
SDPRP	Sustainable Development Poverty Reduction Paper
SLM	Sustainable Land Management
SLMP	Sustainable Land Management Program
SMEs	Small and Medium Enterprises
SNNPR	Southern Nations, Nationalities, and Peoples' Region
SRM	Sectoral Reduction Mechanism
SUNARMA	Sustainable Natural Resource Management Association
TA	Technical Assistance
TC	Technical Committee
UNFCCC	United Nations Framework Convention of Climate Change
VTE	Village Tree Enterprise
WASH	Water, Sanitation and Hygiene
WB	World Bank
WRM	Water Recovery Management
WMO	World Meteorological Organization

Multi-Sector Investment Plan (MSIP) for Climate Resilient Agriculture and Forest Development 2017-2030[1]

Executive Summary

Ethiopia has a vision to become a lower middle-income country by 2025. It aims to do this through climate resilient and green economic growth that is socially equitable and inclusive, and which addresses underlying drivers of vulnerability to climate risks. Due in part to its diverse geography, Ethiopia has always faced a variable climate. The precise, spatially-explicit impacts of future climate change in Ethiopia are still uncertain, but over the coming 15 years increases in climate variability are highly likely. Uncertainty and variability present real challenges to Ethiopia's rapidly growing economy to adapt and build-in resilience. Economic development still relies on a largely rural rain-fed agricultural sector: wide annual variations in seasonal rainfall performance hamper development and dampen growth***.***

Negative impacts of climate change on GDP are assumed to occur as a result of the following five factors: (i) adverse impacts on the agriculture and livestock sectors; (ii) effects on the hydropower sector and, hence, power generation; (iii) increased flooding impacting on the transport sector; (iv) effects of drought on government expenditure associated with vulnerability and food insecurity; and (v) impacts on irrigation and hydropower due to conflicts associated with competing demands for water. Changes in the state of forests and woodlands can amplify or ameliorate each of these factors, given the close interactions and inter-dependency between water, energy, forest, and agriculture in the rural landscape.

As a low-income country, Ethiopia is more vulnerable to current climate variability and future climate changes than are wealthier countries.[2] Ethiopia is both highly exposed to climate shocks and changes, and highly vulnerable. This is due to its rainfall-dependent economy, predominantly rural population, frequent occurrence of droughts and floods, high poverty rates, and limited institutional capacity. [3] To achieve its transformational development goals, Ethiopia must balance investments in vulnerability reduction with response to specific climate impacts. This means investing climate finance in interventions which overlap with traditional development practice as well as in those which target particular climate impacts such as changes in rainfall patterns and temperature increase. In practice, these interventions lie on a broad spectrum of activities with gradations of emphasis on vulnerability and impacts. The MSIP captures required investments along this continuum, which can build the foundations of the country's adaptive capacity and identify and tackle specific climate risks. ***Investment along this spectrum is justified*** because Ethiopia is less able to deal with climate events while it is still developing its institutional, economic or financial capacity to adapt effectively. This justifies the investment of climate finance in both broad-based inclusive growth to boost adaptation demand and improve the efficiency of more targeted adaptation support, while reducing

[1] Throughout this document, years refer to Gregorian calendar years.

[2] The global insight is based partly on forward looking studies that assess the likely impact of future climate change (Tol 2002a, b, Parry et al. 2007) and partly on empirical evidence that looks at the impact of extreme climate events in the past (Kahn 2005, Noy 2009, Toya and Skidmore 2007). More recent papers drawing similar conclusions include Althor, G., Watson, J. E., & Fuller, R. A. (2016). Global mismatch between greenhouse gas emissions and the burden of climate change. Scientific reports, 6. Cariolle, J., Goujon, M., & Guillaumont, P. (2016). Has structural economic vulnerability decreased in Least Developed Countries? Lessons drawn from retrospective indices. The Journal of Development Studies, 52(5), 591-606. Ethiopia-specific literature also notes the gaps in ability to cope with current climate variability, as well as future changes. For example: Cooper, P. J. M., Dimes, J., Rao, K. P. C., Shapiro, B., Shiferaw, B., & Twomlow, S. (2008).

[3] Ethiopian Panel on Climate Change (2015), First Assessment Report, Summary of Reports for Policy Makers, Published by the Ethiopian Academy of Sciences.

fragmentation of climate finance, other forms of development finance, private sector investment, as well as government expenditure.

Fundamentally, to overcome its adaptation deficit and achieve a more resilient economy, Ethiopia must undertake a structural transformation in line with its ambitious economic development plans which rely heavily on a four-fold increase in the productivity of its rural landscapes, green industrialization and urbanization, and sustainable energy access. Ethiopia has set itself ambitious development targets in its second Growth and Transformation Plan (GTPII) development plan; however, it faces inefficiencies in the provision of adaptation services and has to rationally allocate its scarce development resources to more pressing and immediate needs. To overcome its adaptation deficit and achieve a resilient economy, Ethiopia requires a massive effort involving substantial policy and regulatory reform, extensive cross-sectoral and multi-stakeholder collaboration, as well as large volumes of both public and private investment that is strategically coordinated to reduce costly fragmentation.

To help Ethiopia tackle this challenge and support the national objectives of climate resilient, green growth, this Ethiopian Multi-Sector Investment Plan (MSIP) for Climate Resilient Agriculture and Forest Development defines an investment need between approximately US$ 6-8 billion in the 2017-2030 period. The investment plan is presented in terms of: (i) prioritized and costed activity packages; (ii) existing priority large-scale programs of the government that can rapidly direct funds to the ground for quick action; (iii) new strategic investment areas in the forest, agriculture, livestock, energy and water; and (iv) a suite of cross-sector prioritized activities to support these. The MSIP deals with those sectors that are expected to be most affected by climate change in the next 15 years: by strengthening resilience in those important sectors, the MSIP will lay the foundation for future development towards Ethiopia's longer term objectives of a diverse, climate resilient and green economy. The MSIP also contains an analysis of enabling policy and regulatory reforms that can leverage the expected changes from the proposed investments. Not only does the MSIP promise transformation through identifying opportunities for scaling-up existing good practices but it will also leverage change through improving the efficiency of current development spend. This leveraging will be done through building systems for better long-term planning and improved cross-sectoral decision-making, and will be driven by using enhanced climate information, stronger coordination mechanisms for cross-sectoral action, and more conducive conditions for public-private partnership.

The MSIP brings together the Ministry of Finance and Economic Development (MOFEC), four line ministries, and the National Disaster Risk Management Commission (NDRMC) to enhance climate resilience in the agriculture, forestry, water, energy and livestock sectors. The development of the MSIP was led by MoFEC, which is mandated to mobilize both domestic and external resources for the implementation of the Climate Resilient Green Economy (CRGE) Strategy. Financing for preparation has been provided by the Climate Investment Fund's (CIF) Pilot Program for Climate Resilience (PPCR) and Multilateral Development Banks, the World Bank and its BioCarbon Fund, and the partners who are supporting the MoFEC and line ministries in operationalizing the country's CRGE Strategy. The Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Livestock and Fisheries (MoLF), the Ministry of Environment, Climate Change and Forests (MEFCC), the Ministry of Water, Irrigation and Energy (MoWIE), and the NDRMC will lead the implementation of the MSIP activities.

The MSIP is designed to be purposively inclusive. It convenes and helps coordinate a wide variety of financing sources (international financing, climate financing, domestic budget, and private sector investment) to support Ethiopia to scale up climate action. It is meant to support the Federal Democratic Republic of Ethiopia (FDRE) in defining or enhancing large strategic investment programs that can effectively and efficiently further scale up investment action on the ground. Therefore, a detailed consultative process has been followed in the development of the MSIP. It has used an inclusive process of identifying and prioritizing the activities necessary to achieve the targets that Ethiopia has put forward in its CRGE Strategy, Climate Resilience Strategy for Agriculture and Forestry, Climate Resilience Strategy for Water and Energy, UNFCCC Intended Nationally Determined Contribution (INDC),

Climate Change National Adaptation Programme of Action (NAPA), REDD+ Strategy, Agriculture Policy Investment Framework, Ethiopia Strategic Investment Framework for Sustainable Land Management (ESIF), and the Disaster Risk Management Strategic Programme and Investment Framework (DRM SPIF). The prioritization process has been complemented by a gap analysis that identified what additional activities were required to achieve these targets. Through on-going consultation, 50 Activity Packages were prioritized.

Using the consultative MSIP process, the 50 priority Activity Packages have been grouped into five Activity Groups. Each Activity Group focuses on sectoral priorities, pursuing a multi-sectoral approach that identifies priority Activity Packages in the agriculture, forestry, water, livestock and energy sectors that, together, will ***address the financial, thematic and spatial gaps*** that have been identified by the analysis. The five Activity Groups cover the following sectors and themes:

1. ***Enhancing climate resilience in agriculture***
   - Climate smart and gender sensitive agricultural support services
   - Reduced vulnerability to rainfall variability and water supply uncertainty
   - Increased resilience through crop productivity improvements and more equal intra-household relationships
   - Increased resilience through income diversification
   - Better natural resource management (soil, water, agroforestry)

2. ***Climate resilient forest and landscape development, conservation and utilization***
   - Strengthening the resilience of the forest sector by expanding forest resources and improving their management
   - Reducing pressure on Ethiopia's landscapes from extension of the agricultural frontier.
   - Reducing forest degradation due to fuelwood harvesting
   - Reducing pressure on Ethiopia's landscapes from grazing-related land clearance
   - Reducing vulnerability of people in the forestry sector through livelihoods diversificationImproved land and water management to deliver economic growth in agriculture, forestry and livestock production

3. ***Ensuring climate resilient livestock management and livelihoods***
   - Climate smart and gender sensitive extension services
   - Enhanced resilience through reduced livestock vulnerability and diversification
   - Reduced environmental impact of livestock production
   - Better natural resource management (soil, water, agroforestry)

4. ***Increased resilience through affordable access to climate smart energy***
   - Reduced reliance on fuelwood for thermal energy
   - Improved access to low-emissions electricity

5. ***Enhanced climate-resilient disaster risk management and early warning systems***
   - Improved drought and flood risk assessment and early warning systems
   - Increased resilience through coordinated food and non-food responses
   - Improved implementation of the Sendai Framework for Disaster Risk Reduction[4]

[4] The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) was *endorsed by the UN General Assembly* following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR) It is a 15-year, voluntary, It is a non-binding agreement which recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders.

If each Activity Package is counted only once, the total cost of the priority climate resilience measures is estimated at $11.85 billion. However, this can be considered an over-estimate of the need because: some of the activities will produce other co-benefits (e.g., crop productivity, household energy, infrastructure) that go beyond core climate resilience needs; and there will be some synergies between activity packages. If these over-estimates and synergies account for 20% to 30% of the costs, then ***the climate resilience need would be in the range of $8.3 billion – $9.5 billion USD.*** Further; subtracting the estimated $1.85 billion USD (estimated in the portfolio review) that is already being invested in climate resilience; yields an ***unmet climate resilience need in the range of $6.5 billion - $-7.7 billion USD.***

Thus, given the caveats and assumptions, the two estimation approaches (high-level aggregates from Section IV.3 and bottom-up cost estimates from Section X1) yield figures in the same range of $6-8 billion USD.

The MSIP results are closely aligned to the results framework of the CRGE Strategy and the GTP II, which means it will be possible for monitoring and reporting to be integrated into the national system.

Through the envisaged combination of activities, the MSIP can catalyse transformational change through mobilising the investment to scale up existing practices and creating a change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Specifically, the MSIP should contribute to a four-fold increase in the productivity of Ethiopia's rural landscape by harnessing improvements in land and water management that optimize efficiency, balance competing priorities and leverage investment from both the public and private sectors. This requires massive investment as well as extensive policy and regulatory reform.

The MSIP aims to coordinate public financing for investment projects, requiring strong implementation mechanisms at all levels of government as well as the availability of technically qualified manpower to realize investment projects on the ground. Cross-sectoral co-ordination for implementation will be challenging; and significant attention to supporting multi-sectoral planning and coordinated implementation will be necessary. Building on the existing large-scale, long-term government programs that explicitly build climate resilience will allow these multi-sectoral implementation mechanisms to be practically applied and then extended to new and up-scaled investments.

The MSIP process has analyzed the policy and regulatory incentives for improvements in resilience and identified potential areas for reform. This will guide ongoing dialogue between the FDRE and its development partners, as well as private sector actors. Key priorities include:

- The strengthening of capacity for cross-sectoral planning, policy, and investment at all levels of Government.
- Continued regulatory reform and public-private dialogue to enhance the environment for the private sector to scale up investment in land and forest-based sectors and to overcome key barriers to accessing finance , including support to the Forest Fund.
- The management of trade-offs of sectors' claims to land and water through an enhanced land use planning process, update of all major river basin master plans and local level land and water use planning for improved irrigation, afforestation and other infrastructure investments.
- Improved policy for input supply with consideration for greater private involvement, including clearer policies on the registration of new seed varieties and a plan for value chain investments around agro-industrial parks and forest industry.
- Improved regulation to support public-private investments in the forestry sector and to incentivize farmers to use marginal farmlands for afforestation and natural regeneration.
- Improved policy on animal breeding, live animal export and stronger implementation of land use planning that affect feedlot production and pastoral grazing lands.

- Better implementation of VAT and tariff exemption for off-grid renewable energy technologies used for productive purposes, clear regulatory guidelines for imposition of tariffs for off-grid power generation for communal use (e.g. irrigation pumps etc.), inclusion of all off-grid renewable energy devices in financing mechanisms to relieve forex limitations restricting imports, and improved public-private coordination to enhance quality standards and vocational training.
- Enhanced public-private dialogue on Payment for Ecosystem Services (PES) to share lessons from the pilot schemes and to ultimately work towards regulation.
- Stronger institutional arrangements for research and development in the water sector along with more consistent water pricing and implementation of regulations around water allocation.
- Increased dissemination and institutional transparency around the implementation of environmental management legislation.
- Greater investment in the quality and the use of weather and climate data along with new regulations to support the scale-up of weather-indexed insurance.
- Shifting from costly (but often necessary) humanitarian relief to longer-term resilience-building development pathways, in line with the profile of a middle-income country.

A full risk assessment has also been prepared, identifying and categorizing primary risks as well as a suite of mitigation measures to ensure clear plans are in place to manage major risks. The feasibility of this plan rests on the ability to make a change in the way that the FDRE makes decisions and delivers its services. This will include a shift from a *command-and-control* approach where Government plays a lead role in service delivery to one where it takes on a greater facilitation role, creating space for private sector investment and the incentives for behaviour change amongst farmers and rural communities. Transformational change should use three levers to achieve scale:

1. Scaling up through public investment;
2. Creating the incentives for scaling via private investment, including those of smallholder farmers themselves; and
3. Altering decision-making and delivery within existing large-scale government programmes and investments through policy reform and the greater use of climate, hydrological and land use information in decision-making.

The MSIP provides the framework for Ethiopia to achieve the necessary transformation and advance along a pathway to increased resilience.

Part 1: INTRODUCTION AND CONTEXT

I. Introduction and Development Perspective

Upon a request from the Government of Ethiopia's Ministry of Finance and Economic Cooperation (MoFEC), the World Bank Group and African Development Bank are providing support to the development of a Multi-Sector Investment Plan (MSIP) to enhance climate resilience in the agriculture and forestry sectors, taking account of activities in the water, energy and livestock sectors. This section of the MSIP provides an overview of the development perspective and underlying rationale driving the MSIP.

I.1 Introduction

Ethiopia has embarked on an ambitious structural transformation through its successive Growth and Transformation Plans and its Climate Resilient Green Economy (CRGE) Strategy (2011 to 2030). It has experienced strong and inclusive economic development over the past decade, with growth in real gross domestic product (GDP) averaging 10.9% between 2004 and 2014[5], exceeding historical averages for the country as well as regional averages for the same period. This economic growth has been accompanied by significant reductions in poverty, with extreme poverty falling from 55% in 2000 to 33% in 2011[6]. Growth has been driven particularly by improved agricultural practices, the development of new export sectors, strong global commodity demand, and substantial public infrastructure investment. In parallel, substantial advances have been made in the areas of universal primary education, gender parity in education, child mortality, maternal mortality, HIV/AIDS, and malaria, Ethiopia being one of the countries that has made the fastest progress on the Millennium Development Goals (MDGs) and the Human Development Index (HDI) ranking within the last decade.

Unfortunately, climate change represents a key threat to Ethiopia's sustained growth and development. Impacts such as environmental degradation and natural disasters could result in annual GDP losses of 2 to 5 percent per year, with some models predicting annual losses as large as 10% for drier scenarios[7]. Climate projections based on Global Climate Models (GCMs) indicate that the rainfall variability in Ethiopia will increase, with a rising frequency of both severe flooding and droughts due to global warming[8]. Major drought events are estimated to reduce Ethiopia's GDP by 1% to 4% per year[9], causing a drag on economic growth and reducing the speed with which the poor can be lifted out of poverty, in turn slowing achievement of the country's intended middle-income aspiration. By mid-century, climate change might lead to a 20 percent increase in the extent of Ethiopia's dry lands (driest scenario), which would bring more people into environments where the range of resilience options is limited[10].

The clear implication is that Ethiopia's structural transformation requires better integration of environmental and sustainability considerations into the country's policy and institutional frameworks to achieve efficient use of resources that contribute sustainably to economic development, poverty reduction and quality of life. The country faces high population growth and urbanization; significant vulnerability to climate risks, land degradation, and forest loss; and an agrarian economy that is seeking to diversify in the absence a sufficiently strong regulatory environment, aligned incentives, or private sector. Its natural wealth constitutes a potentially large pool of resources that is subject to competing uses but that can be sustainably channeled to enhance physical and human capital if re-invested wisely.

[5] World Bank, World Development Indicators.
[6] World Bank (2016a).
[7] World Bank (2011).
[8] World Bank (2011) *op cit*.
[9] OECD (2014).
[10] Cervigni and Morris (eds.) (2015).

This is particularly important in the context of rural landscapes: transformative change requires that Ethiopia's diverse production landscapes become not only four times as productive, but also more resilient to climate shocks.

Ethiopia's rural livelihoods and development depend significantly on the performance of the forest and agriculture sectors, which are particularly vulnerable to risks associated with climate change. In Ethiopia, 81%[11] of the population lives in rural areas, and is directly dependent upon the performance of the forest and agriculture sectors for income, energy, food, building materials, and water as their principal buffer against drought, floods and other climate or disaster risks. Agriculture accounts for most jobs and about 40 percent of output and exports[12], resulting in the vulnerability of many Ethiopians to climate-related risks such as drought. The forest sector is estimated to have contributed 4% to GDP at the end of the last GTP period [13] through wood and non-wood forest products and ecosystem services. Moreover, approximately 16% of the total population are pastoralists or agro-pastoralists, and are vulnerable to hydro-meteorological hazards such as droughts, which reduce grazing stocks and lead to the starvation of livestock. Local grazing resources are often insufficient to support herds; in the coming decades, feeding deficits are expected to occur in up to 80% of the years[14].

The depletion of natural resources compounds Ethiopia's exposure to climate-related hazards. Forests have been depleting at an unsustainable rate of 1% per year, due largely to demand for fuel wood and agricultural land[15]. With 40% of the crop and pasture land degraded and a further 20% under degradation processes[16], catastrophic droughts and floods caused by greater climate variability represent a significant risk to many Ethiopians whose livelihoods depend on the natural resource base. In the absence of action, climate change is also projected to cause a decline in crop yields under dry and wet scenarios[17], leading to larger income swings among the poor and to large GDP losses[18].

As a recognized global leader on climate action including the CRGE Strategy, the World Bank and International Monetary Fund's Carbon Pricing Leadership Panel, and landscape restoration, the FDRE has made significant progress in advancing its climate resilience agenda, as demonstrated by the development of key policies, projects and programs. The country has prioritized the role of natural capital to help drive and protect growth and prosperity, and help manage climate risks for greater resilience. Advances towards integrating climate change into Ethiopia's national planning processes were made through the development of the Climate Change National Adaptation Programme of Action (NAPA) in 2007. The NAPA, developed by the Ministry of Water Resources (now Ministry of Water, Irrigation and Electricity) and the Meteorological service, was replaced in 2010 by the Ethiopian Programme of Adaptation to Climate Change (EPACC). The EPACC calls for mainstreaming climate change into decision-making at the national level and emphasizes planning and implementation monitoring; it outlines climate change scenarios for Ethiopia and identifies corresponding risks, along with institutions responsible for mitigating these risks.[19]

The FDRE recognized the need to strengthen climate resilience in its Second Growth and Transformation Plan (GTP II, 2015 to 2020) and its CRGE Strategy, which set ambitious climate resilience (CR) goals. The CRGE strategy aims to enhance Ethiopia's resilience to climate change while maintaining 2010 greenhouse gas (GHG) emissions levels.

[11] World Bank, World Development Indicators, 2014.
[12] World Bank (2016a).
[13] World Bank Group (2016d) Ethiopia Commercial Planation Forest Industry Investment Plan
[14] Cervigni and Morris (eds.) (2015).
[15] Drivers of Deforestation and Forest Degradation (2015). Draft study for REDD+ Readiness.
[16] FAO, Global Land Degradation Information System. http://www.fao.org/nr/lada/gladis/glad_ind/.
[17] These scenarios are described more fully in section II.
[18] World Bank (2011).
[19] Nachmany et al. (2015).

To drive forward its climate resilience agenda, the GTP II identified priorities and targets towards strengthening climate resilience for the planning period 2015 to 2020.

Climate-resilience policies and programs are complemented by a national disaster risk management agenda. Given the increasing frequency and severity of disasters due to climate change, in 2013 FDRE developed the National Policy and Strategy on Disaster Risk Management (NPDRM), and has recently developed the Disaster Risk Management Strategic Program and Investment Framework (DRM-SPIF). Key goals of the NPDRM include the enhancement of Ethiopia's capacity to withstand the impact of natural hazards at the national, local, community and household level, and to significantly reduce the damages associated with disasters by 2023. The DRM-SPIF is a tool envisaged to facilitate the National Policy and Strategy on DRM by addressing existing gaps and limitations in Ethiopia's DRM capacity and establishing an integrated DRM system.

There have been other significant advances in strengthening climate resilience and protecting Ethiopia's natural capital. Recent initiatives towards enhancing Ethiopia's climate resilience, such as those conducted under the Ministry of Agriculture and Natural Resources' (MoANR's) Sustainable Land Management Program (SLMP), have focused on improved watershed functions from structural and vegetative measures, leading to water use efficiency gains on plots coupled with a transformation in the livestock production system by shifting from open access to cut-and-carry systems while regenerating vegetation and tree cover. An evaluation showed that in Tigray, household income increased by 161% because of the project, and crop yields increased by 40-189% whether irrigated or not[20]. And unproductive degraded land was brought back into production, helping boost system resilience. A geospatial assessment carried out by the World Bank in 2017 shows a greening trend in SLMP watersheds across a wide area during the 2016 drought.

Notwithstanding these and other initiatives, further investment is required to build Ethiopia's resilience to climate risks and to safeguard Ethiopia's natural capital. Quick action is needed, and existing programs offering a way to quickly scale up action on the ground and channel new funds to do so. Advances such as those made under the SLMP demonstrate the high potential for climate resilience measures to safeguard the large economic gains associated with protection of the natural resource base. However, given the large exposure of the Ethiopian economy to climate-related risks, further investments in resilience enhancing measures are required.

I.2 Rationale

Ethiopia's situation offers both opportunities and challenges that affect the nation's development pathways. Reaching the shorter-term GTP II targets and the longer-term CRGE goals, given environmental and climate risks, will require strong synergies between sectors and careful management of trade-offs of various sectors' claims on the same resources.

Confronting these challenges, the FDRE identified forest and agriculture, as well as the water, energy and livestock sectors, as key sectors to strengthen resilience to climate risks, as highlighted in its Expression of Interest (EOI) to the Climate Investment Fund (CIF)'s Pilot Program for Climate Resilience (PPCR). Based on this EOI and findings from a subsequent broad consultative process including development partner agencies and stakeholders, agreement was reached that investment planning should focus on activities in the agriculture, forest, water, energy and livestock, because safeguarding these sectors from the adverse impacts of climate change is vital to protecting Ethiopia's development gains. This is consistent with the targets and priorities identified in GTP II for these sectors, as follows:

- ***Agriculture:*** Implementing cluster-based agriculture development, improving agricultural input supply and technology adoption, scaling up best practices of model farmers to enhance agricultural productivity among

[20] Draft impact assessment, GIZ (2015).

smallholder farmers, delivering effective extension services and increasing the production of high value crops through increased productivity.

- ***Forests:*** Protecting and rehabilitating forests for their economic and ecosystem services (i.e. forests are water factories), enhancing forest development and utilization, increasing the share of the forest sector in the overall economy and increasing the forest coverage through research-based forest development.
- ***Livestock:*** Improving animal health, animal feed and animal breed with targets to increase productivity, with a view to adequately exploiting the sector's potential for growth, export earnings and job creation.
- ***Water:*** Mitigating flood and runoff impacts, developing and expanding medium and large-scale irrigation, and developing and expanding efficient and sustainable irrigation-based farming.
- ***Energy:*** Expanding electricity power generation from renewable sources of energy (including hydropower, wind power, geothermal power, and solar power) for domestic and regional markets, increasing the national energy generation, transmission and distribution capacity to fully satisfy domestic energy demand with production surplus for export.

To realize the objectives set out in the GTP II and CRGE Strategy, rapid, scaled up action and investments in agriculture, forestry, water, energy and livestock are required. This understanding, combined with recognition of the importance of a coordinated approach, motivated GoE to submit its EOI requesting the World Bank to provide lead support to the development of a Multi Sector Investment Plan (MSIP) to scale up investment and action to achieve the objectives in the CRGE Strategy and GTP-II. In May 2015, Ethiopia was selected to participate, and was allocated a $1.5m preparatory grant from the PPCR.

MSIP Objective

The objective of the MSIP is to help Ethiopia to systematically convene, coordinate and complement financing for resilience objectives in the forest, agriculture, livestock, water and energy sectors from a variety of existing and future sources including the PPCR, the Green Climate Fund (GCF), the Global Environment Facility (GEF), the WB's International Development Association (IDA) and AfDB's African Development Fund (ADF), bilateral financing, GoE budget and CRGE Facility, as well as private sector investment (such as via IFC support to forest and livestock development). The MSIP will convene financing via multiple channels such as blended climate and non-climate financing, private investment, government budget, direct financing to the CRGE Facility, bilateral support, pooled and stand-alone financing, and others. These investments can facilitate the scale-up of FDRE's existing large-scale resilience programs, help fill gaps in resilience responses (e.g. insurance, performance-based payments), strengthen the credibility of investment proposals, plans, programs, projects, and policies, and reduce transaction costs to Ethiopia and partners from overlaps and duplications.

The FDRE's MSIP will directly support Ethiopia's targets articulated in its CRGE Strategy, Climate Resilience Strategy for Agriculture and Forest, Climate Resilience Strategy for Water and Energy, UNFCCC Intended Nationally Determined Contribution (INDC), Climate Change National Adaptation Programme of Action (NAPA), REDD+ Strategy, Agriculture Policy Investment Framework, Ethiopia Strategic Investment Framework for Sustainable Land Management (ESIF), and the Disaster Risk Management Strategic Programme and Investment Framework (DRM SPIF). The MSIP is envisaged to enhance and empower these plans and strategies, as well as existing large-scale WB-financed operations such as the SLMP and forthcoming Resilient Landscapes and Livelihoods operation, Agricultural Growth Program (AGP), Productive Safety Nets Program (PSNP), and the Oromia Forested Landscape Program (OFLP), and the new livestock development operation under preparation.

Development of the MSIP requires a concerted effort to collaborate. With the CRGE strategy and GTP II, Ethiopia articulates the key elements to scale up action on climate change. However, an important factor in ensuring the successful delivery of GTP II goals is coordination. Fragmentation of programs, projects, and policies can hinder the

scale up of financing and reduce its development impact. Moreover, overlapping, unaligned or uncoordinated projects, programs and policies dissipate capacity and carry significant transaction costs. Coordination, as well as consolidating and harmonizing information sharing between the FDRE, its DPs and stakeholders within the wider development community in Ethiopia is therefore crucial in fostering collaboration and reducing costly fragmentation.

By helping to convene resources programmatically for resilient landscapes in Ethiopia, the MSIP can help harness the potential of the natural resource-based sectors to help reduce poverty equitably. Most of Ethiopia's population is rural and directly dependent on natural resources for income, biomass energy (94 percent dependency), food, building materials, and water and as their principal buffer against drought, floods, and other climate or disaster risks. There is therefore a clear link between the renewable natural resource base and how it boosts the prospects and resilience of the bottom 40 percent. This supports Ethiopia's ambition to achieve middle-income status by 2025 through green growth strategies.

The MSIP can also contribute by scaling up existing large-scale programs, which in turn can enhance speed and therefore reduce costs. Action now is more cost-effective than action later, as early action can help in protecting natural capital and the livelihoods that depend on it, and safeguard economic gains associated with the use of natural resources. One of the fastest ways of enabling early action is to scale up existing large-scale government-implemented programs, since existing implementation mechanisms, such as staff, procedures, equipment and knowledge can be deployed. Therefore, scaling up and building on existing programs, such as the SLMP, AGP, PSNP and OFLP represents the fastest and most cost-effective way to deliver climate-resilience objectives.

Reflecting this rationale, in Part 1 this document presents the case for the MSIP, describing the climate risks facing the country and the existing institutional framework in place to manage these, and identifying the extent to which existing investments are meeting the needs for resilience building. Part 2 then presents the conclusions and recommendations drawn from the MSIP process.

II. Climate Risks Facing the Forest and Agriculture Sectors

Ethiopia is more vulnerable to current climate variability and future climate changes than wealthier countries. This section describes how Ethiopia is both highly exposed to climate shocks and changes, and highly vulnerable due to its rainfall-dependent economy, predominantly rural population, frequent occurrence of droughts and floods, high poverty rates and limited institutional capacity.

II.1 Summary of Ethiopia's Climate Challenges

Ethiopia has a complex and varied terrain and climate. The terrain spans from hot arid desert of the Danakil lowland to the mountainous ranges of the Simien. Ethiopia's rainfall patterns range from arid regions to those that experience rainfall of 2,000 mm per year, with the west of the country experiencing greatest rainfall. Ethiopia's rainfall is determined by seasonal changes in large-scale global circulation systems that create distinct rainy seasons in different regions of the country. As a result, there are broadly three hydrological regimes: West with one long rainy season (June-Sept), Central and Eastern with June-Sept as the main rainy season preceded by smaller

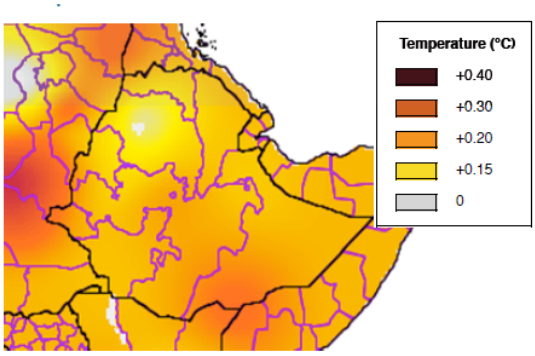


Figure 1: °C per decade relative to 1960s average. Trends for March – June, reproduced from FDR Ethiopia, (2014).

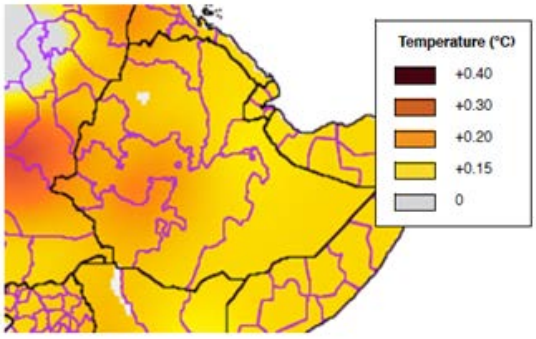


Figure 2: °C per decade relative to 1960s average. Trends for June – Sept, reproduced from FDR Ethiopia, (2014).

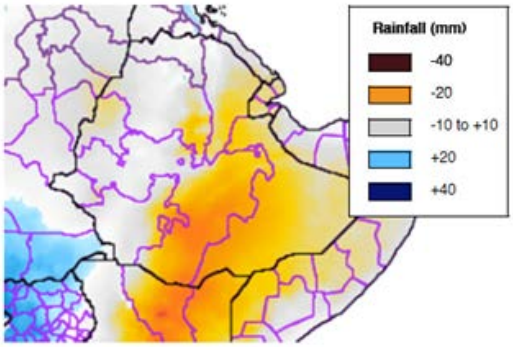


Figure: 3 mm per decade relative to 1960s average. Trends for March – June, reproduced from FDR Ethiopia, (2014).

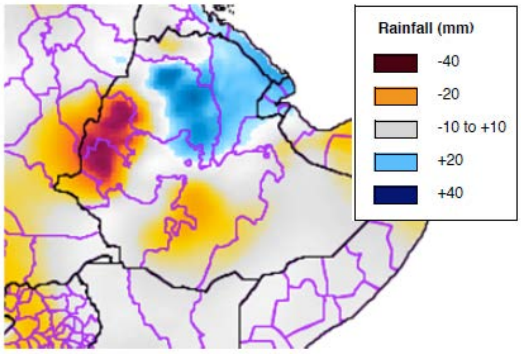


Figure 4: mm per decade relative to 1960s average. Trends for June - Sept, reproduced from FDR Ethiopia, (2014).

rains (March-May), and South and South-Easter with February-May as the main rain season and a secondary rainy season in October-November. There is evidence that climate change has already been happening in Ethiopia for at least the last 50 years. At the national level, temperatures have increased by an average of around 1°C since the 1960s (Figure 1 and 2). The changing climate may have increased weather variability and incidence of droughts and floods in the last 10 years relative to the decade before (Figure 3 and 4).[21]

Climate risks in Ethiopia are linked to high rainfall variability between years, seasons and regions. Yearly variation around mean rainfall levels of 25% is normal, and can increase to 50% in some regions. Weather variability leads to extreme events and hazards, especially droughts and floods, and associated soil erosion (Figures 5, 6, and 7). Drought frequently occurs: 60% of the country is dryland. Major floods have occurred in 1988, 1993, 1994, 1995, 1996, and 2006. Forest fires and pests and diseases have also been linked to increase of temperature, and humidity and moisture available.

[21] FDR Ethiopia, (2014). Climate Resilience Strategy Agriculture and Forestry.

Figure 5: Frequency of droughts by Woreda for 1990 to 1999 (left map) and 2000-2009 (right map), reproduced from FDR Ethiopia, (2014)

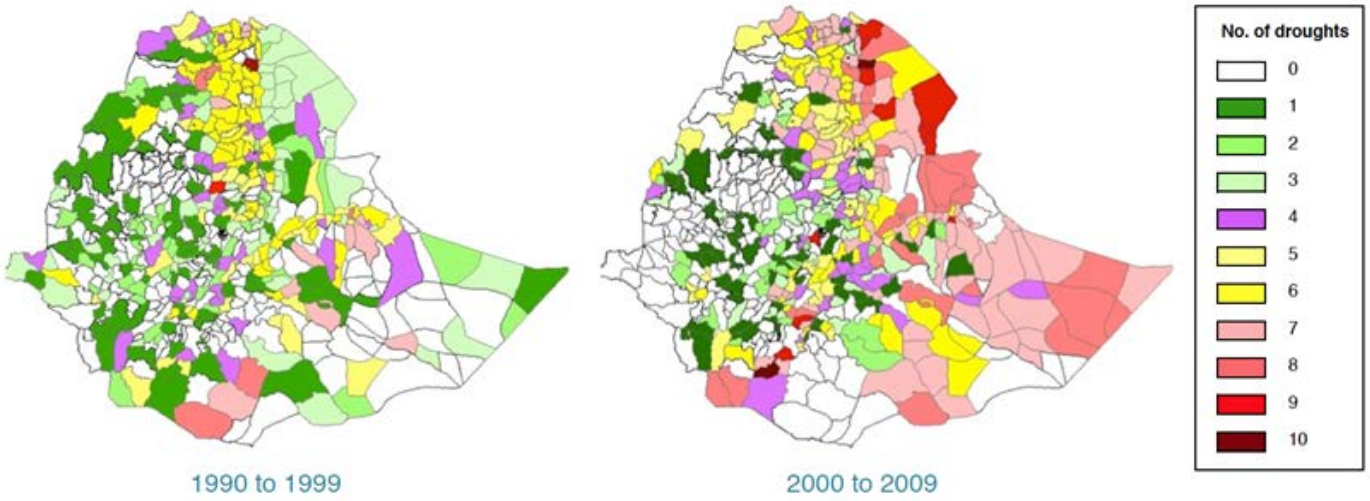


Figure 6: Frequency of floods by Woreda for 1990 to 1999 (left map) and 2000 to 2009, reproduced from FDR Ethiopia, (2014)

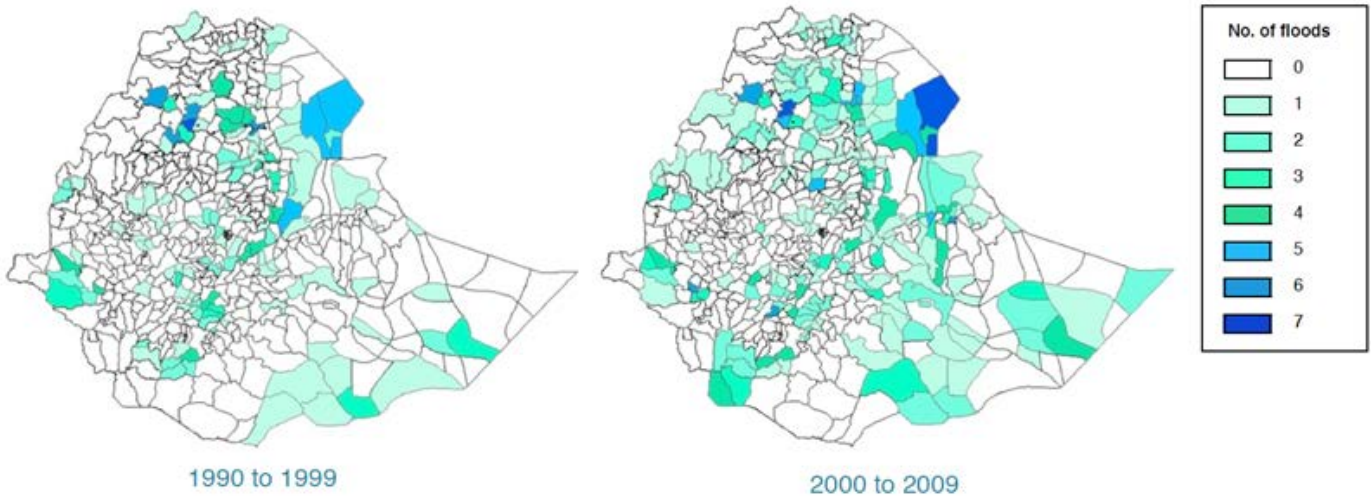
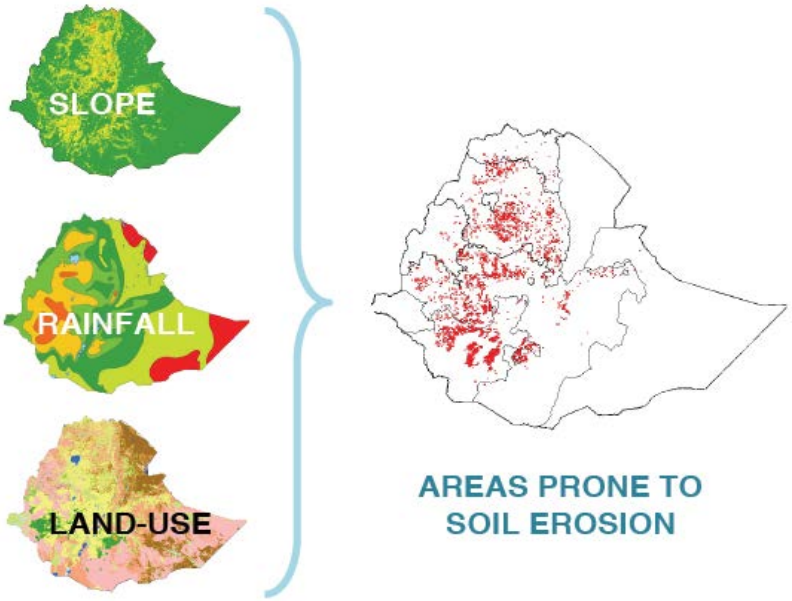


Figure 7: Soil Erosion Risk, reproduced from FDR Ethiopia, (2014). Areas at potential risk from current soil erosion have been estimated by analyzing slope, rainfall, and land-use. The analysis reproduced here suggests that 6% of Ethiopia is at high risk of erosion, particularly the west of the country



***Under current climate, Ethiopia is vulnerable to weather variability*:** Historic weather variability, extreme events and hazards result in lost agricultural output, lower export earnings and reduced foreign direct investment, which have a substantial negative impact on economic growth, particularly for agriculture and forestry, and poverty. Severe losses in agricultural crops, livestock, and rural infrastructures resulting from drought and floods have also food security implications. The economic impact depends on the extent of the variability and extreme events but droughts alone can reduce total GDP by 1% to 4%. The cost of recent major floods range from $3.5 m-$ 6 m per event, though this only capture direct costs. Floods and drought impact millions of people in ways that cannot be evaluated in simple outputs terms alone[22]. In addition, soil erosion is a key hazard for agriculture with up to 6% of the country at risk, and has been estimated to reduce agricultural GDP by 2% to 3% (around 1% of total GDP). Impact on agriculture and land-use activities are extremely diverse by region, a reflection of the variation in climate, soil type and cultural practices across the country, but it is consistently more severe for vulnerable groups such as children, the elderly, the disabled and women.

Increasing climate and weather variability seems likely: Future climate change in Ethiopia is uncertain, although scenarios of change show the range of possible outcomes, and climate variability is likely to increase across all of them. The most recent climate projections support the conclusion that future temperatures will rise in Ethiopia within a range of 0.5 °C to 1.5 °C by the 2020s, and 1.5° to 3° by the 2050s relative to the period 1961-1990 (Figure 8).[23] All projections indicate substantial increases in the frequency of days and nights that are considered 'hot' in the current climate. Days that are considered 'hot' for their season are projected to increase the most rapidly in July to September (JAS), occurring on 38-93% of days in JAS by the 2090s.[24] Due to the complexity of Ethiopia's climate, projections of future rainfall are uncertain and, across the range of models, include both wetter and drier scenarios with projected changes in annual rainfall from -25% to +30% by the 2050s (Figure 9 and 10).

[22] FDR Ethiopia, (2014a)
[23] FDR Ethiopia, (2014b)
[24] LTS International; AEA; Common Futures; B&M Development Consultant, (2012)

Figure 8: Historic and future temperature simulations show a clear warming trend. Reproduced from FDR Ethiopia, (2014)

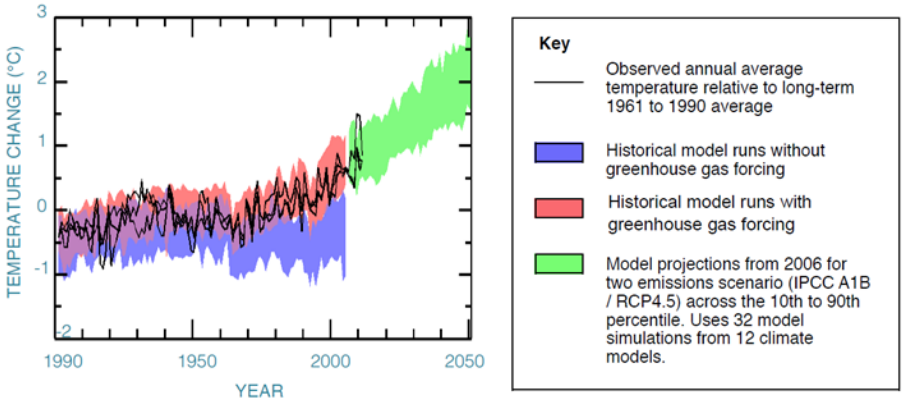


Figure 9: Historic and future rainfall simulations show mixed results and uncertainty. Reproduced from FDR Ethiopia, (2014)

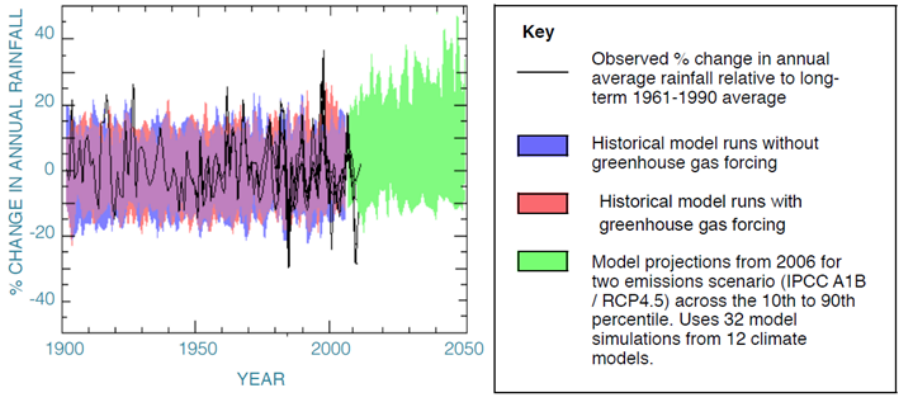
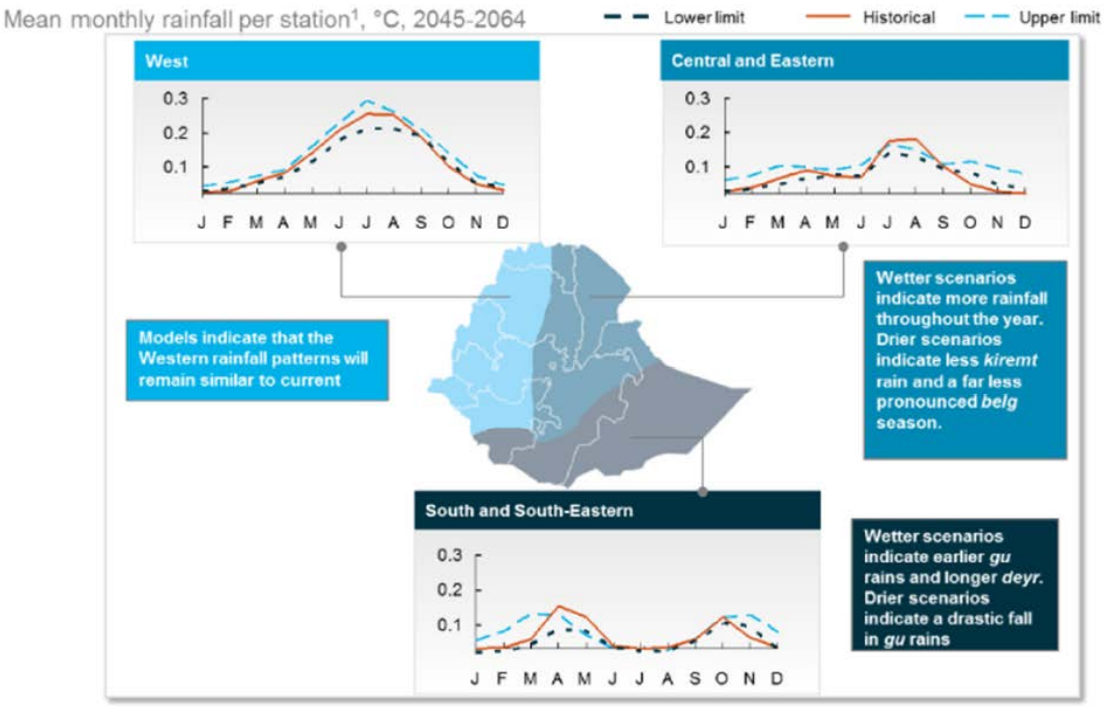


Figure 10: Rainfall projections for Ethiopia by region. Reproduced from FDR Ethiopia, (2015)

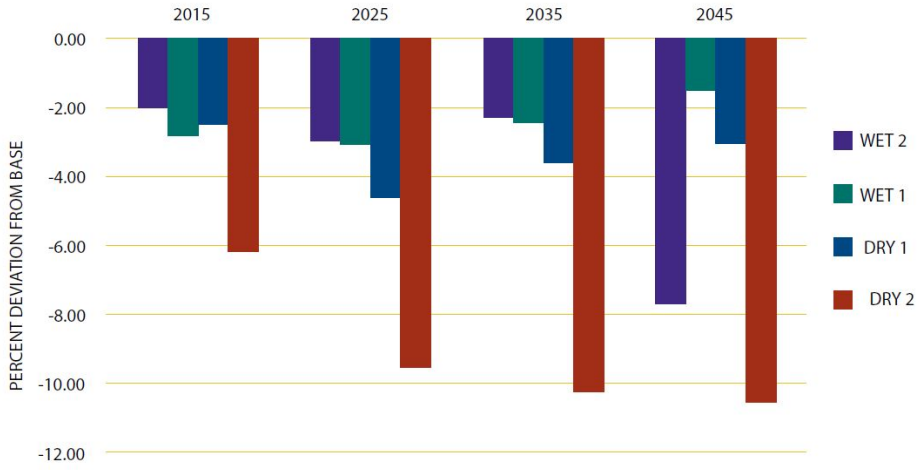


1 Historic data extrapolated for 7% of missing data-points, *West* includes Debre Markos, Gondar, Gore, Jimma, Nekemte. *Central and Eastern* includes Addis Ababa, Awassa, Combolcha, Dire Dawa, Mekele, Metehara, Robe. *South and South-Eastern* includes Gode, Neghele
Source: NMA (historic); CSAG Scenarios (future)

Yet, parts of the country could see more changes in key seasonal rainfall and in long-term mean rainfall, which would have major implications for rural livelihoods and food security, particularly in Somali, South Oromia and parts of SNNPR. Across all scenarios, year-to-year rainfall variability is the most significant climate variable and rainfall is likely to be less predictable with more frequent extremes in future as indicated for example by increases in the proportion of total rainfall that falls in 'heavy' events.[25] Based on Global Climate Models, in conjunction with assumptions about adaptation strategies, it is possible to identify four different climate change scenarios for Ethiopia that cross changes in the temperature and rainfall variables (labeled Dry1, Dry2, Wet1 and Wet2). Thereby, Dry1 and Wet1 refer to scenarios developed in preparation of the World Bank's Economics of Adaptation to Climate Change report, whereas Dry2 and Wet2 refer to specific scenarios to capture climate uncertainty in Ethiopia. A baseline scenario for economic growth and structural change in Ethiopia in absence of climate change has also been estimated. Under the Dry2 scenario, rainfall is likely to decrease over 2045 – 55 (i) by 10 to 25% in the central highlands, (ii) by 0 to 10% in the south and (iii) by more than 25% in the north of the country. Under the Wet2 scenario, rainfall is projected to increase (i) by 10 – 25% in the south and central highlands, (ii) by more than 25% in most of the rest of the country. Moreover, for the Wet2 scenario, an increase in the rainfall variability of the short rains would be associated with an increase in severe flooding due to storm runoff in the highlands.

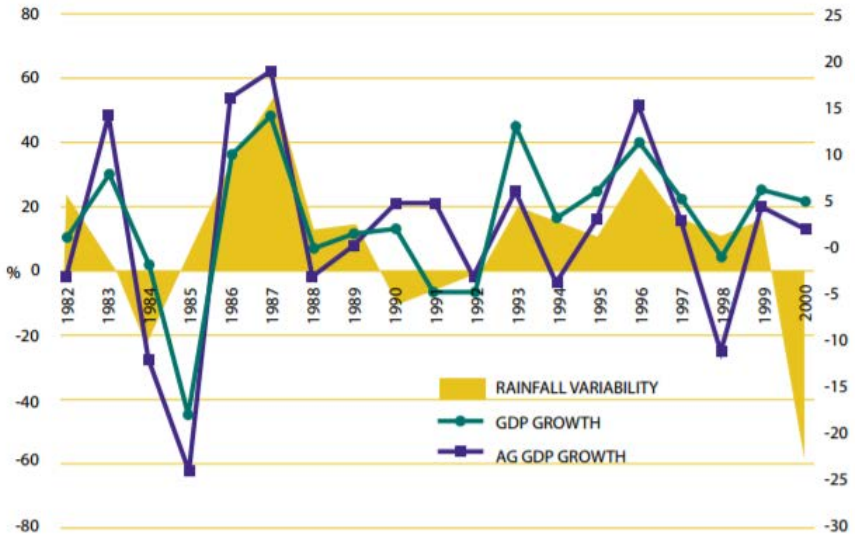
Climate change causes a toll on development and dampens growth. Based on the scenarios identified above, it is possible to estimate the impacts of climate change on GDP (see Figure 11), where a comparison is made between the baseline scenario where no climate change occurs and the four identified climate change scenarios. Negative impacts of climate change on GDP are assumed to occur as a result of the following five factors: (i) adverse impacts on the agriculture and livestock sectors, (ii) effects on the hydropower sector and, hence, power generation, (iii) increased flooding impacting on the transport sector, (iv) effects of drought on government expenditure associated with vulnerability and food insecurity, and (v) impacts on irrigation and hydropower due to conflicts associated with competing demands for energy. Under the *Dry2* scenario, losses associated with climate change would represent 6 to 10% of GDP. Under the *Wet2* scenario, losses would amount to nearly 8% of GDP, occurring towards the mid-century. The link between growth and climate variability is shown in Figures 11 and 12.

Figure 11: Deviations of GDP from baseline Scenario. Reproduced from World Bank, 2011



[25] LTS International; AEA; Common Futures; B&E Development Consultant, (2012).

Figure 12: Economic growth and climate. Reproduced from World Bank, 2011



II.2 Climate Challenges for the Natural Resource Sectors

The agriculture, forestry and livestock sectors are particularly vulnerable to climate change. Under the drier scenarios, increases in temperature, decreases in rainfall, and increases in weather variability are associated with reductions in agricultural productivity, leading to estimated declines of agricultural and livestock productivity of 3% to 30% by 2050 (Figure 13).[26] Two key risks from future climate change relate to coffee and irrigated crops, which are both linked to future economic growth. For irrigated crops, water availability should be seen in the context of rising water demand from an increase in population, rising incomes, and industrial demand, and reduced supply linked to lower rainfall. Coffee, one of Ethiopia's main export commodities, is sensitive to temperature; estimates suggest that due to global warming, the areas suitable for wild coffee production could be reduced by 40% to 90% by the 2080s[27]. If similar reductions would occur for commercial coffee, this could translate into reductions of 30% in export value by 2030[28]. The livestock sector is particularly sensitive to increases in temperature, with estimates suggesting that livestock revenues could decrease by 50% by 2050, potentially jeopardizing the livelihoods of pastoralists. Temperature increases and decreases in rainfall may also lead to the disappearance of certain types of forest (e.g. montane and lower montane wet forest and subtropical desert scrub), as well as shifts in the climatic zones suitable for forestry. These changes may have significant impacts on the production of timber and non-timber forest products and ecosystem services such as water, soil catchment management, flood protection, and availability of wood-fuel (Figure 14).[29] In Figure 15, the main impact of climate change on livelihoods are summarized[30].

[26] FDRE (2015c).
[27] FDRE (2015c).
[28] FDRE (2015c).
[29] FDRE (2015c).
[30] LTS (2012) *op. cit*.

Figure 13: Standard deviation in agricultural year to year growth rates. Reproduced from World Bank, 2011

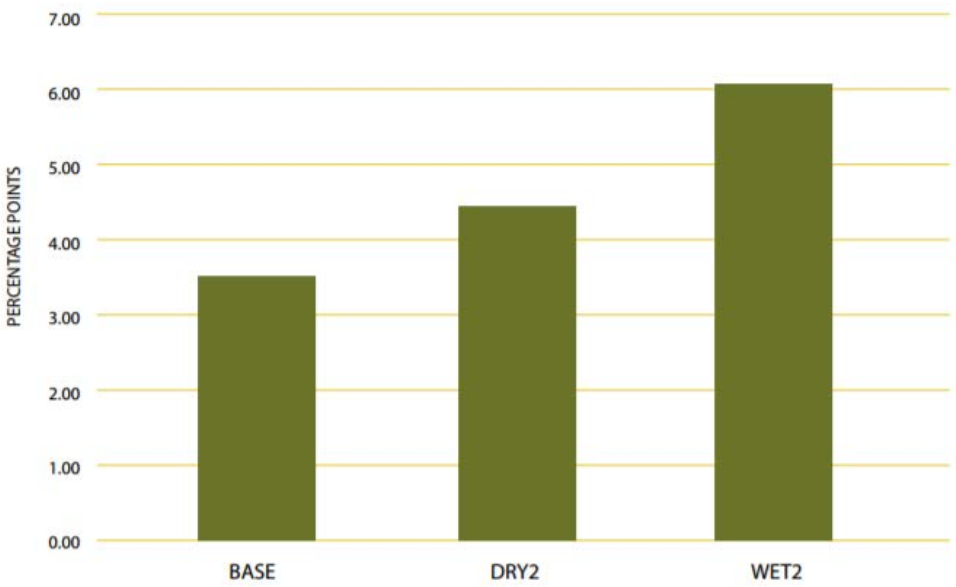


Figure 14: Biomass availability risk. Reproduced from FDR Ethiopia, (2015)

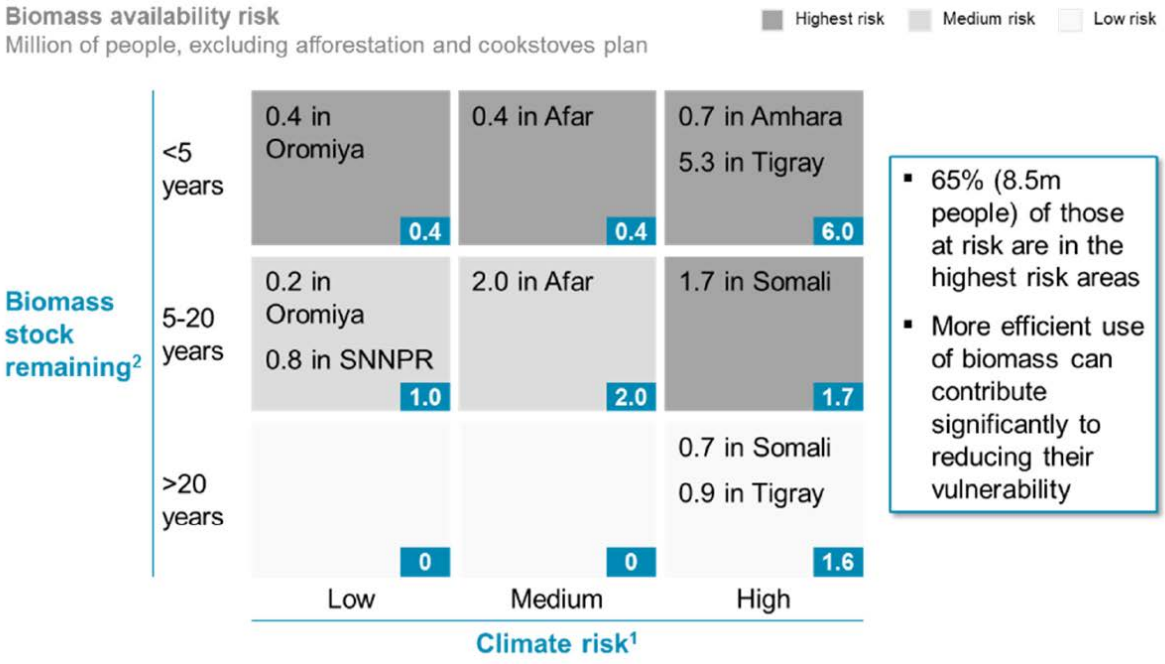
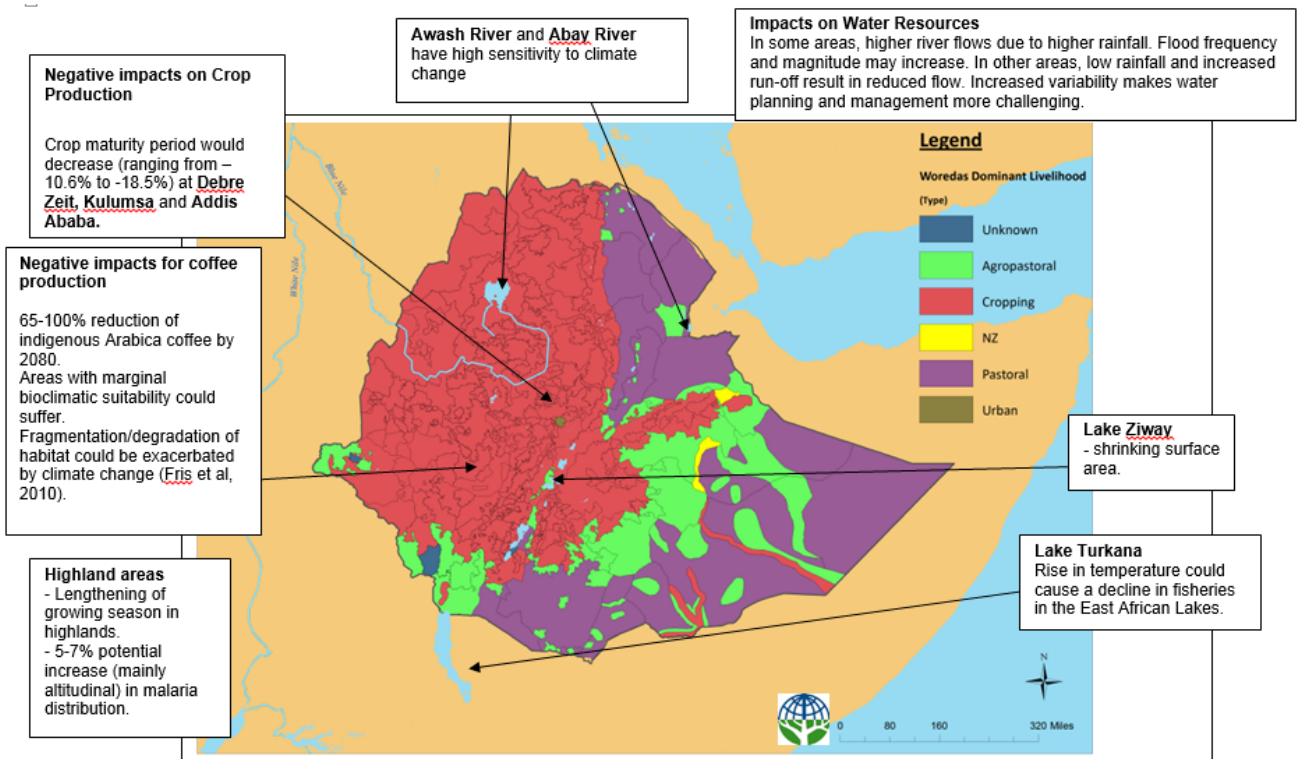


Figure 15: Summary of projected climate impact on livelihoods. Reproduced from LTS (2012)



Pressures on Ethiopia's ecosystems and natural resources will combine with climate change. Over 80 percent of Ethiopians are rural, depending on rain-fed smallholder agriculture as their primary income source. Agriculture is the backbone of Ethiopia's economy, now and in the foreseeable future, and a key focus of the country's economic policy. How landscapes are managed affects food security, water security, drought security, climate security, and livelihoods security[31]. Ethiopia is frequently affected by recurring droughts, and has experienced a high rate of deforestation, soil degradation and loss as well as over-grazing. Unsustainable land management practices, such as over-cultivation and over-grazing, have already led to severe land degradation[32]. With population pressures, annual wood fuel consumption is expected to rise by 65% between 2010 and 2030, outstripping current supply and leading to forest degradation of more than 22 million tons of woody biomass.[33] In the highlands, pressures on land resources have led to an expansion of the agricultural frontier into forest areas and steep slopes, which has accelerated environmental degradation and made agricultural production vulnerable to weather shocks.[34]

Climate change could adversely impact the water and energy sectors through increased water stress and increased uncertainty surrounding energy supply. Increased rainfall variability, as well as an increased incidence of floods and droughts may lead to uncertainty of water supply for human use, livestock production and crop irrigation[35]. This may in turn reduce crop and livestock productivity and jeopardize livelihoods. While climate change may affect the

[31] Danyo, S. *et al.* (2017).
[32] OECD (2014).
[33] FDRE (2011a).
[34] OECD (2014).
[35] FDRE (2015b).

generation of hydropower, studies indicate that the overlap between the life span of current hydropower projects and the time when the effects of climate change will materialize is relatively limited[36]. A study investigating 122 different climate change scenarios suggests that in approximately one third of the scenarios, hydropower production is less than in the no-climate change case, whereas in the remaining scenarios production could be higher if investment in turbine generation is adequate and market arrangements for evacuating the excess power are established[37]. Continued land degradation also reduces reservoir life through sediment loading of surface water bodies, and the feedback loop between land degradation and climate change processes amplifies the impact.[38]

The frequency and severity of disasters such as droughts and floods is likely to increase with climate change, leading to food insecurity among the affected population and prejudicing the livelihood strategies of many Ethiopians. Ethiopia is frequently and severely affected by drought, with 70%[39] of the Ethiopian population at risk of disasters and climatic variability. Droughts are associated with high economic costs, reducing Ethiopia's GDP by 1% to 4% in major events years[40], slackening the speed with which the poor can rise from poverty. Since 2000, approximately 6.2 million[41] people have been affected by drought every year, with the 2015 drought associated with the global El Niño weather phenomenon causing food insecurity among 10.2 million Ethiopians[42]. The 2003 drought led to a decline in 3.8% in GDP, a 15% inflation rate, a decline in agricultural productive, and widespread food and energy insecurity, and has changed physical, chemical and biological conditions of the country's lakes (box 1).[43]

Box 1: The impact of the 2002/03 drought on the Ethiopian economy *Mulat Demeke (2004)*

- The drought in 2002/03 led to a 3.8% decline in the country's GDP and a 15% inflation rate.
- Agricultural production declined by 12% and nearly 11.3 million people required food assistance; an additional 3 million needed close monitoring (World Bank).
- The coffee harvest is estimated to have declined by 30% in 2002/03 due to drought in coffee producing areas of the western, southwestern and eastern parts of the country (Fewsnet).
- Drought can damage quality and quantity of production. The volume of water in the hydro dams is also affected by drought. For instance, the 2002/03 drought reduced the water level of the Koka dam by unprecedented 3 to 4 meters.
- The performance of the non-agricultural sector is also affected by power interruption in years of severe drought (shortage of water for hydroelectric power generation). For instance, the drought in 2002/03 led to power interruptions that lasted about four months with a one day/week complete interruption throughout the country. A one day interruption was estimated to result in a loss of 10-15% of GDP of the day.
- Drought, along with siltation and sedimentation, has changed the physical, chemical and biological conditions of the country's lakes. A case in point is the 2002/03 sharp drop in the depth of Lake Tana (source of the Blue Nile), which seriously disrupted boat transport in the area.
- Millions of dollars are spent on importing food that does not build up a capital stock to foster economic growth. For example, the United States alone gave 500 million USD worth of food aid to Ethiopia in 2002/03.

[36] World Bank (2011).
[37] World Bank (2016a).
[38] TerrAfrica. Land and Climate (2010)
[39] World Bank (2014a).
[40] OECD (2014).
[41] EM-DAT average number of people affected by drought, taking into account droughts in 2003, 2005, 2008, 2009, 2011 and 2015. D. Guha-Sapir, R. Below, Ph. Hoyois - EM-DAT: The CRED/OFDA International Disaster Database. www.emdat.be. Université Catholique de Louvain, Brussels, Belgium.
[42] FDRE and Humanitarian Partners (2016).
[43] LTS (2012) *op. cit*.

II.3 Vulnerability to Climate Change

Overcoming the adaptation deficit. Ethiopia is more vulnerable to current climate variability and future climate changes than wealthier countries.[44] Section II.1 describes how Ethiopia is both highly exposed to climate shocks and changes, and highly vulnerable due to its rainfall-dependent economy, predominantly rural population, frequent occurrence of droughts and floods, high poverty rates and limited institutional capacity. Ethiopia has to use climate finance to reduce climate vulnerability and respond to impacts.[45,46,47] This adaptation continuum [48] has at one end the most vulnerability-oriented adaptation efforts: these overlap almost completely with traditional development practice. At the opposite end, activities are designed to target distinct climate change impacts, and fall outside the realm of development as traditionally defined. In between lies a broad spectrum of activities with gradations of emphasis on vulnerability and impacts. The MSIP captures required investments along this continuum which can build the foundations of the country's adaptive capacity and identify and tackle specific climate risks.

Figure 16: The Adaptation Continuum. Reproduced from McGray (2009)

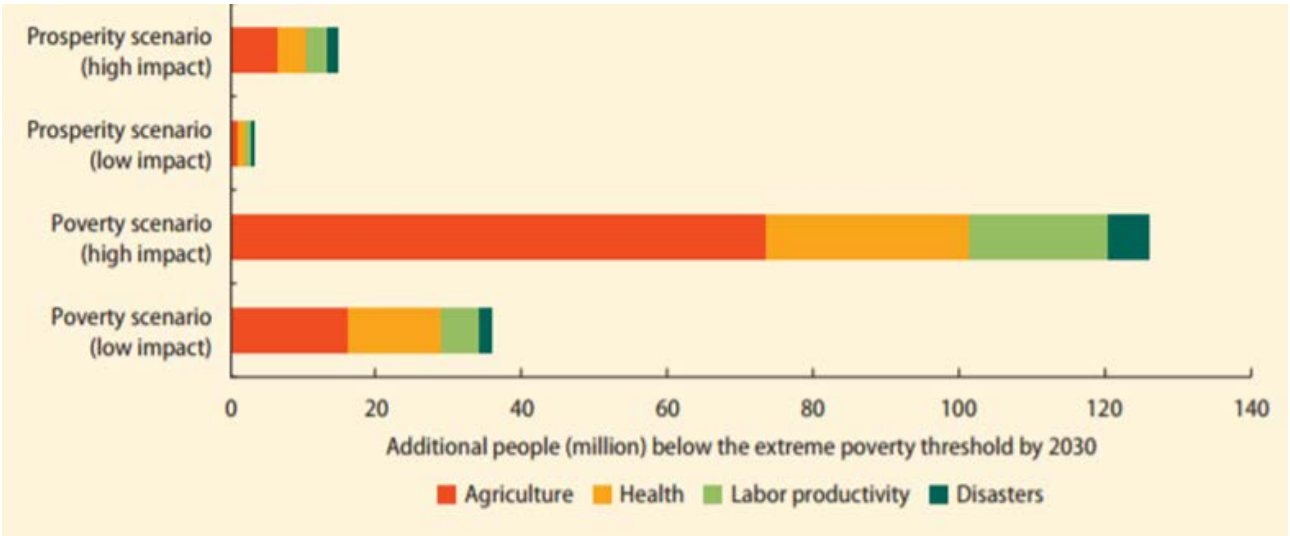
The importance of investments in vulnerability reduction for least developed countries is justified by research and experience tackling the 'adaptation deficit.'[49] This term reflects the fact that low-income countries are less able to deal with climate events because they lack the institutional, economic or financial capacity to adapt effectively. The adaptation deficit occurs both because of inefficiencies in the provision of adaptation services but also because of the rational allocation of scarce resources to more pressing and immediate needs. Sound institutions, high regulatory standards and good public services are more likely to be available in richer countries and these both enhance welfare in their own right, but also make the outcomes of climate change adaptation more efficient. This justifies the investment of climate finance in both broad-based inclusive growth to boost adaptation demand and improve the efficiency of more targeted adaptation support.[50]

To achieve a resilient economy, Ethiopia must undertake a structural transformation in line with its ambitious economic development plans which rely heavily on green industrialization, urbanization and a four-fold increase in the productivity of its rural landscapes. This requires a massive effort involving substantial policy and regulatory reform, extensive cross-sectoral and multi-stakeholder collaboration, as well as large volumes of both public and private investment.

[44] The insight is based partly on forward looking studies that assess the likely impact of future climate change (Tol 2002a, b, Parry et al. 2007) and partly on empirical evidence that looks at the impact of extreme climate events in the past (Kahn 2005, Noy 2009, Toya and Skidmore 2007).
[45] Adger WN, Agrawala S, Mirza MMQ, Conde C, O'Brien K, Pulhin J, . (2007)
[46] Fankhauser, S., & Burton, I. (2011). Spending adaptation money wisely. Climate Policy, 11(3), 1037-1049
[47] Schipper, E. L. F., & Burton, I. (Eds.). (2009).
[48] McGray (2009)
[49] Burton, I. (2009).
[50] Fankhauser, S., & McDermott, T. K. (2014).

Vulnerability assessments show that climate-related shocks, such as drought and food price increases, represent a significant consumption poverty risk to many Ethiopians. The 2016 "Shockwaves" report by the World Bank argued that climate conditions or climate events are already involved in many cases where households fall into poverty. They can be linked to price shocks due to lower agricultural production, natural disasters that destroy assets and livelihoods and affect health and education, and health shocks that are influenced by climatic and environmental conditions. The World Bank estimates that unaddressed climate change could dump up to 122 million people worldwide below the poverty line under the worst-case scenario (Table 1). Agricultural output losses are the main driver of climate-related poverty, followed by health shocks and disasters (Figure 17)[51]. Studying the vulnerability to consumption poverty resulting from adverse shocks, Hill and Porter (2015) find that many Ethiopians are unable to protect their consumption against large covariate shocks such as drought and food price increases. The authors find that 42% of the population is vulnerable to absolute poverty (compared to 29% currently defined as poor), where vulnerable households are defined as those having a probability greater than 50% of falling below the poverty line. Food price shocks disproportionately affect urban uneducated households, whilst rural households are particularly affected by drought shocks. Moreover, Hill and Porter (2013) find that vulnerability is concentrated in the geographic areas targeted by the PSNP. Half of the population in PSNP woredas (districts) is vulnerable, whereas 27% of the population in non-PSNP woredas is vulnerable. On the other hand, of the 27 million identified as vulnerable to absolute poverty, 12.2 million live in non-PSNP woredas, as vulnerability is determined not only by geographic location, but also by factors such as individual access to assets, or lifecycle events.

Figure 17: Agriculture is the key driver for climate change's impact on poverty. Reproduced from World Bank, 2016



[51] Hallegatte, S. et al (2016).

Table 1: Climate change threatens to worsen poverty, but good development can help. Reproduced from World Bank, 2016

Policy choices	Climate change scenario				
	No climate change	Low-impact scenario		High-impact scenario	
	Number of people in extreme poverty by 2030	Additional number of people in extreme poverty due to climate change by 2030			
Prosperity scenario	142 million	+3 million		+16 million	
		Minimum +3 million	Maximum +6 million	Minimum +16 million	Maximum +25 million
Poverty scenario	900 million	+35 million		+122 million	
		Minimum −25 million	Maximum +97 million	Minimum +33 million	Maximum +165 million

Source: Rozenberg and Hallegatte, forthcoming.
Note: The main results use the two representative scenarios for prosperity and poverty. The ranges are based on 60 alternative poverty scenarios and 60 alternative prosperity scenarios.

While overall, climate change represents a significant risk to economic development and growth, climate change may have positive impacts on growth in certain sectors. Research by the EDRI shows that some weather scenarios may have positive impacts in specific sectors. For instance, while an increase in annual average temperature could lead to a decrease in net revenue from crop agriculture and from total agriculture (crop and livestock), it may lead to an increase in net revenue from the livestock production sector alone. Moreover, an increase in annual rainfall would have significant positive effects on crop net revenues, but a negative impact on livestock net revenue. Given that decreases in annual rainfall are more likely than increases in rainfall under climate change scenarios, it is likely that climate change will lead to a decrease in net revenue from both crops and livestock[52]. While climate change is expected to lead to an increased frequency and severity of disaster events, disasters may in turn drive technological change that partly mitigates the adverse economic impacts of disasters[53].

III. The Enabling Policy Environment to Manage Climate Risks and Mobilize and Leverage Investment: Institutions, Incentives and Information to Manage Climate Risks

To achieve greater climate resilience, the FDRE is deploying and increasingly coordinating efforts to enhance institutions, incentives, and information that can help build climate resilience. The key aspects of these efforts to improve the enabling policy environment and most relevant to the MSIP are summarized below. Additional information has been included in Annex 3.

III.1 Institutions

The MSIP builds on Government of Ethiopia's existing response to climate change. The Ethiopian Constitution (1995) sets out the rights of Ethiopian citizens to sustainable development, to improve their standard of living, and to a clean and healthy environment. This is further reinforced by the National Environmental Policy (1997) which recognizes, *inter alia* the need to seek financial support for climate action, plan over long time horizons and ensure community participation.

Ethiopia is guided by five-year development plans. The Second Growth and Transformation Plan (GTP II) covers the period 2015/6 to 2019/20. It aims to sustain the broad-based inclusive growth achieved under GTP I, while placing

[52] Gebreegziabher et al. (2014).
[53] Hallegatte and Dumas (2009).

greater emphasis on the links between the national development plan and the CRGE Vision, citing CRGE as one of its nine pillars. Launched in 2011, the CRGE Vision sets the goal for Ethiopia to become a middle-income country by 2025 with zero net increase in annual carbon emissions and a climate resilient economy. The National Adaptation Plan of Ethiopia summarizes adaptation strategies, with respect to agriculture, forestry, water, energy, transport, urban, industry, health and education requirements. Climate Resilience (CR) Strategies also provide more detail for the Agriculture and Forestry (2014) and Water, Irrigation and Electricity (2015) sectors. CR commitments are outlined in Ethiopia's Nationally Determined Contribution (NDC) submitted to the UNFCCC[54].

The cross-sectoral nature of climate resilience investments implies a need for coordination across sectoral boundaries. MSIP will build capacity throughout Ethiopia's coordination and delivery systems. At present, inter-agency coordination on climate change is facilitated through the establishment of an inter-ministerial council, as well as through the CRGE Technical Committee, the National Planning Commission, and the CRGE Facility Secretariat. Additionally, CRGE units or focal points exist within most line ministries to promote and manage mainstreamed CRGE activities. However, further strengthening of inter-institutional coordination will be key to unlocking the potentially large cross-sectoral synergies of investment activities prioritized through the MSIP. This is particularly important at regional level, since most regions have not yet created mechanisms for inter-sectoral coordination.

Sustainable management of natural resources requires an integrated and holistic approach, defining landscapes, eco-regions or watersheds as planning and implementation areas. These landscapes usually embrace farmland, rangeland, forests and others forms of land use. While the FDRE has made substantial progress with implementation of its land policy through certification, it has not undertaken comprehensive macro-level land use planning in the past.[55] The responsibility for management of Natural Resources has been split: MoANR is responsible for the overall Land Administration and Use Policy, as well as SLM on farmlands and rangeland, whereas the forest areas are under the responsibility of MEFCC. Basin Master Plans and cross-sectoral coordination at Basin level has been designated the responsibility of River Basin Authorities under MoWIE, but only two are functioning.

The MSIP has the potential to catalyse transformational change through mobilising the investment to scale up existing practices and creating a step-change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Ethiopia and most of its development partners and civil society share an understanding that climate resilient development requires economic transformation. The MSIP aims to contribute to a four-fold increase in the productivity of Ethiopia's rural landscape by harnessing improvements in land and water management that optimise efficiency, balance competing priorities and leverage investment from both the public and private sectors. This requires massive investment as well as extensive policy and regulatory reform. Transformational change should use three levers to achieve scale: 1) Scaling up through public investment; 2) Creating the incentives for self-scale via private investment, including those of smallholder farmers; and 3) Altering decision-making and delivery within existing programmes and investments through policy reform and the greater use of climate, hydrological and land use information in decision-making.

III.2 Incentives

A sound policy and regulatory framework can unlock transformative investment and represents a critical element of a resilient economy. Ethiopia's Federal system and ambition for inclusive, broad-based growth through the

[54] FDRE(2015) See http://www4.unfccc.int/submissions/INDC/Published%20Documents/Ethiopia/1/INDC-Ethiopia-100615.pdf

[55] Except in urban centres with master plans and land zoning in place. See Haddis, Bekure, Belete, Gebremeskel and Tafare (2017) Ethiopia's Move To A National Integrated Land Use Policy And Land Use Plan for more information. Available at: https://www.land-links.org/wp-content/uploads/2017/03/USAID_Land_Tenure_WB17_Ethiopia_Move_Land_Use_Plan.pdf

Growth and Transformation Plans create scope for resilient growth. The National Disaster Risk Management and Social Protection policies aim to prepare for shocks and promote equity. However, there are still some limitations. Developing a coherent and comprehensive policy framework will facilitate climate resilience enhancing investments.

Ethiopia is well-endowed with natural resources but they are subject to competing uses. Managing environmental risks and enabling economic transformation is key to Ethiopia's ability to achieve its climate resilience objectives. Reaching the shorter-term GTP II targets and the longer-term CRGE goals, given environmental and climate risks, will require strong synergies between sectors and careful management of trade-offs between various sectors' claims on the same resources.[56]

Land holding certificates are an important form of land tenure that can drive household and community reinvestment in land resources. The MOANR Directorate of Rural Land Use and Administration is committed to strengthening tenure security through a land certification program. This has been supported by investments in the SLMPII, and has given farmers increased security and an incentive to invest in land and water resources, agroforestry, and climate-smart agriculture. This is an important foundation for MSIP actions.

Participatory land use planning, watershed management and forest management are important drivers of rational resource use, poverty reduction and shared benefits, but greater investment in high level integrated level land and water use planning is essential. Participatory watershed management is well established in Ethiopia with National Guidelines developed under the SLMPII and used across Ethiopia's agriculture sector programs. Similarly, Participatory Forest Management (PFM) has been initiated to ensure that local communities benefit from the forests they manage. However, these local-level land use approaches are not situated within a high level spatial plan that can manage competing demands from crop and livestock production, forestry, ecosystem services and biodiversity conservation. Neither are such plans integrated with an overall assessment of water availability and water-use planning.

The involvement of the private sector is important for national resilience, but continued progress on regulatory reform will be required to enhance the enabling environment for resilience investments. GTP II sets out an ambitious plan for attracting private sector investment in the agricultural and industrial sectors, and has made extensive investment in market infrastructure. However, Ethiopia remains a challenging location for private sector development, ranking 159th out of 190 countries in the World Bank's Ease of Doing Business index. The tightly controlled financial services sector creates limitations on the availability of finance, particularly foreign exchange and short term loans. Enhanced modalities for public private partnerships in the land-based sectors could be developed but require prior investments in appropriate land use planning. Public-private dialogues at a high-level should be expanded to all relevant sectors to ensure an appropriate framework for public private partnership is developed. Lessons from the implementation of the World Bank's Climate Innovation Centre to support micro and small enterprises could also be relevant.

Improved policies can foster more resilient economic growth in the forest sector. The forest sector contributes 4% of Ethiopia's GDP and this is expected to grow to 8% by 2020. The expansion and modernization of the forest sector is in the center of the government's development strategy, with forest cover is to be increased from 15% to 20% through the rehabilitation of existing forests. A forest sector roadmap is under development setting out strategies to encourage a substantial increase in the area under forest cover, continued growth in the share of forestry's contribution to national GDP and the promotion of proven approaches such as area closures, participatory forest management, plantation development and improvements, agroforestry and the management of dry forests.

[56] Danyo, S. *et al* (2017) *op cit*.

Substantial growth is expected from foreign direct investment in plantation development and processing but this requires improvements to the enabling environment, including (i) developing arrangements for Public Private Partnerships; (ii) enabling access to land (e.g., leasing, certificates) to encourage long-term forest investments; and (iii) creating economic incentives for forest investments, such as credit facilities, loan guarantees, duty-free imports of relevant machinery, or delayed taxes, recognizing the long time horizon for these investments.[57] Public-private dialogue initiated by the World Bank Group in Ethiopia and involving high level Government representatives as well as current and potential forest sector investors has created the foundation for this action. Plans to establish a formal Forestry and Timber Processing Industry Association will create a stronger platform for information sharing and dialogue with the private sector. MEFCC is working on the establishment of a Forest Fund to incubate domestic and foreign investment in the sector. Payments for ecosystem services could also help to create incentives for forest conservation, especially in high value areas, however the regulatory framework is limited. The identification of stakeholders willing to pay for the services, and the development of regulations for implementers are needed to enable scale up.

Box 2: Way forward for private sector engagement

MSIP contains numerous opportunities for public-private partnership. FDRE efforts to foster private investment and smallholder commercialization can also be supported by civil society organizations which can act as facilitators to strengthen the capacity of cooperatives and ensure institutional arrangements are environmentally and socially sustainable. Investment opportunities include:

- **Attracting foreign direct investment to the forest sector as per the Commercial Plantation Forest Industry Investment Plan:** This plan proposes the allocation of land for commercial plantation establishment in four key regions, alongside the establishment of an integrated panel (plywood, MDF and particleboard) and sawnwood production cluster. This should also enhance the productivity of existing Government-owned plantations. Government will build on its existing investment promotion strategy to create incentives for commercial forestry. This requires the interpretation and application guidelines of land tenure and environmental regulations, the introduction of improved technology for harvesting and transportation of timber, upgrading the vocational and higher education provision in subjects relevant to plantation management and timber processing, the easing of export logistics and cross-border procedures.[58]
- **Strengthening value chain development in the agricultural and livestock sectors:** Ethiopia's second Growth and Transformation Plan contains ambitious targets to attract commercial investment, with a further 500,000 hectares identified for agricultural investments between 2015-2020 and an attractive investment policy for agricultural and livestock investments.[59] The enabling environment for land allocation will be supported by the macro-level land use planning proposed under MSIP and by proactive implementation of the investment and smallholder commercialization policies, including through ongoing and high-level public-private dialogue. One example is the partnership between IFC, Nespresso and the World Bank's BioCarbon Fund which aims to boost environmental sustainability in the coffee value chain through farmer training and improvements to wet mill operations in the Oromia Region.

Improvements in the policy environment for agricultural and livestock commercialization and value chain development are required. Ethiopian farmers are inhibited from commercial production due to weak access to working capital, inputs, poor market integration and volatile prices. Seed supply is a key barrier to improved production and the development of policy to register new varieties and regulate imported seed are important. In the

[57] Danyo, S. *et al*. (2017) *op. cit.*

[58] Indufour Oy (2016) Ethiopia Commercial Plantation Forest Industry Investment Plan. Final Report. July 2016. Addis Ababa.

[59] See the Investment Promotion of Act 375/1996, Act 249/93, 543/2007; labor act 466/1997 and 456/1997 land administration and land use proclamation.

livestock sector, gaps relate to the lack of enforcement of meat quality standards, weak implementation of the animal breeding policy, and weak implementation of land policies that affect feedlot production. FDRE's recent initiative to establish four Integrated Agro-Industrial Parks offers an opportunity to attract private investment but complementary improvements in the technical support offered to cooperatives, input supply and finance for cooperatives and their members are needed.

The deployment of renewable technologies for resilience can be supported by improvements in regulatory and financial support. Recommended improvements include effective implementation of VAT and tariff exemption and its application to parts and appliances; the creation of a policy to guide the implementation of Pay-As-You-Go solar businesses; and improved enforcement of quality standards for solar products used for productive purposes (for example, solar pumps).

Harnessing the country's rural growth potential requires much greater capacity for research and development in water use management, and more consistent water pricing. The establishment of more hydraulic infrastructure to store and distribute water and to buffer rainfall variability will stimulate growth and reduce vulnerability to climate change. [60] However, this is hampered by weak knowledge of resource conditions, patterns of water use, and a lack of capacity to plan water allocation and assess the impacts and trade-offs of water resources development. Water permits are issued by competing state and federal authorities, often outside the scope of Basin Master Plans (when these exist). Flood and drought management are also not well integrated into the Water Recovery Management (WRM) system. Substantial investment in WRM capacity is required, including in research and development.

Greater access to higher quality meteorological information can improve investment decision-making at all levels. Whilst both MoWIE and MoANR have internal systems for distributing regular meteorological bulletins generated by the National Meteorological Agency, improvements can be made both in the quality of the information and the capacities of decision-makers to use it. Furthermore, communication to farm level is also currently patchy, with the opportunity to build on and scale up mobile services such as the MoANR/EIAR collaboration on "8028", Ethiopia's first agricultural hotline.

Improvements in cross-sectoral coordination for disaster risk management will improve economic resilience and reduce the cost of humanitarian response. Ethiopia's disaster management infrastructure is well-developed, with a continuously improving annual humanitarian assessment process and a system of clusters coordinating food and non-food responses. Interaction between the NDRMC and the Productive Safety Net Programme (PSNP) ensures that the risk financing mechanism of the PSNP is triggered to allow rapid scale-up of transfers during drought years. However, key gaps include weak assessment methods for non-food responses, particularly in the agriculture and water sectors, and a lack of coordination in relation to managing rapid-onset disasters, such as floods. In addition, there is weak uptake of risk assessment data by sector line ministries, and inadequate coordination between DRM and CRGE mainstreaming processes and institutions.

Greater investment in the enabling environment for weather-indexed insurance could help manage risks, but there is a long way to go for insurance to become a viable large-scale option. A range of weather-indexed and multi-peril insurance products are offered to farmers and livestock keepers on a pilot basis in Ethiopia. Key challenges to scale-up include the costs of premiums,[61] the lack of historic weather data upon which to base risk calculations, and lack of financial infrastructure to sell products and collect payments cheaply.[62] There is, therefore, a continued need for

[60] Mosello, B., *et al*. (2015) *op. cit*.
[61] Tadesse, M. A., *et al.* (2015).
[62] MeheRette, E (2009)

subsidy which compromises sustainability. Further analysis of the relative costs of subsidy in comparison to other forms of public sector response to shocks is needed.

The MSIP can strengthen the implementation of FDRE policy commitments on gender equality. Ethiopian legislation via the Constitution and Family Code (213/2000) give men and women equal rights in most areas. There remain, however, significant differences in access to extension services, inputs and finance between men and women, and particularly stark differences by region. [63, 64] Complementary activities to narrow the gender gap may include the provision of specific training for women, social communications on behavior change, encouraging financial inclusion through the creation of savings and credit groups, and the establishment of women-only self-help groups.

III.3 Information

Better data on the economic value of Ethiopia's natural resources would improve decision-making and efficient resource allocation. One recommendation of the on-going Country Environment Analysis is that Ethiopia could consider incorporating natural capital measures into its system of national accounts to provide quantitative evidence of achievements toward the CRGE vision. Other critical information gaps are related to ground water resources, options for electrification, biofuel, and air pollution, as well as climate, hydrology and weather data. This requires investment in the capacities and technologies to generate such information.[65]

Investment in hydrological research and mapping groundwater resources will result in better investment in new water infrastructure. Due to limited understanding of the complex nature of groundwater resources in Ethiopia and limited data about water availability and use, it is not possible to effectively plan for sustainable water use. Filling knowledge gaps and identifying the likely outcomes of climate scenarios is a key priority prior to investment in further water extraction.

It is necessary to conduct empirical studies on the analysis of demand, costs and benefits of biofuel production. Ethiopia has an ambitious strategy for biofuel development, but this was produced in 2007 and does not draw on latest data.

Investment in climate information services represents an opportunity to enhance Ethiopia's resilience to climate change. Due to Ethiopia's diverse geography and topography, climate modeling is particularly challenging. This is compounded by limitations in capacity, as well as resource constraints within key institutions[66]. One constraint is insufficiently rich weather data related to the distribution of weather stations which are mainly in cities or along the main roads.[67]

To address its exposure to climate-related events, Ethiopia has developed early warning systems that enable a timely response to drought events but these focus on assessing food needs and could be strengthened to ensure livelihoods are also protected in humanitarian responses. Ethiopia uses drought early warning tools to guide its response to the onset of a drought, including triggering contingency plans and risk financing through the PSNP. However, the predictive power of the existing early warning tools could be enhanced with more and better data. Furthermore, much of the early warning system is geared towards the assessment of food needs, with less resource invested into the identification of non-food support in the agriculture and water sectors.

[63] Kumar, N., & Quisumbing, A. R. (2015).
[64] Kasa et al (2015)
[65] Danyo *et al* (2017) *op. cit*.
[66] OECD (2014).
[67] Dinku *et al*. (2014); OECD (2014).

Improved program monitoring, in conjunction with rigorous impact assessments would help to improve the implementation of investment programs. Enhancing the capacity to monitor investment projects and developing rigorous impact assessments could inform the design of future investment programs, improve program implementation, and enhance the effectiveness of existing programs to yield development and poverty results.

IV. Process for Preparing the MSIP: Collaboration, Iteration, Evidence across Sectors and Stakeholders

IV.1 Summary of Overall Process

The MSIP was developed to convene, coordinate, and scale up funding, investment actions and enabling policies to build climate resilience in key rural sectors. The MSIP is a strategic financing document to advance the goals of the country's CRGE Strategy, and was prepared with support from the PPCR of the Multilateral Development Banks and CRGE support funds from the BioCarbon Fund of the World Bank.

Recognizing the importance of a coordinated approach, MoFEC requested the World Bank, in concert with numerous partners including the African Development Bank and International Finance Corporation, to provide lead support to the development of the MSIP. In May 2015, Ethiopia submitted an Expression of Interest for support in investment for resilient forest and agriculture, which led to it being selected by the Climate Investment Fund to participate in the PPCR, and being allocated a $1.5m preparatory grant from the PPCR for investment planning.

The MSIP will focus on the forest and agriculture sectors, and will incorporate activities in the water, energy and livestock sectors. The MSIP will consist of a pipeline of large scale, programmatic investments that serve to contribute to the GoE priorities and the achievement of the goals under the Government's GTP-2 (2015-2020) and CRGE Strategy (2011-2030). To enhance inclusivity of the MSIP development process, the WB and AfDB committed to support joint missions and national workshops to validate the agreed upon investment plans and specific investment projects, and worked closely with the four line ministries to convene numerous development partners interested in a coordinated, multi-sectoral, programmatic approach to scaling up investment in climate resilience.

The MSIP preparation process is Government-owned, led by MoFEC along with a core set of line ministries including the Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Environment and Climate Change (MEFCC), the Ministry of Water, Irrigation and Electricity (MoWIE), and the Ministry of Livestock and Fisheries (MoLF). To ensure cohesion, it also involves the National Disaster Risk Management Commission. The collaborating entities are briefly described in Box 3.

MoFEC, which is mandated to mobilize both domestic and external resources for the implementation of the FDRE's CRGE strategy, upon which the MSIP builds, has acted as the lead agency in designing, and will oversee the delivery of, the MSIP. Almost 50 organizations have been continually engaged in MSIP preparations and dialogues. The process built upon sector plans and helped to harness cross-sectoral synergies, strengthen

Box 3: Background on MSIP collaborating entities

The **Ministry of Finance and Economic Cooperation (MoFEC)** is mandated to mobilize both domestic and external resources for the implementation of the FDRE's GTPII and CRGE strategy. MoFEC is the lead agency in the process of designing and overseeing the delivery of the MSIP. In 2016, MoFEC created the *Climate Change Facility and UN Agencies*

Directorate in 2016 to formally reflect that, since 2011, this Directorate has managed the country's national climate finance facility - the CRGE Facility - and has worked closely with MEFCC to coordinate cross-sectoral plans to integrate climate change. The Management Committee of the CRGE Facility has also acted as a coordination mechanism bringing together sector representatives to discuss CRGE issues at policy level.

The Ministry of Environment, Forest and Climate Change (MEFCC) is mandated to coordinate Ethiopia's technical implementation of FDRE's CRGE Vision, and is also responsible for the implementation of the Forest Development, Conservation and Utilization Proclamation (542/2007), the subsequent Forest Development, Conservation and Utilization Policy and Strategy and Climate Resilience Strategy for Agriculture, which includes the forestry sector. This requires coordination with Regional bodies. Many forest areas in the regions fall under the responsibilities of Forest Enterprises such as the Oromia Forest and Wildlife Enterprise (OFWE), others are located within National Parks under the Ethiopian Wildlife Conservation Authority (EWCA) under the Ministry of Culture and Tourism (MoCT).

The **Ministry of Agriculture and Natural Resources (MoANR)** implements climate action related to agriculture. It is guided by the 10-year Policy and Investment Framework (PIF) (2010-2020), the Agricultural Development Led Industrialization (ADLI approach) and the Climate Resilience Strategy for Agriculture (also covering Livestock and Forestry) (2014). MoANR is divided into three sectors covering Agricultural Development (plant health, agricultural extension, input marketing and managing private investment), Natural Resources (land administration and utilization, natural resource development) and Food Security (implementation of the productive safety net program). The *Ethiopian Strategic Investment Framework for Sustainable Land Management* (2010) provides a holistic framework under which all stakeholders can work to promote and sustain land management, including the flagship Sustainable Land Management Programme. Other major programs include the Productive Safety Net Programme and the Agricultural Growth Programme. Relevant agencies and government-owned enterprises include the Agricultural Transformation Agency, Federal Cooperative Agency, Agricultural Input Supply Enterprise (AISE), Ethiopian Seed Enterprise (ESE) and Ethiopian Grain Trade Enterprise (EGTE).

The **Ministry of Livestock and Fisheries (MoLF)** was recently created as a separate entity from MoANR and is advancing FDRE's agenda with respect to livestock productivity as part of FDRE's GTP II targets, the National Livestock Master Plan and livestock-components of the Climate Resilience Strategy for Agriculture. Regulations established the Ethiopian Meat and Dairy Technology Institute (143/2008) and the Ethiopian Meat and Dairy Industry Development Institute (EMDIDI) (295/2013) to increase milk production and supply to processing industries, upgrade the capacity of milk processing companies in product development and processing, and to reduce dependence on milk imports. The draft Animal Breeding Policy and Strategy (2014) covers all livestock species reared in Ethiopia and supports the previously developed "Guideline on Import and Export of Animals and Animal Genetic Materials" (2012).

The **Ministry of Water, Irrigation and Energy (MOWIE)** leads the implementation of FDRE's Climate Resilience Strategy for Water and Energy, which identifies key resilience enhancing actions in the water and energy sectors, such as enhancing energy efficiency, strengthening irrigated agriculture and accelerating access to WASH. The Ethiopian Water Resources Management Policy (1999) set out the basis for contemporary integrated water resource management in Ethiopia, this including large-scale basin management and utilization of water for irrigation. In 2001, the Ethiopian Water Strategy was adopted with the stated aim of translating the 1999 Policy into action. The River Basin Councils and Authorities Proclamation (534/2007) marked the beginning of a process to a decentralized and basin-level approach, but only two of Ethiopia's eight major basins had functional river basin authorities in 2016.[68] The Energy Policy (1994) describes GoE's intention to increase access to modern energy sources and to avoid adverse environmental impacts. The Electricity Feed-in-Tariff Law (2012) encourages the diversification of the power mix in the national grid whereas the Energy Proclamation (2013) sets out the responsibilities of the Ethiopian Energy Agency and establishes standards for licensed generators and energy efficiency standards. The Rural Electrification Fund was established in 2003 (Proclamation No 317/2003) to provide loans and technical assistance for rural electrification. MoWIE has several

[68] Mosello, B., *et al*. (2015).

alternative energy programs for increasing access to modern fuels including the National Biomass Energy Strategy (2013),[69] National Biogas Program for Ethiopia (2007)[70], Biofuel Program and Sustainable Energy For All Action Plan.[71]

The **National Disaster Risk Management Commission (NDRMC)** was created in 2015. It is guided by the 2013 National Policy and Strategy on Disaster Risk Management and the 2014 Strategic Programme and Investment Framework (DRM-SPIF). NDRMC works closely with the National Meteorological Agency in the generation and dissemination of agro-met data and the provision of early warning information to all sectors.

investment proposals, programs, policies and projects, and thus build the capacity of relevant stakeholders to participate in the MSIP.[72]

To enable effective collaboration, the development of the MSIP has been conducted in four steps: (i) scoping to define the MSIP process and to determine boundaries of the investment plan; (ii) analysis and stocktaking to conduct evidence-based assessments to address gaps identified during the scoping and to agree on criteria to identify priority investments; (iii) prioritization to identify bankable activities, projects, programs and policies, starting with each sector's plans; and (iv) the finalization of a comprehensive, unified, realistic, costed, multi-sector investment plan (MSIP). Throughout the development of the MSIP, consultations with stakeholders have been conducted as part of a participatory and inclusive process.

Development of the MSIP has utilized three distinct but inter-related tools:

- ***Portfolio Review:*** A stock-taking of relevant existing donor-supported projects has been undertaken in the relevant sectors, to understand what investments have so far been made in the context of climate resilience in agriculture and forestry.
- ***Gap Analysis:*** The portfolio of existing projects has been analyzed to identify any gaps in investments, based on key parameters. Specifically, the existing portfolio has been analyzed with respect to: its alignment with GTP II targets; the degree to which it meets projected investment requirements, in aggregate and disaggregated by sectors and themes; and the extent to which investment flows have met the spatial needs of Ethiopia.
- ***Investment Prioritization Framework:*** A tool for prioritizing activities was developed by the World Bank collaboratively with partners and government, and then adopted by the consultants to help finalize preparations. Using this tool, and the gap analysis findings, a range of identified activities were prioritized in an iterative and inclusive manner by the line ministries, and informed by partners and stakeholders.

All tools have been applied in highly participatory ways. The relevant line ministries provided the data that has been used in the portfolio review and gap analysis, and have engaged in consultations and workshops designed to enable review of and feedback on the results of the analysis. They have also been closely involved in the design of the Investment Prioritization Framework, and have used this to assess the importance of the Activity Packages that they have identified as being most important to achieving climate resilience in the targeted sectors. The creation of the outputs that have been combined to form the MSIP document has been iterative to ensure it has stakeholder agreement and ownership. MSIP preparation has thus helped to consolidate and harmonize information sharing, foster collaboration, reduce costly fragmentation and enhance coordination, which should then strengthen capacity to implement the MSIP.

[69] http://www.euei-pdf.org/sites/default/files/field_publication_file/Ethiopia_Biomass_Energy_Strategy_and_Action_Plan_Final_2014_02_06.pdf
[70] http://www.africabiogas.org/countries/ethiopia/
[71] https://www.se4all-africa.org/se4all-in-africa/country-data/ethiopia/
[72] See the list of Contributing Partners at the beginning of this document.

Together these stakeholders have collaborated to deliver an MSIP that is responsive to multiple potential international climate finance opportunities. Potential sources include the Green Climate Fund (GCF) and the Global Environment Facility (GEF), as well as financing sources not conventionally thought of as "climate finance" including the WB's International Development Association (IDA) and AfDB's African Development Fund (ADF). The MSIP also aims to enhance coordination of public financing for investment projects, as well as create a framework for work with public and private banks and insurance companies, microfinance institutions and savings and credit cooperatives to create new financing mechanisms for resilience building.

The MSIP process is in many ways the product, having enabled preparation of credible climate financing proposals by: (i) centering on an inclusive and consultative process with numerous DPs and other stakeholders; and (ii) largely building on and incorporating all major strategies, programs, projects and analytics for Ethiopia. Using these climate finance proposals, the MSIP process aims to leverage and create a multiplier effect in scaling up investment and action through 2030 using new and additional financing from multiple sources – complementing existing financing and proven government programs for efficient impact – to support Ethiopia to achieve its climate resilience objectives in key sectors. By doing so, the MSIP process will boost GoE's capacity for cost-effective and efficient scaled-up action on the ground.

The final version of the MSIP document has benefitted from and been modified in response to an external independent peer review. Annex 4 includes details of this independent review.

The remainder of Part 1 of the MSIP summarizes the portfolio review and gap analysis, to lay a foundation for the investment prioritization and planning to be described in detail in Part 2. More detailed descriptions of the preparation and consultation processes, and summaries of participation, have been provided in Annex 5. The investment prioritization tool and process are described in Part 2.

IV.2 Portfolio Review

The portfolio review was undertaken to establish a clear, evidence-based baseline that could inform future-focused multi-sectoral investment planning. The review was designed to ensure that a sufficiently reliable picture of past and on-going investments was produced, bearing in mind available time and resources. The review has been performed so that it can continually be refined, should this be considered necessary. The portfolio review methodology and conclusions are more fully described in Annex 6 of the MSIP document.

The review comprised a sequence of desk research and stakeholder consultation activities, and identified projects in the prioritized sectors, namely agriculture, forestry, water, energy and livestock. In the case of water and energy, only projects related to agriculture, forestry and/or livestock were considered. Approximately 146 potentially relevant projects were identified. To focus on those that would be most material to the gap analysis, the following filters were applied:

- ***Project budget equal to or greater than US$3 million:*** Given the nature of the review, projects below this scale are unlikely to be material to the conclusions of the portfolio review and gap analysis.
- ***Projects implemented starting from 2010.*** As 2010 marks commencement of GTP I, any projects implemented prior to this would be difficult to analyze in a way that is meaningful to relevant FDRE strategies and plans.
- ***Sufficient project data available.*** Minimum data requirements are a summary of the budget and the primary activities or outputs. Without this, even a basic project review would not be possible.

These filters reduced the portfolio for detailed analysis to 102 projects. Most of the remaining projects did not meet the minimum budget requirement. It was recognized that, while smaller projects were unlikely to change the results of the portfolio review and gap analysis exercise, there would likely be useful lessons to be learned from some of

these, which could inform MSIP preparation in qualitative ways. For this reason, quick case studies have been prepared for two projects[73] that offer useful learning in each of the following areas (one of these projects has been highlighted in Box 4):

- ***Scaling-up potential:*** A priority for FDRE is to identify successful approaches that can be rapidly scaled-up by extending them to new areas. These two small project case studies could help identify potential approaches.
- ***Multi-sector synergies:*** The MSIP seeks to identify opportunities for linking approaches across sectors to accelerate the building of climate resilience, and to reduce costly fragmentation of financing and projects. These two small project case studies could help identify potential linkages.

Box 4: Integrating Farmer and Scientist Knowledge

In 2009, Biodiversity International introduced the "Seeds for Needs" (S4N) initiative in Ethiopia to help increase farmers' resilience to climate change through agricultural biodiversity. Currently, the project has several sites in 11 countries involving a range of crop varieties. The project received an initial World Bank development marketplace award of US$200,000 over a three-year period. The distinctive approach of this project is that it focused on using or (re) introducing a diversity of superior landraces available in genebanks rather than focusing on breeding and introducing new varieties. The S4N initiative was judged a winner in the World Bank's Development Marketplace 2009, for its innovative and low-cost strategy to understanding the needs of farmers, particularly women, and improving access to crop varieties that could help them enhance their resilience to climate change impacts. The project was successful in addressing its objective by reducing the vulnerability and enhanced the adaptive capacity in smallholder farming communities by increasing the intraspecific diversity of important food security crops using barley and durum wheat.

For those projects included in the detailed portfolio review, data collection focused on the following:

- ***Project budget:*** Data was sought on the total project budget, as well as by project activities and/or outputs, and by areas (woredas) in which the project activities would be implemented.
- ***Project activities:*** Data was sought on the type and location of specific project activities.
- ***Project outputs:*** Data was sought on the outputs (results) that the project intended to achieve.
- ***Beneficiaries:*** Information was sought on the number of beneficiaries targeted in the different project locations.

It was not possible to collect data on project impact; in some cases, projects are still being implemented, while in others impact evaluation data was not available. Consequently, project budget has to be used as an indicator of project impact (the assumption being that all projects achieved their intended results with the funds made available).

For relevant categories of data, only partial information was available for many projects. Only a small number of available project documents provided information on targeted beneficiaries or spatially explicit project boundaries. In addition, a small minority of project documents disaggregated budget information by activities, outputs and/or location. In other cases, different documents provided conflicting information about budgets or targets. Where disaggregated data was unavailable, the project review assumed that total budget was allocated evenly across the targeted outputs, and in proportion to the populations within each of the woredas it targeted. Where conflicting data sources were discovered, the project review considered the size of the discrepancy and balanced efforts to

[73] See Addendum 1 of Annex 6 for details.

collect more data against the expected increase in accuracy. Another small set of project documents did have better data on financing and project boundaries.

The characteristics of the portfolio of projects selected for gap analysis are summarized in Figures 18 and 19. The need to make basic assumptions given a lack of detailed data means that some of the figures for investment by thematic or spatial area may be inexact. However, the overall results remain valid for highlighting trends in investment across resilience themes and geographic areas of the country. The analysis tool is designed to accommodate additional data as it becomes available.

Figure 18: Share of project portfolio investment by sector

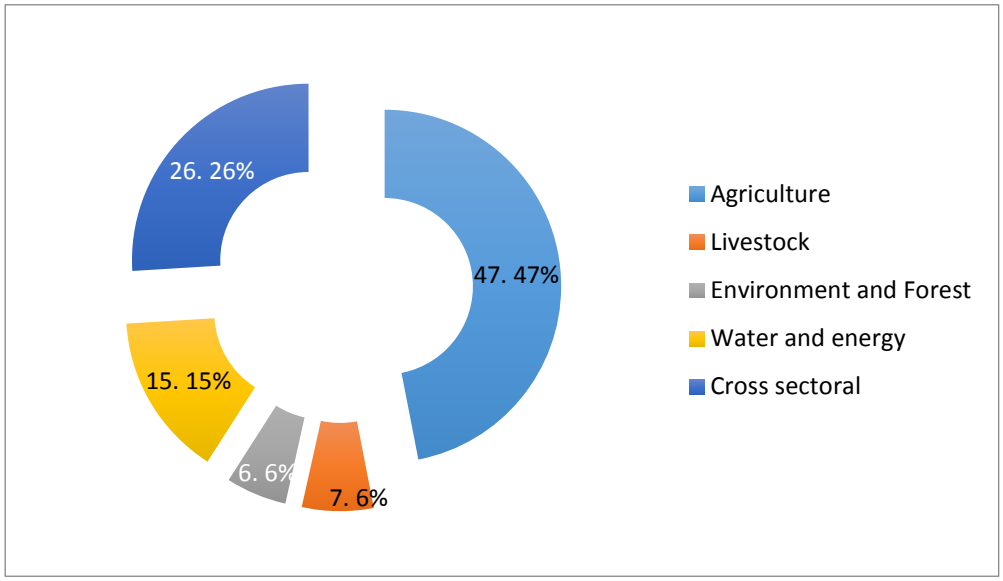
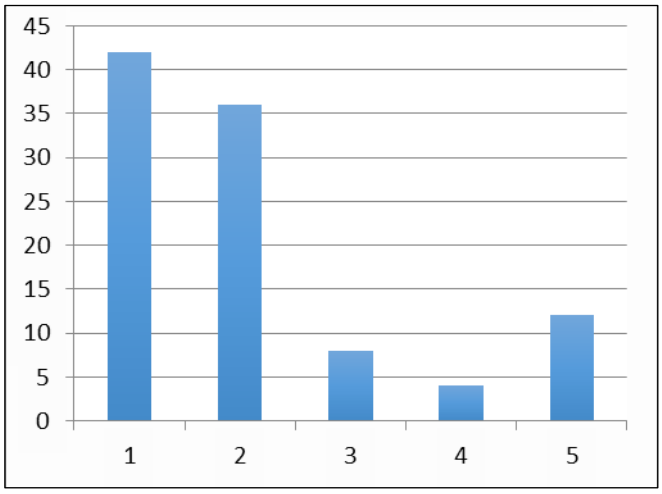


Figure 19: Number of projects in portfolio, by size category



Total Project Budget	Size Category	Number of Projects
100M+	5	12
75 to 99M	4	4
50 to 74M	3	8
11 m to 49M	2	36
3 to 10M	1	42

IV.3 Investment Gap Analysis: Spatial, Thematic, Financial

The gap analysis was undertaken to establish a clear, evidence-based assessment of where current committed investments would and would not meet Ethiopia's projected climate resilience requirements. This analysis could then be used to help inform future-focused multi-sectoral investment planning. The gap analysis was designed to ensure that a sufficiently accurate assessment of investment gaps was produced, bearing in mind available time and

resources. The analysis has been performed so that it can continually be refined, should this be considered necessary. In future iterations of the assessment, it may be useful to also include a detailed public expenditure review to complement analysis of external financing.

The gap analysis was performed using the parameters described in Table 2. Each of these parameters provides a different method for assessing how well existing investments meet the strategic objectives established for building climate resilience in the prioritized sectors. By combining the findings from the different methods of gap analysis it is expected that a reliably nuanced understanding of existing investment levels will be achieved. For this reason, all parameters are treated as equally important and no weighting has been applied.

Table 2: Parameters for Gap Analysis

Parameter	Definition
Gaps against GTP II targets	The assessment of how much activity is addressing climate resilience objectives stated in GTP II.
Financial gaps	The assessment of the difference between the level of investment that has been projected as being required to achieve climate resilience, and the investment that has currently been committed.
Thematic gaps	Assessment of gaps in activities that are necessary to achieve the CR strategy looked at through each of the CR themes of agricultural and forest as well as water and energy.
Spatial gaps	The assessment of how much activity is addressing climate resilience objectives in relation to relative levels of vulnerability to climate change, by woreda.

All gap analysis activity has been performed using data gathered by the portfolio review. The portfolio review concentrated on project activity between 2010 and 2020 (very few projects under implementation have commitments beyond 2020, although pipeline projects do, such as the new IDA-financed Resilient Landscapes and Livelihoods operation of MOANR that aims to begin implementation in July 2018.). All analysis has been performed on a "Business as Usual" basis; that is, it has been assumed that underlying conditions remain the same, without any unforeseen changes in climate science, the availability or terms of climate finance and other forms of ODA, or Ethiopia's enabling policy environment, etc.

In all cases, the analysis has attempted to identify gaps between identified need as expressed in the CR strategies, and existing investment commitments. In most cases, the needs expressed in different planning documents were not directly comparable, thus requiring specific approaches to be developed to generate a consistent evaluation of the gap for each parameter of analysis (as defined in Table 2). For analysis of gaps against GTP II targets, the gap analysis assessed the extent to which each activity was relevant to the target. For financial and thematic gaps, analysis focused on the difference between the financial needs as identified in the government's Climate Resilience Strategies for (i) Agriculture and Forestry, and (ii) for Water and Energy, and the total investments that have so far been committed. In all cases, assumptions must be made to enable effective and reliable gap analysis. The gap analysis methodologies have been more fully described in Annex 7 of the MSIP document; appreciation of these methodologies will aid interpretation of the findings and conclusions, which are summarized below. As well as reviewing the data from the gap analysis, conclusions are also drawn by cross-referencing the MSIP Activity Package list previously developed during the preparatory work, to help connect the portfolio gap analysis to the next phase of investment prioritization and planning.

Conclusions from the analysis of gaps against GTP II targets:

The analysis of gaps in activity levels compared to CR relevant objectives established by GTP II was inconclusive. The analysis identified specific GTP II targets that are the major focus of donor investment, and others that receive little or no financial support from donors. However, it may not be appropriate to conclude that the latter areas should receive more donor attention. The areas that receive relatively little donor support are activities that are (or could be) pursued profitably by the commercial sector. Evidence of a gap is not always evidence of a direct funding need. It may indicate that measures to enable or incentivize private sector investment could be appropriate. In some cases, some private sector investment is underway, such as in forest coffee in Oromia via the new IFC-Nespresso forest coffee project with World Bank BioCarbon Fund support as part of the government's new umbrella Oromia Forested Landscape Program.

Looking ahead at the Activity Packages developed through the original MSIP stakeholder consultation process, it appears that there are no listed activities in the portfolio of ongoing donor supported projects that do not contribute to the goals of GTP II in some way. Hence, the GTP II criterion provides very limited guidance to the development of the MSIP.

Conclusions from the Analysis of Financial Gaps:

Given that it was not possible to use impact data in the gap analysis, investment flows are a proxy for intensity of activity for each of the other analyses. The detailed conclusion from the analysis of financial gaps is therefore reflected in the conclusions of each of the other gap analyses.

Determining the extent of the investment gap is difficult. Based on data in the CR strategies of the concerned sectors, the total investment required by 2030 to achieve climate resilience in forest and agriculture is estimated to be about $5.9 billion.[74] Noting that these estimates dated from 2011-14, it is likely that not all climate resilience requirements were fully anticipated and that the actual current need could be 20-30 percent higher. Increasing the current number by 25% suggests that the total investment requirement is about $7.4 billion.

Some of this investment need has been met by the existing investments in the targeted sectors. The total value of all 102 projects included in the portfolio is around $4.8 billion. However, not all these project expenditures were committed to climate resilience. Available data makes it difficult to determine how much of the total amount has been invested in climate resilience. Based on the rationale outlined in the box below, it is estimated that $1.85 billion was invested in climate resilience between 2010 and 2020.

> To estimate how much of the project portfolio's total expenditure of $5.9 billion was committed to climate resilience, the MSIP referred to a 2014 report on "Climate Finance in Ethiopia",[75] which found that between 40-50% of agriculture sector expenditure and (depending on the year) 35-80% of MoWIE budget was considered "climate change" relevant. Taking the 2011/12 budget year as a benchmark, the MSIP assumes that 40% of investment in the forest and agriculture sectors and 35% of the spend in the water and energy sectors was relevant to climate resilience. On this basis, and given the sectoral

[74] The estimate does require qualification. The sectoral calculations of investment need included commitments made by on-going major programs at the time. Such amounts will likely have also been included in the portfolio review, and thus will already have been subtracted from total requirement. This introduces an element of inconsistency. Nevertheless, $5.9 billion is considered a valid assessment of investment need for the purpose of this analysis.

[75] Eshetu, Z. Simane, B. Tebeje, G., Negatu, N. Amsalu, A. Berhanu, A. Bird, N., Welham, B., and Canales Trujillo, N. (2014). *Climate finance in Ethiopia.* Overseas Development Institute, London and the Climate Science Centre, Addis Ababa University, Addis Ababa.

split of the 102 projects in the portfolio, the assessed investment in climate resilience in the target sectors is calculated as follows:

- 72% of the total portfolio (thus $3.4bn of the total of $4.8bn) falls within the forest and agriculture sectors. By applying a weight of 40% it can be deduced that about $1.38bn has been invested in CR.
- 28% of the total portfolio ($1.3bn) falls within the water and energy sectors. By applying a weight of 35% it can be deduced that about $470mn has been invested in CR.
- Thus, the total assessed investment in CR across the target sectors is around $1.85bn.

From these calculations, the high-level conclusion from the financial gap analysis is that Ethiopia requires around $5.5 billion of additional, incremental investment to reach its 2030 climate resilience targets. While these calculations could be challenged, the benefit of limiting them to the amounts specific to climate resilience (and thus distinguished from more traditional development finance) is that the cases become more relevant to providers of climate finance. In addition, financing adaptation and resilience must catalyze larger financial support to make a difference at scale. For example, the Adaptation Fund, the GEF, the GCF and the PPCR currently have limited bandwidth and so are focused on achieving the greatest possible impact per transaction. These funds tend to invest tens of millions of US dollars per project, with co-financing requirements that may result in a total budget of upwards of $100 million. Even larger financiers such as IDA seek to leverage the impact of large scale investment projects by crowding in the private sector and government budget. These examples illustrate why fragmented financing is an opportunity lost for leveraging additional financing.

These observations indicate that the overall climate resilience financial gap is more likely to be filled – and large-scale impact achieved – by investments in, for example, 10 $100 million USD projects, rather than for example 100 $10 million projects. The FDRE and its development partners have developed several investments to enhance resilience to climate change in Ethiopia. Existing large-scale, long-term government programs that explicitly build climate resilience are the most promising bets for scaling climate action, including, *inter alia*, the OneWash programme, Sustainable Land Management Programme (SLMP), Rural Electrification Fund, Productive Safety Net Programme (PSNP), and Oromia Forested Landscape Programme (OFLP). Further scale-up and strengthening of these programs can represent a cost-effective and quick solution to further advance toward Ethiopia's resilience objectives in the GTP II.

A recent expenditure review of climate financing in Ethiopia[76] indicates that public climate change expenditures were mainly concentrated in MoANR and MoWIE, which accounted for approximately three quarters of the total climate change relevant programmes in 2011/12. In contrast to overall government expenditure, which has high budget execution rates, budget execution rates for climate change-relevant expenditure was found to be concentrated in areas that may need additional capacity and efficiency, a factor that might be relevant to efforts to scaling-up of existing investments.

Conclusions from the Analysis of Thematic Gaps Related to Ethiopia's Climate Resilience Strategy Documents:

The thematic analysis identified nine themes from the Agriculture and Forestry CR strategy as well as four strategic priorities from the Energy and Water CR strategy relevant to the MSIP. The analysis then ranked the relative investment requirements for each theme as indicated in the strategy documents, and compared this to the relative levels of donor support identified in the Portfolio Review. The gap analysis was performed by comparing the difference in relative importance of each resilience theme, as indicated by CR funding request on the one hand and actual donor funding on the other hand. The difference between these two relative rankings can be considered an

[76] Ibid.

indication in the perceived gap in importance of each theme by financiers. The relative rank of each theme is indicated in the following table, along with the difference in scores.

Table 3: Relative Thematic Gap Analysis

Climate Resilience Theme	CR Financial Priority	Donor Spending Rank	Relative Gap (Priority minus Spending)
Agriculture / Land Management	1	7	-6
Natural Resources, Conservation, Biodiversity	2	3	-1
Crop and water management (on-farm)	3 (tied)	1	+2
Disaster Risk Reduction	3 (tied)	8	-5
Social Protection	5 (tied)	6	-1
Livestock	5 (tied)	5	0
Value Chain and Market Development	5 (tied)	10	-5
Information and Awareness	5 (tied)	4	+1
Capacity Building and Institutional Coordination	5 (tied)	2	+3
Improved Biomass Efficiency	10	11	-1
Non-Grid Access	11	9	+2

One conclusion that can be drawn from this analysis is that the CR strategy would benefit from a relative reprioritization of donor investment towards activities that support agriculture / land management, and value chain / market development. However, this requires careful interpretation. As forestry was part of the former Ministry of Agriculture when the Agriculture Sector CR strategy was prepared, forest and biodiversity conservation initiatives were covered under the agriculture theme of the CR strategy. Forest sector investment had been low (about 6% of total donor funding) but has recently increased. Furthermore, previous forest sector investments were part of natural resource management and rehabilitation programs. Recent forest sector investment had focused on developing national and regional level polices and guidelines to lay the necessary foundation for REDD+ and afforestation activities. Bearing in mind the significance of forest sector development, including through private sector activity, as a contribution to rapid industrialization of the country and the growth of the construction sector, ICF has prepared the *Ethiopia Commercial Plantation Forest Industry Investment Plan.* The World Bank, Ethiopian Chamber of Commerce and MEFCC has made private sector forest development one of the key elements of Public Private Partnership Dialogue.

The GoE has set ambitious forestry targets in GTP II and in its international commitments. These include increasing agroforestry coverage from 6.06 to 16.21 million hectares of land, increasing the area of forestland protected with management plans from 0.07 million to 2.2 million hectares, and increasing the total land covered with forests from 12 million hectares to 18 million hectares. The GoE has also made a pledge through the Bonn Challenge to restore 15 million hectares of degraded land by 2030 through reforestation and forest restoration, including agroforestry.

Thematic gap assessments have also revealed key intervention areas that seem to require increased attention if Ethiopia is to achieve climate resilience. One such thematic gap that is cross cutting and stands out is climate and market information as well as relevant scientific data, which are relevant for policy making as well as smallholder farmers. Timely and relevant data is essential for planning purposes as well as monitoring progress towards achieving targets. While there have been efforts to create a standardized data collection and transfer system, it remains weak, particularly on climate and markets. The National Meteorology Agency has infrastructure as well as capacity limitations inhibiting its ability to collect, analyze and disseminate important climate information. While some efforts have been made to address these issues, to date these have largely been pilot programs which need to be scaled-up once complete. Climate and market information are key as they address multiple climate resilient themes.

Note that this analysis does not focus on absolute amounts of funding. It does not say that donors are spending too much money on a thematic area, nor does it say by how much donors should increase support for other areas. Rather, the analysis highlights the areas of greatest apparent disconnect between the government's stated climate resilience priorities and the distribution of donor funding. This disconnect provides a strong rationale for new adaptation related funding that goes beyond business as usual and fills clearly identified gaps. Therefore, it may be useful to identify and prioritize investment activities aligned with those highlighted resilience themes.

Conclusions from the Analysis of Spatial Gaps:

The spatial gap analysis compares actual levels of investment to measures of climate change across woredas in Ethiopia. This analysis attempts to answer the question, "Where is additional adaptation related investment most needed?" To answer the question three stages of assessment were made.

First, an assessment is made of areas with the greatest change in rainfall and temperature since 1970. The geospatial analysis looked at existing climate changes mainly in terms of the past 46-year trends in increased average temperature and decreased average rainfall and using that as an indication of near future changes. An intensification of those two variables generates climate stress via more frequent and severe droughts. Figure 20 shows those areas of Ethiopia that have been most affected by changing climate since 1970 . It is acknowledged that these areas may not be where the people or land is most vulnerable: this is more complex and relates to a range of interacting infrastructural, agro-ecological and socio-economic factors. We have not tried to model these but refer to the secondary analysis presented in Section II.2.

Second, additional climate adaptation related investment is more likely to be needed in areas with a larger number of affected people. For any given climate impact, a greater number of people affected requires a greater response. The spatial distribution of Ethiopia's population is well known – it is higher in the central areas around

Figure 20: Climate change impacts (rainfall and temp)

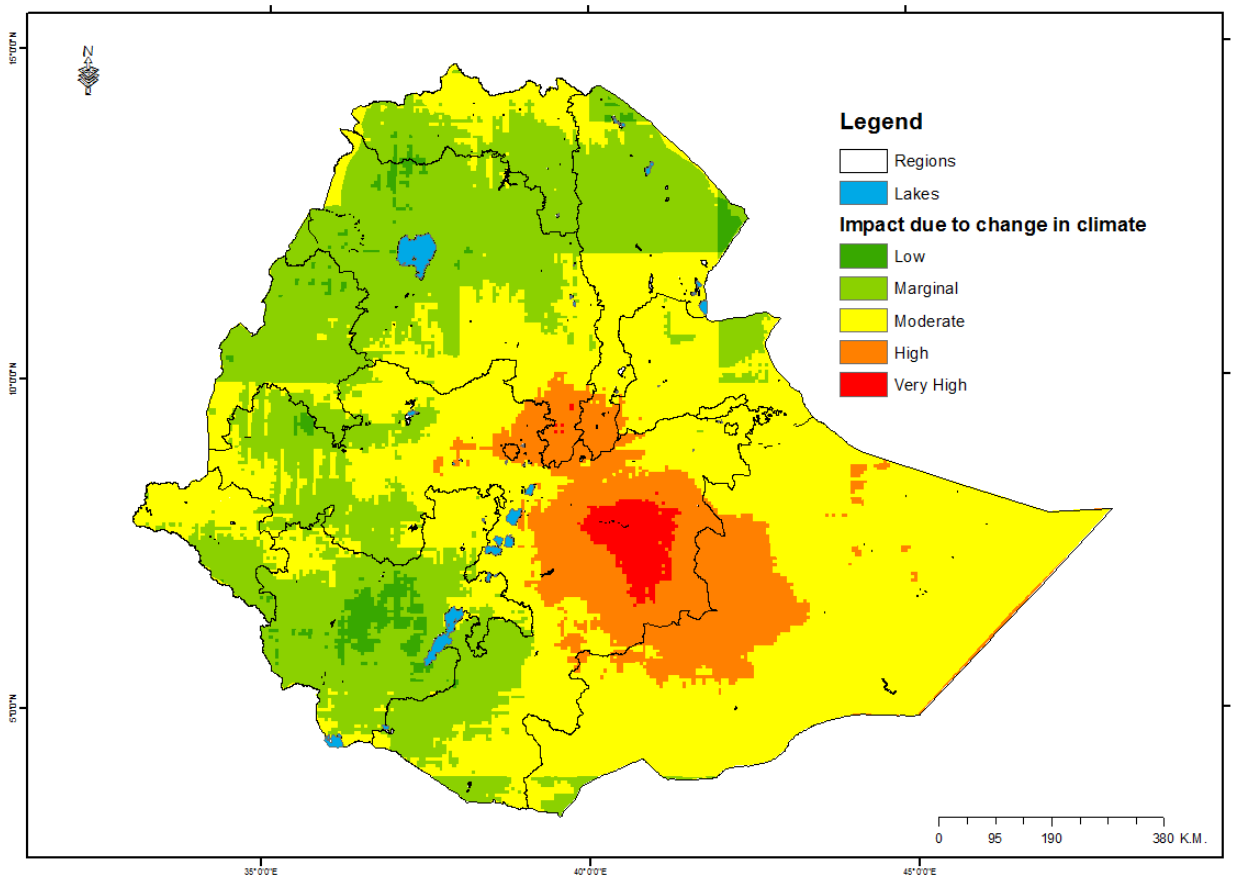


Figure 21: Indicative Approach to Spatial Prioritization

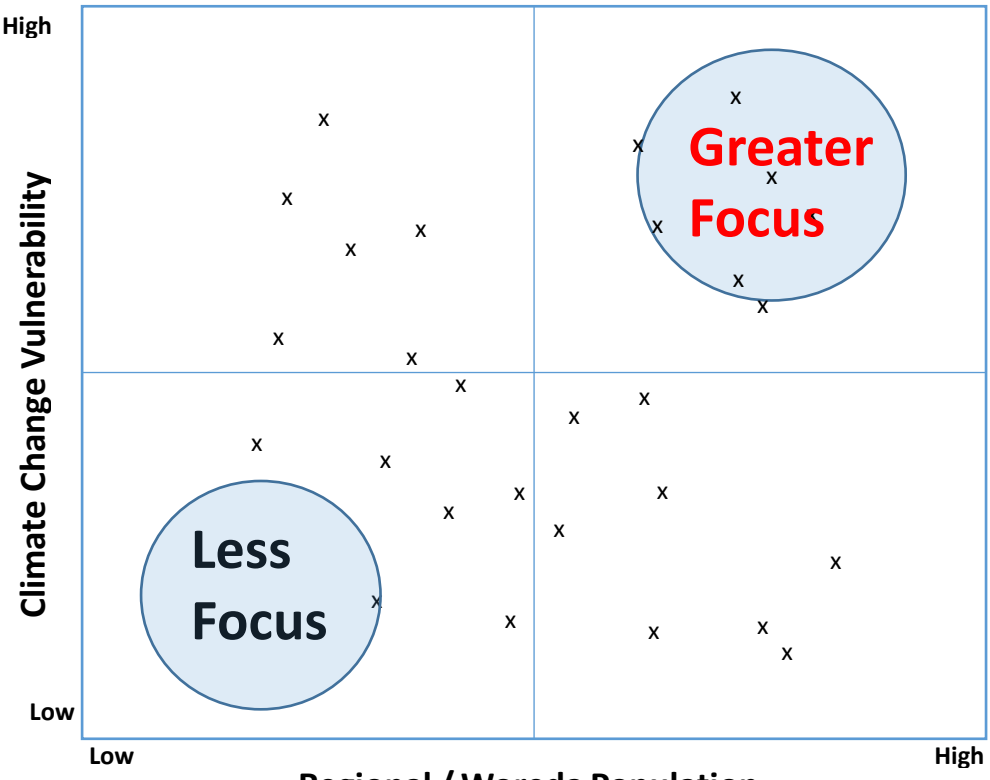
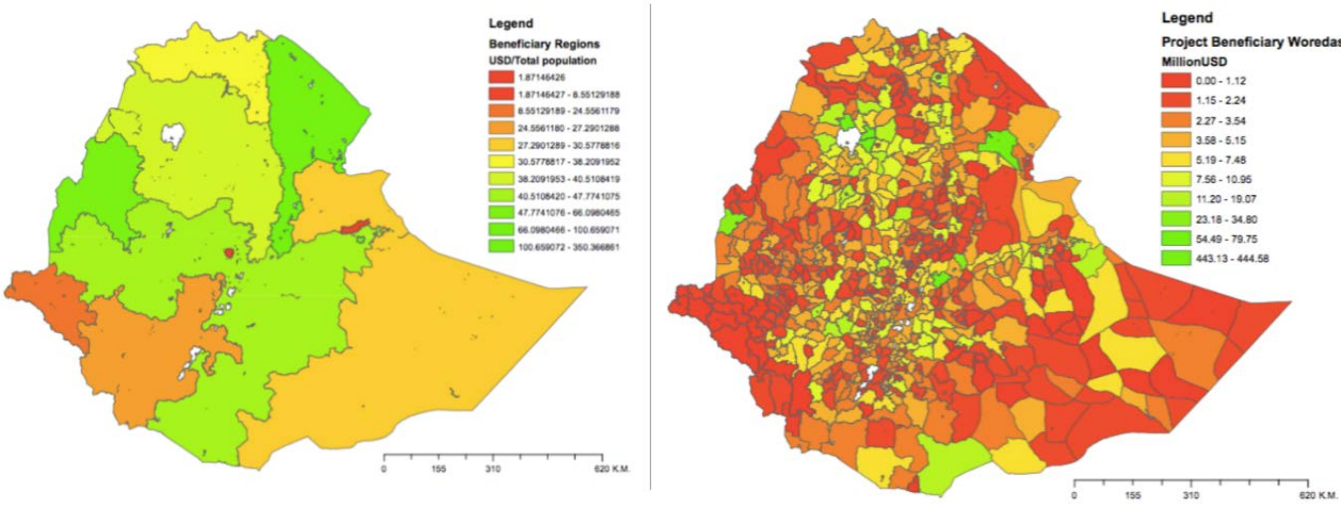


Figure 22: Regional Fund Flow Per Population

Figure 23: Spatial Representation of Donor Funding



Addis Ababa and in the wetter agricultural regions to the west, and lower in the drier eastern and northern regions of the country.

Figure 21 illustrates how these two spatial factors combine to indicate which rural areas should be prioritized for climate resilience investment. The top right quadrant indicates areas with a high degree of vulnerability and relatively large populations – this area would be a clear target for prioritization. The bottom left quadrant has less vulnerability and relatively low populations – impacts are less likely to be severe and will not affect as many people. The top left and bottom right quadrants are middle cases.

Third, additional climate resilience investment is more likely to be needed in areas that currently receive relatively less investment from traditional sources. Geospatial analysis enables calculation of total and per capita donor funding flows per region or woreda, as indicated in Figures 22 and 23.By combining Figures 21, 22 and 23, it is possible to draw initial conclusions from the spatial analysis. The central regions are likely to experience the most severe climate impacts due to large climate shifts and a large population. This indicates that this region might fall into the upper right quadrant of the chart in Figure 20. The eastern region of the country has relatively high vulnerability under existing conditions of variability and moderate climatic shifts may have high impacts on livelihoods and food security. They have relatively low levels of per capita donor support and the region has a relatively lower population as well, which might indicate that it belongs in the upper left quadrant of Figure 21.

Implications of Gap Analysis for Investment Planning:

The gap analysis has been conducted to provide inputs for the MSIP and feed into more informed program design, by providing broader indication of where (thematically and geographically) increased flows/allocation of investment in CR might be most required. Of itself, it does not provide a definitive basis for determining investment prioritization, as other factors will likely come into play. These issues are explored more fully in Part 2 of this document.

Based on the findings, the lessons that should be drawn and potentially integrated into the MSIP include the following.

1. ***Climate and market information as well as relevant scientific data is a major gap both for policy making as well as smallholder farmers.*** Timely and relevant data is essential for planning purposes as well as monitor progress towards achieving targets. While there have been efforts to create a standardized data collection and transfer system, it remains weak, particularly on climate related variables and markets. The National

Meteorology Agency has infrastructure as well as capacity limitations inhibiting the collection, analysis and dissemination of important climate information. The Ministry of Water, Irrigation and Electricity, Hydrology and Water Quality Directorate is responsible for collecting, storing, disseminating hydrology data information. Both NMA and MoWIE have limited capacity in use of climate and hydrological data. While few efforts are being made to address these issues, the attempts are largely pilot programs and need to be scaled up once complete. Climate and market information are key as they address multiple climate resilience themes.

2. ***The gap assessment found that a small number of GTP II output areas have not directly received sufficient external (development co-operation) support. The gap areas are 1) agricultural mechanization, 2) productive export crops, coffee and spices, and 3) water access in rural areas.*** These are gaps where there is potential for private sector involvement as well as public sector support for public goods (such as watershed function) that enable private benefits and natural wealth to accrue. Conventional development partner funded grants rarely fund the private sector, and financial regulations in Ethiopia do not generally encourage private enterprises to access funds from donors.[77] On the other hand, gaps such as agricultural mechanization are actions that both the GTP II and CRGE have prioritized as being important for resilience building and GHG reductions, if well-managed. Thus, a review of the policy and legal framework for rural investment and consideration of alternative financing approaches are required to trigger private sector actions. Examples of programs such as risk guarantees, which will also leverage and could therefore expand financing, could be considered in the MSIP.

3. ***The GoE has recognized the need for improving Disaster Risk Management and has invested in the sector.*** To respond to food insecurity, largely caused by climate change, the GoE has implemented several key programs. The Sustainable Development Poverty Reduction Paper (SDPRP) was one of the earlier policies devised which recognized food security as a central element. In the last decade a major programmatic shift has been taking place in Ethiopia concerning food security. This is based on the development of the Productive Safety Net Programme (PSNP), now in its fourth phase. The PSNP is framed within the long-standing Rural Economic Development and Food Security coordinating platform of MOANR, in which SLMP and AGP are also placed as flagship programs. The stated rationale for the PSNP is to address the food needs of the chronically food insecure through multi-year predictable resources, rather than through a system dominated by emergency humanitarian aid. This involves a shift from food to cash as the primary input. Another key milestone in GoE's response to food security is the transformation of the Disaster Risk Management and Food Security Sector (DRMFSS) to a Commission, the National Disaster Risk Management Coordination Commission (NDRMCC) now under the Ministry of Agriculture and Natural Resources with its own state minister. As stated in its strategic plan, the aim of DRMFSS is, among several others, to improve identification and assessments of disaster risk; to enhance knowledge management for DRR; and to integrate DRR in emergency response management.[78] The NDRMCCC was established with three strategic objectives: to save lives and reduce morbidity related to drought, to protect and restore livelihoods, and to prepare for and respond to other humanitarian shocks, including natural disasters, conflict and displacement.

   However, one of the key findings of the gap assessment is that there is currently inadequate investment in disaster risk reduction, both financially and thematically. One of the bottlenecks identified here is that resilience and resilience building have yet to be clearly articulated in program level interventions. Furthermore, investment in climate information collection, analysis and dissemination focusing on key parameters such as rainfall, temperature, which are essential in disaster risk management, has been limited to pilot interventions only. Based

[77] The GoE VAT (Value Added Tax) regulation does not distinguish income from sales and grants and thus private sector entities that access grants are also subjected to VAT as the tax authority also views grant as income.
[78] FDRE (2014a)

on outcome of pilots and capacity building at NMA and other institutions, use of climate information needs to be scaled up, and information delivered efficiently to land and water users through a variety of mechanisms and a variety of existing and future programs and projects throughout the country.

4. ***Comparing the gap analysis to prioritized Activity Packages identified during MSIP preparation, it was found that about 85% of the activities help fill key financial or thematic gaps.*** The identified activities are either new activities that will build resilience of households and communities, or scalable activities from on-going pilot initiatives. To help highlight the degree to which Activity Packages meet identified gaps each one has been categorized into four groups. This identified 34 Activity Packages that fall into the category of "only in pilot stage or not yet being addressed", and 20 that need "to be geographically scaled up and/or allocated increased funds".

The process of performing the portfolio review and gap analysis also generated knowledge that may help contextualize the findings and further inform investment planning. The following points are considered material.

1. ***Deficiencies in cross-sectoral coordination: in the process of data collection many donors have indicated that limited cross-sectoral coordination is a challenge that adds cost to the government and its partners, and can reduce project effectiveness.*** This difficulty could be a challenge and burden in designing and implementing multi-sectoral programs and projects. The MSIP is expected to be implemented by four key ministries that have their own mandates, targets and goals. Though donors have indicated that they have a preference to work sectorally or coordinate their work with a single Ministry, they also understand the benefits of a multi-sectoral approach. Some even have emphasized that under the current climate change trend, unless programs have multiple components, their likelihood of transformational outcomes is limited. Whilst the advantages of multi-sectoral program approaches are acknowledged, the GoE, and particularly MOFEC's CRGE Facility, which will oversee MSIP implementation, needs to design and implement a strong, effective co-ordination mechanism, and this work has begun with a small grant from PPCR through the World Bank, as well as existing government coordination for a such as the REDD+ Steering Committee, the REDFS platform, and the SLMP Steering Committee. Without a more robust coordination mechanism (and careful not to "over-coordinate"), the natural forces of sector ministry budgeting, prioritizing and implementation will hinder the success of a multi-sector approach.

2. ***Lack of policy guidance and plans to realize GTP II targets.*** Though the GoE has a well-articulated vision expressed in the CRGE strategy and the development targets defined in GTP II, there is much less guidance on how these targets should be achieved. There is limited guidance given by the GoE, at Federal level, on how GTP II should be operationalized and implemented. Among issues that have not been addressed, and as was often made clear by stakeholders, there is a need to improve the coherence of program design and implementation, and of co-ordination between government ministries. The poor coordination among sector ministries during planning and implementation is also caused by absence of a systematic coordination mechanism and high turnover of staff. The GoE has clearly understood the climate change agenda and the need for sustained implementation at scale; however, there are only a small number of tangible and sustainable models for scale-up and replication to achieve developmental goals. This must be taken into consideration when planning future investments. Lessons from successful large-scale programs such as SLMP, AGP and PSNP can be drawn when looking to scale-up best practices. The SLM Program has emphasized scaling-up of successful practices, approaches and technologies. The approach to scaling-up best practices has been incorporated into the long-term Ethiopian Strategic Investment Framework for Sustainable Land Management (ESIF), which was developed in 2008-2010 with the leadership of the MoANR, and involvement and contributions of development partners, civil society organizations and other stakeholders.

3. ***While the GoE has set up the CRGE Facility to mobilize and disperse climate finance, it can play a greater role in ensuring cross-sectoral coordination in planning and implementation.*** Co-managed by MEFCC and MOFEC, the Facility has already started to function with financial assistance from the UK, Austria, Denmark and Norway, and advisory services from the World Bank and others. The Facility has systems in place and guidance provided by the comprehensive CRGE Operations Manual. It has established and operationalized an Environmental and Social Safeguard Framework, and a Monitoring and Evaluation framework that will be used to monitor and evaluate CRGE initiatives implemented on ground. The MEFCC also provides a wide range of systems to monitor and evaluate including the reporting, lesson learning and knowledge management systems. The governance arrangement of the CRGE Facility brings sector ministries together on regular basis to discuss and decide on climate change related issues, including cross-sectoral projects and programs.

   Recently, the Management Committee of the CRGE Facility, which comprises the State Ministers of the key CRGE Sectors, took the decision to revitalize the scope of work of the CRGE Facility and to coordinate all forms of climate finance channeled to Ethiopia, and collaborate with and provide support to Multilateral Development Banks and UN Agencies to mobilize and solicit climate finance from bilateral and multilateral climate finance sources. The Committee also decided to enhance the sub-national engagement of the CRGE Facility and ensure active engagement of the Bureaus of Finance and Economic Cooperation and Bureaus of Environment and Forest on climate change issues. It further decided that the CRGE Facility put in place and manage a climate finance tracking system and strengthen collaboration with research, academia and other stakeholders for generation, management and communication of sectoral and cross-sectoral climate change related data and dissemination of knowledge and lessons. The committee also decided that the CRGE Facility should support sectors to develop MRV systems, engage in result based payment, carbon finance, focus on mainstreaming climate actions into sector programs, and continuously monitor, evaluate and report on compliance to environmental and social safeguard standards. The MSIP will benefit from the re-defined functions and scope of the CRGE Facility. The current PPCR and the TA support from the World Bank are helping the CRGE Facility deliver some of these renewed responsibilities. However, further capacity building and Technical Assistance for the CRGE Facility – particularly in promoting cross-sectoral coordination at Federal, regional and woreda levels – is crucial. Other coordination mechanisms currently functioning in Ethiopia include the RED&FS in the agriculture sector. The CRGE Facility might draw lessons from these to help it strengthen its co-ordination between donors and government entities. The new Oromia Forested Landscape Program is planning to support improved multisector investment planning and implementation of forest and agriculture actions at local levels.

4. ***The approach to monitoring and evaluation (M&E) and reporting should become more systematic.*** The CRGE Facility should strengthen its monitoring, evaluation and reporting functions, to ensure generation of evidence necessary for learning and improvement, and that can guide on-going investment planning, so that progress towards targets cannot easily be measured.

Part 2: MULTI-SECTOR INVESTMENT PLAN

V. Summary and Added Value of the Investment Plan

Part 1 of this document provided an overview of the climate challenges facing the agriculture and forestry sectors in Ethiopia, reviews the existing portfolio of relevant climate resilience projects and programs, and analyzes the key thematic, financial and spatial gaps in investment. The objective of the MSIP is to help mobilize the resources that will fill these critical gaps in Ethiopia's climate resilience agenda for the agriculture and forestry sectors.

The MSIP can catalyze transformational change through mobilizing the investment to scale up existing practices and creating a step-change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Both Ethiopia and her development partners share an understanding that climate resilient development requires economic transformation and the MSIP has identified high priority investment activities that will contribute to this transformational change. Given Ethiopia's development context and vulnerability to climate change, these activities strongly include vulnerability-oriented adaptation that enhance and support existing resilience building efforts, and activities are designed to target distinct climate change impacts.

Beyond this MSIP, the FDRE is committed to green industrialization and creating the levers for urbanization and growth in jobs in the manufacturing and service sectors. Managing the rural to urban transformation sustainably is critical to rural resilience and well-functioning production landscapes that in turn affect the rural-to-urban transition. To support this process, one role of the MSIP is to contribute to a four-fold increase in the productivity and resilience of rural landscapes by harnessing improvements in land and water management that optimize efficiency, balance competing priorities and leverage investment from both the public and private sectors. This requires massive investment as well as extensive policy and regulatory reform as set out in the MSIP. The feasibility of this plan rests on the ability to make a change in the way that the FDRE makes decisions and delivers its services. This will include a shift from a *command-and-control* approach where Government plays a lead role in service delivery to one where it takes on a greater facilitation role - creating space for private sector investment and the incentives for behavior change amongst farmers and rural communities. Transformational change should use three levers to achieve scale, namely: 1) Scaling up through public investment; 2) Creating the incentives for self-scale via private investment, including those of smallholder farmers; and 3) Altering decision-making and delivery within existing programs and investments through policy reform and the greater use of climate, hydrological and land use information in decision-making.

Thus, the MSIP will add value by identifying and filling gaps in Ethiopia's climate resilience agenda for agriculture and forest development – including important aspects from the livestock, energy and water sectors. The Activity Packages identified in the MSIP are intended to build on, enhance or complement existing programs and projects across sectors as identified in Part I of this document. The MSIP Activity Packages have been developed as part of a collaborative process involving the sectoral ministries comprising the CRGE Facility Core Team. These Activity Packages have been prioritized through an inclusive stakeholder process, and assembled into cross-sectoral Activity Groups that generate synergies between activities to better address the major financial, thematic and spatial gaps identified through the portfolio review and gap analysis.

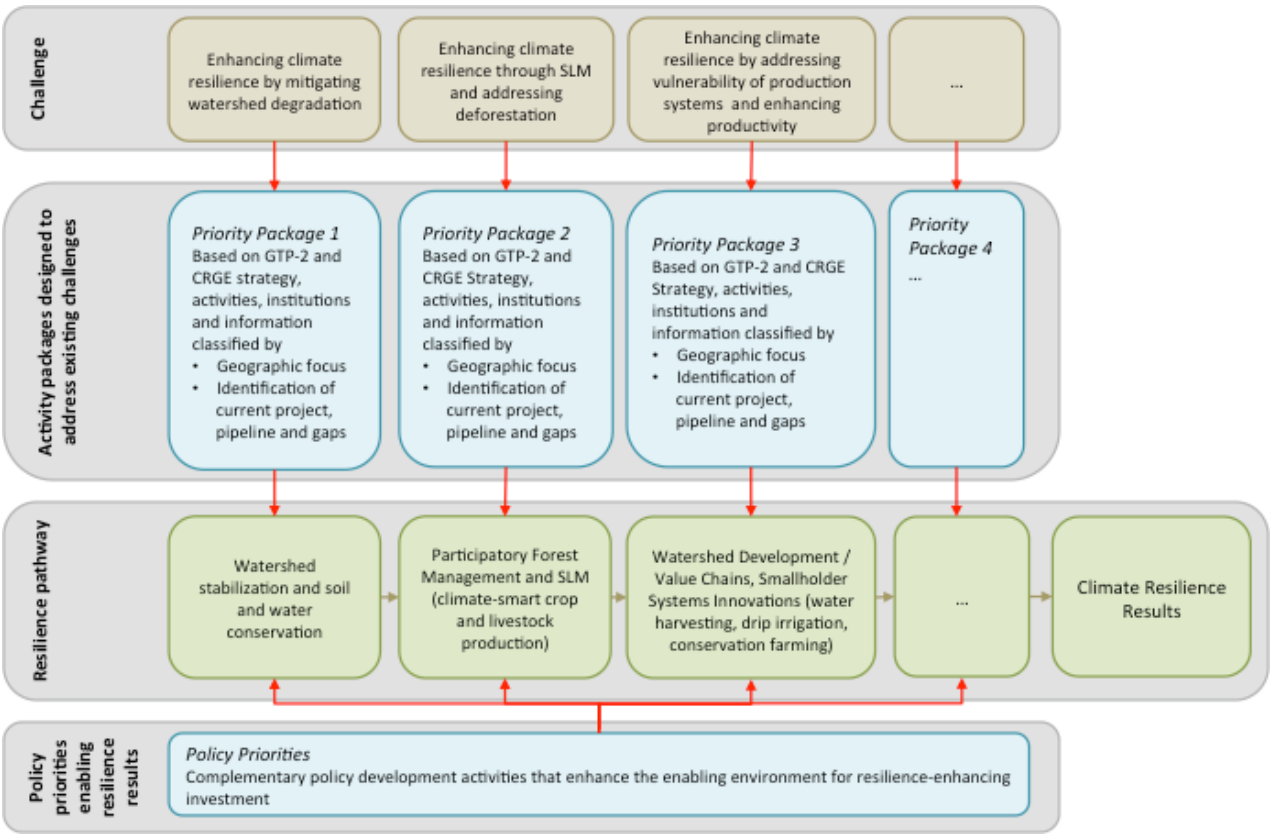
The MSIP describes the process for developing and prioritizing the individual Activity Packages via a participatory stakeholder process. It then presents an overview of the cross-sectoral Activity Groups that are made up of combinations of Activity Packages and describes how each Group addresses important climate resilience gaps. The

MSIP further describes an approach to monitoring results, managing risks for sustainability, and identify new and additional sources of potential funding for the Activity Packages and Groups that comprise the MSIP.

VI. Investment Prioritization Framework

The prioritization framework was developed to help assess possible investment activities based on their relative importance for Ethiopia to progress along a development pathway toward greater climate resilience (see Figure 24). The prioritization process will result in a pipeline of new financing proposals for investment support to Ethiopia, building on existing programs and opportunities across sectors.

Figure 24: Resilience pathways and corresponding Activity Packages for investment



VII.1 Approach to Prioritization of Investment and Financing Activities

The individual elements of the investment framework / approach to prioritization, as applied to the MSIP, are elaborated below.

Multi-criteria analysis: To assess key climate resilience enhancing investments, possible investment activities are compared and ranked using multi-criteria analysis. The prioritization process has involved development, discussion and consensus building on: (i) criteria to evaluate possible investments; (ii) scales to measure the relative merit of investments; (iii) weights to assess the relative importance of criteria; (iv) indices to rank investment opportunities based on the criteria, scales and weights; and (v) selection of the highest priority investment activities based on the indices interpreted and refined through a consultative process.

Possible criteria: As part of the first MSIP Joint Scoping Mission (February 2016), possible criteria for prioritization of investment activities were discussed during a stakeholder consultation. Based on the criteria proposed during the consultation, as set out in the Joint Scoping Mission Aide Memoire and based on further analysis of possible and relevant criteria, an initial set of criteria was developed. As part of the second MSIP Joint Mission (June 2016), the initial list of criteria was discussed and revised as part of a technical workshop to ensure the prioritisation of activities that together would deliver high potential for the transformational effects articulated in the country's GTP II. Based on discussions during the workshop, the following criteria were agreed to be helpful to the evaluation of investment activities (the operational definitions of which are elaborated in Table 4 below):

1. Contribution to GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF targets
2. Impact on poverty and distributional issues
3. Impact on climate resilience
4. Impact on climate change mitigation
5. Cross-sectoral synergies and co-benefits (positive impacts)
6. Cross-sectoral trade-offs (negative impacts)
7. Value for money
8. Readiness to implement
9. Planning horizon
10. Scale-up potential
11. Social inclusiveness

Table 4: Operational definition of prioritization criteria

No.	***Criterion***	***Definition***
1	Contribution to GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF targets	Impact of Activity Package on one or more of the climate resilience targets set out in the GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF.
2	Impact on poverty and distributional issues	Impact of Activity Package on consumption poverty or food insecurity, or impact on consumption of bottom 40%.
3	Impact on climate resilience	At either the household or macro-economic level, impact of the Activity Package on ability to generate income (household or GDP) under a different climate change / global warming scenarios.
4	Impact on climate change mitigation	Impact of the Activity Package on Ethiopia's GHG emission targets.
5	Cross-sectoral synergies and co-benefits	Positive impact of Activity Package on more than one sector, directly or via positive externalities.
6	Cross-sectoral trade-offs	Positive impact of the Activity Package on one sector and negative externalities in one or more other sectors.
7	Value for money	Cost-effectiveness of Activity Package, as measured by expected development results relative to Activity Package costs.
8	Readiness	Capacity at all level of governments and across participating institutions to implement the Activity Package on the ground.
9	Planning horizon	Feasibility of Activity Package in the immediate future, based on existing institutions, information and investments.

No.	*Criterion*	*Definition*
10	Scale-up potential	Applicability of investment activity across regions in Ethiopia.
11	Social inclusiveness	Impact of Activity Package on vulnerable groups including women, youth, elderly, disabled, minorities.

Scales for measuring merit. For each of the criteria, a scale is needed to designate the evaluation of possible investment opportunities. The measurement scale or score could be binary (yes / no), qualitative (high, medium or low), quantitative (a measured value, like dollars). Criterion 1, "Contribution to GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF targets", is used as a filtering criterion to verify whether the considered investment activity meets the basic requirement of contributing to the Government's key targets set out in the GTP II, CRGE, NAPA, INDC, ESIF and/or DRM-SPIF. Criteria 2 to 11 are scored from 1 to 6, with 1 indicating the lowest value and 6 the highest.

Weights for the criteria. Weights can be assigned to the criteria, reflecting their relative importance in the evaluation of investment opportunities. Examples of possible weights are given below (Table 5). The first scheme gives equal weights across the criteria. The second scheme gives half the weight to an investment proposal's impact on poverty and climate resilience. The third scheme gives half the weight to measures of the proposal's potential to be operationalized quickly. The fourth scheme gives 33% of the weight to criteria in each of the categories "impact", "implementation" and "inclusiveness", as detailed below.

Table 5: Weights applied to prioritization criteria

Nr.	Criteria	Weighting 1	Weighting 2	Weighting 3	Weighting 4
2	Impact on poverty and distributional issues	10%	25%	7.1%	5.6%
3	Impact on climate resilience	10%	25%	7.1%	5.6%
4	Impact on climate change mitigation	10%	6.3%	7.1%	5.6%
5	Cross-sectoral synergies and co-benefits	10%	6.3%	7.1%	5.6%
6	Cross-sectoral trade-offs	10%	6.3%	7.1%	5.6%
7	Value for money	10%	6.3%	7.1%	5.6%
8	Readiness	10%	6.3%	16.7%	11.1%
9	Planning horizon	10%	6.3%	16.7%	11.1%
10	Scale-up potential	10%	6.3%	16.7%	11.1%
11	Social inclusiveness	10%	6.3%	7.1%	33%
	TOTAL	**100%**	**100%**	**100%**	**100%**

Determining a basic prioritization index. The criteria, along with the numeric measurement scales and the weights assigned to the criteria, can be used to construct an index, representing a combination of the numerical scales and rankings that reflects different prioritization schemes. A simple index would multiply the weight times the measure for each criterion, then add the resulting values. An example of how weights and measurements on each of the criteria are combined to form an index is given in the Table 6 below.

Table 6: Example of the creation of a prioritization index

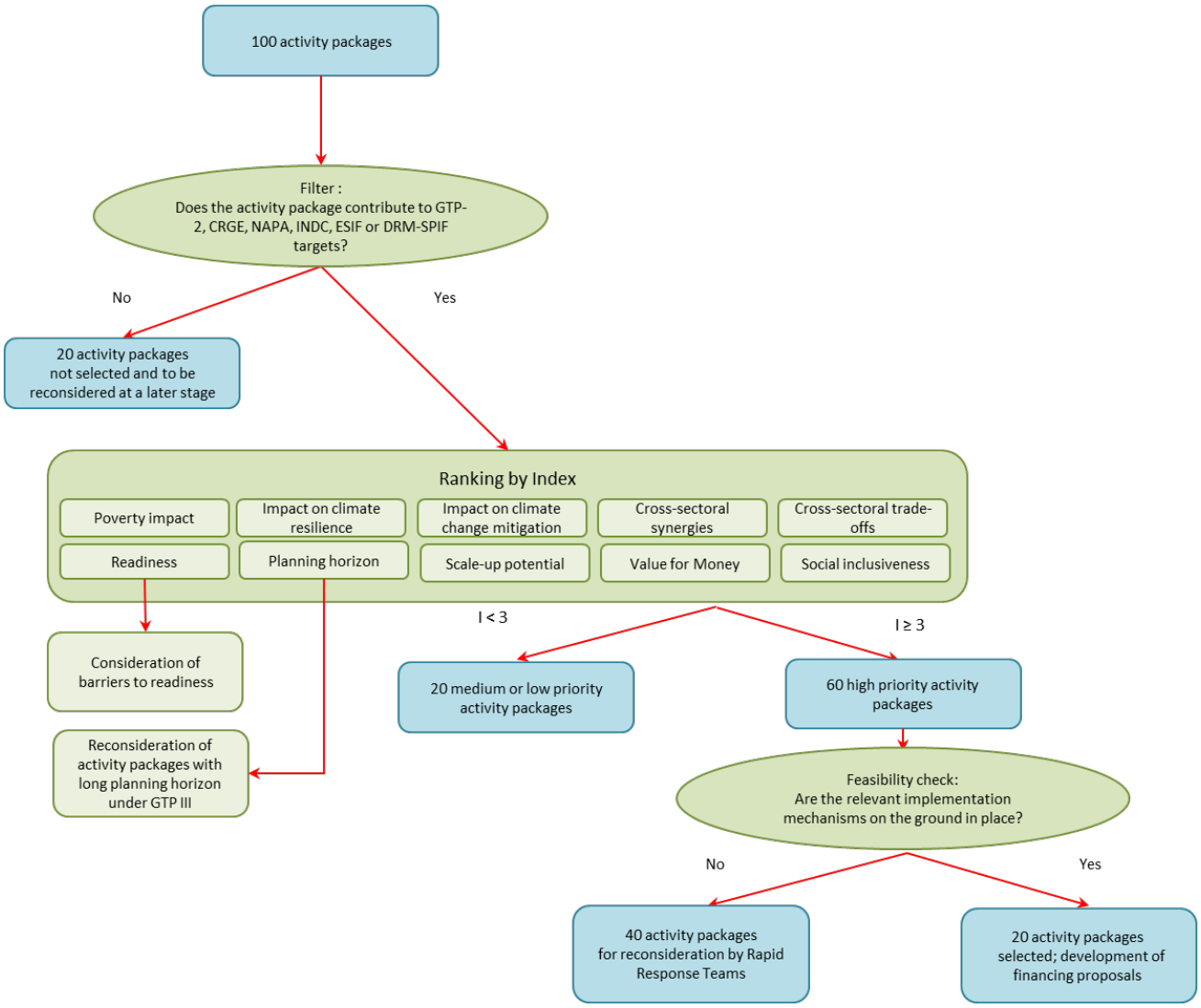
Example of Scoring and Weighting for an Investment Activity Package (e.g. soil and water conservation)			
Criterion	**Weight**	**Measurement (scale from 1 to 5)**	**Weight x Measurement**
Impact of poverty and distributional issues	10%	4	0.1 x 4 = 0.4
Impact on climate change resilience	10%	5	0.1 x 5 = 0.5
Impact on climate change mitigation	10%	1	0.1 x 1 = 0.1
Cross-sectoral synergies and co-benefits	10%	5	0.1 x 5 = 0.5
Cross-sectoral trade-offs	10%	5	0.1 x 5 = 0.5
Value for money	10%	3	0.1 x 3 = 0.3
Readiness	10%	4	0.1 x 4 = 0.4
Planning horizon	10%	3	0.1 x 3 = 0.3
Scale-up potential	10%	5	0.1 x 5 = 0.5
Social inclusiveness	10%	3	0.1 x 3 = 0.3
Index		**Sum = 38**	**Average = 3.8**

Alternative indices: By combining different weights and scores for each criterion, different indices can be defined that will generate different overall rankings. The following are examples of indices that could be used to prioritize Activity Packages:

1. **Basic Index 1 (illustrated above): Average.** This index assigns equal weights to all criteria, and would average across the scores a given Activity Package has for all criteria.
2. **Alternative Index 2: Poverty and climate resilience.** This index assigns half the weight to the criteria "poverty and distributional issues" and "climate resilience", and half the weight to all other criteria. The resulting index will prioritize investments that score higher in terms of focus on poverty alleviation and climate resilience.
3. **Alternative Index 3: Operational relevance.** This index assigns half the weight to the criteria "readiness", "planning horizon" and "scale-up potential" and half the weight to all other criteria. The resulting index will prioritize investments that score higher on readiness, planning horizon and scale-up potential – and so may be more operationally ready for implementation.
4. **Alternative Index 4**: **Impact, implementation and inclusiveness**. This index assigns criteria 2 to 11 into the categories "impact", "implementation" and "inclusiveness", and assigns a third of the weight to each category. Within each category, criteria are given equal weights. Criteria are classified as follows:
    - *Impact criteria (33%):*
        - Impact of poverty and distributional issues
        - Impact on poverty and distributional issues
        - Impact on climate resilience
        - Impact on climate change mitigation
        - Cross-sectoral synergies and co-benefits
        - Cross-sectoral trade-offs
        - Value for money
    - *Implementation criteria (33%):*
        - Readiness to implement
        - Planning horizon
        - Scale-up potential
    - *Inclusiveness criteria (33%):*
        - Social inclusiveness

Threshold values for the index. To use the index to select investment opportunities, it is necessary to set thresholds that enable the classification of investment activities into the categories high priority / medium priority / low priority. For example, opportunities with a value of the index greater than 3 could be considered high priority, those with a value between 2 and 3 could be considered a medium priority, and those with a value less than 2 could be considered low priority. Figure 25 provides an illustration of this approach.

Figure 25: Flowchart for prioritization of investment and financing activities (single time-period)



A framework / tool for organizing the ranking process. These aspects of the investment prioritization process – investment opportunities, criteria, scoring systems, weights and indices – can be combined into a framework or tool to facilitate the MSIP planning and consultation process. An example framework is illustrated in Figure 26,

Figure 26: Example framework / tool for MSIP prioritization

					Criteria											Indices			
Primary Economic Sector and Key Theme (From GOE Climate Resilience Strategies)	**Activity Group (from GOE Climate Resilience Strategies, GTP-2)**	**Activity Package (sub-component of a project proposal) (focus of prioritization exercise)**	**Example activities (e.g., individually costed items in a project proposal)**	**Agroecological Zone [Zone 1 to 5]**	**Contribution to GTP-2, CRGE Strategy, NAPA, INDC, ESIF and/or DRM-SPIF targets [YES / NO]**	**Impact on poverty and distributional issues [Scale of 1 to 6]**	**Impact on climate resilience [Scale of 1 to 6]**	**Impact on climate change mitigation capacity [Scale of 1 to 6]**	**Cross-sectoral synergies and co-benefits [Scale of 1 to 6]**	**Cross-sectoral trade-offs [Scale of 1 to 6]**	**Readiness [Scale of 1 to 6]**	**Planning horizon [Scale of 1 to 6]**	**Scale-up potential [Scale of 1 to 6]**	**Value for money [Scale of 1 to 6]**	**Social inclusiveness [Scale of 1 to 6]**	**INDEX 1 - Average**	**INDEX 2 - Poverty and Climate Resilience**	**INDEX 3 - Operational relevance**	**INDEX 4 - Impact, implementation and inclusiveness**
Weighting for Index 1 - Average					YES / NO	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10				
Weighting for Index 2 - Poverty and Climate Resilience					YES / NO	25.0%	25.0%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%				
Weighting for Index 3 - Operational Relevance					YES / NO	7.1%	7.1%	7.1%	7.1%	7.1%	16.7%	16.7%	16.7%	7.1%	7.1%				
Weighting for Index 4 - Impact, implementation and inclusiveness					YES / NO	5.6%	5.6%	5.6%	5.6%	5.6%	11.1%	11.1%	11.1%	5.6%	33.3%				
Sector X	*Activity Group Y*	***Activity Package Z***	*Activity 1, 2, 3,...*	3	YES	2	3	4	5	2	2	4	5	3	2	3.20	2.94	3.33	2.94
Sector: Agriculture, Forest Theme: Information and decision support	Decision support systems	**Market information**	Pricing and exchange system and access													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Water Theme: Information and decision support	R&D	**Water resources R&D**	Carry out research on resilience related issues and connect with extension services													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Forest Theme: Information and decision support	Enhanced extension services	**Forest extension**	DA outreach on topics such as PFM, land use planning													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture Theme: Information and decision support	Enhanced extension services	**Agriculture (crop and livestock) extension**	DA outreach on topics such as CSA, build and staff FTCs, SWC structures, land use planning, microwatershed planning													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Energy, Forest Theme: Information and decision support	Enhanced extension services	**Energy extension**	DA outreach on topics such as cookstoves, biogas, solar home systems													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Water, agriculture Theme: Crop and water management on-farm	Irrigation	**Medium and large-scale irrigation**	Reservoirs, dams, diversions, channels, water user associations													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture Theme: Sustainable agriculture and land management	Land and water management	**SWC structures/measures (landscape restoration and prevention of land degradation)**	* Terraces and bunds * Gully rehabilitation *Low tillage where applicable * Afforestation/Reforestation													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture Theme: Sustainable agriculture and land management, sustainable forest management, watershed management	Crop management and intensification, livestock management, forest management, water resources management	**Planned rangeland and grazing management**	* Rangeland planning * Rangeland development including boreholes, stocking, fodder and pens * Area closures (livestock exclusion zones) plus assisted natural regeneration and pens/rope * Rotational grazing * Grazing corridors, * Setting paddocks aside in case of drought													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture Theme: Sustainable agriculture and land management, and land use	Crop management and intensification, livestock management, market development	**Post-harvest systems and practices**	* Storage of harvest and processing methods to reduce food losses that improve land use efficiency (also women's workloads and food safety) * Dairy/meat refrigeration * Processing technologies (huskers, etc.)													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Agriculture, Forest Theme: Sustainable agriculture and land management, and land use	Land tenure and access	**Land holding certification**	* Individual land holding certificate issuance (crop) * Communal land holding certificate issuance (forest, grazing)													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Energy Theme: Sustainable energy, forest, and land use	Energy access	**Off-grid household energy**	* Biogas (community or household) * Improved cook stoves * Solar power lighting * Woodlots (link to forest/ag)													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Forest, water, agriculture Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Water management, forest management, crop management and intensification, livestock management	**Land use planning**	* Land use planning and enforcement at woreda and kebele levels													not prioritized	not prioritized	not prioritized	not prioritized
Sector: Forest, water, agriculture Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Water management, forest management, crop management and intensification, livestock management	**Watershed planning**	* Watershed planning at microwatershed and critical watershed levels													not prioritized	not prioritized	not prioritized	not prioritized

with some examples from various sectors provided. Implementation of the ranking procedure entails completing the scores for each proposed activity, then the spreadsheet tool could calculate various indices. Threshold values could be incorporated into the framework by color coding, or flagging, items where the index score is below 2 or above 3, for example, to direct the attention of reviewers/ users of the tool to those aspects of the ranking. The tool is a framework for organizing and presenting the ranking process. It is important to note that the tool does not make decisions; rather, it provides critical input to them.

VI.2 Applying the Prioritization Framework Tool

The prioritization framework tool allows users to assign a "Yes/No" score to indicate whether the proposed Activity Package contributes to GTP II and other key policies. The tool then allows users to score each Activity Package on a scale of 1-6 against ten different criteria relating to climate resilience, scalability, investment readiness and other factors. The prioritization tool includes brief definitions for each of the criteria, and an indication of what each of the scores (1 to 6) should signify regarding the extent to which an Activity Package met that criterion. The tool uses these individual scores to generate an average score (Index 1). The tool also weights this average score in three different ways (Index 2, Index 3, and Index 4) to reflect potential GoE priorities related to climate resilience, operational relevance, and inclusion.

During the June / July 2016 MSIP process, representatives from MEFCC, MoANR, MoWIE and MoLF were asked to score the Activity Packages relevant to their Ministries. The intent was to use the combined scores to develop a shortlist of activities that would be included in the MSIP for near-term investment, and another list of activities that would be considered for future investment planning.

The 77 Activity Packages listed in the prioritization framework tool covered a range of sectors, as described in the "Primary Economic Sector" column of the tool. A summary of the sectors covered by the Activity Packages is indicated in Table 7 below:

Table 7: Summary of Activity Packages in the prioritization framework tool

No. of sectors addressed	Sectors	Number of Activity Packages
All	Agriculture, Water, Forestry, Energy, Livestock	5
3	Agriculture, Water, Forestry	9
3	Agriculture, Forestry, Livestock	1
3	Agriculture, Water, Livestock	1
2	Agriculture, Forestry	11
2	Agriculture, Water	1
2	Energy, Forestry	1
2	Forestry, Livestock	1
1	Agriculture	17
1	Energy	10
1	Forestry	9
1	Livestock	8
1	Water	3

Based on these groupings, the expected number of Activity Packages scored by each of the sector Ministries would be as follows:

- MoANR: 40
- MEFCC: 32
- MoWIE: 25
- MoLF: 10

Note that 30 activities address more than one sector and were scored by more than one Ministry.

A review of the scoring submissions from each Ministry revealed that differing approaches had been applied to using the prioritization framework tool. The number of Activity Packages scored by each Ministry was as follows:

- MoANR: 76
- MEFCC: 77
- MoWIE: 21
- MoLF: 12

Consequently, all 77 Activity Packages received multiple scores.

A detailed analysis of the results indicates that the four Ministries interpreted the scoring system differently. This means the top scores for the four ministries vary widely, from a low of 3.7 to a high of 5.5. Table 8 shows the top five average scores from each sectoral Ministry using Index 1.

Table 8: Top five scores using index 1

MoANR	MoWIE	MEFCC	MoLF
3.7	5.7	4.6	5.5
3.6	5.5	4.1	5.3
3.6	5.5	4.0	5.1
3.5	5.3	3.9	4.9
3.4	5.3	3.8	4.9

Taking the Ministries' combined submissions at face value indicates that the highest priority Activity Packages would overwhelmingly represent the scores generated by MoWIE, even though stakeholder comments from the 2016 and 2017 consultations indicate the need for a more balanced outcome. Therefore, further interpretation is required to use the results of the prioritization framework tool.

The next stage of the prioritization process was intended to generate a short-list of priority investment packages, but not to result in a strict numerical ranking. This stage of the investment prioritization process involved two approaches:

1. Applying the prioritization tools against the combined Ministry scores; and
2. Review of Activity Packages against the findings of the gap analysis (the findings of the portfolio review and gap analysis have been summarized in section IV of the current working draft of the MSIP).

For the first of these, the prioritization tool was used to identify activities:

a) …ranked high priority by at least one sector Ministry
b) …across all three weighted indices defined in the prioritization framework.

This analysis found that:

- Index 1 (Average) – 64 activities ranked "high priority" by at least one Ministry
- Index 2 (Poverty & Climate Resilience) – 73 activities ranked "high priority" by at least one Ministry
- Index 3 (Operational Relevance) – 62 activities ranked "high priority" by at least one Ministry
- Index 4 (Impact, Implementation & Inclusiveness) – 50 activities ranked "high priority" by at least one Ministry.

This analysis established a high degree of consensus across the sectors:

- Approximately half of all Activity Packages were ranked "high priority" by experts from 2-3 sectoral Ministries. This high degree of overlap indicates significant cross-cutting potential across the identified Activity Packages.
- 50 Activity Packages were ranked "high priority" by experts in at least 1 Ministry using all three weighted indices.

Using the gap analysis described in Part 1 of this document, it was found that:

- Nearly all Activity Packages fill thematic gaps
- Approximately 85% of Activity Packages (65) fill key spatial / financial gaps

Combining the results from the portfolio review and gap analysis yielded significant overlap. The gap analysis identified 65 Activity Packages as being priorities to address investment gaps; 45 of these Activity Packages were also included in the 50 prioritized by the sector Ministries, reflecting their practitioner assessment of what is important. Thus, two different approaches yielded essentially the same conclusions as to where investment priorities lie. Because the prioritization tool scores reflect the expert opinion of Ministry staff, the final list includes those five "outlier" Activity Packages.

The resulting list of 50 high priority Activity Packages addresses the key gaps identified by the gap analysis exercise, and reflects the results of the prioritization framework analysis, and forms the basis of the Activity Groups described in the next section of the MSIP.

VII. Portfolio of Priority Activity Groups

VII.1 Overview of the Activity Groups

The list of prioritized climate resilience activities for the targeted sectors initially prepared by the sectoral ministries has been refined and further developed based on the outputs from the prioritization framework tool, the findings of the Project Review and Gap Analysis (PRGA), and feedback received during the Stakeholder Workshops conducted on 22nd/23rd February and 30 March 2017. The prioritized list of Activity Packages was created using the results from sector Ministry scores of the original list of 77 Activity Packages in the MSIP Prioritization Framework Tool, which were evaluated against the Tool's three weighted indices and the findings of the MSIP gap analysis.

The resultant Activity Groups comprise the 50 Activity Packages that this process identified as "priority", meaning that they address the conclusions drawn from the initial financial, thematic and spatial gap analysis. These were supplemented with a small number of complementary Activity Packages suggested by participants in the stakeholder workshops. Thus, based on currently available data, each Activity Group has been conceived as far as possible to

address the key climate challenges for agriculture, livestock and forestry, as described in Part I, Section II of the MSIP document.

This updating ensures identified projects are aligned with assessed gaps and provide an opportunity for scaling-up and exploiting cross sectoral synergies. The updated list of Activity Groups is presented below. Brief overview descriptions of the component Activity Packages have been provided in Annex 8. A summary of the costing information on which the cost estimates have been based has been provided in Annex 9.[79]

It is important to note that the proposed Activity Groups are not projects or project proposals at this point. The Activity Groups suggest investment opportunities for a landscape approach to addressing the expected climate impacts facing the agriculture, livestock and forestry sectors, that involves collaboration across the sectoral ministries including energy and water. Therefore, there is some overlap in the individual discrete priority activities that comprise each Activity Group. Each priority Activity Group is described below.

VII.2 Activity Group 1: Enhancing Climate Resilience in Agriculture

This Activity Group comprises a suite of incremental activities that reduce vulnerability to climate related shocks and increase climate resilience in the agricultural sector.

Figure 27: Summary Description of Activity Group 1 (Enhancing Climate Resilience in Agriculture)

Development objectives: The component activities in this Activity Group aim to enhance climate resilient agricultural production in four ways:

1. Improving agricultural support services, especially extension services to better respond to the resilience needs of a broad range of farmers, including women, the poor and vulnerable; and market information systems to strengthen the private sector response to climate change, helping farmers better access agricultural inputs and sell their products.
2. Reducing vulnerability to rainfall variability and uncertain water supplies – namely, providing improved meteorological services, encouraging enhanced water conservation, supporting integrated land-use and basin resources planning and management, and increasing the use of solar and wind-powered pumps to access groundwater supplies.
3. Improving resilience by encouraging climate-smart crop intensification and diversification, crop productivity improvements through participatory research, more equal intra-household relationships, and greater engagement of the private sector in climate resilient agricultural activities,. Key activities include protection against crop losses (post-harvest loss and crop disease), increased mechanization and provision of new technology, and support for lending to encourage investment in productivity improvements.
4. Improving resilience through income diversification – using mechanisms like payments for environmental services, coupled with promotion of non-farm livelihoods activities to help farmers reduce reliance on potentially vulnerable crops and provide a base of support in the event of climate events.

Components and activities: The specific activity packages comprising this Activity Group are:

- Improved AgroMet and HydroMet Services, spatial data and data storage and sharing platforms including historical data analysis and projections (Activity Package 1)
- Enhanced market information systems (Activity Package 2)
- Agricultural R&D to identify climate resilient crop varieties and production methods (Activity Package 3)
- Water resources R&D to address climate change (Activity Package 6)

[79] An Excel spreadsheet including the more detailed cost estimate methodology and calculations has been provided separately.

- Enhanced agriculture extension services that are responsive to all (including poor, vulnerable and female farmers) (Activity Package 8)
- Sustainable small, medium and large-scale irrigation (Activity Package 10 & 11)
- Soil and Water Conservation (SWC) structures / measures (Activity Package 13)
- Integrated land use planning (involving spatial planning, agriculture, forest, livestock, etc.) (Activity Package 25)
- Basin/Sub-basin Resources Planning and Management (Activity Package 27)
- Develop payments for environmental services (PES) (Activity Package 33)
- Promote non-farm livelihoods to increase resilience (Activity Package 40)
- Pre- and post-harvest plant protection (Activity Packages 20 and 41)
- Mechanization / small-scale mechanization to reduce reliance on livestock for farming (Activity Package 42)
- Value chain development and efficiency (Activity Package 47)
- Home gardens (Activity Package 54)
- Solar and wind pumps for small-scale irrigation, water supply and sanitation (Activity Package 70)
- Water pricing to encourage efficient use and cost recovery (Activity Package 71)
- Sustainable land management practices *(new Activity Package)*
- De-risking commercial lending for pro-poor and resilient agricultural investment *(new Activity Package)*

Rationale for investment:

This Activity Group contributes to the goals of Ethiopia's agriculture Climate Resilience strategy, which addresses the impact of rising temperatures and decreased rainfall on crop production. GTP II includes an objective to increase agricultural productivity per hectare of 8% per annum as part of the effort to achieve middle income country status for 2020. At the same time, climate change scenarios anticipate an increased likelihood and frequency of high temperatures and reduced rainfall in many key agricultural regions. These conditions lead to crop stress and reduced crop productivity. As described in Part I of the MSIP document, the FAO reports that 40% of cropland and pasture land is degraded, and a further 10% is in the process of becoming degraded. Low crop productivity per hectare means that the agricultural frontier is being extended into forested areas and onto steep slopes. The resulting loss of watershed services further increases the vulnerability of farmers and agricultural communities to drought and flooding. While there are existing projects like SLMP and AGP that address these issues, the magnitude and range of potential climate impacts in the agricultural sector indicates a need to scale up these initiatives and take a more cross-sectoral approach to implementing these activities.

Gender lens:

This activity group was designed with specific consideration of the differing impacts on women and men resulting from climate variability and weather extremes in agriculture. Women and men in rural areas in developing countries are especially vulnerable when they are highly dependent on local natural resources for their livelihood. Those charged with the responsibility to secure water, food and fuel for cooking and heating face the greatest challenges. Secondly, when coupled with unequal access to resources and to decision-making processes, limited mobility places women in rural areas in a position where they are disproportionately affected by climate change[80]. Vulnerable women, such as widows, have a particular need for more tailored livelihoods support. Climate change has serious ramifications in four dimensions of food security: food availability, food accessibility, food utilization and food systems stability. Therefore, it is important that this Activity Group ensures that the rights of rural women are ensured with respect to food security, non-discriminatory access to resources, and equitable participation in decision-making processes where climate resilience activities are implemented.

[80] UN Womenwatch (2009)

Synergies with ongoing projects:

Many of the activities included in this Activity Group are being implemented as parts of projects like SLMP and AGP. Those projects demonstrate the effectiveness of the prioritized activities. The financial and economic analysis of AGP showed good profitability outcomes and attractive financial internal rates of return, and a similar analysis of SLMP showed that net benefits from the program greatly exceed program costs. As described in Part 1 of this document, climate change is expected to have a net negative impact on agricultural productivity. As a result, this Activity Group demonstrates cost effectiveness by helping to reinforce and scale up the outputs from existing climate resilience projects, improve linkages with other sectoral initiatives, and enhance their sustainability.

Synergies with other Activity Groups:

Climate smart crop intensification activities are designed to increase agricultural productivity without depleting water resources or degrading soils and the natural resource base. Agricultural intensification also reduces pressure to extend the agricultural frontier to forested areas. Both effects generate synergies with Activity Group 2. Measures to rationalize the use of livestock in on-farm production highlights strong synergies with the livestock focused activities in Activity Group 3. Meanwhile, agricultural resilience is enhanced through integrated natural resource and basin management activities, which feature in all Activity Groups, but especially Activity Group 2.

Institutional arrangements:

MoANR would likely have primary responsibility for this Activity Group. However, one of its key features is its landscape approach, and the consequent need for active coordination and implementation support across sector Ministries. For example, while the Activity Group focuses on enhancing resilience and improving crop production, its success depends on support from MoWIE to develop irrigation infrastructure and the data required for sustainable wind and PV-powered groundwater pumping. Enhanced commercial lending to enable farmers and private sector investors to access productivity enhancing equipment and supplies would require the support from the Central Bank of Ethiopia. At the same time, effective land use planning and basin-level resources planning and management requires coordinated action between all four sectoral Ministries. Public-private dialogue would help ensure that public investments in value chain development will leverage commercial investment around key value chains and agro-industrial parks. Private sector processors and buyers may expand their contribution to resilience in the sector through the provision of services to smallholders and development of contract farming or outgrower arrangements. An active role for farmers and their cooperatives is expected in value chain development actions. Non-governmental organisations can also support value chain facilitation, build the capacity of cooperatives, test new varieties, support institutional strengthening in irrigation projects and build on their existing models of good practice in private sector engagement and Payment for Ecosystem Services.

Enabling environment and policy development:

The current policy framework creates an enabling environment for many of these activities via the Agricultural Program Investment Framework, the Ethiopia SLM investment Framework, and Climate Resilience Strategies for Water, Agriculture, Livestock and Forestry Sectors. Some areas for improvement include:

- Engage private sector in dialogue to develop a framework for public-private partnerships and joint investments in value chain development associated with agro-industrial parks
- Strengthen policy for the registration of new seed varieties and regulation of imported seed and build capacity for seed management.
- Create a policy framework for a technology / input distribution system that places greater emphasis on the role of the private sector through establishing public-private lines of finance for farmers
- Create the mandate for a National Water Research body and ensure it is responsive to policy priorities.

- Create incentives for EIAR and its network to undertake "climate resilient" research more closely linked to the implementation of resilience activities.
- Establish River Basin Authorities where they do not exist and complete Basin Master Plans, where required, including greater climate scenario planning.
- Climate change and related spatial information more accessible for decision makers (Activity 67)
- Ensure water use permits are issued based on hydrological research and limit maximum extraction during peak irrigation demand to protect downstream users. Engage private sector water users in dialogue to set tariffs at an appropriate level and to link where possible to the development of payments for ecosystem services. ☐
- Ensure productive wind/solar technologies are covered by same improvements in import regulations, quality assurance and foreign exchange facilitation as household devices. Create stronger regulatory framework to encourage private sector engagement in the distribution, installation and maintenance of solar/wind irrigation pumps.

Cost estimates:

The indicative cost of this Activity Group through 2030 is approximately USD $5.99 billion (of which about $5 billion is indicated for climate resilient irrigation activities that contribute also to forest, livestock and water sector outcomes). Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings.

Indicators: The results indicators for Activity Group 1 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. (Change in) rainfed crop area under sustainable, climate smart land management practices (ha) – by crop type (private holders only)	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2. (Change in) crop land productivity where modern, climate smart and small-scale irrigation applied (quintal per hectare) for: Major food crops; High value crops	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 3. (Change in) total crop land under modern, climate smart irrigation systems (ha and %) by type: Medium and large-scale; Small-scale	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 4. Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity

Financing strategy:

A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below already support climate resilience agriculture work in Ethiopia, or have publicly expressed interest in the overall goal within Ethiopia of enhancing climate resilience in agriculture, or in some combination of the constituent Activity Packages:

Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • European Investment Bank • Food and Agriculture Organization of the United Nations • Global Environment Facility Least Developed Countries Fund • Green Climate Fund • International Finance Corporation • International Fund for Agricultural Development • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Canada Department of Foreign Affairs, Trade and Development • EU Ethiopia Office • Finland Embassy • Agence Française de Développement (AfD) • Kreditanstalt für Wiederaufbau (KfW) • Norwegian Agency for Development Cooperation (NORAD) • Switzerland Embassy • UK Department for International Development (DfID) • US Agency for International Development (USAID)

VII.3 Activity Group 2: Climate Resilient Forest and Landscapes for Development, Conservation and Utilization

This Activity Group helps to address the multiple challenges facing Ethiopia's forested landscapes – forests, woodlands, grasslands, thickets, wetland and bamboo. The Activity Group aims to reduce the vulnerability of forests and other landscapes to climate shocks and maintain their ability to provide economic and ecosystem services.

Figure 28: Summary Description of Activity Group 2 (Climate Resilient Forest and Landscape Development, Conservation and Utilization)

Development objectives: The component activities in this Activity Group aim to enhance climate resilience in forestry and natural resource management in five key ways:
1. Strengthening the resilience of the forest sector by expanding forest resources and improving their management. These measures aim to support a sustainable increase in the forest sector's contribution to GDP (including the value of firewood, industrial wood and non-timber forest products) by encouraging sustainable private and public sector utilization and development of forests. These measures will support a net increase in the number of hectares of forest land, tree plantations and urban greenery across Ethiopia, thereby reducing pressure on those forested areas most vulnerable to climate change related temperature increases and rainfall reductions, and helping reduce net greenhouse gas emissions. 2. Reducing pressure on Ethiopia's landscapes from extension of the agricultural frontier. These agricultural support measures encourage crop intensification and improved market access to help boost farmer's incomes from existing agricultural land, reducing the need to clear forests and other landscapes.

3. Reducing forest degradation due to fuelwood harvesting. These measures aim to reduce the use of wood and charcoal fuel by promoting more efficient charcoal production, efficient cook stoves and alternative sources of cooking energy like biofuels.
4. Reducing pressure on Ethiopia's landscapes from grazing-related land clearance. As with agriculture, these measures aim to improve the productivity of the livestock sector so that incomes can be maintained or increased without requiring more land for grazing.
5. Reducing vulnerability of people in the forestry sector through livelihoods diversification. These measures promote alternative sources of income in the forest sector beyond cutting trees for fuel and timber, which helps to protect forests and help people cope with the effects of climate shocks on forests.

Components and activities: The specific activity packages comprising this Activity Group can be classified by their contribution to forest landscape development, sustainable utilization, and conservation :

Climate Resilient Development

- Land tenure and communal forest land certification to encourage sustainable natural resource management (Activity Package 21)
- Forestry R&D (Activity Package 4)
- Enhanced climate focused forestry and resource management extension services (Activity Package 7)
- Basin/Sub-basin Resources Planning and Management (Activity Package 27)
- Forest development (expansion) by smallholders and communities (Activity Package 28)
- Develop payments for environmental services (PES) (Activity Package 33)
- Bamboo agro-forestry (Activity Package 48)
- Tree nursery investment (Activity Package 57)
- Urban greening (Activity Package 61)
- Assisted natural regeneration (ANR) *(new Activity Package)*
- Development of out-grower schemes *(new Activity Package)*
- Use of climate change and related spatial information in landscape planning for medium and large-scale commercial forest development *(new Activity Package)*

Building resilient livelihoods through sustainable utilization

- Enhanced market information systems (Activity Package 2)
- Apiculture and sericulture development (Activity Package 18)
- Silvo-pastoral production systems (i.e., multi-purpose trees on rangeland and farmland) (Activity Package 49)
- Strengthened commercial plantation forestry into PFM model *(new Activity Package)*
- Design and implementation of Forest Fund *(new Activity Package)*
- Support to link forest sector with micro enterprises *(new Activity Package)*
- Promote small and medium scale wood processing industries *(new Activity Package)*

Building more resilient natural habitats and maintenance of ecosystem services through landscape conservation

- Enhanced agriculture extension services that address climate change and are responsive to all (including poor, vulnerable and female farmers (Activity Package 8)
- Land tenure and communal forest land certification to encourage sustainable natural resource management (Activity Package 21)
- Integrated land use planning (including Agriculture, Forest, Livestock, etc.) (Activity Package 25)
- R&D for energy to address climate change (Activity Package 69)

- Energy efficiency to reduce wood and charcoal consumption (Activity Package 68)
- Promotion of non-food biofuel sources such as biogas and ethanol as alternatives to wood and charcoal (Activity Package 66)
- Off-grid household energy access (Activity Package 24)
- Improved on-farm and rangeland livestock production practices and manure management (Activity Package 16)
- Planned rangeland and grazing management (Activity Package 19)
- Livestock value chain and market development and efficiency (Activity Package 73)
- Livestock related infrastructure development (Activity Package 74)
- Livestock payments for environmental services (reduced ruminant numbers, destocking, etc.) (Activity Package 75)

Rationale for investment:

The Government of Ethiopia has prioritized an increase in the forest sector's contribution to the economy, rising from 4% of GDP to 8% by the end of GTP II (2020), and potentially higher by 2030. There is a parallel target for forest cover to expand to 30% of the country by 2030. Increasing the forest sector's economic contribution while simultaneously expanding forest cover will require a significant incremental investment in the sustainable development and utilization of forest resources, and will require increasing support for private sector involvement.

Forest destruction and degradation is a major source of greenhouse gas emissions in Ethiopia, representing 37% of total emissions in 2010. In addition, the forestry sector is particularly vulnerable to climate change. Climate related temperature increases and reduced rainfall could lead to the disappearance of montane and lower montane wet forest and subtropical desert scrub, and affect the ability of forested areas to provide ecosystem services such as water and soil catchment and flood protection.

While initiatives like the SLMP show promise in preserving forests' ability to deliver ecosystem services, the magnitude of climate and other pressures requires expanded investment to ensure the resilience of Ethiopia's forest sector while meeting national targets. At the same time, additional investment is needed to address the drivers of forest degradation and loss. Extensive agriculture and livestock production is a major contributor to landscape degradation in Ethiopia. Agriculture and livestock activities and fuelwood collection are the main drivers of deforestation. Inefficient production techniques mean that farmers continually extend the agricultural frontier, a practice responsible for 50% of annual forest loss in Ethiopia. Similarly, wood and charcoal remain the primary source of energy in rural areas, with forest degradation due to inefficient fuelwood consumption responsible for 46% of annual forest loss. Further investment in climate resilient agriculture, livestock and energy activities will help make a major contribution to Ethiopia's forest conservation efforts. The coordinated response highlighted by this Activity Group aims to deliver a greater and more transformative climate resilience response than would standalone efforts.

Gender lens:

Women's domestic roles often make them disproportionate users of natural resources such as water, firewood and forest products. Women and girls spend a significant amount of time collecting firewood – time they could otherwise spend on more productive activities. As wood resources become scarcer, women experience an increased work burden and may fall further into poverty as a result[81]. This activity group was designed with specific

[81] Kangas, A., Haider, H., and Fraser, E. (2014).

consideration of the differing impacts on women and men resulting from the need to build resilience in forest landscapes. The activities within this group must account for the different effects that they can have on women and men, and consider how to mitigate the short-term trade-offs of resilience building activities (that often have medium to long-term objectives). There is evidence that since women in many parts of Ethiopia have primary domestic responsibility of providing for their families, they are more reliant on natural resources and are thus more careful stewards of them and the environment. Resilience building activities in the forested landscape can therefore offer opportunities empower women through their traditional roles as stewards of natural resources.

Synergies with ongoing projects:

The component activities in this Activity Group share useful synergies with existing projects. Most notable of these are the Ethiopia Oromia Forested Landscape Project, SLMP (which finances bamboo development with INBAR via the World Bank, as well as agroforestry and PFM as part of watershed rehabilitation), REDD Readiness TA, a new Norway financed REDD operation at MEFCC via the CRGE Facility, JICA and NGO engagements on PFM and/or REDD, and the National Programme for Improved Household Biomass Cook Stoves Development & Promotion. The financial and economic analysis of SLMP showed that net benefits from the program greatly exceed program costs. Similarly, a review and assessment of the Rural Energy Program showed that the program has raised awareness and played a supportive role for improved utilization of renewable energy with emphasis on biomass, which will foster its sustainable development in view of the expected high population growth in combination with low agricultural productivity. As described in Part 1 of this document, climate change is expected to have a net negative impact on Ethiopia's forests and landscapes. This Activity Group is therefore expected to demonstrate cost-effectiveness both due to the direct benefits of the component activity packages as described above, and also due to preserving the benefits of existing forest and landscape related projects against climate impacts.

Synergies with other Activity Groups:

As described above, the success of this Activity Group is closely tied to sustainable intensification of crop production (Activity Group 1), intensification of livestock production (Activity Group 3), and reduction in the use of fuelwood as a source of household energy (Activity Group 4).

Institutional arrangements:

While MEFCC has primary responsibility for the forestry sector, the primary risks facing the sector come from agricultural, livestock and energy related activities. In addition, MoANR has responsibility for natural resource management. At the same time, measures to protect upland forest areas affect the ability of watersheds to protect against flooding, recharge groundwater supplies and feed rivers, while biofuels promotion lies within the mandate of the Ministry of Petroleum and Natural Gas. As a result, many of the individual activities described above would be managed by MoANR, MoLF or MoWIE, and would require close coordination with those Ministries from initial planning stages. The CRGE Facility is expected to ensure close coordination between these agencies.

Private sector investors are expected to take on plantation development, management and the establishment of timber processing operations such as integrated panel and sawnwood production. Such investors can also establish outgrower arrangements with smallholder woodlot growers. Local communities and their organizations (e.g. CBOs, cooperatives, etc.) are expected to participate in forest development plans, establish local bylaws and contribute to value chain development through involvement in forest development cooperatives. NGOs can support through supporting the development of capacity in forest development, organising and building the capacity of community cooperatives and facilitating mutually beneficial commercial relationships between communities, forest investors and Government forest enterprises.

Enabling environment and policy development:

Developing the economic contribution of the forest sector and attracting private investment will require:

- Continuing public-private dialogue and developing arrangements for public-private partnerships in both plantations and smallholder outgrower schemes
- enabling access to land (e.g., leasing, certificates) to encourage long-term forest investments
- creating economic incentives for forest investments, such as credit facilities, loan guarantees, duty-free imports of relevant machinery, or delayed taxes, recognizing the long time horizon for these investments.
- Formation of a forestry and timber-processing industry association to share information with Government
- Further the development of the Forest Fund to incubate private sector forest investment

Effective land management requires balancing priorities across sectors, making long-term decisions which are continually enforced. Whilst GoE has made progress on implementation of the land policy, the development of Land Use Policy and National Land Use Plan is only just beginning and should be implemented in the 3rd GTP (2020-2025). To ensure this huge undertaking is done in a way that supports climate resilience, it will be important to consider:

- Requirements to consider future climate and population scenarios in land use planning and resource for this research.
- A mandate for a cross-sectoral body to link land use planning and water use planning to ensure water uses are balanced across priorities. This should link to river basin authorities and existing Basin Master Plans.
- Massive investments in capacity for local level development and enforcement of plans and cross-sectoral monitoring and learning about trade-offs in land use planning.
- Creation of a regulatory framework for Payments for Ecosystem Services in forests and rangelands, based on existing studies and lessons.
- Ensure future climate scenarios are considered in forestry R&D.

Cost estimates:

The indicative cost of this integrated suite of Activity Packages through 2030 is estimated at $5.41 billion USD. Of this total, about $2 billion USD is indicated for agriculture and livestock-related activities in recognition of the pressure these sectors place on Ethiopia's forests. A further $0.56 billion USD is targeted at reducing the impact of fuelwood collection. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings

Indicators: The results indicators for Activity Group 2 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. Total area (individual & communal) of land under sustainable, climate smart, land management plans	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2, Cumulative area of land covered with forest (ha), disaggregated by: Protected (%); Plantation (%); Under improved forest management systems and reduced carbon emissions practices (%)	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 3. Change in household fuelwood consumption	Frequency of Collection: Baseline, mid-term and end of program Monitoring & Reporting Responsibility: Implementing Entity

Result Indicator 4. Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 5. Area of land developed with community based watershed program	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 6. Area of land rehabilitated	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Financing strategy:	
A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support climate resilience forest and landscape initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:	
Multilateral Banks, Funds and Agencies:	• Adaptation Fund • Climate Investment Funds – Pilot Program for Climate Resilience • European Investment Bank • Food and Agriculture Organization of the United Nations • Global Environment Facility Least Developed Countries Fund • Green Climate Fund • International Fund for Agricultural Development • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Finland Embassy • Kreditanstalt für Wiederaufbau (KfW) • Norway's International Climate and Forest Initiative (NICFI) • Norwegian Agency for Development Cooperation (NORAD)

VII.4 Activity Group 3: Ensuring Climate Resilient Livestock Management and Livelihoods

This Activity Group helps to improve the climate resilience and reduce the climate impact of Ethiopia's livestock sector.

Figure 29: Summary Description of Activity Group 3 (Ensuring Climate Resilient Livestock Management and Livelihoods)

Development objectives: The component activities in this activity group aim to achieve increased resilience in the livestock sector in three key ways:

1. Developing climate smart livestock extension services that factor in measures to reduce climate vulnerability and impacts for women, men, and poor farmers;
2. Reducing the vulnerability of farmers and livestock to climate shocks through measures that intensify livestock production, increase the market value of livestock and reduce vulnerability to disease;
3. Reducing the environmental impact of livestock production, especially by reducing overall methane emissions per head of livestock and reducing the need to clear forest land for grazing.

Components and activities: The specific activity packages comprising this Activity Group are:

- Livestock R&D to address climate change (Activity Package 5)
- Improved resilience-focused livestock extension services that are responsive to all (including poor, vulnerable and female farmers) (Activity Package 8)
- Livestock management (Activity Package 16)
- Improved fisheries practices and aquaculture development / value chain development, including encouraging aquaculture in reservoirs (Activity Package 17)
- Planned rangeland and grazing management (Activity Package 19)
- Integrated land use planning (involving agriculture, livestock, forestry, water, etc.) (Activity Package 25)
- Basin/sub-basin resources planning and management (e.g., integrating feed production and grazing management into watershed management) (Activity Package 27)
- Transboundary disease monitoring for livestock (Activity Package 52)
- Climate change and related spatial information more accessible for decision makers (Activity 67)
- Livestock value chain efficiency, specialization and commercialization (Activity Package 73)
- Livestock related infrastructure development (Activity Package 74)
- Livestock payment for environmental services – reducing ruminant numbers, destocking, switching to poultry, etc. (Activity Package 75)
- Enhanced livestock diversification / biodiversity (Activity Package 76)
- Capacity development (institutional, organizational and HR resources development – to improve readiness) (Activity Package 77)
- Improved on-farm and rangeland livestock practices to improve productivity for rangeland and mixed farming agro-ecologies *(new Activity* Package*)*
- Manure management to support biogas production *(new Activity* Package*)*

Rationale for investment:

The livestock sector is particularly vulnerable to climate related weather events, especially increased temperature and reduced rainfall. Livestock are used for animal traction on farms across Ethiopia, in addition to rangeland herds that make Ethiopia Africa's largest livestock producer. Climate related shocks that affect livestock therefore have the potential to damage livelihoods across the country. This Activity Group promotes an integrated approach to building resilience against climate shocks, and provides a framework for scaling up climate-smart livestock production activities.

Gender lens:

Ethiopia has both full pastoralist and agro-pastoralist systems. In the former cattle and larger stock (camels) are usually owned by men and men may undergo seasonal migration with their stock whilst women stay with (younger) children at the homestead. In the latter, livestock activities are normally integrated into the existing farming systems; sheep and goats can be kept on small farms without large fodder and these; and backyard poultry

which are kept near the house; are more women's domain. Access to and tenure of rangeland or fodder resources, and differential access to markets also must be considered. This Activity Group should be implemented with specific consideration of the differing climate change impacts and livelihoods responses on women and men in livestock.

Synergies with ongoing projects:

The component activities in this Activity Group complement a number ongoing initiatives, most notably the SLMP, and the Ethiopia Oromia Forested Landscape Project, and a new IDA-financed livestock program under preparation. A review of the SLMP showed that it has helped reduce the negative impact of livestock overgrazing in communal hillside areas and improved livestock productivity. The cost effectiveness and value added of this Activity Group will be determined by its direct contribution to enhancing climate resilience in the livestock sector, and helping to ensure the continued provision of benefits from other projects and programs in the context of a changing climate.

Synergies with other Activity Groups:

Intensification of livestock production may reduce the need to clear forest land for grazing, and therefore contributes to the objectives of Activity Group 2. Conversely, expanding forest cover under Activity Group 2 can provide increased shade for livestock, reducing vulnerability to increased temperatures under climate change. Activity Groups 1 and 2 also include land use planning and basin / sub-basin resources planning and management activities, which could be implemented most effectively across Activity Groups and sector ministries.

Institutional arrangements:

Public-private dialogue would help ensure that public investments in value chain development will leverage commercial investment around key livestock value chains and can strengthen links to the new agro-industrial parks. An active role for farmers and their cooperatives is expected in value chain development actions. Non-governmental organizations can also support value chain facilitation, build the capacity of cooperatives, test new livestock extension packages, broker partnerships with private sector traders or meat processors, and build capacity for the implementation of the animal breeding policy.

Primary responsibility for this Activity Group would lie with the Ministry of Livestock and Fisheries (MoLF). At the same time, intensifying livestock production can reduce competition with farmers for land and reduce the need to clear forested areas and other landscapes for grazing. Successful scale-up of these activities will therefore require a landscape approach with close coordination between MoLF, MoANR and MEFCC for effective land use and basin resources planning and management. The CRGE Facility is expected to ensure close coordination between these agencies.

Enabling environment and policy development:

The MoLF is guided by the Livestock Master Plan (2015-2020), which indicates the importance of livestock activities contributing to both climate change adaptation and mitigation as outlined in the CRGE Strategies. The Climate Resilience strategy indicates specific resilience measures for the livestock sector, which could be enhanced if:

- Implementation of the newly developed Animal Breeding Policy should consider future climate scenarios and prioritize those characteristics that will allow higher yields under uncertain conditions and increased temperatures.
- Ensure that land use planning guidance considers strategic feedlot creation alongside irrigation for agriculture to preserve the integrity of extensive grazing systems.
- Strengthen the implementation of meat quality standards and improve control on live animal export to enhance investment in domestic meat processing where it is profitable.

- Review policies impacting livestock feed and create incentives for domestic feed production, including limiting the oilseed export, encouraging domestic grain production and integrate livestock feed production in newly developed Agro-Industrial Park Clusters.
- Greater investments are made in research and development for livestock production systems in areas with a high level of vulnerability to climate change.
- Create a forum for public-private sector dialogue to ensure Government investments in value chain development leverage a greater role for private sector.

Cost estimates:

The indicative cost of this cross-sectoral Activity Group through 2030 is approximately $2.63 billion USD. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings.

Indicators: The results indicators for Activity Group 3 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. Area of pasture under improved pastureland management	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2, Productivity of communal pasture and rangeland (tons/ha) – feed / forage	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 3. Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity

Financing strategy:

A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support climate resilience livestock initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:

Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • Food and Agriculture Organization of the United Nations • Green Climate Fund • International Fund for Agricultural Development • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Canada Department of Foreign Affairs, Trade & Development • Finland Embassy • Kreditanstalt für Wiederaufbau (KfW) • Switzerland Embassy • United States Agency for International Development (USAID)

VII.5 Activity Group 4: Improved Resilience through Affordable Access to Climate-Smart Energy

This Activity Group promotes affordable energy access as an enabler of other livelihood and resilience goals.

Figure 30: Summary Description of Activity Group 4 (Improved Resilience through Affordable Access to Climate-Smart Energy)

Development objectives: This Activity Group includes measures that reduce reliance on energy resources like fuelwood that are vulnerable to climate shocks, while also reducing pressure on forest resources. The component activities in this activity group aim to enhance access to climate smart energy in two ways:
1. Reducing reliance on increasingly uncertain fuelwood supplies as a source of energy, by improving the efficiency of the biomass energy value chain – including charcoal production and wood / charcoal stoves – and by developing alternative sources of household energy; 2. Improving livelihoods and reducing vulnerability through increased access to electricity in a climate smart manner. These activities promote renewable energy-based electrification while addressing the potential longer term impact of climate change on hydropower resources over the longer term.
Components and activities: The specific activity packages comprising this Activity Group are:
• Enhanced energy extension services (Activity 9) • Promotion of non-food biofuel sources – biogas, ethanol as alternatives to wood and charcoal (Activity 66) • Energy efficiency throughout the value chain to reduce wood and charcoal consumption (Activity 68) • LPG as an alternative to wood and charcoal • R&D for energy to address climate change (Activity 69) • Off-grid household energy access (Activity 24) • Micro-hydropower (Activity 45) • Pico-, micro-, mini- and meso-scale grid electricity (Activity 63, 64, 65) • Introduction and adoption of energy tariffs (Activity 72)
Rationale for investment:
This Activity Group builds on the existing work of projects like SREP and the National Programme for Improved Household Biomass Cook Stoves Development & Promotion. Given the significant role that fuelwood consumption plays in forest degradation, it is important to further scale up those existing initiatives, promote sources of clean energy that are not emphasized by existing projects, and encourage enhanced coordination with activities in other sectors.
Gender lens:
Energy has significant links to gender equality: Women and girls are often primarily responsible for collecting fuel and water at the community level. Also, poor women tend to participate in the informal economic sector, which relies strongly on biomass as its main energy source and climate induced scarcity of natural resources can exacerbate women's time poverty[82]. This Activity Group was designed with specific consideration of the differing ways that women and men access and use energy, and the implications of climate change on rural energy in Ethiopia. Gender disaggregated baseline data and inclusion of women in discussions on energy plans and policies will inform gender mainstreaming of resilience building programs for rural energy.

[82] Habtezion, S. (2012)

Synergies with ongoing projects:

This Activity Group complements several existing projects, including the National Programme for Improved Household Biomass Cook Stoves Development & Promotion in Ethiopia, the Ethiopia Oromia Forested Landscape Program, SLMP (which supports household energy), and the Scaling-Up Renewable Energy Program Ethiopia Investment Plan (SREP). The Household Biomass Cook Stoves project and SREP have contributed to an increase in the number and improvement in the quality and cost of more efficient cooking devices. The cost-effectiveness of this Activity Group will be determined both by its direct contribution to reducing reliance on vulnerable energy resources and its contribution to preserving the benefits of ongoing projects in the context of a changing climate.

Synergies with other Activity Groups:

Improved energy access contributes to or depends upon the successful execution of each of the other Activity Groups. The off-grid household energy and biofuels activities support the goals of Activity Group 2, by reducing degradation from fuel wood collection. Conversely the sustainability of micro-hydropower initiatives depends on improved HydroMet services and the climate resilient watershed and basin management activities described in Activity Groups 1 and 2.

Institutional arrangements:

The household energy activities described above depend on close coordination between MEFCC and MoWIE. Similarly, hydropower based mini-grids, while the responsibility of MoWIE, often rely upon the same water resources as irrigation activities, and depend on well-functioning watersheds. As a result, taking a landscape approach means that coordinating closely with MoANR and MEFCC will be important to satisfying the needs of all users and achieving economies of scale and scope. The CRGE Facility is expected to ensure close coordination between these agencies.

Regulatory improvement will ensure an attractive environment for private sector investors which are expected to play an important role in the development of micro-hydro schemes, the sale of pico/micro solar products and in the installation and maintenance of mini and meso solar installations. Civil society may have a role in promoting renewable energy and energy efficiency measures to rural communities and in supporting the development of local bylaws and institutions for sustainable management of off-grid generators. NGOs may also build on their prior experience with the implementation of biogas or ethanol stoves to strengthen Government and private sector capacity for promoting these technologies on a wider scale.

Enabling environment and policy development:

Several enabling policies exist, including The Energy Policy (1994), the Electricity Feed-in-Tariff Law (2012) and the Energy Proclamation (2013). The Rural Electrification Fund also exists to provide loans and technical assistance for rural electrification. MoWIE has several alternative energy programs for increasing access to modern fuels including the National Biomass Energy Strategy (2013), National Biogas Program for Ethiopia (2007), Biofuel Program and Sustainable Energy For All Action Plan. Priorities under the Sectoral Climate Resilience strategy include a need to diversify the energy mix, improve energy efficiency, improve the efficiency of biomass use and accelerate off-grid energy access. It also highlights the importance of balancing water demands between those for human and agricultural uses as well as those for power generation. However, there is still scope for further improvements to the policy environment and the capacity to implement existing provisions. These include:

- Develop regulatory framework for off-grid energy tariffs.
- Ensure Land and Water Use procedures balance water and land demands across personal, productive and energy uses.
- Ensure VAT-exemption on renewable technologies is implemented consistently and applies to product parts and appliances.
- Strengthen institutions for managing and maintaining public systems and consider creating regulations to manage private sector involvement and sustainable operations.

- Equip the Ethiopian Standards Agency (ESA) to quality assure all renewables products and not just those covered by the Lighting Africa standards.
- Continue to invest in vocational training for renewable energy technicians and ensure curricula reflect appropriate quality standards and consider environmental impacts and safe disposal.

Cost estimates:

The indicative cost of this cross-sectoral Activity Group through 2030 is approximately $0.65 billion USD. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings.

Indicators: The results indicators for Activity Group 4 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. Quantity of wood fuel displaced (tons): disaggregated by type of energy-saving or alternative fuel measure	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2: Installed capacity renewable energy, including from solar, wind, hydropower and/or biomass (type, GWh, number of connections)	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 3: Annual energy savings: (GWh) disaggregated by type of energy-saving measure	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity

Financing strategy:

A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support energy access and energy efficiency initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:

Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • European Investment Bank • International Finance Corporation • Global Environment Facility Least Developed Countries Fund • Green Climate Fund • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Agence Française for Développement • DANIDA • Finland Embassy • Norwegian Agency for Development cooperation (NORAD) • United States Agency for International Development (USAID

Development objectives: This Activity Group includes measures that reduce reliance on energy resources like fuelwood that are vulnerable to climate shocks, while also reducing pressure on forest resources. The component activities in this activity group aim to enhance access to climate smart energy in two ways:

3. Reducing reliance on increasingly uncertain fuelwood supplies as a source of household energy, by improving the efficiency of wood stoves and developing alternative sources of household energy;
4. Improving livelihoods and reducing vulnerability through increased access to electricity in a climate smart manner. These activities promote renewable energy-based electrification while addressing the potential longer term impact of climate change on hydropower resources over the longer term.

Components and activities: The specific activities comprising this Activity Group are:

- Enhanced energy extension services (Activity 9)
- Promotion of non-food biofuel sources – biogas, ethanol as alternatives to wood and charcoal (Activity 66)
- Energy efficiency to reduce wood and charcoal consumption (Activity 68)
- LPG as an alternative to wood and charcoal
- R&D for energy to address climate change (Activity 69)
- Off-grid household energy access (Activity 24)
- Micro-hydropower (Activity 45)
- Pico-, micro-, mini- and meso-scale grid electricity (Activity 63, 64, 65)
- Introduction and adoption of energy tariffs (Activity 72)

Rationale for investment:

This Activity Group builds on the existing work of projects like SREP and the National Programme for Improved Household Biomass Cook Stoves Development & Promotion. Given the significant role that fuelwood consumption plays in forest degradation, it is important to further scale up those existing initiatives, promote sources of clean energy that are not emphasized by existing projects, and encourage enhanced coordination with activities in other sectors.

Gender lens:

Energy has significant links to gender equality: Women and girls are often primarily responsible for collecting fuel and water at the community level. Also, poor women tend to participate in the informal economic sector, which relies strongly on biomass as its main energy source and climate induced scarcity of natural resources can exacerbate women's time poverty[83]. This Activity Group was designed with specific consideration of the differing ways that women and men access and use energy, and the implications of climate change on rural energy in Ethiopia. Gender disaggregated baseline data and inclusion of women in discussions on energy plans and policies will inform gender mainstreaming of resilience building programs for rural energy.

Synergies with ongoing projects:

This Activity Group complements several existing projects, including the National Programme for Improved Household Biomass Cook Stoves Development & Promotion in Ethiopia, the Ethiopia Oromia Forested Landscape Program, SLMP (which supports household energy), and the Scaling-Up Renewable Energy Program Ethiopia Investment Plan (SREP).

Synergies with other Activity Groups:

Improved energy access contributes to or depends upon the successful execution of each of the other Activity Groups. The off-grid household energy and biofuels activities support the goals of Activity Group 2, by reducing degradation from fuel wood collection. Conversely the sustainability of micro-hydropower initiatives depends on

[83] Habtezion, S. (2012)

improved HydroMet services and the climate resilient watershed and basin management activities described in Activity Groups 1 and 2.

Institutional arrangements:

The household energy activities described above depend on close coordination between MEFCC and MoWIE. Similarly, hydropower based mini-grids, while the responsibility of MoWIE, often rely upon the same water resources as irrigation activities, and depend on well-functioning watersheds. As a result, taking a landscape approach means that coordinating closely with MoANR and MEFCC will be important to satisfying the needs of all users and achieving economies of scale and scope. The CRGE Facility is expected to ensure close coordination between these agencies.

Enabling environment and policy development:

Several enabling policies exist, including The Energy Policy (1994), the Electricity Feed-in-Tariff Law (2012) and the Energy Proclamation (2013). The Rural Electrification Fund also exists to provide loans and technical assistance for rural electrification. MoWIE has several alternative energy programs for increasing access to modern fuels including the National Biomass Energy Strategy (2013), National Biogas Program for Ethiopia (2007), Biofuel Program and Sustainable Energy For All Action Plan. Priorities under the Sectoral Climate Resilience strategy include a need to diversify the energy mix, improve energy efficiency, improve the efficiency of biomass use and accelerate off-grid energy access. It also highlights the importance of balancing water demands between those for human and agricultural uses as well as those for power generation. However, there is still scope for further improvements to the policy environment and the capacity to implement existing provisions. These include:

- Develop regulatory framework for off-grid energy tariffs.
- Ensure Land and Water Use procedures balance water and land demands across personal, productive and energy uses.
- Ensure VAT-exemption on renewable technologies is implemented consistently and applies to product parts and appliances.
- Strengthen institutions for managing and maintaining public systems and consider creating regulations to manage private sector involvement and sustainable operations.
- Equip the Ethiopian Standards Agency (ESA) to quality assure all renewables products and not just those covered by the Lighting Africa standards.
- Continue to invest in vocational training for renewable energy technicians and ensure curricula reflect appropriate quality standards and consider environmental impacts and safe disposal.

Cost estimates:

The indicative cost of this cross-sectoral Activity Group through 2030 is approximately $654 million USD. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield some savings.

Indicators: The results indicators for Activity Group 4 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1. Quantity of wood fuel displaced (tons): disaggregated by type of energy-saving or alternative fuel measure	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
Result Indicator 2: Installed capacity renewable energy, including from solar, wind, hydropower and/or biomass (type, GWh, number of connections)	Frequency of Collection: Baseline, mid-term and end of program
	Monitoring & Reporting Responsibility: Implementing Entity
	Frequency of Collection: Baseline, mid-term and end of program

Result Indicator 3: Annual energy savings: (GWh) disaggregated by type of energy-saving measure	Monitoring & Reporting Responsibility: Implementing Entity
Financing strategy:	
A portion of the estimated cost of this Activity Group may be met by end user contributions and GoE co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support energy access and energy efficiency initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:	
Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – PPCR • European Investment Bank • International Finance Corporation • Global Environment Facility Least Developed Countries Fund • Green Climate Fund • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Agence Française for Développement • DANIDA • Finland Embassy • Norwegian Agency for Development cooperation (NORAD) • United States Agency for International Development (USAID)

VII.6 Activity Group 5: Enhanced Climate-Resilient Disaster Risk Management and Early Warning Systems

This Activity Group aims to improve the capacity to anticipate and manage climate related disaster risks as part of Ethiopia's existing DRM Strategic Program and Investment Framework.

Figure 31: Summary Description of Activity Group 5 (Enhanced Climate-Resilient Disaster Risk Management and Early Warning Systems)

Development objectives: This Activity Group aims to enhance climate-related disaster risk management in three main ways:
1. Enhancing prevention, mitigation and preparedness activities, including by building DRM elements into development strategies, policies and programs. This involves improving drought and flood risk assessment and early warning systems, including historical data analysis, prediction and early warning. These activities reflect the increased need for meteorological and hydrological systems that integrate changing climate projections into agriculture and forestry development and disaster risk management planning as climate related shocks become more frequent and severe. 2. Increasing resilience through coordinated food and non-food responses to climate related disasters. These measures are intended to reduce the stress that climate shocks place on government and civil society response capacities.

3. Enhanced adoption of post-disaster risk reduction and resilience approaches. These measures are meant to address long-term risks as part of disaster risk assessment and ensure that households and communities can "build back better" after an event.

Components and activities: The specific activity packages comprising this Activity Group are:

- Improved Spatial, AgroMet and HydroMet monitoring services and data storage and information sharing platforms, including historical data analysis and projections (Activity 1)
- Capacity building for the collection and analysis of drought and flood early warning information (e.g. LIAS data, bottom up data including indigenous knowledge), spatial data and creation of data storage and sharing platform (Activity 34)
- Climate change and related spatial information more accessible for decision makers (Activity 67)
- Enhanced data sharing to ensure climate projections and weather forecasts reach the woreda planners who can interpret and advise extension agents and farmers (Activity 34).
- Risk financing via weather index based agriculture, livestock, and forest crop insurance (Activity 36)
- Improved coordination between administrative, humanitarian and insurance-based disaster response systems *(new activity package)*
- Long-term risks considered in non-food responses to contribute to reduce vulnerability (e.g. infrastructure is "built back better" and non-food response funds are used to incentivize households to adopt more resilient livelihood options) *(new activity package)*

Rationale for investment:

Ethiopia has an established DRM Strategic Program and Investment Framework and a well-functioning disaster management system. However, there is insufficient knowledge of climate risks to enable long term planning. Given the expected increase in the frequency and severity of climate related weather events such as floods and drought, it is important to increase the quality and availability of meteorological and hydrological forecasts and early warning systems. In addition, there is very limited support for potential private sector measures like insurance that can help reduce the government's disaster response burden.

Gender lens:

Women often have a strong body of knowledge and expertise that can be used in climate change mitigation, disaster reduction and adaptation strategies. Furthermore, women's responsibilities in households and communities, as stewards of natural and household resources, positions them well to contribute to livelihood strategies adapted to changing environmental realities[80]. Key supporting activities for this group include: Increase the understanding of gender concerns and needs in disaster risk reduction; Develop government capacity to address gender issues in disaster risk reduction; Encourage governments to take action to integrate gender perspectives into disaster risk reduction legislation, policies and programs[84]. Gender sensitive risk assessments are required to determine the differentiated exposure to risk and climate vulnerability of women and men.

Synergies with ongoing projects:

The disaster risk management and response activity packages described above align with and build climate resilience into each of the seven pillars of the Government of Ethiopia Disaster Risk Management Strategic Programme and Investment Framework (DRM-SPIF). They also complement the approach taken in the UNDP led Disaster Risk Management and Livelihood Recovery Programme. The mid-term evaluation of the UNDP program found that it to be a highly relevant intervention that helped Ethiopia respond to a drought crisis in 2011, and that it has been effective in advancing policy actions at Federal Level. The cost-effectiveness of this Activity Group will

[84] UNISDR (2009).

be determined by the extent to which incremental funding focused on climate resilience preserves and enhances the performance of Ethiopia's DRM system in the context of more frequent and severe droughts and floods.

Synergies with other Activity Groups:

Disaster management and response has strong synergies with activities to promote climate resilient livelihoods. Enhancing the success achieved by those climate resilient livelihoods activities means that people can cope with manageable climate stresses and shocks with less need for DRM. What is more, the long-term climate and weather forecasts that are a featured part of this Activity Group can improve decision making across the Activity Groups, making all of them more effective.

Institutional arrangements:

The NDRMC has primary responsibility for ensuring that DRM is mainstreamed in the sector Ministries, and would be expected to be have a strong role in this Activity Group. However, the success of the component activities is also heavily dependent upon the work of the National Met Agency, MoANR, MEFCC, MoWIE and a range of other government and research institutions. The CRGE Facility is expected to ensure close coordination between these agencies.

Private Sector insurance providers are expected to deliver existing weather-indexed products to a larger number of clients whilst developing new products as required. Civil Society will continue to play a role in supporting the collection of early warning data and building national capacity for the use of risk data in planning and the implementation of non-food responses during crises.

Enabling environment and policy development:

The 2013 National Policy and Strategy on Disaster Risk Management and the 2014 Strategic Program and Investment Framework (DRM-SPIF) set out the requirements for a national DRM system. However, since the NDRMC is newly created and has historically focused on Disaster Management and Food Security, there are capacity gaps in its ability to coordinate and push for Disaster Risk Management across sectors. Some priority areas for improvement include:

- Create formal mechanisms to link NDRMC and RBAs to coordinate flood management activities and ensure sufficient capacity on hydrological issues within NDRMC.
- Create systematic and cross-sectoral guidelines on the use of agro-meteorological and hydro-meteorological data, risk analyses and livelihood data and improve links to contingency planning and action.
- Continue to invest in the data and meteorological systems required for the insurance industry.
- Ensure capability for national-level contingency planning is available to allow access to the African Risk Capacity and systems for learning and improvement to expand its coverage if appropriate.
- Improve the communication infrastructure and develop regulatory frameworks to enhance the use of mobile banking to facilitate the scale-up of farmer/herder focused insurance products.

Cost estimates:

The indicative incremental cost of this cross-sectoral Activity Group through 2030 is approximately USD $107 million. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield cost savings.

Indicators: The results indicators for Activity Group 5 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

	Frequency of Collection: Every 5 years

Result Indicator 1: Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems	Monitoring & Reporting Responsibility: Disaster Risk Management and Food Security Sector
Result Indicator 2: Evidence of strengthened government capacity to collect, analyze and apply climate information to decision-making	Frequency of Collection: Annually Monitoring & Reporting Responsibility: Responsibility: CRGE Secretariat and CRGE priority Ministries under the program

Financing strategy:

A portion of the estimated cost of this Activity Group may be met GoE co-financing. Note also that the activity package focused on de-risking the provision of livestock, agriculture and forest crop insurance is intended to leverage a significantly larger private sector contribution to resilience. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support climate resilience livestock initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:

Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • Food and Agriculture Organization of the United Nations • Green Climate Fund • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Austria Development Agency • DANIDA • EU Ethiopia Office • Kreditanstalt für Wiederaufbau (KfW) • Norwegian Agency for Development Cooperation (NORAD) • Switzerland Embassy • UK Department for International Development (DfID) • United States Agency for International Development (USAID

Development objectives: This Activity Group aims to enhance climate-related disaster risk management in three main ways:

4. Improving drought and flood risk assessment and early warning systems, including historical data analysis, prediction and early warning. These activities reflect the increased need for meteorological and hydrological systems that integrate changing climate projections into disaster risk management planning as climate related shocks become more frequent and severe.
5. Increasing resilience through coordinated food and non-food responses to climate related disasters. These measures are intended to reduce the stress that climate shocks place on government budgets.

6. Enhanced adoption of the Sendai Framework for Disaster Risk Reduction. These measures are meant to address long-term risks as part of disaster risk assessment and ensure that households and communities can "build back better" after an event.

Components and activities: The specific activities comprising this Activity Group are:

- Improved Spatial, AgroMet and HydroMet monitoring services and data storage and information sharing platforms, including historical data analysis and projections (Activity 1)
- Capacity building for the collection and analysis of drought and flood early warning information (e.g. LIAS data, bottom up data including indigenous knowledge), spatial data and creation of data storage and sharing platform (Activity 34)
- Climate change and related spatial information more accessible for decision makers (Activity 67)
- Enhanced data sharing to ensure climate projections and weather forecasts reach the woreda planners who can interpret and advise extension agents and farmers (Activity 34).
- Risk financing via weather index based agriculture, livestock, and forest crop insurance (Activity 36)
- Improved coordination between administrative, humanitarian and insurance-based disaster response systems *(new activity package)*
- Long-term risks considered in non-food responses to contribute to reduce vulnerability (e.g. infrastructure is "built back better" and non-food response funds are used to incentivize households to adopt more resilient livelihood options) *(new activity package)*

Rationale for investment:

Ethiopia has an established and well-functioning disaster management system. However, there is insufficient knowledge of risks to enable long term planning. Given the expected increase in the frequency and severity of climate related weather events such as floods and drought, it is important to increase the quality and availability of meteorological and hydrological forecasts and early warning systems. In addition, there is very limited support for potential private sector measures like insurance that can help reduce the government's disaster response burden.

Gender lens:

Women often have a strong body of knowledge and expertise that can be used in climate change mitigation, disaster reduction and adaptation strategies. Furthermore, women's responsibilities in households and communities, as stewards of natural and household resources, positions them well to contribute to livelihood strategies adapted to changing environmental realities[80]. Key supporting activities for this group include: Increase the understanding of gender concerns and needs in disaster risk reduction; Develop government capacity to address gender issues in disaster risk reduction; Encourage governments to take action to integrate gender perspectives into disaster risk reduction legislation, policies and programs[85]. Gender sensitive risk assessments are required to determine the differentiated exposure to risk and climate vulnerability of women and men.

Synergies with ongoing projects:

The disaster risk management and response activities described above reinforce and complement several ongoing projects, most notably the Disaster Risk Management Strategic Programme and Investment Framework (DRM-SPIF).

[85] UNISDR (2009).

Synergies with other Activity Groups:

Disaster management and response has strong synergies with activities to promote climate resilient livelihoods. Enhancing the success achieved by those climate resilient livelihoods activities means that people can cope with manageable climate stresses and shocks with less need for DRM. What is more, the long-term climate and weather forecasts that are a featured part of this Activity Group can improve decision making across the Activity Groups, making all of them more effective.

Institutional arrangements:

The NDRMC has primary responsibility for ensuring that DRM is mainstreamed in the sector Ministries, and would be expected to have a strong role in this Activity Group. However, the success of the component activities is also heavily dependent upon the work of the National Met Agency, MoANR, MEFCC, MoWIE and a range of other government and research institutions. The CRGE Facility is expected to ensure close coordination between these agencies.

Enabling environment and policy development:

The 2013 National Policy and Strategy on Disaster Risk Management and the 2014 Strategic Program and Investment Framework (DRM-SPIF) set out the requirements for a national DRM system. However, since the NDRMC is newly created and has historically focused on Disaster Management and Food Security, there are capacity gaps in its ability to coordinate and push for Disaster Risk Management across sectors. Some priority areas for improvement include:

- Create formal mechanisms to link NDRMC and RBAs to coordinate flood management activities and ensure sufficient capacity on hydrological issues within NDRMC.
- Create systematic and cross-sectoral guidelines on the use of agro-meteorological and hydro-meteorological data, risk analyses and livelihood data and improve links to contingency planning and action.
- Continue to invest in the data and meteorological systems required for the insurance industry.
- Ensure capability for national-level contingency planning is available to allow access to the African Risk Capacity and systems for learning and improvement to expand its coverage if appropriate.
- Improve the communication infrastructure and develop regulatory frameworks to enhance the use of mobile banking to facilitate the scale-up of farmer/herder focused insurance products.

Cost estimates:

The indicative cost of this cross-sectoral Activity Group through 2030 is approximately USD $53 million. Note that synergies with existing project activities and complementarities with other Activity Groups in this MSIP may yield cost savings.

Indicators: The results indicators for Activity Group 5 are aligned to the CR Strategy for Agriculture and Forestry and the CRGE strategy:

Result Indicator 1: Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems	Frequency of Collection: Every 5 years Monitoring & Reporting Responsibility: Disaster Risk Management and Food Security Sector
Result Indicator 2: Evidence of strengthened government capacity to	Frequency of Collection: Annually Monitoring & Reporting Responsibility: Responsibility: CRGE Secretariat and CRGE priority Ministries under the program

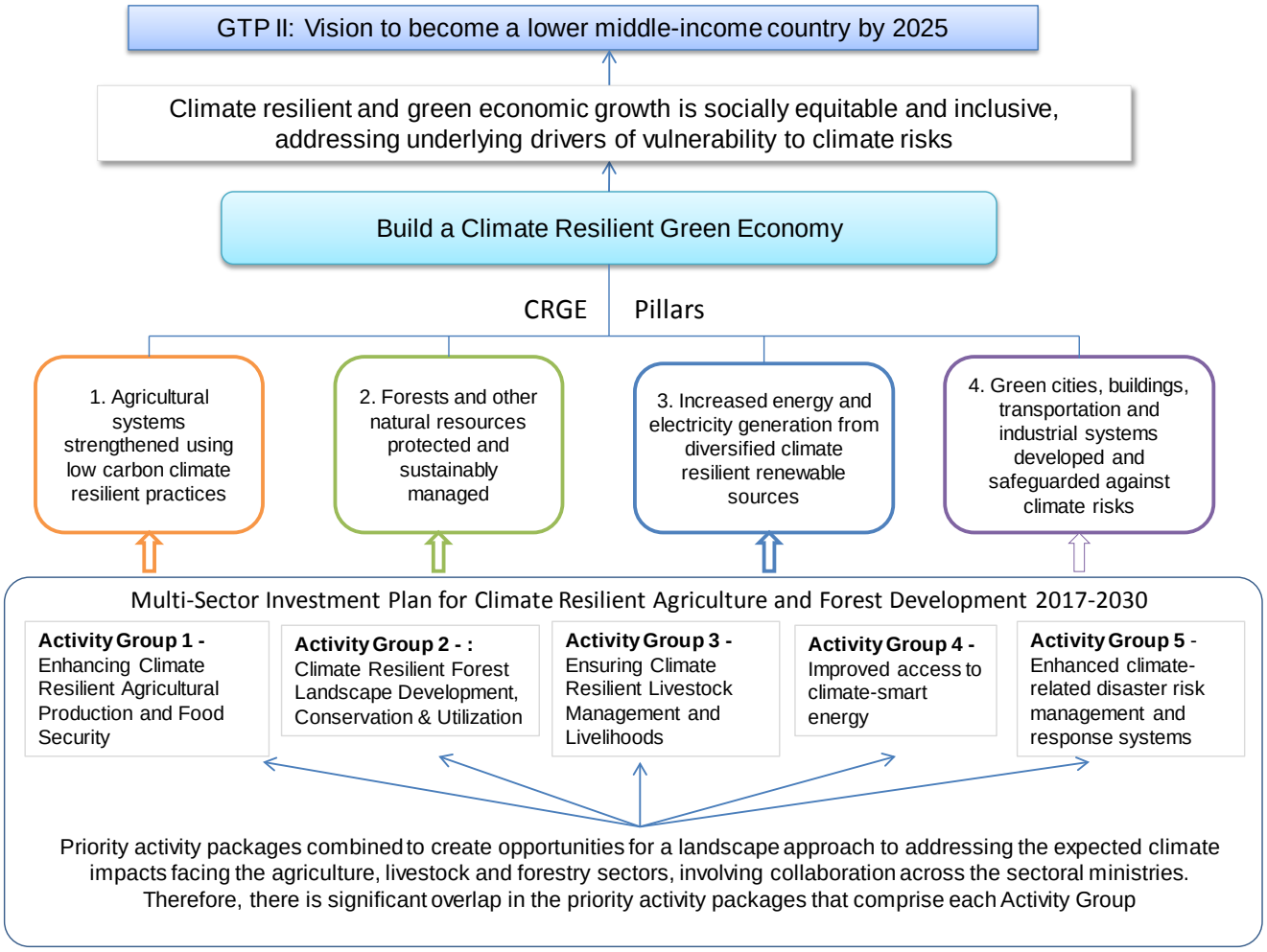
collect, analyze and apply climate information to decision-making	
Financing strategy:	
A portion of the estimated cost of this Activity Group may be met GoE co-financing. Note also that the activity package focused on de-risking the provision of livestock, agriculture and forest crop insurance is intended to leverage a significantly larger private sector contribution to resilience. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. The bilateral and multilateral funding institutions listed below either already support climate resilience livestock initiatives in Ethiopia, have publicly expressed interest in this thematic area within Ethiopia, or expressed interest in supporting some combination of the constituent Activity Packages:	
Multilateral Banks, Funds and Agencies:	• Adaptation Fund • African Development Bank • Climate Investment Funds – Pilot Program for Climate Resilience • Food and Agriculture Organization of the United Nations • Green Climate Fund • United Nations Development Program • The World Bank (IBRD / IDA)
Bilateral Funding Agencies:	• Austria Development Agency • DANIDA • EU Ethiopia Office • Kreditanstalt für Wiederaufbau (KfW) • Norwegian Agency for Development Cooperation (NORAD) • Switzerland Embassy • UK Department for International Development (DfID) • United States Agency for International Development (USAID

VIII. Monitoring and Evaluation

VIII.1 The Objective Hierarchy

The MSIP directly supports Ethiopia's targets articulated in its Climate Resilient Green Economy (CRGE) Strategy, Climate Resilience Strategy for Agriculture and Forest, Climate Resilience Strategy for Water and Energy, and related sectoral investment frameworks in pursuance of the GTP II transformational objective of reaching lower-middle income status by 2025. The CRGE is one of nine strategic pillars of the GTP II and contributes by supporting climate resilient and green economic growth that is socially equitable and inclusive, addressing underlying drivers of vulnerability to climate risks (Figure 32). As shown in Figure 32, the MSIP will directly support three of the CRGE Strategic Pillars and indirectly support the fourth by supporting the climate sensitive development of the rural-urban interface.

Figure 32: Objective Hierarchy for MSIP to contribute to the GTP II



Monitoring and evaluation under the MSIP is part of an ongoing effort to track national development and resilience progress. The objective hierarchy proposed here is based on the national Growth and Transformation Plan. The CRGE Facility will coordinate and support improvements needed in sector monitoring systems to respond to CRGE priorities. However, it will not be responsible for producing monitoring data. This is provided by existing investment projects, ongoing sector reports and annual surveys conducted by the Central Statistics Agency. Studies conducted by development research groups such as the EDRI will also be used to measure impact and explore learning priorities in relation to effective resilience investment. Investment is required to improve the quality of routine monitoring data and to ensure surveys and impact studies meet the requirements of the CRGE.

VIII.2 Integrated M&E System

The CRGE Facility has established a Monitoring and Evaluation (M&E) System that cascades national monitoring requirements into CRGE related investments. This can be aligned with the PPCR M&E results framework, as required (and as indicated in Table 9). The priority for the MSIP is a strong nationally led process to prepare and report

evidence. However, should PPCR resources become available, this will ensure consistency with PPCR M&E requirements within existing national monitoring, evaluation and reporting systems.

Table 9 provides a range of indicators that may be used to monitor and evaluate the MSIP. At the Goal level, both the CRGE and PPCR set out indicators for measuring the improvements in climate resilient development of people. At the outcome level, the MSIP will catalyze transformational change through mobilizing the investment to scale up existing practices and creating a step-change in the use of landscape-level cross-sectoral planning, implementation and monitoring and through this; the greater use of spatial, climate, hydrological and land use data and tools in cross-sectoral decision-making. This is consistent with PPCR transformational objectives, and will be measured by CRGE indicators with respect to:

- Integration of climate resilience into development planning.
- Increased capacity, knowledge and skills.

Ethiopia does not yet have an indicator for or data to track climate-responsive investment and private sector development. However, this is a strong component of the GTP II, and the MSIP may measure the number and value of investments (national and local government, non-government, private sector, etc.) for each type of climate resilient investments as this will contribute to the IEs GTP II reporting.

The result-level indicators will be monitored by the responsible implementing entities and reported through the FDRE M&E system as well as directly to project investors through the relevant sector-level management units or via the CRGE Facility depending on implementation arrangements. At the results level, several possible indicators may be selected by IEs depending on the final configuration of any activity group investment, as long as these are consistent with the FDRE M&E system requirements.

There is a lot of potential to use remote-sensed satellite imagery for monitoring progress. For this to be effective all investments across sectors would need to use the same spatial and mapping standards for reporting, starting with a set of common 'base maps' using agreed data sources. The National Spatial Data Infrastructure will provide the basis for this spatial monitoring platform.

VIII.3 Implementation of the M&E Framework

FDRE achievements in relation to CRGE will be monitored and reported on a regular basis using the indicators selected from the CRGE and GTP II Framework. The CRGE Facility will coordinate and support this process to encourage mainstreaming of CRGE-relevant indicators into the sectoral monitoring processes. In turn, the IEs must select relevant outcome-level indicators and ensure new investments contain appropriate resources to monitor these or explain how existing data collection exercises will allow monitoring.

Under the national monitoring system, the following process will be followed in ensuring appropriate indicators are reported via MSIP investments (as summarized in Box 5).

Box 5: Background on MSIP collaborating entities

Level-1: Woredas report on a quarterly and annual basis to regional sector bureaus. Where there are Executing Entities working with regional sector bureaus, they should also report in the same way. However, where Executing Entities (EEs) operate at the federal level, they report instead to federal Implementing Entities.

Level-2: Regional sector bureaus consolidate the quarterly and annual reports received from woredas and Executing Entities, and submit this to the respective federal Implementing Entity (IEs). This may take place through routine GTPII progress reporting or through investment/project specific processes. In the case of climate-focused investments, regional sector bureaus also send a copy of this collated report to regional CRGE focal points; these will be BOFED and Environment and Forest Bureau (names may differ from region to region).

Level-3: Federal Implementing Entities aggregate the reports received from Executing Entities and from regional sector bureaus into one report. This is used for investment/project specific processes or may be submitted to the CRGE Facility if they are playing the financial intermediary role. In both cases, the CRGE Facility must receive copies to aggregate reporting against key CRGE indicators for the Management Committee.

Level-4: The CRGE Facility presents quarterly reports to the CRGE Facility Management Committee for review and approval. This committee is used to further the process of mainstreaming climate action and climate data into ongoing sector action and progress reviews as well as resolve problems associated with climate finance investments.

Level-5: If the CRGE Facility acts as the program intermediary for any investments under MSIP, they will be responsible for sending the report to contributors, development partners and interested parties. Otherwise, they will produce regular reviews of climate-relevant results produced with FDRE data with the goal of promoting improved data quality and better sectoral decision making.

Annex 10 provides a Logical Framework. At the Activity Group level, proposed indicators have been included in the summaries for each Group, as documented in section VII. These have been aligned with the MSIP Logical Framework.

Table 9: The MSIP Results and Outcomes integrated with CRGE Indicators, compared to relevant PPCR Indicators

General Objective: To directly support Ethiopia's target of a climate resilient and green economy reaching lower-middle income status by 2025.			
CRGE Narrative	**CRGE Indicators**	**PPCR Results and Catalytic Outcomes**	**PPCR Indicators**
Goal: Resilience of households improved	• Change in climate vulnerability of rural communities • Strengthened adaptive capacity of rural communities and rural businesses	Improved quality of life of people living in areas most affected by climate variability and climate change	• Percent (%) of people classified as poor (women and men) and food insecure (women and men) in most affected regions • Change in Global Adaptation Index
Longer-term MSIP outcomes	**CRGE Indicators**	**PPCR Results and Catalytic Outcomes**	**PPCR Indicators**
Enhanced climate responsive and climate resilient development planning	• Evidence of strengthened government capacity to collect, analyze and apply climate information to planning and decision-making • Degree of integration/ mainstreaming of climate change in national and sector planning and coordination	Increased resilience in economic, social, and eco-systems to climate variability and climate change through transformed social and economic development	• Changes in budget allocations of all levels of government to take into account effects of climate variability and climate change across sectors and regions. • Degree to which development plans integrate climate resilience by subjecting planning to climate proofing and assessments of vulnerability (including gender) and including measures to better manage and reduce related risk.
Climate responsive investment opportunities		Scaled-up investments in climate resilience and their replication	• Number and value of investments (national and local government, non-government, private sector, etc.) in $ by type of climate resilient investments
Knowledge, skills and capacities: Strengthened government capacities to plan, resource and deliver green, climate resilient development results	• Extent to which sectors use improved tools, instruments, strategies and activities to respond to climate variability and climate change	Increased capacity to integrate climate resilience into country strategies	• Evidence of a functioning cross-sectoral mechanism that takes account of climate variability and climate change • Evidence of line ministries or functional agencies lead in updating or revising country strategies (country ownership)

Expected MSIP results	CRGE Indicators	PPCR Project/Program Results	PPCR Indicators
Activity Group 1 - Enhancing Climate Resilient Agricultural Production and Food Security	• (Change in) Rainfed crop area under sustainable, climate smart land management practices (ha) – by crop type (private holders only)	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc	• Change in percent change in availability of drought/salt-tolerant, certified seeds/crops
	• (Change in) crop land productivity where modern, climate smart and small-scale irrigation applied (quintal per hectare) for: Major food crops; High value crops		• Change in hectares of farms with sustainable access to irrigation and drinking water
	• (Change in) Total crop land under modern, climate smart irrigation systems (ha and %) by type: Medium and large-scale; Small-scale		
	• Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)		
Activity Group 2 - Climate Resilient Forest and Landscapes for Development, Conservation and utilization	• Total area (individual & communal) of land under sustainable, climate smart, land management plans	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority agricultural / water interventions, social safety nets, insurance schemes, etc	• Change in hectares (ha) of area in project/program area with management plan that integrate climate change considerations
	• Cumulative area of land covered with forest (ha), disaggregated by: Protected (%); Plantation (%), Under improved forest management systems (%) and reduced carbon emissions practices (%)		
	• Change in household fuelwood consumption		
	• Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)		

	• Area of land developed with community based watershed program		
	• Area of land rehabilitated		
Expected MSIP results	**CRGE Indicators**	**PPCR Project/Program Results**	**PPCR Indicators**
Activity Group 3 - Ensuring Climate Resilient Livestock Management and Livelihoods	• Productivity of communal pasture and rangeland (tons/ha) – feed / forage		
	• Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)		
Activity Group 4 - Improved access to climate-smart energy	• Annual energy savings: disaggregated by type of energy-saving measure	Increased capacity to withstand / recover from CC / CV effects in investment program/ project specific priority infrastructure	• Change in number of energy-related infrastructure integrating climate resilience features
	• Installed capacity renewable energy (type, GWh), including from solar, wind, geothermal and/or biomass		• Availability of tools to assess climate risks to power plants and other sources of energy
Activity Group 5: Enhanced climate-related disaster risk management and response systems	• Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems • Evidence of strengthened government capacity to collect, analyze and apply climate information to decision-making • Extent to which sectors use improved tools, instruments, strategies and activities to respond to climate variability and change • Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning system	Increased resilience in economic, social, and eco-systems to climate variability and climate change through transformed social and economic development	• Existence and effectiveness of early warning system for extreme climate events • Scope of social safety nets; • Existence of risk insurances; • Extent to which development decision making is made based on country-specific climate science, local climate knowledge (regional and eco-regional level), and (gender-sensitive) vulnerability studies • Coverage (comprehensiveness) of climate risk analysis and vulnerability assessments within the limits that current scientific evidence permits.

IX. Managing Risks for Sustainability

IX.1 Background

The MSIP will use existing FDRE and MDB risk management systems to effectively manage implementation, and associated political, social and environmental risks. This includes due attention to the following issues:

***Ensuring political support for MSIP through using participatory approaches at all stages*:** MSIP has been designed using participatory approaches, consulting stakeholders at all levels and bringing together FDRE and development partners. This approach will continue as activities are rolled out to sub-national levels of Government ensuring that, at each level, strong Government ownership is developed and key actors are engaged to ensure feasibility. Ultimately participatory planning with communities will build ownership and sustainability at the local level.

Using existing Operational Manuals and Public Financial Management Systems: The CRGE Facility Operational Manual contains clear guidance to ensure effective fund mobilization, allocation and management. Extensive capacity building support has been provided by the World Bank and other development partners to ensure Ethiopia's Financial Management Systems continue to improve. Consequently, the FDRE has experience in delivering billions of dollars of international development assistance per year. The MSIP will continue to build on this by using FDRE systems to deliver resilience finance but exploring the possibility for innovative financial mechanisms to create new public-private partnerships where possible.

Using best practices in Human Resource Management, Technical Assistance and Capacity Development: A key risk to sustainability is the high staff turnover in the Ethiopian civil service, which suffers from weak career and salary incentives, particularly when contrasted with market-level salaries provided to contracted staff. The MSIP will support the deployment of contracted staff and provide additional incentives for existing staff to enhance delivery prospects and promote sustainability. System improvements for human resources management within the civil service will also be essential to complement this.

Effectively Applying Social and Environmental Safeguards: Ethiopia has a robust legislative framework to ensure application of appropriate social and environmental safeguards. These are underpinned by the Constitution and include the Environmental Policy (1997), Environmental Impact Assessment Proclamation (299/2002), Environmental Pollution Control Proclamation (300/2002), Solid Waste Management Proclamation (513/2007), the Expropriation of Land Holdings for Public Purposes and Payment of Compensation Proclamation (455/2005) and (135/2007), Proclamation on Rural Land Administration and Land Use Proclamation on Research and Conservation of Cultural Heritage (209/2000). Ethiopia is also a signatory to several Multilateral Environmental Agreements and has experience in the application of the World Bank, the Global Environmental Facility, and the African Development Bank safeguards systems for specific project investments.

Effectively mobilizing and supporting CRGE Facility and Line Ministry Staff within dedicated units for social and environmental safeguards. The CRGE Facility has developed an Environmental and Social Safeguards Framework (ESSF). This draws on the World Bank's policies related to: Environmental Assessment, Indigenous Peoples, and Involuntary resettlement; the African Development Bank Integrated Safeguards System (ISS), including provisions for gender equality, climate risk management and civil society engagement; and the GEF safeguarding strategies related to natural habitats, pest management and the safety of dams. The ESSF documents a seven-step process applied to all new investments. This starts with screening projects, scoping and conducting environmental and social impact assessments as required, reviewing the assessment, making decisions about the future of the project and the required mitigation measures, monitoring and reporting on

their implementation and finally auditing completed projects as required. As well as the environmental requirements, the ESSF places a requirement on all projects to identify under-served and vulnerable peoples and develop appropriate measures to meet their specific requirements. A Resettlement Policy Framework is also available to guide CRGE initiatives requiring small scale resettlement (less than 200 people) and those with larger scale resettlement requirements.

Several of the proposed activities under MSIP present safeguarding risks stemming from possible changes of land use, introduction of new technologies, and generation of new waste streams. However, these risks will be effectively managed through implementation of the FDRE ESSF as well as associated World Bank procedures. Ongoing World Bank support to the FDRE's safeguards and risk management system will also be used with any grants awarded under the MSIP incorporating specialist safeguards support. This will complement other Bank-supported activities in the same area, such as the similar safeguards component of the Enhancing Shared Prosperity through Equitable Services (ESPES)/Promoting Basic Services (PBS) project, and ongoing safeguards training provided to MoFEC's CRGE Facility (dedicated climate fund).

Social mobilization will be a key feature of community based activities and grievance redress systems and mechanisms will be put in place where needed. FDRE has a long experience of social mobilization and can also draw on successful NGO pilots in participatory land use management to deliver MSIP. It has managed grievance redress systems in the context of large World Bank managed programmes and been subject to international due diligence on safeguarding implementation. Continued improvement of such systems will be supported through the MSIP investment projects.

MSIP is intended to support resource mobilization for the delivery of inclusive resilience building activities. Detailed feasibility work will be undertaken prior to the implementation of activity packages. This will allow the phased delivery of activities as soon as sufficient resources are available for a particular group of activity packages. Resource mobilization must ensure sufficient funds are available for required capacity development and technical assistance activities, and to mitigate any project risks or adverse environmental and social impacts identified during feasibility assessments.

IX.2 Risk Assessment

The MSIP risk assessment differentiates between numerous risk types. The overall summary of risks is available in Table 10 with an explanation of these risk ratings in the subsequent text.

Table 10: MSIP Risk Rating Summary

Risk categories	Rating
1. Political and governance	High
2. Macroeconomic	Moderate
3. Regulatory Risks: Sector strategies and policies	Substantial
4. Technical design and program development risks	Substantial
5. Operational risks: Institutional capacity for implementation and sustainability	High
6. Operational risks: Fiduciary	Moderate
7. Environment and social	High

8. Stakeholders	Substantial
9. Outcome Risks	Moderate
10. Other	-
Overall	High

The MSIP's overall risk is rated *high,* but effective application of mitigation measures described in section IX.1 and in more detail in section IX.3 can mitigate these risks. Risk mitigation measures seek to manage and eliminate preventable risks, whilst monitoring external risks to ensure MSIP implementation can respond to changing circumstances and maximize its impact on climate resilient and inclusive growth in Ethiopia.

IX.3 Summary of key risks and mitigation measures

IX.3.1 Political and Governance *(High risk)*

Governance arrangements for inter-sectoral coordination could be insufficient

Ethiopia does not have extensive experience of implementing cross-sector investments. Conflict between sectors on the use of land or water or inadequate collaboration in the development of land use plans could threaten the achievement of MSIP objectives. Mitigation measures include the development of a robust multi-sector implementation approach. This will build on FDRE's existing capacity, including the inter-ministerial Management Committee of the CRGE Facility and the National Planning Council. The NPC brings together sector ministries with Regional Leaders and this forum can be used to ensure inter-sectoral arrangements for cross-sectoral coordination are replicated at Regional Levels. Furthermore, it is envisaged that sufficient resources would be mobilized under MSIP to incentivize the creation of woreda level groups for planning and implementation as was done under the recent CRGE Facility Fast Track Initiative.

Political instability prevents implementation or results in reputational damage

In October 2016, FDRE declared a six-month State of Emergency as a result of widespread disturbances and protests, which were particularly concentrated in Oromia and Amhara Regions and included destruction of government and private investor's property. The situation has since stabilized, but local grievances regarding broad governance issues, land use and land conversions remain. This situation is in part a legacy issue that requires a political resolution by the FDRE, and which the World Bank is unable to influence via MSIP. The disturbances were not related directly to forest, agriculture, energy or water issues and therefore are outside the scope or influence of MSIP. However, they pose both implementation and reputational risks.

Risks to implementation include security concerns, limitations on access to communities and unavailability of key FDRE implementation staff. The situation will be monitored and mitigated through (i) carefully planned missions that take security into account, (ii) implementing sound safeguards monitoring, (iii) effective communications and outreach, and (iv) enhanced transparency in project-supported activities.

Risks to reputation may occur from false associations. For example, if actors misunderstand the nature of the MSIP and allege that it is responsible for financing activities that lead to protests or underlying complaints. Key mitigating measures include: a) implementation of a proactive communication strategy to clarify what the operation does and does not finance, and articulate MSIP and the WB's distance from the causes of the protests, should they re-emerge; (b) MSIP's participatory approach to land use, forest and land management will benefit affected communities and help reduce residual reputational risks to the Bank; (c) extensive local consultations

and the inclusion of dedicated activities to strengthen the FDRE's safeguards system to promote inclusiveness and sustainability should be a key design principle of investments under MSIP.

IX.3.2 Macro-economic risk (moderate risk)

MSIP assumes Ethiopia's growth trajectory will continue as projected. However, slower growth in the off-farm and industrial sectors could result in increased pressure on land-use and inhibit MSIP delivery.

Ethiopia's overarching macro-economic policy focuses on structural transformation including massive growth in the industrial sector, creating jobs and creating space for land consolidation and more productive land uses. This will happen over a long timescale and slower progress during the GTPII period is unlikely to pose an operational risk to the MSIP. However, ultimately climate resilience will be harder to achieve without some transition to less weather-dependent sectors. World Bank engagement with FDRE via the *Country Environmental Analysis (CEA)* process and in wider macro-economic dialogue will mitigate this risk to the extent possible.

IX.3.3 Regulatory Risks: Sector Policies and Strategies (substantial risk)

Necessary improvements to policy and regulations are not introduced or successfully implemented

The MSIP has proposed numerous areas where regulatory reform is needed to create an enabling environment for resilience building. These reforms cut across four sector line ministries and one national commission and are ambitious in scope, requiring substantial FDRE capacity and political will. The MSIP will be supported by ongoing donor-Government dialogue through the Development Assistance Group and its sector working groups, as well as the option to provide technical assistance and capacity building components within investment projects under MSIP. The World Bank will also work with other providers of technical assistance (GGGI, USAID, DFID) to ensure that FDRE personnel receive sufficient support to design and implement new regulatory arrangements

Private sector investors do not respond to new incentives

Currently, private sector aversion to risk is high, the country suffers from some restrictions on international investment and the domestic private sector is less developed than other countries in the region. However, there is an improving infrastructure, a number of incentives in the investment policy and low costs of labor and electricity which can attract investment and help make Ethiopia competitive in export markets. The MSIP has recommended a series of regulatory incentives, public-private sector dialogues and complementary private investments to help address this. However, there is still a risk that private sector will be crowded out due to FDRE's strong role in resilience sectors. This will be managed through strong dialogue and through the creation of appropriate financial instruments to attract private sector and develop sound frameworks for public-private partnerships.

Weak land tenure at the individual and community levels inhibits investment in land-based enterprises

Communities and landholders still face a perception of land tenure insecurity in Ethiopia. This is particularly important in forested areas and rangelands, since individual land certificates are not issued. Although participatory forest or rangeland management can go some way to mitigate this risk, FDRE is also planning legal reforms to improve the community tenure arrangements but it may take time for these to be implemented at local level. In rangeland areas, weaker Government capacity and competing claims to rangeland may inhibit progress. MSIP will actively seek to mitigate these risks through support to macro land and water use planning and the implementation of participatory land management planning at multiple levels. Lessons from FDRE and NGO experiences in implementing rangeland and forest management plans will also be used to strengthen capacity in this area.

IX.3.4 Technical Design and Program Development Risks (substantial risk)

More detailed water and natural resource assessments may reveal finite limits requiring trade-offs and limiting progress for some activities.

FDRE's development plans, reflected in MSIP are extremely ambitious and suggest a four-fold productivity increase from Ethiopia's rural landscapes. Detailed and spatially explicit feasibility studies for MSIP activities have not yet been undertaken. This is an activity under MSIP and will result in the development of specific investment projects which will contain their own nested risk assessments. However, it is possible that there will be insufficient resources for all sectors to achieve all their growth objectives in all locations. Water or land availability may be a constraint to growth in commercial agriculture, forest plantation establishment or renewable energy development. MSIP will allow the best possible decision-making in the event of such trade-offs by improving data availability and creating multi-sector fora for decision-making. Nevertheless, continued efforts to improve transparency and to commit to partnership and dialogue with international partners will also support the effective management of such trade-offs and can minimize minimum operational or reputational risk to the World Bank and the FDRE.

Not all private sector and civil society implementing partners have been identified.

Since MSIP is an overarching investment framework and not a detailed investment project, FDRE has not yet identified all the private sector and CSO partners which will be expected to participate in MSIP implementation. There is therefore a risk that appropriate partners will not be available or willing to contribute. However, MSIP can mitigate this risk by building on existing forums for public-private dialogue and using existing coordination arrangements that regulate civil society activity in the country. The FDRE Charities and Societies Agency will be responsible for regulating NGO contributions to the MSIP and all NGOs will be expected to negotiate agreements with FDRE at Regional and National level before beginning implementation. For funds channeled through the CRGE Facility, the national climate finance facility, further arrangements are in place to ensure NGO contributions are managed through Sector Line Ministries. It is therefore expected that sectors will also play a key role in identifying the most appropriate technical areas where CSOs can cost-effectively add value to FDRE capacity. Suggestions are also included in each Activity Group in the MSIP. Historically FDRE has a strong record of effectively engaging with a range of development partners, including private sector and CSOs.

IX. 3.5 Operational risks: Institutional capacity for implementation and sustainability

Inadequate operational capacity within Government to implement the proposed activities and high staff turnover limits capacity development efforts.

The MSIP has identified several capacity limitations that currently constrain improvements in resilience in the country – these cover all sectors and technical areas. However, MSIP has been designed to address such limitations. It will embed support to system building and mobilize additional human and financial resources as part of its implementation. Appropriate priority must be given to this during implementation design, with consideration of the resources and working conditions most likely to support the retention of staff given consideration. It is possible that capacity limitations at local levels could cause implementation delays if they are not effectively managed. Support from other service providers may be helpful in filling capacity gaps.

Monitoring and reporting capacity may be insufficient for accountability and learning, inhibiting resource mobilization and adaptive management.

The MSIP will only continue to leverage financial resources if it is able to demonstrate its results and provide strong evidence of its efficiency and effectiveness. Some of its work will be innovative and will require in-built learning to continuously adapt to changing contexts and emerging lessons. Investment in data gathering and in

strengthening the capacity for monitoring, evaluation and learning is therefore essential for successful implementation. Prior experience suggests there are insufficient numbers of trained staff able to complete monitoring and evaluation tasks to a donor-compliant standard, particularly in some reasons. There is a need for greater attention to the maintenance of records. This can be mitigated through the provision of technical assistance for monitoring and evaluation alongside MSIP investment projects.[86]

IX 3.6 Operational risks: Fiduciary (High)

FDRE must mobilize sufficient financial resources to implement the MSIP

MSIP is an investment framework and whilst it contains a financial mobilization strategy, this will need to be successfully implemented as the FDRE does not currently have committed resources to meet the financing gap outlined in the MSIP. However, this is considered a manageable risk as the CRGE Facility exists to mobilize and allocate available resources and, via the MSIP process, has begun a process of stakeholder engagement for resource mobilization. It is proposed that detailed feasibility studies set out more detailed geographic priorities for specific Activity Packages and that FDRE then only launches implementation once sufficient resources are available for integrated implementation in a particular area.

Weak application of procurement systems limit or delay the availability of key resources

Both the CRGE Facility and the World Bank have experience of supporting Sector Line Ministries and Regions with procurement planning and implementation. However, there are limitations at sectoral and regional level where a lack of qualified procurement staff has caused delays and quality issues. There are also wider procurement issues such as the shortage of foreign exchange for imported goods. These risks will be monitored closely and continual training and close implementation support will be needed to ensure these do not impair the achievement of MSIP objectives.

IX 3.7 Environment and social (Substantial risk)

Social or environmental safeguards are insufficient or poorly applied

MSIP will work in a changing and fragile environment with complex social relationships and will likely face social concerns from undeserved and vulnerable groups in its intervention areas. This is compounded by: (a) inadequate understanding of relevant social issues, and (b) weak capacity and expertise within the government structures to deal with both social and environmental risks to properly implement and document safeguards instruments. The risk mitigation measures will rely on carefully designed safeguards management plans and capacity-building measures to strengthen the implementation capacity of the implementing agency. The CRGE Facility has developed an Environmental and Social Sustainability Framework (ESSF) which is compliant with World Bank and AfDB requirements. Safeguards Specialists have also been recruited in both MEFCC and MoFEC, and there is an ongoing collaboration with the World Bank to build capacity at all levels.[87] Legislation mandates the completion of assessments but they are not routinely applied and impact assessments are not publicly available. MSIP will ensure that all feasibility work for MSIP investments complete environmental and social impact assessments in line with these procedures and any risks are appropriately addressed in collaboration with the FDRE. Additional technical assistance or safeguards support should be embedded in implementation projects. If safeguards implementation is solely the responsibility of FDRE without external oversight it will be hard to assure risks are minimized.

[86] Ibid.

[87] LTS (2016b) Review of Climate High Level Investment Programme. Report submitted to DFID.

IX 3.8 Stakeholder-related risks (substantial risk)

If MSIP targeting is not transparent and benefits are not equitably distributed, there is a risk of conflict. Not all households in a given area may benefit equally from MSIP support. Evidence from community consultations suggest the potential for conflict if benefits are seen to be distributed unfairly. Transparent and fair process are particularly important given the continued risk of civil disturbances. It is therefore suggested that detailed project planning should draw on lessons from existing interventions and use clear targeting guidance. Such guidance must prioritize transparency and equity and include strong communication measures to mobilize and inform local communities, strengthen consultation/participatory development models, and enhance transparency in project-supported activities and safeguard implementation. Sufficient resources must be made available to train local level implementing staff in the implementation of such guidelines and their application must also be continually monitored with course corrections rapidly applied. Capacity for the management of complaints and feedback mechanisms will also be strengthened.

IX 3.9 Outcome Risks (moderate risk)

Resilience outcomes from proposed approaches do not materialize or do not reach the most vulnerable Ethiopians

Whilst MSIP has largely selected interventions where there is already evidence of their efficacy from Ethiopian pilots or from other contexts, there remains a risk that not all projected benefits will materialize due to potential conflicts with other land uses, elite capture, political disturbance or broader macro-economic conditions. To ensure efficacy, MSIP will continue to improve data availability, both from routine monitoring and via specially commissioned impact assessments to understand how these activities can best deliver resilience in the Ethiopian context. Such data will identify quickly whether interventions are proceeding as planned and allow appropriate course correction. Decision makers at all levels will be trained to use data appropriately for adaptive management. Ethiopia has committed itself to an inclusive and broad-based growth trajectory, it also has proven capability to deliver programmes that target and meet the needs of vulnerable groups – for example the Productive Safety Net Programme (PSNP). Whilst all targeting approaches have limitations, joint Government-donor dialogue and effective use of complaints and grievance mechanisms have mitigated some of these risks in other programmes and would continue to be applied and strengthened in MSIP. Overall, the risk to Ethiopia of not implementing the MSIP is ultimately the most significant. Without measures to build climate resilience, Ethiopia will experience GDP losses as a result of climatic changes and the food security and livelihoods of rural communities will suffer.

IX.3 The Critical Role of Coordination

The MSIP requires FDRE to deliver at scale and to adopt new ways of cross-sectoral working to improve the quality of results delivered. This will require substantial investment in building coordination capacity, especially at sub-national levels. The cross-sectoral approach proposed by MSIP requires new data, increased capacity to analyze and use this data, and continuously improving skills and relationships for decision making. This will need to be supported by strong management and a more transparent and learning-focused approach to results measurement and monitoring. Such capacities need to be developed at all levels of Government, including within meso-level coordination groups such as River Basin Authorities and in dialogue with external bodies such as through public-private partnerships.

The CRGE Facility anticipates playing a key role in the "recipient executed" aspects of the MSIP. Through existing FDRE financial management and coordination systems, MOFEC will hold the relevant line ministries and

commissions accountable for the delivery of "recipient executed" activities under MSIP. It is likely that the recruitment of dedicated personnel to lead on the delivery of MSIP activities will be a core part of the FDRE approach but it will ensure these personnel are paired with existing Government staff to promote skill transfer and sustainability.

The CRGE Facility has substantial capacity for fund mobilization and management, and both MoANR and MoWIE already manage large, multi-donor programs. However, MSIP must build further capacity within FDRE systems for effective delivery, monitoring and reporting. To do this, it should utilize existing fora for donor-Government policy dialogue. FDRE has invested in the CRGE Facility, substantially expanding its personnel and using seconded staff provided by Development Partners to train staff and embed systems. This Facility can also work closely with Sectors to strengthen their ability to deliver climate finance. MSIP will continue to support these efforts by providing opportunities to use CRGE Facility systems and strengthen staff capacity in sectors through recruitment, training and technical assistance. Political incentives within Sectors and Regions are also extremely important to the creation of functional systems. Use of the Inter-ministerial Steering Group, the National Planning Council and existing FDRE-Development Partner dialogue will help push for regulatory reform and for sufficient priority to be given to MSIP objectives.

Delivery and inter-sectoral coordination capacity at regional and sub-national level varies considerably. Federal Government's use of political levers to influence this may also vary. This may require different delivery mechanisms to ensure quality is not compromised. To ensure high value for money of all funds invested, sufficient attention needs to be given to Emerging Regions where FDRE capacity for high quality delivery is weaker. In some Regions, it may also not be possible to influence the political incentives that are required for system improvements over the lifetime of this investment. Options to build capacity within the system may need to be paired with greater investment in functional capacity of more independent project delivery units but this should be investigated in more detail during the feasibility assessment for specific project investments.

The MSIP can benefit from well-equipped delivery systems for existing major multi-donor programs such as the Agricultural Growth Programme, Productive Safety Net Programme, Sustainable Land Management Programme, Oromia Forested Landscape Programme and One Wash initiative. Work with USAID-led initiatives such as the Land Administration to Nurture Development (LAND) and the Program for Pastoralist Resilience Improvement and Market Expansion (PRIME) could also be considered. Such programs are already making capacity development investments and are supported by a well-established Government-Donor coordination mechanism that supports the utilization of monitoring data, adaptive management of the program delivery and coordination with components delivered by non-governmental entities. For example, Working Groups for Rural Economic Development and Food Security (RED&FS SWG), Water and Private Sector Development and Trade provide Government-Donor coordination platforms relevant to MSIP. These groups promote continuous improvement in the delivery of flagship multi-donor programs and enable policy dialogue, including in relation to climate resilience themes. These Sector Working Groups can support the leveraging of investments in existing programs to support the MSIP as well as mobilization of additional climate finance, which can then be managed either by the CRGE Facility or through the existing sector-led approaches.

Decisions about institutional arrangements for delivery must be made once funding sources have been identified and detailed feasibility work undertaken. However, these should ensure maximum FDRE ownership and leadership, and contribute to lasting delivery capacity within Government systems. This MSIP does not propose arrangements for project level funding, but assumes that detailed investment planning will take place once funding sources for specific Activity Groups are identified. Given existing capacity within FDRE systems and the importance of continuing to build and sustain that capacity, delivery arrangements which prioritize the

strengthening of Government systems are considered paramount. Different investors have different risk tolerance and varied appetite for what proportion of their investment should be spent on direct delivery of results rather than on long-term systems building. Investment into existing mechanisms may be an efficient way to deliver results but may offer less scope for innovation, problem-solving or building systems which lie outside of those programs. The CRGE Facility must play a key role in negotiating with donors to ensure that MSIP investments meet priority investment needs.

X. Financing Plan and Instruments

X.1 Summary of Costs Associated with Activity Packages and Activity Groups

Cost estimates for the Activity Groups have been derived based on an analysis of similar interventions undertaken in Ethiopia and other countries, and scaled to address the regional or national climate challenges facing the country, designed to ensure they can support Ethiopia's transformational objectives under GTP II. This is a bottom-up approach to identifying the climate resilience investment gap, and provides an alternate approach to the "top-down" financial gap analysis described in Section IV.3.

As described in Section VII, the five Activity Groups combine prioritized Activity Packages to address the spatial and thematic gaps identified through the Portfolio Review and Gap Analysis. The Activity Groups represent a programmatic, landscape approach to ensuring climate resilience, and emphasize the benefits of cross sectoral collaboration between sector Ministries to maximize impacts at the national, regional and woreda level. Investment in these cross-sectoral responses will require implementation at a landscape scale, necessitating multi-stakeholder coordination in spatial land-use planning which requires using climate, hydrological and land use data in cross-sectoral decision-making.

Many of the climate resilience activities covered by the MSIP reflect established national priorities and are already being supported by existing projects and programs. At present, however, more than 50% of priority Activity Packages are supported only at pilot stage or need to be scaled up to fully address the resilience challenges faced. In other cases, there are critical gaps that would significantly increase the effectiveness of ongoing initiatives, for example via improving agriculture related weather forecasting and information services. The MSIP creates the opportunity for substantially scaling these up.

Table 11 summarizes the estimated cost of the Activity Packages associated with each of the five, climate resilience-focused Activity Groups.[88]

Table 11: Summary of Activity Group Costings

Title	Main Components	Est. overall cost (USD)
Activity Group 1 - Enhancing Climate Resilience in Agriculture	1. Climate smart and gender sensitive agricultural support services	$5,992 million

[88] See Annex 9 for more detailed costing information.

Title	Main Components	Est. overall cost (USD)
	2. Reduced vulnerability to rainfall variability and water supply uncertainty 3. Increased resilience through crop productivity improvements and more equal intra-household relationships 4. Increased resilience through income diversification	
Activity Group 2 – Climate Resilient Forest and Landscapes for Development, Conservation and Utilization	1. Enhanced climate resilience through expansion of forest resources, effective joint management, more inclusive benefit sharing, and sustainable utilization 2. Reduced pressure on forests from extensive agriculture 3. Reduced pressure on forests from fuelwood collection 4. Reduced pressure on forests from livestock activities 5. Enhanced resilience through livelihood diversification	$5,414 million
Activity Group 3 – Ensuring Climate Resilient Livestock Management and Livelihoods	1. Climate smart and gender sensitive extension services 2. Enhanced resilience through reduced livestock vulnerability and diversification 3. Reduced environmental impact of livestock production	$2,628 million
Activity Group 4 – Increased Resilience through Affordable Access to Climate Smart Energy	1. Reduced reliance on fuelwood and charcoal for thermal energy 2. Improved access to low-emissions electricity	$654 million
Activity Group 5 – Enhanced Climate-Resilient Disaster Risk Management and Early Warning Systems	1. Enhancing prevention, mitigation and preparedness activities, including through improved drought and flood risk assessment and early warning systems 2. Increased resilience through coordinated food and non-food responses 3. Enhanced adoption of post-disaster risk reduction and resilience approaches	$107 million

Many key Activity Packages contribute to the resilience goals of more than one Activity Group, therefore any attempt to add the costs of the Activity Groups would overestimate the cost of these cross-sectoral resilience measures. For example, improved livestock management practices (Activity Package 16) has an indicative cost of $545 million USD. This Activity Package is included in costings for Activity Groups 2 and 3 due to this measure's contribution to conservation of forests and landscapes and to improved livelihoods in the livestock sector.

If each Activity Package is counted only once, the total cost of the priority climate resilience measures is estimated at $11.85 billion. However, this can be considered an over-estimate of the need because some of the activities will produce other co-benefits (e.g., crop productivity, household energy, infrastructure) that go beyond core climate resilience needs. Further, there will be some synergies among activity packages in different sectors. For example, upstream landscape management activities will lower costs and increase the resilience of

water supply and management structures. Similarly, improving agriculture, livestock and forest management and related livelihoods can improve people's ability to mitigate and cope with drought and flood risks without costlier reliance on disaster risk response.

If these over-estimates and synergies account for 20% to 30% of the costs, then the climate resilience need would be in the range of $8.3 billion – $9.5 billion USD.

Further subtracting the estimated $1.85 billion USD that is already being invested in climate resilience, as described in Section IV.3 from this figure yields an unmet climate resilience need in the range of $6.5 billion - $7.7 billion USD.

Thus, given the caveats and assumptions, the two estimation approaches (high-level aggregates from Section IV.3 and bottom-up cost estimates from this Section) yield figures in the same range of $6-8 billion USD.

X.2 Mapping of Priority Investments to Possible Funding Sources

There are over 20 multilateral and bilateral institutions including development banks, funds and assistance agencies that currently support agriculture, forest and livestock resilience activities in Ethiopia, or else have publicly indicated an interest in supporting these activities. A review of these agencies has identified:

- 20 funders that could potentially support components of Activity Group 1;
- 13 funders that could potentially support components of Activity Group 2;
- 13 funders that could potentially support components of Activity Group 3;
- 14 funders that could potentially support components of Activity Group 4; and
- 15 funders that could potentially support components of Activity Group 5;

The amount of financial support that each provides ranges from technical assistance grants of less than $1 million to programmatic investments of well over $1 billion for agriculture, land management, watersheds, safety nets, tenure, livestock and forest. Funding support comprises a mixture of in-kind assistance, grants, concessional loans and equity investment. Note that these figures do not include private sector and / or IFC investments. Public / private partnerships have the potential to unlock and leverage public financing, both domestic and international. However, detailed information on large-scale private sector investment in agriculture, forest and livestock were not available for this analysis.

The potential funding available through these institutions, coupled with end user contributions and GoE co-financing, would be sufficient to meet the incremental investment requirement of the Activity Groups. While some funding sources may be capable of fully funding an Activity Group, there may be advantages to combining funding from several potential sources to better match the programmatic focus, time horizon and administrative requirements with needs at the woreda, regional or national level. A preliminary framework to help match funding sources to investment priorities has been provided in Annex 11.

The GoE expects to use the MSIP analysis, prioritization and consensus building as the base for developing specific investment projects with finance blended from multiple sources in the coming months. Sources for this financing include the multi-lateral development banks, bilateral development partners, and a range of international climate finance funds and mechanisms, notably the Green Climate Fund. It is expected that this strategic and prioritized approach will yield tangible results in terms of scaled up financing within a few years. If the Climate Investment Funds and the PPCR gain access to additional financing for investment of country level investment plans, Ethiopia expects that the funding requests outlined below can be considered. Specific project concepts and proposals will be developed at the next stage of seeking financing from specific multilateral and bilateral funds, including the PPCR if funding becomes available. As a direct result of the MSIP process:

- With AfDB, the GoE is preparing a Ethiopia's Cook Stove Situation Analysis for PPCR Investment Opportunity (US$ 1 million) which derives from the analyses and consultations under the MSIP process. There is a request for project preparation funds of US$ 0.5 million. AfDB will request MPIS funds.
- With the World Bank, the GoE is preparing a Resilient Landscapes and Livelihoods operation ($100m IDA) to be delivered in mid-2018. This project is being designed based on inputs from the MSIP process and will seek to leverage financing from the PPCR (requesting US$ 48.5, if funds are available), GCF and bilateral donors, though the final amounts are not yet determined. The World Bank is not requesting MPIS funds.

XI. Essential Learning from the MSIP Process

XI.1 The Value of the MSIP Process

The MSIP was established to address particularly the climate resilience needs of the forest and agriculture sectors, taking account of activities in the water, energy and livestock sectors. While this document focuses on work specific to these sectors, it was recognized at the early stages that the "product is the process", and the process could be applied equally to other sectors in the country, and indeed in other countries tackling risks caused by climate change. The MSIP can therefore add further value through lesson learning and dissemination.

The MSIP process has featured two core approaches to the preparation of credible climate financing proposals, namely: (i) centering on an inclusive and consultative process with numerous DPs and other stakeholders; and (ii) largely building on and incorporating all major strategies, programs, projects and analytics for Ethiopia. The two approaches are somewhat mutually reinforcing; without the high level of participation and inclusiveness, it will be difficult for the analysis and conclusions to fully and properly reflect the strategic priorities of Ethiopia. The combination of these two approaches is essential to generating the buy-in and commitment of the most influential and concerned stakeholders.

In themselves, these two approaches are not new to development or unique to climate change programs. Participation and ownership have for some time been understood as essential to effective process of technical assistance and change management. They have perhaps been even more important than might otherwise be the case, given that the MSIP process aims to leverage and create a multiplier effect in scaling up investment and action through 2030 using new and additional financing from multiple sources to support Ethiopia to achieve its climate resilience objectives. This requires a high level of clarity on the current state of play as well as the case for change, and one that is unlikely to emerge from a more traditional (or "expert") approach to programming, where the essential realities and interests of the country unfortunately can get overlooked.

As highlighted elsewhere in the MSIP, the three essential components of the process have been preparation, consultation and participation. Lessons learned in the context of each one are worth consideration.

XI.2 The Value of Preparatory Work

Preparation has been a continual element of the MSIP process. In many ways, the extensive strategic planning and institutional adaptation pursued by GoE to tackle climate resilience provided the strong foundation for the work. Without this, the consultation and participation would have been harder to facilitate, as it would have lacked both an organizing framework and material data.

In the context of the MSIP itself, the first Joint Scoping Mission, conducted in February 2016, represented the foundation point for the work and engaged with over 40 different entities intensively in investment and policy dialogue. The second mission brought in regional actors to deepen the dialogue. This provided the important base of understanding for stakeholders, which could continually be referenced to guide on-going work and

ensure consistency. The creation of an early "zero draft" of the MSIP document provided a line of sight for participants, establishing a framework under which the process could inform the product.

Thus, preparation was essential to the effectiveness and efficiency of the process, and hence the robustness of the product. As usually the case, hindsight provides lessons on how preparation could have been strengthened. The main ones relate to the elements of consultation and participation, as described below.

XI.3 The Value of Consultation

Consultation has been the bedrock of the MSIP, this document incorporating data and information collected from, and analysis and conclusions that have been jointly reviewed and refined with, stakeholders. While external parties have helped develop the MSIP their role has been to sustain rather than substitute for such consultations. The consultants engaged in the latter part of the MSIP preparation were required to add capacity in data collection, analysis and reporting, while ensuring that stakeholders remained the owners of the process.

The involvement of the consultants on this basis was enabled by the preparatory work that had gone before. There was a clear starting point that limited the risk of either duplication or digression of work. Regular consultations between the consultants and the Core MSIP team ensured that this remained the case.

While consultation was essential to the MSIP, it should always be recognized that this comes at a cost. Extensive and inclusive consultations such as those that have been practiced inevitably take time. The submission of the MSIP to the PPCR will be almost two years after Ethiopia was selected to participate in the PPCR. For some, this might seem too long, particularly in a context where there is an understandable sense of urgency driving resource mobilization to support the CRGE initiative.

Ensuring such urgency does not overtake the consultative process is essential. The end-product can only derive from full consultations around each step of the process, if it is to be robust and owned by those that will take it forward. The lesson is that there must be, from the outset, a strongly shared vision of the nature and value of - the end-product, so that any urge for short-term progress can be overcome.

This lends emphasis to the vital role of thorough preparation, as it is this that will help create the shared vision. While acknowledging the effort that had gone into early preparation, the consultants observed some inconsistencies in stakeholder understanding of the purpose of the MSIP. Such inconsistencies did not prevent the work from going forward, but did at times slow the process down. Totally removing divergence of understanding is extremely difficult, particularly when involving many people with differing interests. Nevertheless, the critical lesson is that substantial time must be spent communicating the vision, ensuring that stakeholders really do share an understanding and thus are able to contribute fully to the consultative process.

XI.4 The Importance of Participation

Participation is essential if consultation is to be effective. To work the fullest extent, participation must be inclusive and engaged.

The essence of the MSIP is that it takes a multi-sectoral approach and melds together the interests of the different groups that can contribute to and will likely be affected by the MSIP. The importance of involving the different sectors, as well as the donors and potential executing agencies, was recognized at the outset, the formation of the Core MSIP Team being instrumental in bringing them together in constructive dialogue. The inclusiveness of the participation is indicated by the recording of over 230 contributors to the MSIP process (see Annex 5 for more details).

For participants to be engaged the opportunity to contribute is necessary but not sufficient; for real engagement to occur people must feel that their input can make a difference, and will be considered as seriously as those of other stakeholders. Key to this has been both the openness of the consultative process and transparency achieved through the regular updating and sharing of information. Outputs have resulted from each step in the process, and it is possible to see from these how consultations have influenced the development of the MSIP. This seems to have encouraged continual and constructive participation.

Effective (engaged) participation also requires continuity, otherwise progression is difficult to achieve. The records of stakeholder participation (see Annex 5) reveal that there were many individuals that participated in only one or two steps, and few outside the Bank that have been involved in all, which implies lack of continuity. Participating organizations might counter this by ensuring that, even if different people are involved, they have all been fully briefed and thus have the necessary shared understanding. While in theory this is possible, the observation of the consultants was that such briefing had not always adequately taken place, with some participants at workshops seeming to have limited understanding of previous steps. This slowed down progress and reduced the value of the consultations. Given demands on participant time, safeguarding against this lack of continuity is always difficult. However, it is important to address this as much as possible, including by making the organizations involved understand that they are accountable for the ability of the individuals that represent them to properly engage in – and therefore for the success of – the process.

If this continuity in organizational engagement can be achieved, then in fact there are benefits of inclusivity from involving a larger number of people. The more people that participate in the preparations and consultations, the broader the base of understanding of and, potentially, buy-in to the MSIP. In this way, the MSIP process can achieve one of its aims, by boosting GoE's capacity for cost-effective and efficient scaled-up action on the ground.

In taking the MSIP forward it should be noted that there has been limited participation of the private sector, and none of the communities intended to benefit from investments in climate resilience. The latter seems appropriate, as community involvement will be more constructive when considering the design of specific projects developed under the MSIP. The lack of engagement of the private sector is potentially more problematic, given how important their contribution will be to some investment areas. The lack of participation of this group probably reflects its current low levels of investment in activities that contribute to climate resilience in natural resources in Ethiopia, and will need to be addressed as the MSIP is used to mobilize necessary resources, some of which must come from the private sector.

Multi-Sector Investment Plan for Climate Resilient Agriculture and Forest Development 2017-2030

ANNEXES TO THE FINAL DRAFT

2 May 2017

Contents

Annex 1: GLOSSARY

Activity Group	Groups that generate synergies between Activity Packages to better address the major financial, thematic and spatial gaps identified through the portfolio review and gap analysis.
Activity Package	An area of investment identified as being necessary to build climate resilience in the targeted sectors in Ethiopia.
Adaptation Deficit	Poor countries are more heavily affected by extreme weather events and future climate change than rich countries. This discrepancy is known as an adaptation deficit and is a result of increased vulnerability, weaker demand for climate security and reduced efficiency of adaptation investments due to weaker infrastructure and governance. In poor countries with a large adaptation deficit, there is strong justification for climate finance to be invested in both inclusive growth and dedicated adaptation support.
Climate change adaptation	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
Climate resilience	The capacity for a socio-ecological system to: (1) absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and (2) adapt, reorganize, and evolve into more desirable configurations that improve the sustainability of the system, leaving it better prepared for future climate change impacts.
Climate Resilient Green Economy (CRGE)	Ethiopia's high level policy commitment to achieve middle income status by 2025 in a climate resilient green economy.
Disaster Risk Management	Disaster risk is a function of the occurrence of a potentially dangerous event (hazard), combined with the vulnerability the population and economic assets located in hazard-prone areas (exposure); and the susceptibility of the exposed elements to the natural hazard (vulnerability). Disaster Risk Management are those actions taken to assess risks, prepare for, respond to and recover shocks as well as those longer-term measures to reduce exposure and vulnerability.
Financial Gap Analysis	The assessment of the difference between the level of investment that has been projected as being required to achieve climate resilience, and the investment that has currently been committed.
Investment Prioritization Framework	An Excel-based tool developed to help assess possible investment activities based on their relative importance for Ethiopia to progress along a development pathway toward greater climate resilience.
Multi-sectoral approaches	Approaches which require deliberate collaboration between stakeholders from different line ministries and agencies to achieve a policy outcome which requires coordinated action across sectors. Land and Water Use Planning are key

	examples of sectors demanding multi-sectoral action due to the competing priorities for land and water use across agriculture, energy, forestry and livestock sectors.
Participatory approaches	Participatory approaches are those which seek to engage affected stakeholders in the decisions that affect their work and lives. Participation is a right held by all people to engage in society and in the decisions that impact their lives. The right to promote the participation of the people in the formulation of national development policies and programs is enshrined in Article 89 of the Ethiopian Constitution.
Portfolio Review	A stock-take of relevant existing donor supported projects has been undertaken in the relevant sectors, to understand what investments have so far been made in the context of climate resilience in agriculture and forestry.
Program	Government initiative.
Project	Externally financed contributions to government programs.
Spatial Gap Analysis	The assessment of how much activity is addressing climate resilience objectives in relation to relative levels of vulnerability to climate change, by woreda.
Thematic Gap Analysis	Assessment of gaps in activities that are necessary to achieve the CR strategy looked at through each of the CR themes of agricultural and forest as well as water and energy.

Annex 2: REFERENCES

Adger WN, Agrawala S, Mirza MMQ, Conde C, O'Brien K, Pulhin J, . (2007) Assessment of adaptation practices, options, constraints and capacity. In: Parry ML, Canziani OF, Palutikof JP, van der Linden PJ, Hanson CE (eds) Climate Change 2007: Impacts, Adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press, 717–743

Burton, I. (2009). "Climate Change and the Adaptation Deficit", in: E.L.F. Schipper and I. Burton, eds. The Earthscan Reader on Adaptation to Climate Change, London: Earthscan

Bird, N. Manuel, M. and Nakhooda, S. (2015): *Scaling up international support for adaptation: Productive safety nets and reimbursable debt service*. Overseas Development Institute Working Paper 427.

Cervigni, R. and Morris, M. (eds.) (2015): *Confronting Drought in Africa's Drylands: Opportunities for Enhancing Resilience*. World Bank.

Danyo, S. Abate, A., Bekhechi, M., Köhlin, G, Medhin, H., Mekonnen, A., Wikman, A, Fente, A., Ginbo, T. Negede, B. and Tesfaye, H. (2017). Realizing Ethiopia's Green Transformation: Country Environmental Analysis, Transformation CEA Series, Environment and Natural Resources Global Practice. Washington, DC: World Bank.

DFID and FDRE (2017) Energy Africa Compact. Internal Document.

Dimes, P. J. M.; Rao, J.; Shapiro, K. P. C.; Shiferaw, B. & Twomlow, S. (2008). Coping better with current climatic variability in the rain-fed farming systems of sub-Saharan Africa: An essential first step in adapting to future climate change? *Agriculture, Ecosystems & Environment*, 126(1), 24–35.

Dinku, T., Hilemariam, K. Grimes, D. and Connor, S. (2011): *Improving availability, access and use of climate information*. WMO Bulletin Weather, Climate, Water, Vol. 60/2, available at http://www.wmo.int/pages/publications/bulletin_en/archive/60_2_en/60_2_Tufa_en.html.

EPA (2011), *Ethiopia's Vision for a Climate-Resilient Green Economy*, EPA, Addis Ababa.

Eshetu, Z. Simane, B. Tebeje, G., Negatu, N. Amsalu, A. Berhanu, A. Bird, N., Welham, B., and Canales Trujillo, N. (2014). *Climate finance in Ethiopia.* Overseas Development Institute, London and the Climate Science Centre, Addis Ababa University, Addis Ababa.

Ethiopian Panel on Climate Change (2015), First Assessment Report, Summary of Reports for Policy Makers, Published by the Ethiopian Academy of Sciences, Addis Ababa.

Fankhauser, S., & Burton, I. (2011). Spending adaptation money wisely. Climate Policy, 11(3), 1037-1049

Fankhauser, S., & McDermott, T. K. (2014). Understanding the adaptation deficit: why are poor countries more vulnerable to climate events than rich countries? Global Environmental Change, 27, 9-18.

FDRE (1994) *The National Energy Policy*.

FDRE (1995) Constitution of the Federal Democratic Republic of Ethiopia

FDRE (1997) Environmental Policy of Ethiopia

FRDE (1999) *Ethiopia's Water Resources Management Policy*.

FDRE (2001) *Ethiopia's Communication to the United Nations Framework Convention on Climate Change*. Addis Ababa.

FDRE (2001b) Ethiopian Water Strategy

FDRE (2003) National Energy Proclamation

FDRE. National Metrological Agency (2007) *Climate Change National Adaptation Programme of Action (NAPA) of Ethiopia.*

FDRE (2007a) *Forest Development, Conservation and Utilization Policy and Strategy.*

FDRE (2007b) The River Basin Councils and Authorities Proclamation

FDRE (2007) National Biogas Program for Ethiopia

FDRE (2010a) Ethiopia's Agriculture Sector Policy and Investment Framework (PIF) (2010-2020)

FDRE (2010b) Ethiopia's Strategic Investment Framework for Sustainable Land Management

FDRE (2011a): *Ethiopia's Climate Resilient Green Economy Strategy.*

FDRE (2012) Guideline on Import and Export of Animals and Animal Genetic Materials

FDRE Ministry of Water and Energy (2012b): *Scaling-Up Renewable Energy Program Ethiopia Investment Plan* (Final Draft).

FDRE Ministry of Water and Energy (2012c): *National Programme for Improved Household Biomass Cook Stoves Development & Promotion in Ethiopia, Version 7*. Addis Ababa, Ethiopia.

FDRE (2013) National Policy and Strategy on Disaster Risk Management

FDRE (2013b) National Biomass Energy Strategy

FDRE (2014a) *Disaster Risk Management Strategic Programme and Investment Framework.* Disaster Risk Management and Food Security Sector Ministry of Agriculture.

FDRE (2014b): *Ethiopia's Climate-Resilient Green Economy. Climate Resilience Strategy for Agriculture and Forestry.*

FDRE (2014c) Draft Animal Breeding Policy and Strategy for Ethiopia

FDRE Ministry of Environment, Forest and Climate Change National REDD+ Secretariat (2015a): *National REDD+ Strategy* (First Draft).

FDRE (2015b): *Ethiopia's Climate-Resilient Green Economy. Climate Resilience Strategy for Water and Energy*.

FDRE (2015c) Intended Nationally Determined Contribution, submitted to the UNFCCC. Available online at http://www4.unfccc.int/submissions/INDC/Published%20Documents/Ethiopia/1/INDC-Ethiopia-100615.pdf

FDRE (2015d) The Financial Management Performance of the Federal Government. PEFA Report. Available at https://pefa.org/assessments/listing?page=6 FDRE (2016): *The Second Growth and Transformation Plan (GTP II) (2015/16 – 2019/20).*

FDRE and Humanitarian Partners (2016): *2016 Humanitarian Requirements Document.*

Gebreegziabher, Z. Mekonnen, A. Deribe, R. Abera, S. and Kassahun, M. (2014): *Climate change can have significant negative impacts on Ethiopia's agriculture*. EDRI Research Brief.

GIZ (2015) Lessons and Experiences in Sustainable Land Management, GIZ Ethiopia.

Habtezion, S. (2012) Gender and Energy. Global Gender and Climate Alliance, UNDP, New York.

Haddis, Bekure, Belete, Gebremeskel and Tafare (2017) Ethiopia's Move To A National Integrated Land Use Policy And Land Use Plan for more information. Available at: https://www.land-links.org/wp-content/uploads/2017/03/USAID_Land_Tenure_WB17_Ethiopia_Move_Land_Use_Plan.pdf

Hallegatte, S. and Dumas, P. (2009): *Can natural disasters have positive consequences? Investigating the role of embodied technical change*. Ecological Economics, Vol. 68, pp. 777-786.

Hallegatte, S.; Mook B.; Bonzanigo L.; Fay,M.; Kane, T.; Narloch, U.; Rozenberg, J.; Treguer, D.; and Vogt-Schilb, A. (2016) Shock Waves: Managing the Impacts of Climate Change on Poverty. Climate Change and Development Series. Washington, DC: World Bank.

Hill, R. and Porter, C. (2013): *PSNP/HABP Formulation Process. Vulnerability Study to assist with assessment of potential caseload for next generation of PSNP & HABP*.

Hill, R. and Porter, C. (2015): *Shocks, Safety-nets and Vulnerability to Poverty in Ethiopia.* Available at https://www.researchgate.net/publication/281774460 .

Indufor (2016) Ethiopia Commercial Plantation Forest Industry Investment Plan. Produced for the Government of Ethiopia and the World Bank.

Kahn, M., (2005) The Death Toll from Natural Disasters: The Role of Income, Geography, and Institutions. *The Review of Economics and Statistics*, Vol. 87, No. 2, Pages: 271-284

Kangas, A., Haider, H., and Fraser, E. (2014). *Gender: Topic Guide*. Revised edition with E. Browne, Birmingham: GSDRC, University of Birmingham, UK

Kasa, L., Warner, J., & Kieran, C. (2015). Patterns of agricultural production among male and female holders: Evidence from agricultural sample surveys in Ethiopia. Intl Food Policy Res Inst.

Kumar, N., & Quisumbing, A. R. (2015). Policy reform toward gender equality in Ethiopia: Little by little the egg begins to walk. World Development, 67, 406-423.

LTS International (2016a) Study of Value Chain Development with the Sustainable Land Management Programme. Report submitted to Royal Norwegian Embassy to Ethiopia.

LTS (2016b) Review of Climate High Level Investment Programme. Report submitted to DFID.

LTS International; AEA; Common Futures; B&M Development Consultant, (2012). A mapped assessment of the likely impacts of climate change for Ethiopia (Deliverable 8).

Lung, F (2013) The Africa Risk Capacity Agency in the Context of Growing Drought Resilience in SSA. *SAIS Europe Journal*.

McGray (2009) A Continuum of Adaptation Activities: From Development to Climate Change. World Resources Institute.

MeheRette, E (2009) Providing Weather Index and Indemnity Insurance in Ethiopia. Available online at: https://www.agrifinfacility.org/resource/innovations-insuring-poor-providing-weather-index-and-indemnity-insurance-ethiopia

Mosello, B., Calow, R., Tucker, J., Parker, H., Alamirew, T., Kebede, S., & Gudina, A. (2015). Building adaptive water resources management in Ethiopia. London: Overseas Development Institute.

Nachmany, M. Frankhauser, S. Davidova, J. Kingsmill, N., Landesman, T., Roppongi, H., Schleifer, P., Setzer, J., Sharman, A., Singleton, C.S., Sundaresan, J., and Townshend, T. (2015): *Climate Change Legislation in Ethiopia. An Excerpt from the 2015 Global Climate Legislation Study. A Review of Climate Change Legislation in 99 Countries.* London School of Economics and Political Science Grantham Research Institute on Climate Change and the Environment.

Noy I. (2009) The macroeconomic consequences of disasters. *Journal of Development Economics* Vol. 88, Issue 2, pp 221–231

Nune, S. Kassie, M. and E Mungatana (2009). *Forestry Resources Accounting: The Experiences of Ethiopia. Environmental Economic Policy Forum for Ethiopia (EEPFE), Addis Ababa*.

ODI (2016) Accelerating access to electricity in Africa with off-grid solar. Off grid solar country briefing: Ethiopia. A background study for the Energy Africa campaign launched by the Department for International Development (DFID).

OECD (2014): *Climate Resilience in Development Planning: Experiences in Colombia and Ethiopia, OECD Publishing.* http://dx.doi.org/10.1787/9789264209503-en.

Parry M.L., O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., 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, Cambridge University Press, Cambridge, UK, 982pp

Schipper, E. L. F., & Burton, I. (Eds.). (2009). The Earthscan reader on adaptation to climate change. London: Earthscan

Shapiro *et al.* 2015. *Ethiopia Livestock Master Plan. Roadmaps for growth and transformation: A contribution to the Growth and Transformation Plan II (2015-2020).* ILRI Project Report. Nairobi, Kenya: International Livestock Research Institute (ILRI).

Tadesse, M. A., Shiferaw, B. A., & Erenstein, O. (2015). Weather index insurance for managing drought risk in smallholder agriculture: lessons and policy implications for sub-Saharan Africa. *Agricultural and Food Economics*, 3(1), 26.

Tol, R.S. (2002) Estimates of the Damage Costs of Climate Change. Part 1: Benchmark Estimates *Environmental and Resource Economics* 21: 47.

Toya, H.; Skidmore, M. (2007) Economic development and the impacts of natural disasters. *Economics Letters*, Vol. 94, Issue 1, January 2007, Pages 20–25.

UN OCHA (2011): *Humanitarian Requirements for the Horn of Africa Drought.* Available at https://docs.unocha.org/sites/dms/CAP/HRD_2011_Horn_of_Africa_SCREEN.pdf

United Nations (2009) Women, Gender Equality and Climate Change. UN Womenwatch, New York.

United Nations (2015): *World Population Prospects. The 2015 Revision. Key Findings and Advance Tables*.

UNISDR (2009) Making Disaster Risk Reduction Gender-Sensitive: Policy and Practical Guidelines, Geneva, Switzerland.

USAID Ethiopia (2013), Comparative analysis of Ethiopia's 2013 Seed Proclamation and Draft Seed Regulations Available online at: http://ethioagp.org/download/reports/AGP%20AMDe%20Comparative%20Analysis%20of%20Ethiopia's%20New%20Seed%20Proclamation%20and%20Draft%20Regulations%20Final%20Report.pdf

World Bank (2008): *Ethiopia – Sustainable Land Management Project. Project Appraisal Document.* World Bank, Washington D.C.

World Bank (2010): *Ethiopia - Agricultural Growth Project. Project Appraisal Document*. World Bank, Washington D.C.

World Bank (2011): *Ethiopia Economics of Adaptation to Climate Change*. World Bank, Washington D.C.

World Bank (2013): *Ethiopia - Second Phase of the Sustainable Land Management Project. Project Appraisal Document.* World Bank, Washington D.C.

World Bank (2014a): *Ethiopia Fourth Productive Safety Nets Project – Project Appraisal Document*. World Bank, Washington D.C.

World Bank (2014b): *The State of Social Safety Nets 2014*. World Bank, Washington D.C.

World Bank (2014c): Project Information Document (Concept Stage) - Oromia Forested Landscape Carbon Finance Project - P151294. World Bank, Washington D.C.

World Bank (2015a): *Accelerating Climate-Resilient and Low-Carbon Development. The Africa Climate Business Plan.*

World Bank (2015b): *Ethiopia – Second Agricultural Growth Project. Project Appraisal Document*. World Bank, Washington D.C.

World Bank (2015c): *Forest Sector Review*. Technical Assistance under the CRGE Facility TA support task. World Bank, Washington D.C.

World Bank. (2015d): *Enhancing the Climate Resilience of Africa Infrastructure: the Power and Water Sector*. Africa Development Forum series.

World Bank (2016a): *Ethiopia Priorities for Ending Extreme Poverty and Promoting Shared Prosperity. Systematic Country Diagnostic*. World Bank, Washington D.C.

World Bank (2016b): *DRAFT Ethiopia Oromia Forested Landscape Project. Project Appraisal Document*. World Bank, Washington D.C.

World Bank (2016c) Ethiopian Forest Sector Review

World Bank Group (2016d) Ethiopia Commercial Planation Forest Industry Investment Plan

World Development Indicators (2014) World Bank, Washington, DC.

Zwedu, G. A. (2014). Financial inclusion, regulation and inclusive growth in Ethiopia. Shaping policy for development Working paper, 408.

Annex 3: INSTITUTIONS AND INCENTIVES

This text provides more extensive analysis to support the summary text in the main MSIP document.

A3.1 Institutions

The MSIP is being developed through a process involving five ministries, namely the Ministry of Finance and Economic Cooperation (MoFEC), the Ministry of Environment, Forest and Climate Change (MEFCC), the Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Water, Irrigation and Electricity (MoWIE) and the Ministry of Livestock and Fisheries (MoLF). To ensure cohesion, it also involves the National Disaster Risk Management Commission. MoFEC, which is mandated to mobilize both domestic and external resources for the implementation of the FDRE's CRGE strategy, upon which the MSIP builds, is the lead agency in the process of designing and overseeing the delivery of the MSIP. The coordination of the process is being further facilitated by the existing designated focal points within all five ministries. Key development partner agencies and stakeholders will remain engaged in MSIP preparation and dialogues.

The MSIP builds on Government of Ethiopia's existing response to climate change. The Ethiopian Constitution (1995) sets out the rights of Ethiopian citizens to sustainable development, to improve their standard of living and to a clean and healthy environment. This is further reinforced by the National Environmental Policy (1997) which recognizes, *inter alia* the need to seek financial support for climate action, plan over long time horizons and ensure community participation in sustainable environmental management.

Ethiopia is guided by five-year development plans. The Second Growth and Transformation Plan (GTP II) covers the period 2015/6 to 2019/20. It aims to sustain the broad-based inclusive growth achieved under GTP I, but places a greater emphasis on the links between the national development plan and the CRGE Vision, citing CRGE as one of its nine pillars. Launched in 2011, the CRGE Vision sets the goal for Ethiopia to become a middle-income country by 2025 with zero net increase in annual carbon emissions and a climate resilient economy. The National Adaptation Plan of Ethiopia summarizes adaptation strategies, with respect to agriculture, forestry, water, energy, transport, urban, industry, health and education requirements. Climate Resilience (CR) Strategies also provide more detail for the Agriculture and Forestry (2014) and Water, Irrigation and Electricity (2015) sectors. CR commitments are also outlined in Ethiopia's Nationally Determined Contribution submitted to the UNFCCC[1].

The MSIP pursues a cross-sectoral approach and is coordinated by Ethiopia's MOFEC's CRGE Facility. MEFCC is mandated to coordinate Ethiopia's technical implementation of CRGE. MoFEC created the Climate Resilient Green Economy and UN Agencies Directorate in 2016 to formally reflect that, since 2011, this Directorate has managed the country's national climate finance facility (the CRGE Facility) and has worked closely with MEFCC to coordinate cross-sectoral plans to integrate climate change. The Inter-Ministerial Steering Committee of the CRGE Facility has acted as a coordination mechanism bringing together sector representatives to discuss CRGE issues at policy level.

The overall objectives of the CRGE Facility are to access, mobilize and combine domestic and international sources of finance (both public and private) to support the implementation of the CRGE Strategy. The Facility is an "on budget" fund using FDRE's Channel One Program Coordination Arrangement for financial disbursement and reporting as well as the Public Procurement Administration (PPA) policy and procurement arrangements.

[1] FDRE(2015) See http://www4.unfccc.int/submissions/INDC/Published%20Documents/Ethiopia/1/INDC-Ethiopia-100615.pdf

The CRGE Facility has proven capacity to manage at least moderate amounts of climate finance, which is achieved via implementation agreements with GoE sector line ministries using finance channeled via Regional Bureaus of Finance and Economic Development. At local level, multi-sectoral implementation committees composed of Woreda technical experts and chaired by the Woreda Administrator will oversee implementation. More recently the CRGE Facility has added a climate mainstreaming focus among sectors.

At national level, the CRGE Facility works closely with the National Planning Commission (NPC) (Regulation 281/2013) to support cross-sectoral planning across Ethiopia's Regions. The NPC reports to the Prime Minister's Office and is accountable to the National Planning Council, made up of the Prime Minister, Cabinet Ministers, Regional Chief Executives and the National Bank. The NPC works closely with MoFEC in coordinating sector planning and was involved in efforts to more closely integrate GTP II and the CRGE Strategy.

MSIP implementation will rely on national statistical and research bodies to support innovation, monitor progress and undertake research to promote learning. For macro-economic research and monitoring, this would include the Central Statistics Authority (CSA), and the Environment and Climate Research Center (ECRC) of the Ethiopian Development Research Institute (EDRI). Within the agriculture sector, this will include the Agricultural Transformation Agency, an autonomous strategy and delivery oriented government agency, the Ethiopian Institute of Agricultural Research and its network of regional research centers. For hydrological research, the Research and Development Directorate of MoWIE has responsibility for coordinating policy-oriented water research, whereas The Ethiopian Environment and Forest Research Institute exists to support research and development in the forestry sector. The Ethiopian Biodiversity Institute (EBI) has lead responsibility for implementing the UN Convention on Biological Diversity within Ethiopia and its work is guided by the National Biodiversity Strategy and Action Plan (NBSAP) 2015-2020 and referenced in the Climate Resilience Strategy for Agriculture and Forestry.

The MSIP aims to coordinate public financing for investment projects, requiring strong implementation mechanisms at all levels of government as well as the availability of technically qualified manpower to realize investment projects on the ground. Initiatives to strengthen institutional capacity to implement large-scale projects have been undertaken as part of the PSNP II, AGP II and SLMP II projects, which include components to build capacity with respect to SLM practices, monitoring and evaluation and fund management at the regional and local level. Existing capacity gaps with respect to afforestation and reforestation, Participatory Forest Management (PFM), land-use planning, safeguards, policy development, and extension activities will be addressed through MEFCC's OFLP. As part of MoWIE's WASH project, capacity constraints with respect to program planning, implementation and management are being addressed. While these programs have led to significant advances within all participating institutions and across all levels of government, considerable further investments will be required to create the needed capacity within government ministries and implementing entities to deliver FDRE's ambitious national climate change agenda.

The MSIP creates a framework for work with public and private banks and insurance companies, microfinance institutions and savings and credit cooperatives to create new financing mechanisms for resilience building. The Ethiopian financial sector consists of three public banks, including the Development Bank of Ethiopia (DBE), 16 private banks, 14 private insurance companies, one public insurance company, 31 microfinance institutions and over 8,200 Saving and Credit Cooperatives (SACCOs) in both rural and urban areas.[2] There are 30 international development partners, active in the country, providing both grants and concessional loans. Multilateral Development Finance Institutions include the European Union, World Bank Group International Bank for Reconstruction and Development and International Finance Corporation, the African Development

[2] Zwedu, G. A. (2014).

Bank, the International Fund for Agricultural Development. Major bilateral donors are the USA and UK, with Canada, Netherlands and Japan also provided substantial support. Bilateral sources of loan finance include the Agence Française de Développement, the UK's Commonwealth Development Corporation and the German KfW. The African Risk Capacity of the African Union provides sovereign drought insurance. The MSIP has built on existing lessons to ensure appropriate financial instruments and capacity is available to support resilience objectives.

Realization and implementation of investments prioritized under the MSIP require further strengthening of Ethiopia's policy framework for climate resilience. Key steps towards strengthening this policy framework and implementing relevant policy have been made in all sectors. For example, under MoANR's SLMP, the implementation of land use planning and land use certification has been enhanced, thereby enhancing ownership of the project and incentivizing farmers to invest in conservation. Within the water sector, recent advances were made as part of policy strengthening initiatives under MoWIE's WASH program. For example, the implementation of FDRE's cost recovery policy. Building on these advances, the MSIP will seek to further strengthen FDRE's climate resilience policy framework, thereby enriching the enabling environment for climate action. Key areas for reform are highlighted below, specific opportunities being referenced in Part 2, in relation to descriptions of each investment Activity Group.

The development of the MSIP has benefitted from successful information sharing among stakeholders, this will need to be sustained and further developed during implementation. The MSIP methodology has been designed to consolidate and harmonize information sharing, foster collaboration, reduce costly fragmentation and enhance coordination. This requires strong institutional capacity to manage, share and disseminate information. Advances in the field of information sharing are currently made as part of the AGP II program, which includes the creation of information databases, and provides an interactive mechanism for key stakeholders to share best practices and lessons learned. The AGP II also supports the establishment of information technology centers to enable extension services to access a knowledge database. Ethiopia's capacity to share and disseminate climate information has been strengthened further through the SLMP II program, which supports the development of a harmonized land information system, and the Tana-Beles Program of MOWIE which established a robust basin monitoring information system. SLMP II also facilitates the generation and sharing of knowledge regarding the adoption of sustainable natural resource management, sustainable land and water management practices, and climate-smart agriculture in almost 250 major watersheds throughout the highland regional states. The NDRMC has developed databases of livelihood zone assessments and many woreda disaster risk profiles, and has worked with the National Meteorological Agency to share weather and early warning information. The MSIP will seek to further enhance the capacity to share climate information among key stakeholders within Ethiopia; possible initiatives could include development of hydro-meteorological and groundwater monitoring systems, or the development of a platform to share disaster early warning data.

The cross-sectoral nature of climate resilience investments implies a need for coordination across sectoral boundaries. At present, inter-agency coordination on climate change is facilitated through the establishment of an inter-ministerial council with representatives from relevant line ministries, as well as through the CRGE Technical Committee, the National Planning Commission, and the CRGE Facility Secretariat. Additionally, CRGE units or focal points exist within most line ministries to promote and manage mainstreamed CRGE activities. However, further strengthening of inter-institutional coordination will be key to unlocking the potentially large cross-sectoral synergies of investment activities prioritized through the MSIP. This is particularly important at regional level, since most regions have not yet created mechanisms for inter-sectoral coordination. MEFCC's regional institutions, which should take leadership in this, are still at an early stage of development in some regions.

Sustainable management of natural resources requires an integrated and holistic approach, defining landscapes, eco-regions or watersheds as planning and implementation areas. These landscapes usually embrace farmland, rangeland, forests and others forms of land use. While the FDRE has made substantial progress with implementation of its land policy through certification, it has not undertaken comprehensive macro-level land use planning in the past.[3] The responsibility for management of Natural Resources has been split: MoANR is responsible for the overall Land Administration and Use Policy, as well as SLM on farmlands and rangeland, whereas the forest areas are under the responsibility of MEFCC. Basin Master Plans and cross-sectoral coordination at Basin level has been designated the responsibility of River Basin Authorities under MoWIE, but only two are functioning and implementing master plans, which lack capacity for all required tasks. There is also an Advisor to the Prime Minister of Ethiopia on Environment and Basin Development in the rank of State Minister who can support cross-sectoral coordination on this issue.

FDRE has developed a National Integrated Land Use Plan Road Map that sets out a process to prepare a land use policy and conduct macro-level land use planning to be implemented in the 3rd Growth and Transformation Plan between 2020-2024. This process will require complex data analysis, extensive stakeholder engagement and effective measures to share and enforce plans, but will create a formal mechanism to make decisions about land use in the face of competing priorities for land use from crop and livestock production and forestry as well as the need to balance water demands for consumption, irrigation and electricity generation. Considering the suitability of land for specific uses under future climate scenarios adds a further layer of complexity. Therefore, the MSIP must integrate with, and support these cross-sectoral processes.

Mitigating and effectively managing risks will be crucial to delivering on Ethiopia's climate resilience priorities. Due to the necessarily large number of stakeholders and implementing agencies involved in the realization of prioritized investments, the delivery of the MSIP will rest on the successful mitigation of risks, particularly with respect to the timely implementation of investment priorities. Key risks include weak land tenure at the individual and community levels, limited regional capacity for inter-sectoral coordination, the absence of functional river basin authorities, weak capacity for forestry at all levels and the nascent stage of national-level land use planning. Within the agricultural sector, capacity weaknesses at regional and local levels may represent a risk to the successful implementation of prioritized investment activities, as well as the risk that Government investments crowd out private sector and limit farmer choice. Appropriate risk mitigation strategies will be required to safeguard the development benefits of investment activities prioritized through the MSIP.

The MSIP has the potential to catalyse transformational change through mobilising the investment to scale up existing practices and creating a step-change in the use of climate, hydrological and land use data in cross-sectoral decision-making. Ethiopia and most of its development partners and civil society share an understanding that climate resilient development requires economic transformation. Outside of the MSIP, the FDRE is committed to green industrialisation and creating the levers for urbanisation and a growth in jobs in the manufacturing and service sectors. To support this, the MSIP should contribute to a four-fold increase in the productivity of Ethiopia's rural landscape by harnessing improvements in land and water management that optimise efficiency, balance competing priorities and leverage investment from both the public and private sectors. This requires massive investment as well as extensive policy and regulatory reform as set out in the MSIP document. The feasibility of this approach rests on the ability to make a step-change in the way that the FDRE makes decisions and delivers its services. This will include a shift from a *command-and-control* approach where

[3] Except in urban centres with master plans and land zoning in place. See Haddis, Bekure, Belete, Gebremeskel and Tafare (2017) Ethiopia's Move To A National Integrated Land Use Policy And Land Use Plan for more information. Available at: https://www.land-links.org/wp-content/uploads/2017/03/USAID_Land_Tenure_WB17_Ethiopia_Move_Land_Use_Plan.pdf

Government plays a lead role in service delivery to one where it takes on a greater facilitation role - creating space for private sector investment and the incentives for behaviour change amongst farmers and rural communities. Transformational change should use three levers to achieve scale: 1) Scaling up through public investment; 2) Creating the incentives for self-scale via private investment, including those of smallholder farmers; and 3) Altering decision-making and delivery within existing programmes and investments through policy reform and the greater use of climate, hydrological and land use information in decision-making.

A3.2 Incentives

A sound policy and regulatory framework can unlock transformative investment and represents a critical element of a resilient economy. Ethiopia's Federal system and ambition for inclusive, broad-based growth through the Growth and Transformation Plans create scope for resilient growth. The National Disaster Risk Management and Social Protection policies aim to prepare for shocks and promote equity. Recent policy advances, such as those made under the MoANR's SLMP program and AGP, have enhanced the enabling environment for transformative investments. On the other hand, policy barriers and limitations in information may represent a binding constraint on investment. Removing policy gaps and barriers and developing a coherent and comprehensive policy framework can foster the accumulation of human and natural capital and facilitate climate resilience enhancing investments.

Ethiopia is well-endowed with natural resources but they are subject to competing uses. Managing environmental risks and enabling economic transformation are essential for achievements of Ethiopia's resilience objectives. The structural transformation of Ethiopia's natural capital into other forms of capital is crucial for Ethiopia's development strategy. Reaching the shorter-term GTP II targets and the longer-term CRGE goals, given environmental and climate risks, will require strong synergies between sectors and careful management of trade-offs of various sectors' claims on the same resources. Improvements in policy and regulation is needed to bring Ethiopia to middle-income status by 2025, via resilient and environmentally sustainable growth pathways.[4]

Participatory land use planning, watershed management and forest management are important drivers of rational resource use, poverty reduction and shared benefits, but greater investment in high level integrated level land and water use planning is essential. Participatory watershed management is well established in Ethiopia with National Guidelines developed under the SLMPII and used across Ethiopia's agriculture sector programs. The involvement of communities in in project development and implementation creates ownership and increases the sustainability of soil and water conservation measures. Similarly, by ensuring that local communities benefit from the forests they manage and strengthening community forest user rights through Participatory Forest Management (PFM), incentives towards sustainable forest management can be created. However, these local-level land use approaches are not situated within a high level spatial plan that can manage competing demands from crop and livestock production, forestry, ecosystem services and biodiversity conservation. Neither are such plans integrated with an overall assessment of water availability and water-use planning. MSIP can support the development of land use plans and decision-making around local priorities.

Land holding certificates are an important form of land tenure that can drive household and community reinvestment in land resources. The MOANR Directorate of Rural Land Use and Administration is committed to strengthening tenure security through a land certification program, and it has already begun to issue land certificates to cover both individual and communally held lands, with geo-referencing and mapping of plots. This

[4] Danyo, S. *et al* (2017) *op cit*.

has been supported by investments in the SLMPII and has given farmers increased security and an incentive to invest in land and water resources, agroforestry, and climate-smart agriculture. The MSIP can continue to support these efforts alongside wider land use planning and watershed management initiatives.

The involvement of the private sector is important for national resilience, but continued progress on regulatory reform will be required to enhance the enabling environment for resilience investments. GTP II sets out an ambitious plan for attracting private sector investment in the agricultural and industrial sectors, and has made extensive investment in the road network and other market infrastructure. However, Ethiopia remains a challenge location for private sector development, ranking 159th out of 190 countries in the World Bank's Ease of Doing Business index. In addition, the tightly controlled financial services sector has meant that limitations on the availability of finance, particularly foreign exchange and short term loans of working capital, remain a key barrier to investors and to the development of small and medium sized enterprises (SMEs). Enhanced modalities for public private partnerships in the land-based sectors could be developed but require prior investments in appropriate land use planning. A series of public-private dialogues have been initiated by the government to explore the above ideas in relation to the forestry sector and includes the World Bank, IFC, Chamber of Commerce and sectoral associations, small operators, cooperatives and their unions, and NGOs. It would be critical to expand that dialogue to cover other sectors and to continue dialogue at the level of ministers and private sector leaders to ensure an appropriate framework for public private partnership in each sector could be developed. Lessons from the implementation of the World Bank's Climate Innovation Centre to support micro and small enterprises in the green technology sector could also be utilized in sectors relevant to resilience.

Improved policies and incentives can foster more resilient and inclusive investment and growth in the forest sector. The forest sector contributes 4% of Ethiopia's GDP and this is expected to grow to 8% by 2020. The expansion and modernization of the forest sector is in the center of the government's development strategy, with forest cover is to be increased from 15% to 20% through the rehabilitation of existing forests A forest sector roadmap is under development setting out strategies to encourage a substantial increase in the area under forest cover, continued growth in the share of forestry's contribution to national GDP and the promotion of proven approaches such as area closures, participatory forest management, plantation development and improvements, agroforestry and the management of dry forests. Through the Ethiopian Forest Sector Review (MEFCC/WB 2016), the Government sponsored an analytical and dialogue process culminating in recommendations from a new public-private dialogue on forest sector development. Substantial growth is expected from foreign direct investment in plantation development and processing but this requires improvements to the enabling environment which include: (i) developing arrangements for Public Private Partnerships in both plantations and smallholder outgrower schemes; (ii) enabling access to land (e.g., leasing, certificates) to encourage long-term forest investments; and (iii) creating economic incentives for forest investments, such as credit facilities, loan guarantees, duty-free imports of relevant machinery, or delayed taxes, recognizing the long time horizon for these investments.[5] The GTP II also identifies the need for the delivery of agro-forestry and silvo-pastoral extension packages, the promotion of tree nursery management as a commercial enterprise, the exploitation of Ethiopia's large bamboo resources and development of improved regulation for joint-forest management.[6] Small-scale tree nursery enterprises can also be effectively linked to urban greening initiatives which mitigate urban flood risk and improve re-charge of urban water sources. Additional incentive systems can also be put in place to encourage farmers to use more of their marginal farmland for tree planting and regeneration, such as the development of outgrower schemes around existing plantations, subsiding seeds or seedlings, enhancing market linkages and providing tax reductions for farmers

[5] Danyo, S. *et al*. (2017) *op. cit.*
[6] LTS (2016a)

allocating land for agro-forestry. The establishment of certification systems and the development of public procurement policies could also create incentives for sustainable and quality certified wood products.[7] Public-private dialogue initiated by the World Bank Group in Ethiopia and involving high level Government representatives as well as current and potential forest sector investors has created the foundation for this action. Plans to establish a formal Forestry and Timber Processing Industry Association will create a stronger platform for information sharing and dialogue with the private sector. MEFCC is working on the establishment of a Forest Fund to incubate domestic and foreign investment in the sector.

Further action is needed to remove constraints to economic development in the forest sector, which should be a key consideration of the MSIP. Specifically, several constraints potentially inhibit long-term investment in forest plantations, including the need for Government to:

- Allocate land for commercial forest plantations.
- Develop adequate infrastructure to support the activities of those plantations – improvements in transport logistics, electricity supply, telecommunication networks, and technical and vocational training.
- Carry out comprehensive preparation to ensure that the major investment projects comply with the best international practices in social, technical and environmental matters. For example, investments in pulp and paper mills and large-scale panel plants would increase significantly wood consumption and water intake as well as impacts on local socio-economic environments which should be assessed and major risks mitigated.
- Include the current commercial (government) plantations in Private Public Partnerships (PPPs) with potential investors for the effective development of proposed clusters.
- Support smallholder woodlot owners to form effective tree-grower associations and provide incentives to encourage farmers to convert more marginal farmland into tree plantation.

Given the long timeframe of investments in pulp, paper, sawn wood and panel clusters, sufficient stability in the regulatory environment would need to be assured to ensure investors are confident about the returns.

Agricultural commercialization requires improvements in input supply and value chain development. Many Ethiopian farmers are inhibited from commercial production due to weak access to working capital, inputs, poor market integration and volatile prices. Seed supply is a key barrier to improved production with the Ethiopian seed sector characterized by dominance of the public sector in production and supply, inaccurate demand estimation mechanisms, and limited capability of the private sector.[8] There is currently a lack of enabling policy for the registration of new seed varieties and insufficient regulation of imported seed. This is a priority for the Agricultural Transformation Agency's seed systems interventions and new policies are expected. However, substantial work will remain in terms of harmonizing the directives and guidelines across regions and to create an environment which can strengthen seed production and distribution.

Whilst improvements have been made in market infrastructure and in market integration via the Ethiopian Commodity Exchange, further improvements are needed to support farmers and their cooperatives and to develop better integrated value chains for priority commodities. FDRE's recent initiative to establish four Integrated Agro-Industrial Parks offers an opportunity to attract private investment along specific value chains but, to succeed, the Government will need to make complementary improvements in the technical support offered to cooperatives, as well as improvements in input supply and finance for cooperatives and their members.

[7] Danyo et al. (2017). *op. cit*.

[8] USAID Ethiopia, Comparative analysis of Ethiopia's 2013 Seed Proclamation and Draft Seed Regulations, 2013.

Livestock value chain development and the development of export are critical elements of enhancing household income and job creation. Ethiopia is the fifth biggest livestock-producing country worldwide, with the largest cattle population in Africa at 54 million[9]. However, Ethiopia accounts for less than one percent of global meat exports, and the country is a net importer of dairy products. Agricultural growth will have a larger impact on poverty reduction if policy supports growth in the livestock sector[10]. The Livestock Masterplan has identified several key challenges related to the lack of enforcement of meat quality standards, weak implementation of the animal breeding policy, and weak implementation of land policies that affect feedlot production. A lack of control on illegal live animal export reduces incentives to make necessary investments in modernizing slaughterhouses and abattoirs. In addition to this, existing animal breeding policies do not specifically target resilience characteristics nor prioritize investments in herd diversification where it is logical to do so. The MSIP presents opportunities for improving animal breeding and for strengthening the policy frameworks for land and water management. For example, land use policy to support livestock production might prioritize strategic feedlot creation for pastoral animal production in dryland irrigation schemes alongside crop production. It might also consider fisheries management in the design of new infrastructure to store or extract water.

The MSIP contains numerous opportunities for public-private partnership. FDRE efforts to foster private investment and smallholder commercialization can also be supported by civil society organizations which can act as facilitators to strengthen the capacity of cooperatives and ensure institutional arrangements are environmentally and socially sustainable. Investment opportunities include:

- **Attracting foreign direct investment to the forest sector as per the Commercial Plantation Forest Industry Investment Plan:** This plan proposes the allocation of land for commercial plantation establishment in four key regions, alongside the establishment of an integrated panel (plywood, MDF and particleboard) and sawnwood production cluster. This should also enhance the productivity of existing Government-owned plantations. Government will build on its existing investment promotion strategy to create incentives for commercial forestry. This requires the interpretation and application guidelines of land tenure and environmental regulations, the introduction of improved technology for harvesting and transportation of timber, upgrading the vocational and higher education provision in subjects relevant to plantation management and timber processing, the easing of export logistics and cross-border procedures.[11]
- **Strengthening value chain development in the agricultural and livestock sectors:** Ethiopia's second Growth and Transformation Plan contains ambitious targets to attract commercial investment, with a further 500,000 hectares identified for agricultural investments between 2015-2020 and an attractive investment policy for agricultural and livestock investments.[12] The enabling environment for land allocation will be supported by the macro-level land use planning proposed under MSIP and by proactive implementation of the investment and smallholder commercialization policies, including through ongoing and high-level public-private dialogue. One example is the partnership between IFC, Nespresso and the World Bank's BioCarbon Fund which aims to boost environmental sustainability in the coffee value chain through farmer training and improvements to wet mill operations in the Oromia Region.

Regulatory support for the import and use of renewable energy technologies can enhance their availability and sustainability. While solar products are officially VAT and tariff exempt, there are reports of implementation

[9] World Bank (2016a).
[10] Gelan et al. (2013).
[11] Indufour Oy (2016) Ethiopia Commercial Plantation Forest Industry Investment Plan. Final Report. July 2016. Addis Ababa.
[12] See the Investment Promotion of Act 375/1996, Act 249/93, 543/2007; labor act 466/1997 and 456/1997 land administration and land use proclamation.

problems related to the customs and revenue office, which lead to the inconsistent application of this regulation. There is no clarity on the VAT and tariff status for product parts and appliances is unclear.[13] There is also no regulatory support for the establishment of Pay-As-You-Go solar business models which could strengthen. The absence of minimum warranties and provisions for adequate after sales service undermine consumer protection. There are no direct subsidies on kerosene or diesel in place. However, since fuel is VAT exempt, kerosene and diesel therefore benefit from an indirect subsidy.[14]

The Ethiopian Standards Agency (ESA) adopted IEC (International Electro-technical Commission) technical specifications for pico-PV lighting products as a Voluntary Ethiopian Standard in October 2013. Since then, as part of on-going cooperation with Lighting Africa/Lighting Global, the Government has adopted *Lighting Global* standards for off-grid solar products up to 15 Watt-peak size. 15-100 Watt-peak standards are in process. Standards above 100 Watt-peak are at an early stage. There is a need to also consider standards for other solar products (e.g. water pumps). There is also a lack of sufficiently skilled technicians to install and maintain solar systems, but recent efforts to strengthen vocational training are set to address these. The absence of an effective private sector industry association, and insufficient public-private coordination on this issue has contributed to rapid growth of sub-standard products.[15] Whilst there are plans via *Lighting Africa* to strengthen the Private Sector Solar Industry Association, it is important that this encompasses regulation of other solar products. There are, as yet, no regulations or incentives that could minimize the environmental impacts of the solar industry or encourage recycling of end-of-life solar products.

Payments for ecosystem services (PES) offer potential incentives for conservation but are not well supported by Ethiopian and international policy. The regulatory framework for PES is currently limited within Ethiopia with greatest learning available in relation to afforestation and REDD+ and research underway for rangeland development.[16] Domestic pilots charging local farmers for ecosystems services are also under design in two Ethiopian watersheds.[17] With international carbon markets contracting, the identification of national stakeholders willing to pay for the services, and the development of regulations and guidance for implementers will be essential before this can be effectively scaled up. Key challenges for putting PES in place include the need for open access to information, strong capacity to monitor the resource, the ability to manage financial transactions transparently, ensuring that local land users are supported, and ensuring that the buyers' and sellers' aims and prices are well-aligned.

Greater investment in capacity for water use management, research and development and the introduction of more consistent water pricing can assist water allocation and enhance the resilience of rural production systems. Unmitigated hydrological variability, compounded by climate change, has been estimated to cost the country roughly one third of its growth potential. The establishment of hydraulic infrastructure to store and distribute water and to buffer rainfall variability can stimulate growth and reduce vulnerability to climate change. A joint ODI and MoWIE research project on adaptive water resources management in Ethiopia highlighted a number of implementation issues in relation to water management, noting that "Ethiopia's water sector continues to be characterized by little integrated planning, so that water resources are being allocated in ways that neither take into account competing demands nor are based on a systematic understanding of 'how

[13] ODI.
[14] Ibid.
[15] DFID and FDRE (2017) Energy Africa Compact.
[16] https://www.fs.fed.us/sites/default/files/ethiopia-international-programs.pdf
[17] http://gggi.org/ai1ec_event/validation-workshop-on-assessment-of-forest-based-payment-for-ecosystem-services-opportunities-in-ethiopia/

much water' is available."[18] Weak knowledge of resource conditions, patterns of use, and drivers of change, and a lack of capacity and skills within institutions to plan water allocation, assess the impacts and trade-offs of water resources development and allocation compound this problem. Hydrological (for both surface water and groundwater) and meteorological data are collected in a scattered way by different organizations, and information sharing is minimal. Water permits are issued by competing state and federal authorities, often outside the scope of Basin Master Plans (when these exist), and with insufficient consideration given to the sustainable and equitable allocation of water resources. Water use permits are issued in a way that is not transparent or well-coordinated, limiting regulation. Flood and drought management are also not well integrated into the WRM system. Substantial investment in WRM capacity is required, including in research and development.

Understanding the nature of groundwater resources, and hence, the costs of irrigation for households, could be key in making efficiency gains with the respect to the allocation and use of scarce water resources. At present, less than one percent of smallholder-cultivated land is irrigated, mainly resulting from lack of knowledge and extension. Through the development of low-cost irrigation solutions and water pricing, efficiency gains in the agricultural sector can be made, enhancing the resilience of rural production systems[19].

Greater access to higher quality meteorological information can improve investment decision-making at all levels Whilst both MoWIE and MoANR have internal systems for distributing regular meteorological bulletins generated by the NMA, improvements can be made both in the quality of the information and the capacities of decision-makers to use it. Stronger capacity building efforts are needed to ensure this information is communicated and its implications are understood be decision-makers in water and agricultural sectors. Furthermore, communication to farm level is also currently patchy, with the opportunity to build on and scale up mobiles services such as the MoANR/EIAR collaboration on '8028', Ethiopia's first agricultural hotline or the World Bank/EIAR agro-weather advisory services project.

Mandating the widespread dissemination of environmental information, including EIA and environmental management reports by industry and government agencies would create incentives for improved environmental management and greater institutional transparency. Ethiopia's legislation (Environmental Policy 1997 and the 2002 EIA Proclamation) provides for this but, in practice, EIA reports remain undisclosed. Encouraging public disclosure of EIAs and similar information would promote institutional transparency and stakeholder engagement.[20]

Improvements in cross-sectoral coordination for disaster risk management will improve economic resilience and reduce the cost of humanitarian response. Ethiopia's disaster management infrastructure is well-developed, with a continuously improving annual humanitarian assessment process and a system of clusters coordinating food and non-food responses. Interaction between the NDRMC and the Productive Safety Net Programme ensures that the risk financing mechanism of the PSNP is triggered to allow rapid scale-up of transfers during drought years. However, key gaps include weak assessment methods for non-food responses, particularly in the agriculture and water sectors, and a lack of coordination in relation to managing rapid-onset disasters, such as floods. In addition, whilst the DRM Policy and Strategic Programme Investment Framework suggest an important role for risk analysis in directing long-term investment, there is weak uptake of this data

[18] Mosello, B., *et al*. (2015) *op. cit*.
[19] World Bank (2016a).
[20] Danyo et al (2017) *op cit*.

by sector line ministries, and inadequate coordination between DRM and CRGE mainstreaming processes and institutions.

Greater investment in the enabling environment for weather-indexed insurance could help manage risks, but there is a long way to go for insurance to become a viable large-scale option at this point in time. Both weather-indexed and multi-peril insurance are offered to small-scale and larger farmers by Nyala Insurance, but these products are not yet used at scale, particularly by poorer farmers. Key challenges include the lack of historic weather data upon which to base risk calculations, and the absence of fast and transparent weather data collection.[21] Similarly, index-based livestock insurance has been piloted amongst pastoralist herders in Southern Ethiopia using satellite data to measure grass cover. However, whilst the Kenyan Government has replicated the scheme, scale-up has not yet taken off in Ethiopia. Higher costs involved in selling the products to herders (Kenya uses mobile banking) and weaker implementation capacity amongst key agencies are possible reasons. A key challenge for scaling insurance products in Ethiopia is that, amongst poorer farmers, the gain in utility from smoothing consumption is frequently insufficient to cover the cost of the premium. Furthermore, there is often divergence between the calculated weather index and actual productivity loss on the farm.[22] This means that there is continued need for subsidy. Withdrawal of this support may reduce demand and leave insurance an unsustainable option. It is therefore important that there is a clear analysis of the relative costs of subsidy and other forms of public sector response to shocks and that insurance schemes are developed to promote the adoption of more productive and market-oriented agricultural technologies. In the case of the Nyala pilot via the R4 initiative, a public-works linked subsidized insurance premium is a mechanism to allow poorer farmers to participate, but the costs limit the extent to which the product can scale.

Development of a national sovereign drought insurance scheme could increase the speed of response and reduce costs. The FDRE is in the process of negotiating an MoU with the African Risk Capacity (ARC) – a specialized agency of the African Union supporting sovereign drought insurance.[23] This offers payouts for time-sensitive activities that would not be possible without "first available funds" and requires a detailed operational contingency plan to be in place and approved by the ARC. It is also noted that the ARC in its current design only covers between 1.5% and 4% of Ethiopia's exposed population so further work to develop this facility could be relevant to improve overall resilience,[24] but is under discussion.

The MSIP can strengthen the implementation of FDRE policy commitments on gender equality. The Ethiopian constitution (1995) gives women equal rights to men, including equal rights to the use, transfer and control of land. It also enables the use of positive discrimination to enable women to participate and compete with men in all political, economic and social fields. The Family Code (213/2000) gives equal rights to spouses during the conclusion, duration, and dissolution of marriage, and requires the equal division of all assets between the husband and wife upon divorce. The Ministry of Women and Children Affairs is mandated "to evaluate all policies, legislation, development programs and projects to ensure they give due consideration to women and youth issues". In line with this, most sector line ministries have Women's Affairs Directorates to support sectoral gender mainstreaming. Despite these efforts, there are still there are large differences in access to extension services, inputs and finance between men and women, and particularly stark differences by region. [25, 26] A range

[21] MeheRette, E (2009)
[22] Tadesse, M. A., *et al.* (2015).
[23] This is not the first attempt at sovereign drought insurance in Ethiopia. A 2006 USAID-funded sovereign drought insurance pilot which channeled a payout via WFP was not replicated. Poor cost-benefit ratios were cited as a reason at the time.
[24] Lung, F (2013).
[25] Kumar, N., & Quisumbing, A. R. (2015).
[26] Kasa et al (2015)

of complementary activities are important to enhance women's participation in the rural economy and in resilience building activities. These include improving access to formal information, the provision of specific training for women, encouraging financial inclusion through the creation of savings and credit groups, and the establishment of women-only self-help groups for processing and marketing.

Annex 4: REPORT ON THE INDEPENDENT REVIEW OF THE MSIP

The final version of the MSIP document has benefitted from and been modified in response to an external independent peer review. This annex includes copies of:

- The report provided by the external independent peer reviewer; and
- The combined GoE/MDB response to the external independent peer reviewer.

Ethiopia Multi-Sector Investment Plan for Climate Resilient Agriculture and Forest Development 2017-2030 (MSIP)

PROGRAM UNDER THE STRATEGIC CLIMATE FUND (SCF)	Pilot Program for Climate Resilience (PPCR) - Strategic Program for Climate Resilience (SPCR)
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LIST OF ACRONYMNS

AfDB	African Development Fund
CRGE	Climate Resilient Green Economy
EDRI	Ethiopian Development Research Institute
ESIF	Ethiopia Strategic Investment Framework for Sustainable Land Management
FDRE	Federal Democratic Republic of Ethiopia
GCF	Green Climate Fund
GEF	Global Environment Facility
GoE	Government of Ethiopia
GTP	Growth and Transformational Plan
IDA	International Development Association
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution
MDB	Multi-lateral Development Bank
MEFCC	Ministry of Environment, Climate Change and Forests
MoANR	Ministry of Agriculture and Natural Resources
MoFEC	Ministry of Finance and Economic Development
MoLF	Ministry of Livestock and Fisheries
MoWIE	Ministry of Water, Irrigation and Energy
MSIP	Multi-Sector Investment Plan
NDRMC	National Disaster Risk Management Commission
PFM	Participatory Forest Management
PPCR	Pilot Program for Climate Resilience
REDD	Reduce Emissions from Deforestation and Forest Degradation
SCF	Strategic Climate Fund
SREP	Scaling Up Renewable Energy in Low Income Countries Program
UNFCCC	United Nations Framework Convention on Climate Change
WASH	Water, Sanitation and Hygiene
WB	World Bank

1. PART I: GENERAL CRITERIA

Please comment on whether the investment plan complies with the general criteria indicated in Annex A of the "Procedures for the preparation of independent technical reviews of PPCR and Scaling Up Renewable Energy in Low Income Countries Program (SREP) investment plans and programs".

1.1. Whether complies with the principles, objectives and criteria of the PPCR

1.1.1. Government Led and Capacity to Implement Plan

The Ethiopia Multi-Sector Investment Plan - Strategic Program for Climate Resilience (MSIP -SPCR) has been designed with focus on addressing climate resilience in the agriculture and forest sectors, while taking into account activities in related sectors -- livestock, water and energy that have catalytic climate impacts. Ethiopia's structural transformation agenda spearheaded by the Growth and Transformational Plan (GTP) and the Climate Resilient Green Economy (CRGE) Strategy of 2011 to 2030, are recognized as instrumental in ensuring a successful MSIP. Working under leadership of the Ministry of Finance and Economic Development (MOFEC), which has the mandate to mobilize finance for implementation of CRGE strategy, and four line ministries -- the Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Livestock and Fisheries (MoLF), the Ministry of Environment, Climate Change and Forests (MEFCC), the Ministry of Water, Irrigation and Energy (MoWIE), and the National Disaster Risk Management Commission (NDRMC), which are directly involved in the execution of the CRGE strategy at sectoral level and in the regions. Financing for preparation has been provided by the Climate Investment Fund's (CIF) Pilot Program for Climate Resilience (PPCR) and Multilateral Development Banks, the World Bank and its BioCarbon Fund, and the partners who are supporting the MoFEC and line ministries in operationalizing the country's CRGE Strategy. The MSIP aims to coordinate public financing for investment projects, requiring strong implementation mechanisms at all levels of government as well as the availability of technically qualified manpower to realize investment projects on the ground. ***T***he MSIP has adhered to PPCR and SPCR's principle and mandate respective of ensuring that "its funding is used for technical assistance to enable developing countries to build upon existing national work to integrate climate risk and resilience into national and /or sectoral development plans, strategies and financing." On the other hand – MSIP -has adhered to the fact that "The strategic program for climate resilience (SPCR) is a country-owned and led framework identifying vulnerabilities and priorities for mainstreaming climate resilience into development planning and investment. The SPCR is developed through a participatory process that includes: identifying priorities and strategies, defining key agencies, allocating tasks among agencies, MDBs and other partners, and developing a results framework to track progress. The SPCR builds on policy and analytical work already underway in a country and is designed to attract other multi-lateral or bilateral development funding, including climate finance from the Green Climate Fund (GCF). The above are made clearer in the details below.

1.1.2. Inclusive, Consultative and Participatory

There is evidence that the MSIP has been inclusive in its design and development process. Three scoping missions were conducted in February 13-19, 2016; June 20-24, 2016 and March 29-31, 2017 and two stakeholder workshops held --Workshop to Review Portfolio Review and Gap Analysis Outputs, February 22-23, 2017 and Workshop to Review Investment Prioritization / Planning Outputs, March 30, 2017. The scoping missions. These missions included over 100 participants drawn from the entire development community in Ethiopia, five ministries, a wide variety of sectoral bureaus from all regional states, academia and civil society. The missions convened workshops attended by development partners, non-governmental and research institutions participated actively in the workshop. In a dedicated session, they generally expressed support for the process and approach of the MSIP development and the impressive scale of ambition. Workshop participants were viewed as expert contributors, who will continue to be engaged in the prioritization process. The MDB teams are helped to interpret and consolidate the technical suggestions from the workshop, facilitate the process toward consensus, and assist in producing the MSIP documentation. To help build on the preparatory work MSIP contracted a consortium of consultants, targeted to ensure a high-quality product. The consortium sustained the participatory approaches that had already been initiated, engaging stakeholders in the provision of essential data and opinion as well as the review of the outputs resulting from these consultations and subsequent analysis. a two-day workshop was held on February 22nd and 23rd, 2017. The main objective of the workshop, which brought together representatives from government ministries, donor partners, NGOs, academia, research institutes and the private sector, was to present findings from PRGA so that the data collected and the conclusions formed could be reviewed and tested with representative stakeholders. In addition, the workshop aimed to identify key next steps necessary to finalization of the MSIP. It is therefore evident that MSIP was inclusive, it convened consulted and coordinated varied stakeholders including financing sources – international financing, climate financing, domestic budget and private investment – linking them to prioritized investment activities with most impact in achieving targets in the CRGE, in the UNFCCC Intended Nationally Determined Contribution (INDC), National Adaptation Program of Action, REDD+ Strategy, Agriculture Policy Investment Framework, Ethiopia Strategic Investment Framework for Sustainable Land Management (ESIF), the Disaster Risk Management Strategic Program, etc.

1.1.3. Developed on Basis of Sound Technical Assessment

Using a participatory approach, the MSIP carried out Portfolio Review of all major activities with a budget of more than USD 3 million in the agriculture, forest, livestock water and energy sectors. The findings were subjected to prioritization framework, and later to a financial, spatial and thematic gap analyses. The result was a list of 77 priority activity packages being funded. The prioritization process was complemented by a further gap analysis focusing on climate resilience that identified what additional activities were required to achieve resilience. Fifty Activity Packages were prioritized because of this rigorous exercise. Activity Package, has been defined as ‘an area of investment identified as being necessary to build climate resilience in the targeted sectors in Ethiopia.’ The fifty activity packages have been further grouped into five Activity Groups. Activity Groups have been defined as ‘Group of activities that

generate synergies between Activity Packages to better address the major financial, thematic and spatial gaps identified through the portfolio review and gap analysis.' Each Activity Group focuses on sectoral priorities, pursuing a multi-sectoral approach that identifies priority Activity Packages in the agriculture, forestry, water, livestock and energy sectors that, together, will address the financial, thematic and spatial gaps that have been identified by the analysis

These five Activity Groups are listed as: *i) Enhancing climate resilience in agriculture ii) Climate resilient forest and landscape conservation, development and utilization iii) Ensuring climate resilient livestock management and livelihoods iv) Increased resilience through affordable access to climate smart energy* and *v) Enhanced climate-resilient disaster risk management and early warning systems.* An estimated cumulative cost of implementing the five Activity Groups as USD $6.1 billion been arrived at, however, MSIP reports that USD $4.4 billion of the USD 6.1 billion goes towards irrigation development activities, hence there is an investment gap of about $4 billion.

Using literature review, analysis of historical climate information, and assessment of on-going projects, the MSIP has detailed an investment need of approximately US$ 4 billion needed between 2017 and 2030 period. The investment plan is presented in terms of: (i) prioritized and costed activity packages; (ii) existing priority large-scale programs of the government that can rapidly direct funds to the ground for quick action; (iii) new strategic investment areas in the forest, agriculture, livestock, energy and water; and (iv) a suite of cross-sector prioritized activities to support these. To fund these activities, MSIP proposes a financial strategy for each of the Activity Groups. For instance, financing strategy for Activity Group 1 is summarized as:

"A portion of the estimated cost of this Activity Group may be met by end user contributions and Government of Ethiopia (GoE) co-financing. The remainder may be met through a combination of grants and loans from one or a consortium of new and existing international funding sources."

Bilateral and multilateral funding institutions already supporting climate resilience agriculture work in Ethiopia, and/or those that have publicly expressed interest in the overall goal within Ethiopia of enhancing climate resilience in agriculture, or in some combination of the constituent Activity Packages, are then listed.

For each Activity Group, the MSIP discusses convening financing via multiple channels such as blended climate and non-climate financing, private investment, government budget, direct financing to the CRGE Facility, bilateral support, pooled and stand-alone financing, and others.

In doing so, MSIP discusses a framework for working with public and private banks and insurance companies, microfinance institutions and savings and credit cooperatives to create new financing mechanisms for resilience building. Solutions for the difficult Ethiopian private sector financing regulatory environment are discussed, lessons learned that are handy to ensure appropriate financial instruments and how capacity development can be availed to support resilience objectives.

In summary, The PPCR principles are encapsulated in the MSIP-SPCR's objective, which is to *"help Ethiopia to systematically convene, coordinate and complement financing for resilience objectives in the forest, agriculture, livestock, water and energy sectors from a variety of existing and future sources including the PPCR, the Green Climate Fund (GCF), the Global Environment Facility (GEF), the WB's International Development Association (IDA) and AfDB's African Development Fund (ADF), bilateral financing, GoE budget and CRGE Facility, as well as private sector investment (such as via IFC support to forest and livestock development)."*….These investments can facilitate the scale-up of Federal Democratic Republic of Ethiopia's (FDRE's0existing large-scale resilience programs, help fill gaps in resilience responses (e.g. insurance, performance-based payments), strengthen the credibility of investment proposals, plans, programs, projects, and policies, and reduce transaction costs to Ethiopia and partners from overlaps and duplications."

1.2. Meeting Objectives of PPCR

1.2.1. Ownership and Alignment of MSIP-SPCR

As outlined earlier, the MSIP preparation process was Government-owned, led by Ministry of Finance and Economic Cooperation (MoFEC) along with a core set of line ministries including the Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Environment and Climate Change (MEFCC), the Ministry of Water, Irrigation and Electricity (MoWIE), and the Ministry of Livestock and Fisheries (MoLF). Key development partner agencies and stakeholders were continually engaged in MSIP preparation and dialogues. The participatory nature of the process helps to conclude that the MSIP is responsive to multiple potential international climate finance opportunities including the Green Climate Fund (GCF), the Global Environment Facility (GEF), as well as other traditional financing sources that do not support climate aspects.

The above is in line with the pilot programs implemented under the PPCR as it is country led, has built on National Adaptation Programs of Action and other relevant country studies and strategies, and is strategically aligned with the Adaptation Fund and other donor funded activities to provide pilot finance in the short term so as to learn lessons that will be useful in designing scaled up adaptation financing.

1.2.2. Participatory, Quality Approach and Consensus Building

MSIP four staged participatory development process, that is, i) scoping to determine boundaries of the investment plan, ii) analysis and stock-taking to address gaps and agree on criteria to identify investments, iii) prioritization to identify bankable activities, projects, programs and policies, and (iv) the finalization of a costed, multi-sector investment plan (MSIP) has involved continual consultations with stakeholders making it an inclusive process. The fact that the consultative process involved Development Partners, civil society and other stakeholders; and build on existing major strategies, programs, projects increases the chance of creating a multiplier effect in scaling up investment and action through 2030 using new and additional financing from multiple sources. This process is consistent with the objective of the PPCR, which is to pilot and demonstrate ways to integrate climate risk and resilience into core

development planning, whiles complementing other ongoing activities. Also, consistent with the fact that PPCR preparation grants purpose is to develop quality investment portfolio by strengthening consensus among key national stakeholders and development partners.

With regards to PPCR's objective of enhancing capacity of national institutions for robust policy reform and priority setting, MSIP's has identified existing institutional capacity gaps to implement large-scale projects, for instance in afforestation and reforestation, Participatory Forest Management (PFM), land-use planning, safeguards, policy development, and WASH project where considerable further investments will be required to create the needed capacity within government ministries and implementing entities to deliver Ethiopia's ambitious national climate change agenda. The aim is to ensure coordination of public financing for investment projects, requiring strong implementation mechanisms at all levels of government as well as the availability of technically qualified manpower to realize investment projects on the ground.

MSIP used a sound analytical approach linking relevant sector investments to economic growth and poverty alleviation strategies, in keeping with PPCR objectives. Using the multi-criteria analysis approach to assess key climate resilience enhancing investments, possible investment activities were compared and ranked. The prioritization process was participatory and required consensus building on criteria to evaluate possible investments; scales to measure the relative merit of investments; weights to assess the relative importance of criteria; indices to rank investment opportunities based on the criteria, scales and weights; and final selection of the highest priority investment activities based on the indices interpreted and refined through a consultative process. Second highest ranked criterion was impact of '*Activity Package on consumption poverty or food insecurity, or impact on consumption of bottom 40%,*' followed by impact on climate resilience. Ranked sectorally, many investment activities fell in the category of Poverty and Climate Resilience, with one of the Ministries ranking 73 activities as 'high priority, out of the 77 activity packages listed in the prioritization framework tool

1.2.3. Scale up and Transformational Impact

MSIP has **demonstrated how it will initiate transformative impact** partly by identifying high priority investment activities that will contribute to transformational change. These activities include vulnerability-oriented adaptation that enhance and support existing resilience building efforts, and activities are designed to target distinct climate change impacts. Through the envisaged combination of activities, the MSIP can catalyse transformational change through mobilising the investment to scale up existing practices and creating a change in the use of climate, hydrological and land use data in cross-sectoral decision-making.

Managing the rural to urban transformation sustainably is critical to rural resilience and well-functioning production landscapes that in turn affect the rural-to-urban transition.

The feasibility of this plan majorly rests on the ability to make a change in the way that the FDRE makes decisions and delivers its services. This will include a shift from a *command-and-control* approach where Government plays a lead role in service delivery to one where it takes on a greater facilitation role - creating space for private sector investment and the incentives for behavior change amongst farmers and rural communities. Transformational change should use three levers to achieve scale, namely: 1) Scaling up through public investment; 2) Creating the incentives for self-scale via private investment, including those of smallholder farmers; and 3) Altering decision-making and delivery within existing programs and investments through policy reform and the greater use of climate, hydrological and land use information in decision-making.

MSIP is emphatic that it could Specifically contribute to a four-fold increase in the productivity of Ethiopia's rural landscape by harnessing improvements in land and water management that optimize efficiency, balance competing priorities and leverage investment from both the public and private sectors. This requires massive investment as well as extensive policy and regulatory reform.

With regards to the PPCR aims to contribute to achieving the objectives of the SCF by seeking to **provide incentives for scaled-up action and transformational change in integrating consideration of climate resilience in national development planning** consistent with poverty reduction and sustainable development goals. Many of the climate resilience activities covered by the MSIP reflect established national priorities and are already being supported by existing projects and programs**.** However, more than 50% of priority Activity Packages are supported only at pilot stage or need to be scaled up to fully address the resilience challenges faced. In other cases, there are critical gaps that would significantly increase the effectiveness of ongoing initiatives, for example via improving agriculture related weather forecasting and information services. The MSIP creates the opportunity for substantially scaling these up.

Since many key Activity Packages contribute to the resilience goals of more than one Activity Group; the costings for each relevant Activity Group, though indicated, has not been included in the total gap, to avoid duplication. For example, irrigation, which is Activity Packages 10 and 11 in the document has an indicative cost of $4.4 billion and is included in costings for Activity Groups 1 and 2. If each Activity Package is counted only once, the cumulative cost of the five Activity Groups is USD $6.1 billion, of which USD $4.4 billion is irrigation. By comparison, the Portfolio Review and Gap Analysis identified a financial gap of approximately USD $4 billion between committed funding and the amount required to reach the CRGE 2030 climate resilience goals. If funded in isolation, through 2030, the five Activity Groups would require an incremental investment of approximately USD $11.7 billion to address the climate resilience gaps facing production landscapes. Therefore, MSIP has not only taken account of the additional costs and risks associated with integrating climate risk and resilience in core development activities, but also reduced duplication, which could adversely affect the viability of investments by making it too expensive. This is in

keeping with the PPCR objective of financing additional costs and risks associated with integrating climate risk and resilience in development activities

Table shows a summary of Activity Groups, main components and estimated cost of each component.

Table 1: Summary of Activity Groups, main components and estimated cost of each component

Title	Main Components	Estimated overall cost (USD)
Activity Group 1 Enhancing Climate Resilience in Agriculture	• Climate smart and gender sensitive agricultural support services • Reduced vulnerability to rainfall variability and water supply uncertainty • Increased resilience through crop productivity improvements and more equal intra-household relationships • Increased resilience through income diversification	**4,776 million**
Activity Group 2 Climate Resilient Forest and Landscapes for Development, Conservation, and Utilization	• Reduced pressure on forests from extensive agriculture • Reduced pressure on forests from fuelwood collection • Reduced pressure on forests from livestock activities • Enhanced resilience through livelihood diversification • Enhanced climate resilience through expansion of forest resources and, where appropriate, effective joint management and benefit sharing	**$6,040 million**
Activity Group 3 Ensuring Climate Resilient Livestock Management and Livelihoods	• Climate smart and gender sensitive extension services • Enhanced resilience through reduced livestock vulnerability and diversification • Reduced environmental impact of livestock production	**$721 million**
Activity Group 4 Increased Resilience through Affordable Access to Climate Smart Energy	• Reduced reliance on fuelwood for thermal energy • Improved access to low-emissions electricity	**$144 million**
Activity Group 5 Enhanced Climate-Resilient Disaster Risk Management and Early Warning Systems	• Improved drought and flood risk assessment and early warning systems • Increased resilience through coordinated food and non-food responses	**$53 million**

Title	Main Components	Estimated overall cost (USD)
	• Improved adoption of the Sendai Framework for Disaster Risk Reduction	
Total		**11,734 million**

The table breaks down activities, components and costs thus making it easier for investors, development partners and other sources of finance to pick areas of interest to invest. MSIP goes on to explain how it has generated synergies through cross-sectoral implementation of Activity Groups. While each Activity Group was conceived to address a specific climate change-related challenge facing agriculture and forests, there are important synergies between the Activity Groups and each of the sectors. For example, many of the pressures on forests stem from agriculture, livestock and energy activities. Similarly, improving agriculture, livestock and forest management and related livelihoods can improve people's ability to mitigate and cope with drought and flood risks without costlier reliance on disaster risk response. These important synergies mean that Activity Packages funded as part of one Activity Group may contribute to the objectives of a different Activity Group, thereby potentially achieving multiple goals thus reducing the remaining financing gap.

1.2.4. Capturing and Dissemination of Lessons Learned

Implementation of such projects will require **better coordination, a consolidated and harmonized information sharing,** which can foster collaboration, reduce costly fragmentation. MSIP has demonstrated how Ethiopia's capacity to share and disseminate climate information has been strengthened by several on-going programs such as the SLMP II program, which supports the development of a harmonized land information system, and the Tana Beles Program of MOWIE which established a robust basin monitoring information system. The NDRMC has developed databases of livelihood zone assessments and many woreda disaster risk profiles, and has worked with the National Meteorological Agency to share weather and early warning information. It recommends enhanced capacity to share climate information among key stakeholders within Ethiopia by for instance development of hydro-meteorological and groundwater monitoring systems, or the development of a platform to share disaster early warning data. MSIP notes that there are many capacity development programs on integrating climate into development, however, the main gaps noticed are in areas of planning and monitoring and reporting**.** Many of the capacity building programs are technical and address specific issues. Poor planning and reporting is still noticeable at government institutions. Furthermore, the capacity building and institutional strengthening focus on federal and regional level and capacity or system building activity at woreda level remains a gap.

Notably, MSIP stress that the "*Activity Groups represent a programmatic, landscape approach to ensuring climate resilience, and emphasize the benefits of cross sectoral collaboration between sector Ministries to maximize impacts at the national, regional and woreda level. Investment in these cross-sectoral responses will require implementation at a landscape scale, necessitating multi-stakeholder coordination in spatial land-use*

planning which requires using climate, hydrological and land use data in cross-sectoral decision-making."

1.2.5. Country Capacity to Implement the Plan

MSIP-SPCR has taken into account the **country capacity to implement the plan**. It has analyzed the policy and regulatory incentives for improvements in resilience and identified potential areas for reform**.** Key priority areas are summarized below:

1. The strengthening of capacity for cross-sectoral planning, policy, and investment at all levels of Government.
2. Continued regulatory reform and public-private dialogue to enhance the environment for the private sector and to overcome key barriers to accessing finance for investments in land-based sectors.
3. The management of trade-offs of sectors' claims to land and water through an enhanced land use planning process, update of all major river basin master plans and local level land and water use planning for improved irrigation, and other infrastructure investments.
4. Improved policy for input supply with consideration for greater private involvement, including clearer policies on the registration of new seed varieties and a plan for value chain investments around agro-industrial parks.
5. Improved regulation to support public-private investments in the forestry sector and to incentivize farmers to use marginal farmlands for tree planting and natural regeneration.
6. Improved policy on animal breeding, live animal export and stronger implementation of land use planning that affect feedlot production and pastoral grazing lands.
7. Better implementation of VAT and tariff exemption for off-grid renewable energy technologies used for productive purposes, clear regulatory guidelines for imposition of tariffs for off-grid power generation for communal use (e.g. irrigation pumps etc.), inclusion of all off-grid renewable energy devices in financing mechanisms to relieve forex limitations restricting imports, and improved public-private coordination to enhance quality standards and vocational training.
8. Enhanced public-private dialogue on Payment for Ecosystem Services (PES) to share lessons from the pilot schemes and to ultimately work towards regulation.
9. Stronger institutional arrangements for research and development in the water sector along with more consistent water pricing and implementation of regulations around water allocation.
10. Increased dissemination and institutional transparency around the implementation of environmental management legislation.
11. Greater investment in the quality and the use of weather and climate data along with new regulations to support the scale-up of weather-indexed insurance.
12. Shifting from costly (but often necessary) humanitarian relief to longer-term resilience-building development pathways, in line with the profile of a middle-income country

1.2.6. Prioritization of investments, monitoring and evaluation and links to results framework

MSIP has provided for **prioritization of investments** as discussed earlier, it has also adequately captured and disseminated lessons learned. With regards **to Monitoring and evaluation**, MSIP states that it is going to be part of an ongoing effort to track national development and resilience progress basing itself on the national Growth and Transformation Plan. The CRGE Facility will coordinate and support improvements needed in sector monitoring systems to respond to CRGE priorities. However, it will not be responsible for producing monitoring data. This is provided by existing investment projects, ongoing sector reports and annual surveys conducted by the Central Statistics Agency. Studies conducted by development research groups such as the Ethiopian Development Research Institute (EDRI) will also be used to measure impact and explore learning priorities in relation to effective resilience investment. Investment is required to improve the quality of routine monitoring data and to ensure surveys and impact studies meet the requirements of the CRGE.

It is also clearly stated that the MSIP results are closely aligned to the results framework of the CRGE Strategy and the GTP II, which means it will be possible for monitoring and reporting to be integrated into the national system.

1.2.7. Social and Environmental Issues including Gender

MSIP has addressed **social and environmental issues including gender**, focusing more on the social equity, inclusiveness and social protection by analyzing the policy environment that supports these such as the CRGE. Also addresses underlying drivers that perpetuates the situation. It makes it clear that Ethiopia's structural transformation will require better integration of environmental, social and sustainability considerations into the country's policy and institutional frameworks to achieve efficient use of resources that contribute sustainably to economic development, poverty reduction and quality of life**.** Transformative change requires that Ethiopia's diverse production landscapes become not only four times as productive, but also that the vulnerable groups including women, youth, elderly, disabled, minorities more resilient to climate shocks. MSIP has come up with investment activity packages solely designed to address impact of climate shocks on the very vulnerable groups,

The MSIP can strengthen the implementation of FDRE policy commitments on gender equality. The Ethiopian constitution (1995) gives women equal rights to men, including equal rights to the use, transfer and control of land. It also enables the use of positive discrimination to enable women to participate and compete with men in all political, economic and social fields. The Ministry of Women and Children Affairs is mandated "to evaluate all policies, legislation, development programs and projects to ensure they give due consideration to women and youth issues". In line with this, most sector line ministries have Women's Affairs Directorates to support sectoral gender mainstreaming. Despite these efforts, there are still large differences in access to extension services, inputs and finance between men and women, and particularly stark differences by region. A range of complementary activities are important to enhance women's participation in the rural

economy and in resilience building activities. These include improving access to formal information, the provision of specific training for women, encouraging financial inclusion through the creation of savings and credit groups, and the establishment of women-only self-help groups for processing and marketing.

MSIP has designed the first activity group - **Enhancing Climate Resilience in Agriculture** - with gender lens, that is, specific consideration of the differing impacts on women and men resulting from climate variability and weather extremes in agriculture. Women and men in rural areas in are especially vulnerable when they are highly dependent on local natural resources for their livelihood. Those charged with the responsibility to secure water, food and fuel for cooking and heating face the greatest challenges. Secondly, when coupled with unequal access to resources and to decision-making processes, limited mobility places women in rural areas in a position where they are disproportionately affected by climate change. Vulnerable women, such as widows, have a need for more tailored livelihoods support. Climate change has serious ramifications in four dimensions of food security: food availability, food accessibility, food utilization and food systems stability. Therefore, this Activity Group ensures that the rights of rural women are ensured with respect to food security, non-discriminatory access to resources, and equitable participation in decision-making processes where climate resilience activities are implemented.

From the foregoing, the MSIP design does not only meet the objectives of the PPCR but is also consistent with several PPCR principles including:

- It has demonstrated that it can deliver additional finance to Ethiopia for integrating climate risk and resilience into development planning and investments, including the blending of grant and highly concessional loans with domestic public and private financing.
- Through investment activity packages and activity groups it has illustrated that it can provide the MDBs with the instruments to blend PPCR resources with other sources of financing to tailor terms to a target level of concessionality, which will vary depending on project-specific factors
- MSIP -SPCR has provided the multilateral development banks (MDBs) with a menu of blending options to accommodate different needs of Federal Republic of Ethiopia and program interventions. It has shown how PPCR technical assistance grants could complement investment or development policy operations by supporting specific activity packages under activity groups
- MSIP has put forward activity packages that can require Co-financing from the PPCR through a variety of financing instruments utilized by the Multi-lateral Development Banks (MDBs) for investment and development policy lending.

2. PART II: COMPLIANCE WITH THE INVESTMENT CRITERIA OR BUSINESS MODEL OF THE STRATEGIC PROGRAM FOR CLIMATE RESILIENCE.

2.1.1. PPCR specific criteria – climate information and vulnerability

Climate risk assessment: The Ethiopia MSIP - 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.

Ethiopia's climate risks and challenges are well articulated in part 1 of the MSIP, the section describes how the country is highly vulnerable to climate variability, climate shocks and climate change due to several factors, including its rainfall-dependent economy, a very large predominantly rural population, frequent occurrence of droughts and floods, high poverty rates and limited institutional capacity. The high rainfall variability between years, seasons and regions is well outlined, with illustrations of historical climate events – floods, drought, forest fires and increase in pests linked to increase in temperature, and associated humidity and moisture availability. The impact of historical weather variability, extreme events and hazards are linked to the loss in agricultural output, lower export earnings and reduced foreign direct investment. These have substantial negative impact on the economic growth and poverty given the dependence of the population on agriculture and forestry resources. GDP losses due to climate variability are estimated to be around 1% to 4% but this doesn't include human losses.

Future climate and weather variability is thought to be very likely, with most recent projections showing that future temperatures will rise within a range of 0.5 °C to 1.5 °C by the 2020s, and 1.5° to 3° by the 2050s relative to the period 1961-1990. The report has detailed negative impacts of climate change on GDP which are likely to occur as a result of the following five factors: (i) adverse impacts on the agriculture and livestock sectors, (ii) effects on the hydropower sector and, hence, power generation, (iii) increased flooding impacting on the transport sector, (iv) effects of drought on government expenditure associated with vulnerability and food insecurity, and (v) impacts on irrigation and hydropower due to conflicts associated with competing demands for energy. Impacts of climate events are illustrated by a report that shows that since 2000, approximately 6.2 million people have been affected by drought every year, with the 2015 drought associated with the global El Niño weather phenomenon causing food insecurity among 10.2 million Ethiopians. The 2003 drought led to a decline in 3.8% in GDP, a 15% inflation rate, a decline in agricultural productive, and widespread food and energy insecurity, and has changed physical, chemical and biological conditions of the country's lakes.

It is evident that the Ethiopia MSIP - SPCR has been developed based on 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. This is consistent with PPCR criteria

2.1.2. Institution and Coordination

Institutions/ co-ordination: The Ethiopia MSIP - 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.).

In terms of institutions coordination, the MSIP-SPCR cites the Ethiopian Constitution (1995) which sets out the rights of Ethiopian citizens to sustainable development, to improve their standard of living and to a clean and healthy environment and the National Environmental Policy (1997) which recognizes, *inter alia* the need to seek financial support for climate action, plan over long time horizons and to ensure community participation in sustainable environmental management. It builds on Ethiopia's existing response to climate change as articulated in the Second Growth and Transformation Plan (GTP II), which covers the period 2015/6 to 2019/20 and has CRGE as one of its nine pillars, placing a greater emphasis on the links between the national development plan and the CRGE Vision. CRGE Vision sets the goal for Ethiopia to become a middle-income country by 2025 with zero net increase in annual carbon emissions and a climate resilient economy. The National Adaptation Plan is key to cross-sectoral adaptation strategies, with respect to agriculture, forestry, water, energy, transport, urban, industry, health and education requirements. Climate Resilience (CR) Strategies are also cited as providing more detail for the Agriculture and Forestry (2014) and Water, Irrigation and Electricity (2015) sectors and finally, CR commitments outlined in Ethiopia's Nationally Determined Contribution submitted to the UNFCCC, are given special attention.

MSIP proposes to place coordination responsibilities on the Climate Resilient Green Economy (CRGE) and UN Agencies Directorate of the Ministry of Finance and Economic Cooperation (MOFEC's), which, has managed the country's national climate finance facility or CRGE Facility, working closely with Ministry of Environment, Forestry and Climate Change (MEFCC) to coordinate cross-sectoral plans to integrate climate change. MoFEC created The Inter-Ministerial Steering Committee of the CRGE Facility and has acted as a coordination mechanism bringing together sector representatives to discuss CRGE issues at policy level. The MEFCC is mandated to coordinate Ethiopia's technical implementation of CRGE. According to the MSIP, CRGE Facility has proven capacity to manage at least moderate amounts of climate finance, which is achieved via implementation agreements with GoE sector line ministries using finance channeled via Regional Bureaus of Finance and Economic Development. At local level, multi-sectoral implementation committees composed of Woreda technical experts and chaired by the Woreda Administrator will oversee implementation. More recently the CRGE Facility has added a climate mainstreaming focus among sectors.

CRGE Facility works closely with National Planning Commission (NPC) which reports to the Prime Minister's Office and coordinates sector planning ***to support cross-sectoral planning across Ethiopia's Regions.*** Combined with CRGE strength of accessing and mobilizing domestic and international sources of finance (both public and private) to

support the implementation of climate resilience strategies, makes this a win situation, in terms of coordination arrangements to address climate change.

2.1.3. Prioritization

Prioritization: The Ethiopia MSIP - SPCR has adequately prioritized activities taking into account relevant climate/risks and vulnerabilities and development priorities, sectoral policies; ongoing policy reform processes and existing, relevant activities and strategies.

In its development, MSIP utilized three distinct but inter-related tools outlined below:

- Portfolio Review: A stock-taking of relevant existing donor-supported projects in the relevant sectors, to understand what investments have so far been made in the context of climate resilience in agriculture and forestry.
- Gap Analysis: Analysis of existing portfolio of projects to identify any gaps in investments, based on its alignment with GTP II targets; the degree to which it meets projected investment requirements, in aggregate and disaggregated by sectors and themes; and the extent to which investment flows have met the spatial needs of Ethiopia.
- Investment Prioritization Framework: A tool for prioritizing activities developed by the World Bank collaboratively with partners and government. Using this tool, and the gap analysis findings, a range of identified activities were prioritized in an iterative and inclusive manner by the line ministries, and informed by partners and stakeholders.

According to the MSIP, all tools have been applied in highly participatory ways with relevant line ministries providing data used in the portfolio review and gap analysis, also engaging in consultations and workshops designed to enable review of and feedback on the results of the analysis. Ministries were also closely involved in the design of the Investment Prioritization Framework, and used them to assess the importance of the Activity Packages that they have identified as being most important to achieving climate resilience in the targeted sectors. The MSIP outputs are therefore considered to have stakeholder agreement and ownership.

The involvement of line ministries, development partners and civil society in the prioritization of activities and validation of the outcome makes the process authentic in terms of relevance and consistency with sectoral policies, on-going reform processes and strategies.

2.1.4. Stakeholder Engagement

Stakeholder engagement/ participation: The Ethiopia MSIP - SPCR has identified and addressed the needs of highly vulnerable groups.

MSIP reports that 81% of the Ethiopia population living in rural areas are vulnerable to weather variability - drought, floods and other climate or disaster risks, with 16% of the total population being pastoralists or agro-pastoralists, and highly vulnerable to hydro-

meteorological hazards such as droughts, which reduce grazing stocks and lead to the starvation of livestock. The needs of this highly vulnerable group is addressed at investment activity identification stages. All the five activity groups focus on ensuring that vulnerable groups are protected from vagaries of climate. The fact that a combination of two criteria – impact on poverty and distributional issues and impact on climate resilience were weighted highly in in identifying projects, made sure that most of the activities are addressing highly vulnerable groups.

MSIP gap assessment highlighted the need for articulating resilience and resilience building at program level interventions by investing in climate information collection, analysis and dissemination focusing on key parameters such as rainfall, temperature, which are essential in disaster risk management. There is need to scale up climate information collection, analysis and efficient delivery to land and water users through a variety of mechanisms and a variety of existing and future programs and projects throughout the country.

2.1.5. Considered other Adaptation Finance

The Ethiopia MSIP - SPCR has considered other adaptation finance initiatives in the country and demonstrate how projects developed will meet the (initiatives) submission criteria.

For each Activity Group, MSIP – SPCR has given a comprehensive list of bilateral and multilateral funding institutions which are already supporting similar climate resilience work in Ethiopia, or have expressed interest in financing the overall goal within Ethiopia of enhancing climate resilience in the sector. It has also suggested Activity Group that may be met by end user contributions, GoE co-financing or activities that can be met through a combination of grants and loans from one or a consortium of new and existing international funding sources. Using indices, investment activities have been categorized into high, medium or low priority according to eleven criteria identified. However, the submission criteria as appertains to funding agencies, have not been addressed.

From the above it can be concluded that MSIP-SPCR complies with PPCR program as *in Annex A of the "Procedures for the preparation of independent technical reviews of PPCR and SREP investment plans and programs"*. The strategic program for climate resilience (SPCR) is a country-owned and led framework identifying vulnerabilities and priorities for mainstreaming climate resilience into development planning and investment. The SPCR is developed through a participatory process that includes: identifying priorities and strategies, defining key agencies, allocating tasks among agencies, MDBs and other partners, and developing a results framework to track progress. The SPCR builds on policy and analytical work already underway in a country and is designed to attract other multi-lateral or bilateral development funding, including climate finance from the Green Climate Fund (GCF)

3. PART III: RECOMMENDATIONS.

3.1.1. Risks Identification and Assessment

MSIP has ensured that several of the proposed activities have associated safeguarding risks stemming from possible changes of land use, introduction of new technologies and varieties, and generation of new waste. To mitigate, MSIP states that these risks will be effectively managed through implementation of the Environmental and Social Safe Guards as well as associated World Bank procedures. A Risk Management Framework, identifying primary risks as well as ways of managing them, has been provided. MSIP also cautions that a key risk to sustainability is the high staff turnover in the Ethiopian civil service, which suffers from weak career and salary incentives, particularly when contrasted with market-level salaries provided to contracted staff. To overcome this, MSIP will support the deployment of contracted staff and provide additional incentives for existing staff to enhance delivery prospects and promote sustainability. It recommends human resources management system improvements f within the civil service to complement this.

While the programme and project risk assessment is commendable, it is inadequate from a global perspective. It is recommended that in addition the risk assessment be categorized as below:

1. Development risks that cover all the risks incurred before the project begins implementation, including the identification of suitable private partners and their engagement in relevant climate-resilient measures; Public partners have been identified but private and civil society sector partners have not been adequately addressed.
2. Operation risks which could include government staff turnover, role of other actors and their performance nationally and regionally
3. Outcome risks should cover the risks of not achieving the public policy objectives and specifically climate resilience. For the PPCR, these risks include failure to deliver the intended climate resilience, social protection of the most vulnerable and food security objectives, and to demonstrate for instance how other actors such as the private sector and civil society involvement in building resilience can be achieved
4. Other risks include regulatory risks, external risks. The categorization of all these risks into low, medium and high and their possible mitigation would be very useful.

3.1.2. Other recommendations include:

Cost-effectiveness: Consideration of cost effectiveness of proposed investments has not been detailed. This is acknowledged by statements in the annex which states ‘MSIP seeks to identify ways of achieving the best returns on investment. Given the absence of consistent data on project impact, the portfolio review is unable to determine where the best returns might be available. Preparation of the MSIP will therefore need to involve additional research to inform this vital aspect. The small project case studies could help

provide some insight into where potentially high returns might be available (including through pursuit of scaling-up and/or multi-sector linkages).' It is important that further work is carried out to further ascertain better return on investments prior to full-scale implementation. This could involve:

- Activity packages in activity groups being developed to proper concepts and aligned with the funders conditions and apportioning responsibility for implementation between the different actors and stakeholders
- Role of private sector is still not very clear given the strict regulatory environment. For cost-effectiveness, the role of private sector needs to be more prominent, especially in the agro-forestry and livestock value chain, water infrastructure and energy distribution services
- Civil society role also needs to come out more clearly, especially its contribution in climate information gathering, analysis packaging and dissemination, given that the public bodies cannot do this work alone

In conclusion, the process of developing MSIP-SPCR has been inclusive, consultative, participatory and very sound technically. A lot of information has been generated, some of it in the annexes. This information will need **better packaging**, **validation** and **due diligence**, at least some of them, in order to be used in the next stages of finalizing the MSIP and developing various concepts and proposals to enable implementation through participation of many investors from the various MDBs, bilateral development partners, funding agencies internationally and locally and even the private sector.

Government of Ethiopia and MDB Response to the Independent Technical Review of the Multi-Sector Investment Plan for Climate Resilience

PROGRAM UNDER THE STRATEGIC CLIMATE FUND	Pilot Program for Climate Resilience (PPCR) - Strategic Program for Climate Resilience
NAME OF THE REVIEWER	Stephen Mutimba
DATE OF SUBMISSION	23/04/2017
DATE OF RESPONSE	28/04/2017

We thank the reviewer for the comprehensive assessment of the Ethiopia MSIP (developed with support from the PPCR) and comparison to the PPCR principles, objectives and criteria. We appreciated that the reviewer recognized that the MSIP document addresses and in some cases exceeds the PPCR requirements.

i. Government Led and Capacity to Implement Plan.

We thank the reviewer for noting that "the MSIP has adhered to PPCR and SPCR's principle and mandate respective of ensuring that 'its funding is used for technical assistance to enable developing countries to build upon existing national work to integrate climate risk and resilience into national and /or sectoral development plans, strategies and financing' [and that it is] 'a country-owned and led framework identifying vulnerabilities and priorities for mainstreaming climate resilience into development planning and investment.'"

ii. Inclusive, Consultative and Participatory

The reviewer usefully documents the "evidence that the MSIP has been inclusive in its design and development process," that it "convened consulted and coordinated varied stakeholders including financing sources… linking them to prioritized investment activities with most impact in achieving targets in the CRGE, and other national planning and policy frameworks.

iii. Developed on Basis of Sound Technical Assessment

The reviewer concludes that 'using a participatory approach, the MSIP carried out Portfolio Review of all major activities …in the agriculture, forest, livestock water and energy sectors." And that "the PPCR principles are encapsulated in the MSIP-SPCR's objective, which is to *"help Ethiopia to systematically convene, coordinate and complement financing for resilience objectives in the forest, agriculture, livestock, water and energy sectors from a variety of existing and future sources.'*

I.2 Meeting Objectives of PPCR

1.2.1. Ownership and Alignment of MSIP-SPCR

The GoE is pleased to see the recognition that "the MSIP preparation process was Government-owned, led by Ministry of Finance and Economic Cooperation (MoFEC) along with a core set of line ministries including the Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Environment, Forest, and Climate Change (MEFCC), the Ministry of Water, Irrigation and Electricity (MoWIE), and the Ministry of Livestock and Fisheries (MoLF). Key development partner agencies and stakeholders were

continually engaged in MSIP preparation and dialogues. The participatory nature of the process helps to conclude that the MSIP is responsive to multiple potential international climate finance opportunities…"

1.2.2. Participatory, Quality Approach and Consensus Building

The reviewer usefully notes that "the consultative process involved Development Partners, civil society and other stakeholders." It also "built on existing major strategies, programs, projects [which] increases the chance of creating a multiplier effect in scaling up investment … using new and additional financing from multiple sources. This process is consistent with the objective of the PPCR, which is to pilot and demonstrate ways to integrate climate risk and resilience into core development planning, whiles complementing other ongoing activities." He further notes that "MSIP used a sound analytical approach linking relevant sector investments to economic growth and poverty alleviation strategies, in keeping with PPCR objectives."

1.2.3. Scale up and Transformational Impact

We agree with the reviewer that the "MSIP has demonstrated how it will initiate transformative impact partly by identifying high priority investment activities that will contribute to transformational change;" and that "the MSIP creates the opportunity for substantially scaling … up."

1.2.4. Capturing and Dissemination of Lessons Learned

We agree that "implementation of such projects will require better coordination, a consolidated and harmonized information sharing, which can foster collaboration, reduce costly fragmentation." Indeed, it is also our view that the "MSIP has demonstrated how Ethiopia's capacity to share and disseminate climate information has been strengthened" by ongoing large scale landscape level programs." The reviewer endorses our approach to using Activity Groups to "represent a programmatic, landscape approach to ensuring climate resilience, and emphasize the benefits of cross sectoral collaboration between sector Ministries to maximize impacts at the national, regional and woreda level.

1.2.5. Country Capacity to Implement the Plan

We agree and thank the reviewer for noting that the MSIP "has taken into account the **country capacity to implement the plan**. It has analyzed the policy and regulatory incentives for improvements in resilience and identified potential areas for reform."

1.2.6. Prioritization of investments, monitoring and evaluation and links to results framework

We are pleased to see that the reviewer has endorsed the prioritization of investments, and that the MSIP "results are closely aligned to the results framework of the CRGE Strategy and the GTP II, which means it will be possible for monitoring and reporting to be integrated into the national system."

1.2.7. Social and Environmental Issues including Gender

The reviewer recognizes the effort to address "social and environmental issues including gender,… inclusiveness and social protection by analyzing the policy environment that supports these such as the CRGE." He notes also that we have "come up with investment activity packages solely designed to address impact of climate shocks on the very vulnerable groups" and that the "MSIP can strengthen the implementation of FDRE policy commitments on gender equality," including through the design of specific activity groups using a gender lens. The reviewer concludes the MSIP "not only meets the objectives of the PPCR but is also consistent with several PPCR principles."

2. PART II: COMPLIANCE WITH THE INVESTMENT CRITERIA

2.1.1. PPCR specific criteria – climate information and vulnerability

The reviewer positively notes that the MSIP "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." He notes that "Ethiopia's climate risks and challenges are well articulated in part 1 of the MSIP."

2.1.2. Institution and Coordination

The reviewer positively notes the MSIP's "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.)", as well as the basis of the MSIP in the constitution and earlier environmental policies and that it "builds on Ethiopia's existing response to climate change as articulated in the Second Growth and Transformation Plan (GTP II)." The reviewer acknowledges the appropriate placement of the CRGE coordination responsibilities in MOFEC, working closely with MEFCC and the NPC, which helps to *support cross-sectoral planning across Ethiopia's Regions.*

2.1.3. Prioritization

The reviewer notes that the document "has adequately prioritized activities taking into account relevant climate risks and vulnerabilities and development priorities, sectoral policies; ongoing policy reform processes and existing, relevant activities and strategies." We are pleased that Mr Mutimba recognized the comprehensiveness and value of the three part assessment process that relied on a review of the existing climate investment portfolio, and analysis of financial, geographic and thematic gaps, and an investment prioritization framework – as well as the application of these tools "in highly participatory ways" in an "authentic process" with relevant line ministries and others through consultative workshops designed to achieve and validate "stakeholder agreement and ownership."

2.1.4. Stakeholder Engagement

Mr Mutimba notes that the MSIP "has identified and addressed the needs of highly vulnerable groups" and that the prioritization process gave special attention and weight to "impact on poverty and distributional issues" and "impact on climate resilience" such that "most of the activities are addressing vulnerable groups."

2.1.5. Considered other Adaptation Finance

The reviewer notes that the MSIP "has considered other adaptation finance initiatives in the country and demonstrated how projects developed will meet the (initiatives') submission criteria" and has provided "comprehensive list of bilateral and multilateral funding institutions which are already supporting similar climate resilience work in Ethiopia." He notes that the MSIP "builds on policy and analytical work already underway and is designed to attract other multi-lateral or bilateral development funding, including climate finance from the Green Climate Fund (GCF)." However, the reviewer also notes that the specific submission criteria for different funding agencies "have not been addressed."

- We thank Mr. Mutimba for the review and would like to note that the MSIP's greatest value to Ethiopia has been in aligning and documenting the GoE's climate resilience priorities as a key means to help convene financing from multiple financial sources, and address fragmentation, as appropriate to specific defined needs. With MDB financing, the potential for GCF funding, potential GEF grants, planned and proposed new bilateral support, as well as the need for transformational scale, it is expected that most projects and programs now and in future require blending finance from multiple sources to

meet identified investment priorities and reduce transaction costs associated with fragmented projects, partners, and financing.

- While the MSIP does not enumerate the criteria of every funding agency, we believe that it appropriately provides critical documentation, sound approaches, and evidence of inclusiveness that will help to meet the specific submission criteria for a range of future financing sources (including $100 million in new concessional lending from IDA for the new resilient Landscapes and Livelihoods Project for the Sustainable Land Management Program scheduled for preparation between July 2017 and July 2018. This operation will blend other financing, following the MSIP.). We expect that specific project proposals in the future will certainly require additional documentation to meet the funds' specific requirements. The current MSIP was designed to be responsive to the requirements of the PPCR.

3. PART III: RECOMMENDATIONS.

3.1.1. Risks Identification and Assessment

We note that Mr Mutimba concludes that the "MSIP has ensured that several of the proposed activities have associated safeguarding risks stemming from possible changes of land use, introduction of new technologies and varieties, and generation of new waste" and that "a Risk Management Framework, identifying primary risks as well as ways of managing them, has been provided." He also recommends a more comprehensive discussion of risks, including:

- Development risks that cover all the risks incurred before the project begins implementation, including the identification of suitable partners, including both private sector and civil society.
- Operation risks, which could include government staff turnover, role of other actors and their performance nationally and regionally.
- Outcome risks should cover the risks of not achieving the public policy objectives and specifically climate resilience, including failure to deliver the intended climate resilience, social protection of the most vulnerable and food security objectives, etc.
- Other risks include regulatory risks, external risks. The categorization of all these risks into low, medium and high and their possible mitigation would be very useful.

- We agree with the technical reviewer that some additional risks can be enumerated and discussed, including those that recognize a global perspective. However, it is also noted (as above) that the process is now at the stage of investment planning. The document describes an investment framework that is designed to prioritize and inform the later development of projects and mobilization of resources for specific investment proposals. In the course of Government/MDB preparation of specific projects, more specific project-level risks will be defined through the due diligence process, recognizing that risk mitigation is normally built into project design. MDBs also require fund recipients to develop and implement safeguards measures. Some additional specific responses to the reviewer's recommendations are offered below. These responses should be understood with this background.
- The document will be updated to address these risks, from the perspective of implementation needs. More attention will be paid to development risks, identification of potential partners, and operational risks as noted. Outcome risks can be addressed at the level of the overall investment framework. However, it should also be noted that the introductory chapters usefully outline Ethiopia's climate vulnerabilities/risks in some technical detail. These are the consequences of the failure to deliver climate resilience, social protection, etc. and are the main premise of the activities identified and ranked in the investment plan.

In section 3.1.2, the technical reviewer notes that "consideration of cost effectiveness of proposed investments has not been detailed… Given the absence of consistent data on project impact, the portfolio review is unable to determine where the best returns might be available." Mr Mutimba also suggests that "further work is carried out to further ascertain better return on investments prior to full-scale implementation." He suggests that "activity packages be developed to proper concepts and aligned with [other] funders conditions," including implementation responsibilities for various actors and stakeholders.

- We agree that more information on costs will be helpful. In fact, more details on costs have been developed, but were considered unwieldy as an addition to the MSIP document. A summary of the underlying data and methodology used in the cost estimates will be included in the updated MSIP, which will incorporate indicative ROIs or a range of ROIs for different activities, where these can be based on existing projects. Specific project-level measures of cost effectiveness will be better addressed at the stage of development of specific project proposals, rather than at the strategic level of the MSIP.

- As the reviewer suggests, we fully expect that these specific concept notes and project proposals will build on the activity packages, providing more detail, outline the responsibilities of different actors and stakeholders, specify the role of the private sector and civil society, identify the alignment with specific funders' requirements, and satisfy additional due diligence requirements that may be imposed by the funding agency.

Mr Mutimba suggests that more attention is paid to the role of private sector, especially in the agro-forestry and livestock value chain, water infrastructure and energy distribution services. He would also like to see more attention on the role of civil society in terms of contribution in climate information gathering, analysis packaging and dissemination, given that the public bodies cannot do this work alone.

- Within the current document, there will be an effort to update and include more information on the potential roles for the private sector and civil society. Particularly, as noted, the civil society may have an important role in gathering, analyzing, and disseminating climate and resilience related information in ways that go beyond what public bodies can do.

The reviewer notes that "this information will need better packaging, validation and due diligence… be used in the next stages of finalizing the MSIP and developing various concepts and proposals to enable implementation through participation of many investors."

- We believe the MSIP lays out a sound investment framework and provides substantial detail on the technical nature of the packages and their rationale. This work is at the stage of a strategic investment plan. Specific project concepts and proposals will be developed at the next stage of seeking financing from specific funds, and these projects will fund specific government programs in a more integrated and sequenced way than is typically the case pre-MSIP. We recognize that prior SPCR documents have included concept notes for specific project proposals being submitted by Governments working with MDBs. Currently, however, the PPCR lacks funds for investment in specific projects and no request for project investment is being submitted to PPCR at this time for this reason. Project concepts and proposals will be further developed in coming months and years – by the Government together with the MDBs, and possibly with other partners. Following the MDB process, it is acknowledged that this will require additional project-level analytical work, detailed costing, further validation with specific groups of stakeholders, development of safeguard documents and procedures and other due diligence activities.

Annex 5: PREPARATION, CONSULTATION AND PARTICIPATION

A5.1 Conception of the MSIP for Ethiopia

The World Bank has provided on-going advisory services to Ethiopia's CRGE Facility, housed at MoFEC. In 2015, MoFEC requested funds from the Climate Investment Funds' (CIF) Pilot Program for Climate Resilience (PPCR) to support investment planning for the forest and agriculture sectors, which GoE has prioritized in its pursuit of green growth as well as its efforts to adapt to the risk posed by climate change. To this end, the GoE has already embarked on the implementation of Fast Tack Investment (FTI) projects through the CRGE Facility, both for Climate Change Adaptation and Mitigation, through selected six line Ministries including the Ministry of Agriculture, Ministry of Environment and Forest, and Ministry of Water, Irrigation and Energy. GoE believed that the PPCR could usefully support this work and provide additional focus on the resilience aspects of programming, by supporting existing efforts as well as leveraging larger investments from across the sectors. An anticipated outcome of PPCR investment was improved focus on climate resilience across the full breadth of the sector plans being developed through the GTP2.

The World Bank's 2016 Systematic Country Diagnostic prioritizes climate action for poverty reduction, endorsing the GTP-2's prioritization of investment in resilient landscapes for tangible gains in the primary sectors of forest, agriculture (including livestock), water, energy, and the importance of sound natural resource management that underpins these sectoral aspirations. The Bank was already providing and convening large-scale financing for the forest and agriculture sectors, and taking measures to boost sustainability and resilience. In addition to the Bank's large-scale financing, there is significant public expenditure as well as financing from other development partners (DPs). A comprehensive approach is therefore required to coordinate investment planning across sectors and stakeholders to boost efficiency and effectiveness. As a result, the World Bank, African Development Bank (AfDB), International Finance Corporation (IFC), and other partners have been engaging with MoFEC and four line ministries and other Ethiopian institutions to prepare the MSIP for climate resilience in key sectors, including agriculture and forestry.

Recognizing the importance of a coordinated approach, MoFEC requested the Bank to provide lead support to the development of a Multi Sector Investment Plan (MSIP) to scale up investment and action to achieve the country's CRGE Strategy and the Second Growth and Transformation Plan (GTP-2). In May 2015, to ensure that it could receive the necessary support, and following its submission of an Expression of Interest for support in investment planning for forest and agriculture, Ethiopia was selected to participate in the PPCR, being allocated a $1.5m preparatory grant from the PPCR. The World Bank, confirmed earlier as lead MDB in this process, will work with the GoE to meet CIF specific requirements (e.g. approval of the $1.5m Technical Assistance proposal, requirements of joint mission, peer review of the draft MSIP through an independent external peer review, and presentation of the MSIP by the senior level representative to governance committee). To enhance inclusivity of the MSIP development process, the WB and AfDB committed to support joint missions and national workshops to validate the agreed upon investment plans and specific investment projects.

The MSIP preparation process is Government-owned, led by MoFEC along with the Ministry of Agriculture and Natural Resources (MoANR), the Ministry of Environment and Climate Change (MEFCC),

the Ministry of Water, Irrigation and Electricity (MoWIE), and the Ministry of Livestock and Fisheries (MoLF). This MSIP core team works closely with the MDBs and other partners on the MSIP, the coordination of the process being further facilitated by the existing designated focal points within MoFEC, MoANR, MEFCC, MoWIE and MoLF. Key development partner agencies and stakeholders have been continually engaged in MSIP preparation and dialogues. Together these stakeholders have collaborated to deliver an MSIP that is responsive to multiple potential international climate finance opportunities including the Green Climate Fund (GCF), the Global Environment Facility (GEF), the WB's International Development Association (IDA) and AfDB's African Development Fund (ADF).

The development of the MSIP has been conducted in five steps: (i) scoping to define the MSIP process and to determine boundaries of the investment plan; (ii) analysis and stocktaking to conduct evidence-based assessments to address gaps identified during the scoping and to agree on criteria to identify priority investments; (iii) prioritization to identify bankable activities, projects, programs and policies, starting with each sector's plans; (iv) the finalization of a comprehensive, unified, realistic, costed, multi-sector investment plan (MSIP); and (v) the translation of the MSIP into a detailed pipeline of programs and projects. Throughout the development of the MSIP, consultations with stakeholders will be conducted as part of a participatory and inclusive process, the MSIP process is itself being "the product" of the work.

The rationale for convening resources programmatically for resilient landscapes in Ethiopia is to harness the potential of natural resource based sectors to help reduce poverty equitably. Most of Ethiopia's population is rural and directly dependent on natural resources for income, biomass energy (94 percent dependency), food, building materials, and water and as their principal buffer against drought, floods, and other climate or disaster risks. There is therefore a clear link between the renewable natural resource base and how it boosts the prospects and resilience of the bottom 40 percent. This supports Ethiopia's ambition to achieve middle-income status by 2025 through green growth strategies.

The MSIP for Climate Resilience Project, which aligns closely to the Bank's corporate goals of ending extreme poverty and boosting shared prosperity by 2030, will help convene institutions, information, investment and incentives to scale-up financing for climate action on resilient landscapes, supported by a variety of sources and stakeholders. It will seek to capacitate the Ethiopian government institutions and experts engaged in the MSIP process by providing opportunities to identify, prioritize and address some of the key challenges and barriers for greater resilience, thereby helping build sustainability into national planning and investment activities. Ethiopia's policy makers will benefit from analytical inputs for sector planning, access to global best practice in climate resilience planning and finance, as well as a stronger position in convening and leveraging international climate finance for enhancing existing investments and mobilizing new and additional financing. In this way, it will contribute to key national strategies, including the GTP-2 (2015-2020); CRGE Strategy (2011-2030); Climate Resilience Strategy for Agriculture and Forestry (2015-2030); and other sector strategies for forest, agriculture, sustainable land management, livestock, energy, water, and disaster risk management. The MSIP will seek opportunities for improving the enabling environment for greater investment in domestic private sector development. In addition, the mission recognized the critical role that women play in land use and natural resource based sectors, and that resilience investments should include a gender lens. It will facilitate Ethiopia's progress towards its climate resilience objectives and help mobilize both new and additional finance from multiple sources to implement priority investments at scale that can reduce vulnerability to climate risk. It will also help reduce transaction costs to Ethiopia and her partners from overlaps and duplications.

A5.2 Consultation in Preparation of the MSIP for Ethiopia

A joint World Bank Group-African Development Bank scoping mission was hosted by MoFEC on February 15-19, 2016 to initiate the preparation of the MSIP. The objectives of the mission were to (i) introduce the multi sector investment planning process and PPCR support; (ii) discuss the context of the Government of Ethiopia (GoE) development planning and institutional arrangements for the climate resilient green economy; (iii) engage key stakeholder groups expected to take part in the planning process, including development partners; (iv) discuss approach, timeline and technical documentation needed to support the process; and (v) prepare a budget proposal and work plan for the GoE to implement the US$1.5 million preparation grant received through the PPCR.

The mission was led by World Bank (WB) and the African Development Bank (AfDB) and involved five GoE ministries, civil society, and nearly 20 international development partners. The mission interacted closely with Ato Admasu Nebebe (then Director, UN Agencies and Regional Economic Cooperation Directorate, MoFEC), and met with H.E. Dr. Shiferaw Teklemariam (Minister of Environment, Forestry and Climate Change, MEFCC), H.E. Ato Sileshi Getahun (Minister of Livestock and Fisheries, MoLF), H.E. Frenesh Mekuria (State Minister of Agriculture and Natural Resources, MoANR) and H.E. Ato Wondimu Tekle (State Minister of Water, Irrigation and Electricity, MoWIE). In addition, the mission met with representatives and delegates of the CRGE Facility Advisory Board (which includes WB representation) and most major international partners working on climate resilience in the rural space.

The diverse and very well-attended consultations confirmed that the multi sector investment planning approach will be vital to prepare a comprehensive, unified, realistic, costed investment plan that can harness synergies and ensure an integrated approach for scaling up and coordinating financing for climate resilience. The mission discussed the scope of the MSIP process, focusing particularly on the identification of priority sectors. In accordance with the GoE's Expression of Interest (EOI) to participate in the PPCR, agreement was reached that the MSIP will focus on rural landscapes in line with the GTP-2 cluster that includes agriculture, forest, water, energy and livestock. It was proposed that the MSIP process may be repeated, building on this exercise, to address investment planning in other sectors such as transport and trade/industry. The current investment planning focus, however, would be on the natural resource dependent productive sectors, as well as enabling information, institutions and incentives.

The mission recognized the need to harmonize the MSIP process with existing investment plans, including Ethiopia's Agricultural Sector Policy and Investment Framework, the Ethiopia Strategic Investment Framework for Sustainable Land Management, Ethiopia's Livestock Master Plan, the Disaster Risk Management Strategic Program and Investment Framework, as well as IFC's FDI plan for forest (under the existing WB CRGE Technical Assistance). As climate change is associated with an increased frequency and severity of disasters, the mission recognized the importance of connecting the MSIP process with Ethiopia's Disaster Risk Management ambitions.

A second joint mission of the World Bank (WB), International Finance Corporation (IFC) and African Development Bank (AfDB) was hosted by the Ministry of Finance and Economic Cooperation (MoFEC) from June 20 to 24, 2016. The objectives of the mission were to (i) further engage key stakeholder groups, including development partners, in the process of developing the MSIP; (ii) reach a shared understanding of the content and key messages of the MSIP document; (iii) advance towards a portfolio of possible investment opportunities; (iv) define next steps in further developing the MSIP document, to be in a

position for the Government of Ethiopia (GoE) to potentially submit the MSIP document to the PPCR Sub-Committee by November 2016; and (v) advance the processing of the $1.5m grant support to MoFEC.

The mission was led by World Bank Group (WBG) and the AfDB and involved five GoE ministries, a wide array of regional bureaus, civil society, and approximately 20 international development partners. The mission met with H.E. Dr. Shiferaw Teklemariam (Minister of Environment, Forestry and Climate Change, MEFCC), H.E. Ato Kebede Yimam (State Minister for Forest Sector, MEFCC), H.E. Ato Wondimu Tekle (State Minister for Water, Irrigation and Electricity, MoWIE), H.E. Frenesh Mekuria (State Minister for Agriculture and Natural Resources, MoANR), Ato Admasu Nebebe (Director, UN Agencies and Regional Economic Cooperation Directorate and Head of CRGE Facility, MoFEC), and Dr. Thomas Chirenet (Advisor to Minister for Livestock and Fisheries, MoLF). In addition, the mission met with most major international partners working on climate resilience in the rural space.

The mission re-confirmed that the MSIP will largely build on Ethiopia's existing programs, projects and analytics, and focus on leveraging multiplier effects to scale up investment and action through 2030 using new and additional financing from multiple sources to support Ethiopia to achieve its climate resilience objectives. The mission confirmed with participating ministries that:

- The MSIP is being developed as part of a collaborative process involving five ministries, where line ministries will structure sectoral activities.
- The MSIP is demand-driven, and is based on an inclusive stakeholder process, cross-sectoral synergies and trade-offs, and clear accountabilities.
- The MSIP will source new and additional climate finance.
- The MSIP will build on and consolidate existing projects, programs and initiatives, wherever appropriate, effective and efficient.

The mission included over 100 participants drawn from the entire development community in Ethiopia, five ministries, a wide variety of sectoral bureaus from all regional states, academia and civil society. This extended consultation builds on the February 2016 scoping mission which also included a very wide participation in the investment dialogue for resilience. The mission recognized the need for delivering the MSIP through a concerted effort among of all stakeholders and across all sectors, consolidating expertise at the federal and regional level. Of prime significance, the mission recognized the importance of the engagement of regional state governments during the process.

Technical consultations were held during June 21 to 22 to: (i) discuss and agree on the MSIP investment prioritization framework; (ii) review and revise investment activity packages for prioritization; (iii) leverage sectoral expertise among key government counterparts, MDBs, civil society, academia, and the wider development community within Ethiopia; and (iv) agree on next steps to complete the MSIP. The two-day workshop, with participants from a wide range of institutions, represented a forum to update stakeholders on the MSIP process. Participants noted the good representation from regional agencies and non-government organizations, but noted that more effort may be needed to gather and reflect local experiences.

A key element of the MSIP is to identify investment activities that are most crucial to enhance climate resilience in the agriculture and forestry sectors and related sectors. Activity packages were listed and drawn from the GTP-2, CRGE Strategy and sectoral climate resilience strategies of the GoE, Ethiopia's UNFCCC Nationally Determined Contribution and National Adaptation Programme of Action, and on-going

large-scale sector investment programs. A draft prioritization framework was developed to rank the activity packages and shared well in advance of the mission and used to facilitate workshop discussions. Participants provided constructive feedback on the proposed framework, as laid out in the zero draft MSIP discussion document, and agreed that it is a useful tool with understandable parts and steps. Clarification was provided that the framework, at this stage, is intended for ranking of activity packages that may be combined into larger scale projects or programs later in the process, and that at this level of the process and ranking, there is no a need for detailed information towards project design. Furthermore, clarification was provided on the issue of cross-sectoral interactions, noting that the MSIP development process aims for cross-sectoral consideration and consensus on priorities that can strengthen sector-specific approaches. There was a general agreement that although most of the climate resilience activities might not be revenue-generating, high priority needs to be given to climate-relevant investment activities that could benefit communities and contribute to Ethiopia's ambitious economic development goals.

The workshop and other dialogues during the mission re-confirmed that the GoE is leading the process and setting priorities for investments going forward. The process of developing the MSIP is providing the framework, tools and dialogue process to advance the discussion and build common understanding and consensus on the way forward. Workshop participants were viewed as expert contributors, who will continue to be engaged in the prioritization process. The MDB teams are helping to interpret and consolidate the technical suggestions from the workshop, facilitate the process toward consensus, and assist in producing the MSIP documentation. The process should be open and iterative so that all stakeholders understand the priorities and where they came from. The discussion of potential new and additional activity packages may require some consideration of how best to incorporate them within the current GoE's proposed focus on the agriculture, forestry and related sectors, and within the priorities identified in the GTP-2 and related planning documents.

Development partners, non-governmental and research institutions participated actively in the workshop. In a dedicated session, they generally expressed support for the process and approach of the MSIP development and the impressive scale of ambition. They also emphasized the challenges associated with any multi-sectoral process and the need to build climate resilience upon Ethiopia's already existing sectoral management and coordination structures, to avoid risks of creating new structures and potentially increasing fragmentation. The important challenge of capacity and institutional mandates was raised, based on the experiences of several partners and institutions. The participants, especially from the regions, recognized the importance of sharing information on lessons learned and agreed to share the existing projects under implementation in their respective regions to avoid overlap of activities and enhance the quality of the MSIP. Whenever applicable, the participants stressed that the implementation of activities should be coordinated and integrated to ensure efficiency and effectiveness in each location and to ensure that there is no duplication of efforts. There was recognition that for the process to be a success, a willingness to engage and learn across boundaries was required from sector agencies involved.

To help build on the preparatory work and to help develop the required MSIP, in January 2017 the Bank contracted a consortium led by LTS International, targeted to ensure a high-quality product could be submitted to the PPCR by 5th May 2017. Particularly, the consultants were required to: i) undertake a portfolio review and gap analysis (PRGA) to understand what investments have so far been made in the context of climate resilience in agriculture and forestry, and identify any gaps in investments, given the country's climate resilience objectives; and ii) through consideration of Activity Packages already developed by the sector Ministries, and application of the Investment Prioritization Framework already

developed, develop an investment framework that will help GoE mobilize resources to address priorities identified in the MSIP.

The LTS consortium sustained the participatory approaches that had already been initiated, engaging stakeholders in the provision of essential data and opinion as well as the review of the outputs resulting from these consultations and subsequent analysis. In conducting the PRGA, the LTS consortium: reviewed key relevant development plans, policies, strategies; analyzed project documents for existing or planned large-scale investments; and facilitated broad-based consultation with key stakeholders. To share and review the findings of the PRGA, a two-day workshop was held on February 22nd and 23rd, 2017, at the Capital Hotel and Spa, Addis Ababa, Ethiopia. The main objective of the workshop, which brought together representatives from government ministries, donor partners, NGOs, academia, research institutes and the private sector, was to present findings from PRGA so that the data collected and the conclusions formed could be reviewed and tested with representative stakeholders. In addition, the workshop aimed to identify key next steps necessary to finalization of the MSIP. Draft materials (in the form of sections that would ultimately be incorporated into the MSIP document) were circulated in advance for stakeholder review. The consultants also prepared and circulated a document summarizing the key main points of discussion and the conclusions reached during the workshop, in conjunction with the workshop presentation materials.

As well as helping to refine and finalize the conclusions of the PRGA, the stakeholder workshop used the data analysis to further consider priorities for future investment. Specifically, the second day of the workshop encouraged participants to revisit past prioritizations based on the new perspectives resulting from the PRGA. The consultants used these inputs to draft preliminary designs of Activity Groups conceived to address the priorities identified by the sector Ministries while ensuring these were aligned with the conclusions of the PRGA. Further consultations and data collection was conducted with the relevant Ministries to inform the preparation of the preliminary Activity Groups, which – together with an updated working draft of the MSIP – were circulated to stakeholders for review. A one-day workshop was held on March 30th, 2017, at the World Bank offices in Addis Ababa, Ethiopia, primarily to explain the investment prioritization and planning process and present the conclusions and preliminary recommendations, testing these with the stakeholders. The workshop also provided an update on the status of the MSIP development process to ensure all stakeholders were clear on how they could contribute to its finalization. The feedback gathered during the workshop consultations – which again was captured in a summary document prepared and circulated by the consultants – enabled the refinement of the Activity Groups and completion of preparation of the MSIP, including detailed costings and development of responsive financing strategies.

This final stakeholder workshop was conducted as a part of a third joint scoping mission conducted from March 29-31, 2017. The overall objectives of the mission were to (i) further consult with key government organizations, development partners, NGOs, academia, think tanks and others to review the zero draft MSIP document, including prioritized investment activity packages to ensure that the document coming out of the process is credible; and (ii) discuss and agree with GoE lead agencies on the final stages of MSIP development. The mission reconfirmed that the MSIP should be used as a platform for mobilizing new and additional climate finance for resilient landscapes in priority sectors, including agriculture and forestry. In this regard, the MSIP has identified five priority activity groups (based on PRGA and iterative consultative processes), which would be used for rapid, scaled up action and investments in priority

sectors to realize the objectives set out in the GTP-II and Climate Resilience Strategy for Agriculture and Forestry, among others.

The mission noted that the MSIP endorsed through the CIF sub-committee will provide opportunities to the Government of Ethiopia to explore and systematically leverage more sources of climate finance from a variety of sources such as IDA, IFC, GCF, GEF, and bilateral and multilateral sources. It will also help boost the viability of strong and well-aligned upscaling of climate resilient action on the ground, while reducing transaction costs to Ethiopia and her partners from overlaps, duplications and inefficiencies. The consultation work and inclusive engagement carried out during the MSIP development process has laid a foundation to build ownership, and foster collaboration across sectoral, institutional and disciplinary boundaries, which will be instrumental to translate the MSIP into bankable initiatives, projects and programs as well.

The mission confirmed prior agreement that the first priority and rationale of the MSIP, developed with support from the Climate Investment Fund's (CIF) Pilot Program for Climate Resilience (PPCR), is to mobilize additional and new financing from multiple sources to support Ethiopia to advance toward greater resilience. Accordingly, the GoE, through the three MDBs engaged in the MSIP process, can use the final MSIP to mobilize new and additional large scale financing from multiple sources to scale up investment and action through 2030 to support Ethiopia to achieve its climate resilience objectives.

A roadmap for the delivery of the MSIP was agreed upon. Specific steps identified included to: (i) submit the advanced draft MSIP document, including brief financial proposals on prioritized activity groups (annexed to MSIP), by April 10, 2017; (ii) provide final comments on the advanced draft MSIP by key line ministries by April 12, 2017; (iii) submit the advanced draft MSIP to an external independent peer reviewer by April 14, 2017; (iv) submit the comments on the advanced draft MSIP to MDBs and MoFEC by April 23, 2017; (v) Present the advanced draft MSIP to MoFEC and the four line ministries by April 16, 2017; (vi) Disclose the advanced draft on MoFEC's website for public comments by April 17, 2017; (vii) finalize the advanced draft MSIP document as per the comments of the independent reviewer and others by April 30, 2017; (viii) endorse the updated, improved MSIP document by the CRGE Management Committee by May 2, 2017; (ix) submit the revised and improved MSIP to the Climate Investment Fund Administrative Unit by May 5, 2017; (x) present the MSIP by senior level MoFEC representative to the PPCR Sub-committee by June 2017.

This robust process of consultation, which has progressively developed a shared understanding of Ethiopia's priority investment needs to achieve climate resilience in the forest and agriculture sectors, has made possible the creation of the unified MSIP document designed to guide and support resource mobilization efforts. In this way, the product has indeed been the process.

A5.3 Participation in MSIP Preparation

As indicated above, a large and diverse set of stakeholders has engaged in the development of the MSIP. A summary of these has been included in the table below, which indicates which parts of the complete process each contributor was engaged in. While this list has been designed to be inclusive, almost certainly it omits other individuals – particularly staff in the sector ministries – that have supported data collection activities. Any such omissions should not be taken as suggesting their inputs were not significant

or appreciated; the consultations would not have been as constructive without the relevant data around which they were facilitated.

LIST OF PARTICIPANTS AND STAKEHOLDERS CONSULTED

Types of "Recorded Attendance":

1st JSC	Joint Scoping Mission for MSIP, February 15-19, 2016
2nd JSC	Joint Scoping Mission for MSIP, June 20-24, 2016
3rd JSC	Joint Scoping Mission for MSIP, March 29-31, 2017
W-PRGA	Workshop to Review PRGA Outputs, February 22-23, 2017
W-IPP	Workshop to Review Investment Prioritization / Planning Outputs, March 30, 2017

No.	Name	Title	Organization	Recorded Attendance
1	Baye Abate	Regional Bureau of Agriculture	Benishangul Gumz	2nd JSC
2	Paddy Abbot	Managing Director / Project Director	LTS	W-IPP
3	Yitayew Abebe	Mission Environment Officer	USAID	1st JSC; 2nd JSC
4	Desta Abera	Program Officer	World Vision	W-PRGA
5	Fisseha Abera	Director, Finance Institution Cooperation Directorate	Ministry of Finance and Economic Cooperation (MoFEC)	1st JSC; 3rd JSC
6	Hamdi Abdulahi	Environmental Protection Mines and Energy Development Agency	Somali	2nd JSC
7	Mohamud Mohamed Abdulahi	Water & Energy Bureau	Somali	2nd JSC
8	Hundessa Adugna	Researcher	Ethiopian Environment and Forest Research Institute (EEFRI)	W-PRGA; W-IPP; 3rd JSC
9	Dereje Agonafir	Environmental Specialist	WB	1st JSC; 2nd JSC; W-PRGA; W-IPP; 3rd JSC
10	Manish Kumar Agrawal	ACCRA Coordinator	Oxfam GB/ACCRA	1st JSC
11	Mohammed Ahmed	Technical Specialist	WRDB	2nd JSC
12	Munib Yonis Ahmed	Water and Sewerage Authority	Harari	2nd JSC
13	Kazi Fateha Ahmed	Analyst	WBG	W-IPP; 3rd JSC
14	Million Alemayehu	Senior NRM Specialist	WB	1st JSC; 2nd JSC

No.	Name	Title	Organization	Recorded Attendance
15	Eyob Alemu	CRGE focal person	MoLF	1st JSC
16	Kassahun Alemu	Senior Expert	MoFEC	1st JSC
17	Abubeker Ali	NRM/CCO	Food and Agriculture Organization of the United Nations	1st JSC; 2nd JSC
18	Ahmed Alkadir	Operations Officer	WB	2nd JSC
19	Amadou Allahoury	FAO Representative	FAO	W-PRGA
20	Getenet Amare	RM Director	MEFCC	W-PRGA
21	Sahleselassie Amare		ECRC/EDRI	2nd JSC
22	Ababu Anage	NCCS	United Nations Development Programme	1st JSC; 2nd JSC
23	Samson Andemeskel	Environmental Protection Authority	Addis Ababa	2nd JSC
24	Tefera Arega	MSIP focal person	MoWIE	1st JSC; 2nd JSC; W-IPP; 3rd JSC
25	Mersha Argaw	Program Manager	EU Delegation to Ethiopia	2nd JSC
26	Tesfamariyam Asefa	Livestock Bureau	Tigray	2nd JSC
27	Abebuh Assefa	Team Lead FSAG	Embassy of Canada	W-IPP
28	Fantahun Assefa	Senior Program Officer/M&E Specialist	Ministry of Livestock	W-IPP; 3rd JSC
29	Tamiru Assefa	Expert	MoANR	W-PRGA
30	Tibebu Assefa	Climate Change Expert	Echnoserve	W-PRGA
31	Dr. Araya Asfaw	Executive Director	Horn of Africa RECN	1st JSC; 2nd JSC
32	Lulseged Asfaw	Program Manager	Irish Aid	1st JSC
33	Abebech Assefa	Team Lead Food Security Ag	Embassy of Canada	1st JSC; 3rd JSC

No.	Name	Title	Organization	Recorded Attendance
34	Berhanu Assefa	MRV Expert, MSIP focal person	MoANR	1st JSC
35	Fantahun Assefa	Senior Program Officer/M&E Specialist	ATA/Ministry of Livestock and Fisheries (MoLF)	W-PRGA
36	Taddesse Assefa	Livestock Advisor	SNV Ethiopia	W-PRGA
37	Tesfaye Ayele	Senior Procurement Specialist	WB	2nd JSC
38	Shewakena Aytenfisu	Land Administration Specialist	WB	2nd JSC; W-IPP; 3rd JSC
39	Samir Bakir	Environmental Protection Authority	Harari	2nd JSC
40	Ato Debasu Bayelegn	Director General, Climate Change Coordination	MEFCC	3rd JSC
41	Frew Behabtu	Country Program Officer	International Fund for Agricultural Development (IFAD)	1st JSC; 2nd JSC
42	Desta Bekalu	Strategy Officer	BoA	W-PRGA
43	Eshetu Bekele (PhD)	Director	Save the Children	W-PRGA; 3rd JSC
44	Dr. Wogayehu Bekele	Director	ATA	1st JSC; 2nd JSC; W-PRGA; W-IPP
45	Berhain Belay	Regional Bureau of Agriculture	Tigray	2nd JSC
46	Fantahun Belew	CRGE Facility Advisor	CRGE Facility, MoFEC	1st JSC
47	Hayelom Berhe	Mines & Energy Resources Development Office	Afar	2nd JSC
48	Wondim Berihun	Water, Irrigation & Energy Bureau Development	Amhara	2nd JSC
49	Dr. Abebe Beyene		ECRC/EDRI	2nd JSC
50	Mandefro Beyene	Socio Economist	Beles Sub Basin	1st JSC
51	Mengstu Beyessa	Environmental Protection Association	Benishangul Gumz	2nd JSC

No.	Name	Title	Organization	Recorded Attendance
52	Birhane Bezabh	Senior Forest Expert/MSIP focal person	MEFCC	1st JSC; 2nd JSC; W-IPP; 3rd JSC
53	Kinfe Birhanea	Bureau of Environment and Forest	Afar	2nd JSC
54	Dessalegn Birkeneh	Planning Expert	MoLF	1st JSC
55	Dejene Biru	CRGE Technical Advisor	Oxfam GB/ACCRA	1st JSC; 2nd JSC; W-PRGA
56	Jennifer Bloom	Second Secretary (Development)	Foreign Affairs, Trade and Development Canada	1st JSC
57	Jan Bock	Forestry Advisor	GIZ Germany	2nd JSC
58	Timothy Brown	Senior Natural Resources Management Specialist and Co-TTL, CRGE ASA and MSIP	WB	2nd JSC; W-PRGA
59	Emilie Bruckmann	Second Counsellor	French Embassy	1st JSC; W-PRGA
60	Tiina ByringIlboudo	Counsellor	Embassy of Finland	1st JSC
61	Emilie Bruckmann	Second Counsellor	French Embassy	1st JSC
62	Biel Keat Chea	Environment, Forest and Land Administration	Gambella	2nd JSC
63	Tesfaye Chekole	Program Officer	KfW	W-PRGA; W-IPP; 3rd JSC
64	Dr. Thomas Cherenet	Policy & Research Advisor	Ministry of Livestock and Fisheries (MoLF)	2nd JSC
65	H.E. Ato Kare Chawicha	State Minister for Environment and Climate Change	Ministry of Environment, Forest and Climate Change (MEFCC)	3rd JSC
66	MORBIN Daniele	Program Manager, Rural Development & Food Security Section	EU Ethiopia Office	1st JSC

No.	Name	Title	Organization	Recorded Attendance
67	Stephen Danyo	Senior Natural Resource Management Specialist and Task Team Leader	WB	1st JSC; 2nd JSC; W-PRGA; W-IPP; 3rd JSC
68	Getachew Debalkie	CCMO	Food and Agriculture Organization of the United Nations (FAO)	2nd JSC
69	Tolera Debela	Livestock Bureau	Oromia	2nd JSC
70	Zerihun Dejene	Environment Coordinator	PHE-EC	1st JSC; W-IPP; 3rd JSC
71	Imruwa Demissie	Senior Program Officer	KFW	1st JSC
72	Lulseged Desta		CGIAR	W-IPP; 3rd JSC
73	Issa Diaw	Senior Power Engineer	WB	1st JSC; 2nd JSC
74	Bamba Diop	Principal Environment Specialist	AFDB	1st JSC; 2nd JSC; W-IPP; 3rd JSC
75	Lea Doumnjou	International Coordinator	ACCRA/DCFAMUB	2nd JSC
76	Mareile Drechsler	Climate Resilience Specialist	WB	1st JSC; 2nd JSC
77	Mark Eghan	Agricultural Economist	AfDB	2nd JSC
78	Tesfaye Ejigu	Program Officer	Irish Aid	W-PRGA; W-IPP; 3rd JSC
79	Lars Ekman	Counselor	RNE	1st JSC
80	Samson Emeiru	Regional Bureau of Agriculture	Gambella	2nd JSC
81	Abay Eneyewu	Livestock Bureau	Gambella	2nd JSC
82	Dr. Zewdu Eshetu	Director	AAU Climate Science Centre	1st JSC; 2nd JSC
83	H.E Kaba Eurgesa	State Minister for Ministry of Agriculture and Natural Resources'	Ministry of Agriculture and Natural Resources' Natural (MoANR)	W-PRGA
84	H.E. Dr. G/Egzihabiher G/ Eyesus	State Minister	Ministry of Livestock and Fisheries (MoLF)	3rd JSC

No.	Name	Title	Organization	Recorded Attendance
85	Mequanent Eyayu	Plan & Program Director	Ethiopian Biodiversity Institute	1st JSC
86	Carlo Fadda	Biodiversity specialist, Country Rep.	Consultative Group for International Agricultural Research, CGIAR	1st JSC; 2nd JSC; W-IPP; 3rd JSC
87	Shimelis Fekadu	CRGE Coordinator	CRGE Facility, MoFEC	1st JSC; 2nd JSC; W-IPP; 3rd JSC
88	Prof. Masresha Fetene	Professor	Ethiopian Academy of Science	1st JSC
89	Mulugeta Feleke	Mines & Energy Agency	SNNPR	2nd JSC
90	Admasu Feyisa	Director, International Financial institutions	Ministry of Finance and Economic Cooperation (MoFEC)	3rd JSC
91	Daniel Fikreyesus (Phd)	CEO	Echnoserve	W-PRGA; W-IPP
92	Medhin Fisseha	Environmental and social safeguards specialist	CRGE Facility, MoFEC	1st JSC; 2nd JSC
93	Robert Fitch	Principal Consultant / Team Leader	LTS	W-IPP
94	Ephrem Fiya	Project Officer	JICA	W-PRGA
95	Yosef Gebrehawaryat	Biodiversity Researcher	Biodiversity International	W-PRGA
96	Dr. Tagel Gebrehiwot		ECRC/EDRI	2nd JSC
97	Melaku Gebreyesus		Global Green Growth Institute	2nd JSC
98	Beyene Geleta	PDQA Director	World Vision	1st JSC; 2nd JSC
99	Michael Gessesse	Director	Ministry of Mining, Petroleum and Natural Gas	W-PRGA; W-IPP; 3rd JSC
100	Makonnen Getachew	MRV-CRGE Expert	MoANR	W-IPP; 3rd JSC
101	H.E. Ato Sileshi Getahun	Minister	Ministry of Livestock and Fisheries (MoLF)	1st JSC
102	Zerihun Getu	CRGE Facility Coordinator	CRGE Facility, MoFEC	1st JSC; 2nd JSC; W-PRGA; 3rd JSC

No.	Name	Title	Organization	Recorded Attendance
103	Belay Gezahegn	Director	Enat Bank	W-PRGA
104	Asmerom Gilau	Climate Expert	AfDB	2nd JSC
105	Dejene H/Giorgis	Planning M&E Director	Ethiopian Environment and Forest Research Institute (EEFRI)	1st JSC
106	Mahlet Girma	Team Assistant	WB	1st JSC
107	Fisaha Girmay	Water & Energy Bureau	Tigray	2nd JSC
108	Evan Girvetz	Senior Scientist	International Centre for Tropical Agriculture (CIAT)	1st JSC; 2nd JSC
109	Solomon Gizaw	Technical Assis.	ECH P.L.C.	1st JSC; 2nd JSC
110	Tena Gobena	Regional Bureau of Agriculture	Oromia	2nd JSC
111	Andrew Goodland	Program Leader	WB	1st JSC; 2nd JSC
112	Jamal Gore	Principal Consultant	E Co.	W-PRGA; W-IPP
113	Assefa Gudina	Program Coordinator	MoWIE	1st JSC
114	Dr. Retta Gudissa	Director	ATA	2nd JSC
115	Lelisa Gutema	Water, Mines & Energy Bureau	Oromia	2nd JSC
116	Ghrmawit Haile	Director, Strategic Planning and Resource Mobilization Directorate GEF Focal Point	MEFCC	1st JSC; 2nd JSC
117	Kinfe Hailemariam	Director for Met & FCT	National Meteorological Agency	1st JSC; W-IPP; 3rd JSC
118	Afework Hailu	Executive Director	Ethio-Wetlands and Natural Resources Association	2nd JSC
119	Habtamu Hailu	SLMP-II Coordinator	MoANR	1st JSC; 2nd JSC
120	Mistre Hailemariam	Team Assistant	WB	1st JSC; 2nd JSC

No.	Name	Title	Organization	Recorded Attendance
121	Tsehay Atakit Hailemichael	Energy and private sector senior program officer	Royal Norwegian Embassy	2nd JSC; W-PRGA
122	Anne Sofie Hammend	Political Assistant	Denmark Embassy	W-PRGA
123	Seid Hassen		ECRC/EDRI	2nd JSC
124	Morten Heide	Counselor & Head, Dev't Coop	Royal Norwegian Embassy	2nd JSC
125	Masahiko Hori	Expert	JICA	W-PRGA
126	Behonegn Itefa	Water, Mines & Energy Bureau	Benshangul-Gumuz	2nd JSC
127	Gebru Jember	Advisor	Global Green Growth Institute	1st JSC
128	Jorunn B. Johannessen	Trainee	RNE	1st JSC
129	Marianne Johansen	Counsellor – Climate and Forests	Royal Norwegian Embassy	W-IPP; 3rd JSC
130	Abigail Jones	Climate Advisor	United States Agency for International Development (USAID)	1st JSC; 2nd JSC
131	Oliver Jones	Senior Water and Sanitation Specialist	WB	2nd JSC
132	Hikuepi Epi Katjiuongua	Senior Agriculture Economist	WB	1st JSC
133	Dereje Kebede	Program Manager	Austria Development Cooperation	1st JSC
134	Hussien Kebede	Senior Expert	FAO	W-PRGA; W-IPP; 3rd JSC
135	Mulat Kebede	Water Resources Engineer	Ministry of Water, Irrigation and Electricity (MoWIE)	W-PRGA
136	Tigist Kebede	Senior Program Officer	Denmark Embassy	1st JSC
137	Dr. Baysa Kenawu	Livestock Bureau	Benishabgul Gumz	2nd JSC
138	Getu Kibret	Water, Mines & Energy Office	Diredawa	2nd JSC

No.	Name	Title	Organization	Recorded Attendance
139	Mebratu Kifle	Livelihood and DRR Advisor	CARE	W-PRGA
140	Florence Landsberg	Research Associate	World Resources Institute	2nd JSC
141	Ziyesu Lemma	DRM & REDD+ Advisor	Ethio Wetlands and Natural Resources Association (EWNRA)	W-PRGA; W-IPP; 3rd JSC
142	Lulu Likassa	Program Officer	RNE	1st JSC; 2nd JSC; W-PRGA
143	Ferehan Mahamud	Regional Bureau of Agriculture	Somali	2nd JSC
144	Tambi Matambo	Environmental Specialist	WB	1st JSC
145	Bedilish G/Medhin	Team Assistant	WB	2nd JSC
146	Hailesilasie A. Medhin	Centre Director	Environment and Climate Research Centre, Ethiopian Development Research Institute (ECRC/EDRI)	1st JSC; 2nd JSC; W-PRGA
147	Senait Mekete	Investment Officer	International Finance Corporation	2nd JSC; W-IPP; 3rd JSC
148	Teferi Mekonnen	Regional Bureau of Agriculture	Afar	2nd JSC
149	Abebe Mekuriaw	Programs Coordinator of the Academy	Ethiopian Academy of Science	2nd JSC; W-PRGA
150	H.E. Frenesh Mekuria	State Minister	Ministry of Agriculture and Natural Resources (MoANR)	1st JSC; 2nd JSC
151	Solomon Mengesha	Regional Bureau of Agriculture	SNNP	2nd JSC
152	H/Mariam H/Meskel	Agricultural Economist	AfDB	2nd JSC
153	Tamiru Messele		Kreditanstalt für Wiederaufbau (KfW)	2nd JSC
154	Lakech Imru Mikael	Senior Director, Environmentally sustainable and Inclusive Growth	Agricultural Transformation Agency (ATA)	1st JSC; W-PRGA; W-IPP; 3rd JSC

No.	Name	Title	Organization	Recorded Attendance
155	Abraha Misghina	Coordinator, NICSP	MoWIE	2nd JSC; W-PRGA
156	Dr. Yitebitu Moges	REDD+ Coordinator	MEFCC	1st JSC; 2nd JSC
157	Endashaw Mogesie	M,E&C coordinator	Population, Health and Environment- Ethiopia Consortium, PHE-EC	2nd JSC
158	Daniele Morbin	Program Manager	EU Delegation to Ethiopia	2nd JSC; W-PRGA; W-IPP; 3rd JSC
159	Ueil Muller	Programme Head	GIZ Biodiversity and Forestry Program (BFP)	2nd JSC
160	Temesgen Mulualem	Regional Bureau of Agriculture	Amhara	2nd JSC
161	Maikel Mulugeta	Environmentalist	MoWIE	W-PRGA
162	Tewodros Mulugeta	Private consultant	Echnoserve	W-PRGA; W-IPP
163	Shumi Negash	Rural Land and Environmental Protection Bureau	Oromia	2nd JSC
164	Betelhem Negede		ECRC/EDRI	1st JSC
165	Admasu Nebebe	Director, UN Agencies and Regional Economic Cooperation Directorate	MoFEC	1st JSC; 2nd JSC
166	Bayu Nebsu	Climate Change Expert	Echnoserve	W-PRGA
167	Adugna Nemera	M&E Specialist	CRGE Facility, MoFEC	1st JSC; 2nd JSC
168	Jemal Nesru	Regional Bureau of Agriculture	Harari	2nd JSC
169	Sisay Nune	Program Officer	RNE	1st JSC
170	Elmi Nure	Climate Change and Development Cooperation Analysis/MSIP focal person	CRGE Facility, MoFEC	1st JSC; W-PRGA
171	Iretomiwa Olatunji	Environmental Specialist	WB	1st JSC

No.	Name	Title	Organization	Recorded Attendance
172	Ambrose Oroda	Environmental Specialist	AFDB	1st JSC
173	Ju Hyun Park	Manager	Korea Trade-Investment Promotion Agency (KOTRA)	1st JSC
174	David Potter	Climate Change Adviser & Technical Adviser to the CRGE Facility	CRGE Facility, MoFEC	1st JSC
175	Gareth Phillips	Chief Climate & Green Growth Officer	African Development Bank (AFDB)	1st JSC; 2nd JSC; W-IPP; 3rd JSC
176	Gabriele Prinz	SLM Senior Advisor	GIZ	W-IPP; 3rd JSC
177	Hege Ragnhildstveit	Senior Advisor	Norway's International Climate and Forest Initiative (NICFI)	1st JSC
178	Kanta Kumari Rigaud	Lead Environmental Specialist and World Bank PPCR Coordinator	WB	1st JSC
179	Sandra Romboli	Senior M&E Specialist	WB	1st JSC
180	Fikre Sahile	Senior Expert	MoANR	2nd JSC
181	Dr. Yigremachew Seyoum	Director - Forest Sector	MEFCC	1st JSC; 2nd JSC
182	Mahlet Shebabaw	Program Manager	IDH-Sustainable Trade Initiative	2nd JSC
183	Sisay Shibru	Senior Planning Expert	MoWIE	1st JSC
184	Dr. Edmealem Shitaye	NIC Coordinator	Intergovernmental Authority on Development (IGAD)	2nd JSC
185	Ciara Silke	Climate and Environment Adviser | Wealth Creation and Climate Change team	Department for International Development (DfID)	1st JSC; 2nd JSC
186	Shimeles Sima	Senior Forest Landscape Specialist	WB	1st JSC; 2nd JSC; W-PRGA; W-IPP; 3rd JSC

No.	Name	Title	Organization	Recorded Attendance
187	Wondwossen Sintayehu	Governance and Institutions Specialist	Echnoserve/ILRI	W-PRGA; W-IPP; W-IPP
188	Wolter Soer	Senior Social Protection Specialist	WB	2nd JSC
189	Winfried Suess	Forest Expert	KfW	2nd JSC
190	Abebe Tadesse	Senior Expert and ISP-PPP Coordinator	MoFEC	1st JSC; 2nd JSC
191	Meron Tadesse	Senior Financial Management Officer	WB	2nd JSC
192	Tefera Tadesse	Director, NRM	MoANR	2nd JSC
193	Habtamu Tamir	Director	Abbay Basin	1st JSC
194	Yuhei Tanahashi	Agriculture Sector Advisor	Japan International Cooperation Agency (JICA)	W-PRGA
195	Desalegn Tebratu	Development Economist/MSIP focal person	MEFCC	1st JSC; 2nd JSC; W-PRGA
196	Melanie Teche	Climate Change Specialist	AfDB	1st JSC; 2nd JSC
197	Lidya Tefaye	Project Analyst	Echnoserve	W-PRGA; W-IPP
198	Hailu Tefera	Senior Forest & Climate Change Specialist	WB	1st JSC; 2nd JSC; W-IPP; 3rd JSC
199	Getachew Tegegn	CRGE Expert	MoLF	W-PRGA; W-IPP; 3rd JSC
200	Ejigayehu Teka	Team Assistant	WB	3rd JSC
201	Dawit Tekele	CRGE Expert	NoLF	W-IPP; 3rd JSC
202	H.E. Ato Wondimu Tekle	State Minister	Ministry of Water, Irrigation and Electricity (MoWIE)	1st JSC; 3rd JSC

No.	Name	Title	Organization	Recorded Attendance
203	H.E. Dr. Shiferaw Teklemariam	Minister	Ministry of Environment, Forestry and Climate Change (MEFCC)	1st JSC; 2nd JSC
204	Dr. Hailemariam Teklewold		ECRC/EDRI	2nd JSC
205	Negash Teklu	Ex. Director	Population, Health and Environment- Ethiopia Consortium, PHE-EC	W-PRGA; W-IPP
206	H.E. Wondimu Tekle	State Minister	Ministry of Water, Irrigation, and Electricity (MoWIE)	2nd JSC
207	Yonas Teklemichael	Advisor to State Minister, Environment and Climate Change	MEFCC	1st JSC
208	Negash Teklu	Ex. Director	Population, Health and Environment- Ethiopia Consortium, PHE-EC	1st JSC; 3rd JSC
209	Eyob Tenkir	Environment Safeguards Specialist	REDD+ Secretariat, MEFCC	W-IPP; 3rd JSC
210	Sayuri Teramoto	Project Formulation Advisor- Agri Sector	Japan International Cooperation Agency	1st JSC; 2nd JSC
211	Firdawek Tesfaye	Livestock Bureau	Hareri	2nd JSC
212	Andualem Tesfayea	Environmental Protection Authority	Dire Dawa	2nd JSC
213	Yibeltal Tiruneh	Agriculture and Livestock Team Leader	FAO	W-PRGA
214	Samson Tsegaye	Country Director	Solar Energy Foundation	W-PRGA
215	Yohannes Tsegaye	EPA (Energy version)	Addis Ababa	2nd JSC

No.	Name	Title	Organization	Recorded Attendance
216	Carolyn Turk	Country Director for Ethiopia, Sudan and South Sudan	World Bank (WB)	2nd JSC
217	H.E. Dr. Kabba Urgessa	State Minister	Ministry of Agriculture and Natural Resources (MoANR)	3rd JSC
218	Abdurahman Uyu	Forestry Specialist	GIZ Biodiversity and Forestry Program (BFP)	2nd JSC; W-PRGA
219	Anders Vatn	Counselor	Royal Norwegian Embassy (RNE)	1st JSC
220	Yacob Wondimkun	Environment Advisor	Ethiopia - Canada Cooperation Office	1st JSC; 2nd JSC
221	Ashebir Wondimu	Senior Forest Expert	MEFCC	2nd JSC; W-IPP; 3rd JSC
222	Getahun Worku	Legal Advisor	KOICA	1st JSC; 2nd JSC
223	Dr. Dawit Wubishet		ECRC/EDRI	2nd JSC
224	Alemu Yami		FAO	W-IPP; 3rd JSC
225	H.E. Ato Kebede Yimam	State Minister	MEFCC	1st JSC; 2nd JSC
226	Alemseged W/yohannes	DRM Consultant	WB	W-IPP; 3rd JSC
227	Toshihide Yoshikura	Expert	JICA	W-PRGA
228	Hailemariam Zare	Regional pastoral livelihood resilience project/RPLRP/ Building Pastoral resilience	Agricultural Transformation Agency (ATA)	W-PRGA
229	Dr. Abiy Zegeye		AAU Climate Science Centre (AAU-CSC)	2nd JSC
230	Dr. Solomon Zewdie	REDD+ Pilot Coordinator	MEFCC	2nd JSC
231	Selam Zewdu	Marketing & Research Manager	KOTRA	1st JSC
232	Yared Zewede	MISP Core Team Member	MoLF	2nd JSC

Annex 6: PORTFOLIO REVIEW

A6.1 Basis of the Portfolio Review

The portfolio review was undertaken to establish a clear, evidence-based baseline that could inform future-focused multi-sectoral investment planning. The review was designed to produce a sufficiently reliable picture of past and on-going investments, to the extent possible bearing in mind available time and resources.

It is rare for projects to exclusively address climate change and /or have components explicitly described as being concerned with climate change. Therefore, the portfolio review included all projects in the agriculture, forest, and water and energy sectors, and did not attempt to limit the focus to those identified as being concerned with climate change. This was considered the optimum approach given that, for example, the Agriculture and Forest Climate Resilience Strategy estimates that about 70% of projects and their components are relevant to addressing climate change.

The review has been performed so that it can continually be refined, should this be considered necessary. It comprised the following sequence of desk research and stakeholder consultation activities:

- ***Stock-take:*** Consultation with the Bank to establish what relevant information had already been generated during MSIP preparation.
- ***Web-search:*** Building on the information obtained through the stock-take, identification of additional projects potentially relevant to the review.
- ***Stakeholder consultations:*** One-on-one interviews to validate and add to information that had already been collected. Consultations were conducted with representatives of 15 donors, four selected NGOs, the four core MSIP ministries, and 23 directorates within these ministries.
- ***Additional follow-up:*** As necessary, additional research to refine data collection.
- ***Stakeholder workshop:*** A workshop was held on 22-23 February 2017 to, among other things, present and review the findings of the portfolio review.

A6.2 Scope of the Portfolio Review

The review identified relevant projects in the prioritized sectors, namely agriculture, livestock, forestry, water and energy. In the case of water and energy, only projects related to agriculture, forestry and/or livestock were considered.

The research process identified 146 potentially relevant projects implemented by donor partners, NGOs and Ministries in Ethiopia using funding from development partners. This list was not necessarily exhaustive. While all larger-scale projects should have been captured, almost certainly not all small initiatives were identified. For identified projects, the quality of available data varied considerably. To ensure the portfolio included those projects most likely to reliably inform MSIP preparation, the following criteria were applied:

- ***Project budget equal to or more than US$3 million:*** Given the nature of the review, projects below this scale are less likely to be material to the conclusions of the portfolio review and gap analysis.
- ***Projects implemented since 2010.*** As 2010 marks commencement of GTP I, any projects implemented prior to this would be difficult to analyze in a way that is meaningful to relevant FDRE strategies and plans.

- ***Sufficient project data available.*** At the very least, project documents had to summarize the budget and the primary activities or outputs. Without this, even a basic project review would not be possible.

By applying these three criteria, the portfolio for detailed analysis was reduced to 102 projects. Of those excluded, 37 projects failed to meet the first criteria of minimum budget of $3 million, these accounting for combined funding of approximately US$ 50 million, equivalent to about 1% of the total funding of the projects included in the portfolio review. Therefore, their exclusion was considered unlikely to affect the analysis of the flow of funds. On the other hand, it was recognized that there would likely be useful lessons to be learned from some small projects that might inform MSIP preparation in qualitative ways. For this reason, it was decided to identify a sample of small projects for quick case study,[27] where these were identified as offering useful learning in the context of:

- ***Scaling-up:*** A priority for FDRE is to identify successful approaches that can be rapidly scaled-up by extending them to new areas. The small project case studies could help identify potential approaches.
- ***Multi-sector synergies:*** The MSIP seeks to identify opportunities for linking approaches across sectors to accelerate the building of climate resilience. The small project case studies could help identify potential linkages.
- ***Cost-effectiveness.*** The MSIP seeks to identify ways of achieving the best returns on investment. Given the absence of consistent data on project impact, the portfolio review is unable to determine where the best returns might be available. Preparation of the MSIP will therefore need to involve additional research to inform this vital aspect. The small project case studies could help provide some insight into where potentially high returns might be available (including through pursuit of scaling-up and/or multi-sector linkages).

This approach ensured that, other than projects excluded because of insufficient data, all those identified would be appropriately considered in the development of the MSIP.

It should be noted that, while the portfolio review focused on donor-funded projects, a few of the large projects also received co-financing from Government of Ethiopia sources. Obtaining such information at the level of detail equivalent to that sought for the donor projects would be time consuming. Federal government budget allocation is done annually through parliamentary appropriation, with the federal government allocating budget to federal government entities as well as through block grants to regional governments. Regional governments, through their local parliament, also allocate budget for each sectoral ministry. Tracking government contributions would therefore require research at regional level.

For these reasons, it has not been possible to include funds from GoE sources in the portfolio review. Rather, analysis of the portfolio includes comparison with available information[28] on FDRE expenditure by sector and region, as presented in Table A6-1 and Table A6-2, respectively.

[27] A summary of two case studies has been provided as addendum 1 to this document.
[28] FDRE, The Financial Management Performance of the Federal Government (PEFA REPORT), Final Report, June 2015.

Table A6-1: Actual Expenditure by Functional Classification (as % of total expenditure)

Financial Year	2010/11	2011/12	2012/13
General public services	3.8	4.3	4.2
Justice and security	2.9	3.1	3.0
Defense	7.1	7.7	7.2
Agriculture and rural development	4.0	4.3	2.2
Mining and construction	20.0	20.2	19.5
Trade and industry	0.3	0.2	0.3
Transport and communications	1.9	1.3	1.1
Water and energy	2.0	3.0	3.7
Health	1.0	1.0	1.0
Education	15.1	15.8	16.5
Subsidy to regions	39.7	37	39.5
Other	2.2	2.0	1.7
Total	**100.0**	**100.0**	**100.0**

Table A6-2: Proportion (% of total) of Federal Government Block Grant Distribution by Region

Name of Region	Percentage
Tigray	7.18
Afar	3.15
Amhara	23.17
Oromia	32.50
Somali	8.14
Benishangul Gumuz	2.10
Southern Nations Nationalities and Peoples	20.10
Gambella	1.50
Harari	1.00
Diredawa City	1.16
Total	**100.00**

A6.3 Data Collection

The core data summarized in Figure A6-1 were collected for each of the 102 projects included in the portfolio review.[29]

[29] A full summary list of these projects has been provided in addendum 2 of this document.

Figure A6-1: Core data gathered for the Portfolio Review

Sector	Agriculture	Livestock and Fishery	Forest	Water	Energy	Cross-sectoral
Title of Project						
Source & Amount of Fund						
Project Budget						
Implementing Entity						
Implementing partner/s, if any						
Project Implementation Site (Region and Woreda)/ Beneficiary per woreda						
	Oromia:					
	Amhara:					
	Tigray:					
	SNNPR:					
	Afar:					
	Somali:					
	Gambella:					
	Benshangul:					
	Harar:					
	Dire Dawa:					
	Addis Ababa:					
Duration of Assignment	**Ongoing and/or Completed**					
	Start Date:		**End Date:**			
Description of the Project (objectives and main interventions/activities):						

	Project Output: Description	Output associated with GTP	Output associated with CR strategy	Output associated with mitigation	Output associated with MSIP prioritized activity
1					
2					
3					
4					
5					
….					
75					

The core data collection was organized to enable effective gap analysis by financial, thematic and spatial parameters. To this end, and reflecting the tables presented in Figure A6-1, data collection focused on the following:

- ***Project budget:*** Total project budget, as well as budget disaggregated by project activities and/or outputs, and by areas (woredas) in which the project activities would be implemented.
- ***Project activities:*** The specific project activities grouped by category and locations.
- ***Project outputs:*** Expected project outputs (results) grouped by category.
- ***Beneficiaries:*** Information on the number of beneficiaries targeted in the different project locations.

Available documents for many projects only provided partial information. Very few project documents made available for the review provided information on targeted beneficiaries; consequently, it was not possible to analyze the portfolio based on beneficiaries served. The other primary deficiency encountered was lack of disaggregation of budget information by activities, outputs and/or location. The review employed the follow measures to address this deficiency:

- ***Budget by activities/outputs:*** Total budget was allocated equally across all activities and/or outputs that were specified in the project design.
- ***Budget by location (woreda):*** Total budget was allocated equally to all woredas that were targeted by the project in proportion to their populations.

The use of these assumptions to compensate for data deficiencies inevitably reduces the accuracy of the underlying data and any analysis that uses it. However, given that the primary aim of the analysis is to identify patterns (gaps) in investment flows and associated activities, it is not anticipated that these assumptions will materially alter the findings of the analysis. Given the way that the portfolio review has been designed, the data could be continually reviewed and refined as more accurate information is obtained, should this be considered necessary. Such a process would likely be quite resource intensive, as it will require follow-up consultations with those responsible for implementing each project.

The descriptions above apply specifically to data collection for the projects included in the portfolio review. To enable preparation of the MSIP, additional qualitative data was collected, including through the small projects case studies.

A6.4 Overview of the Project Portfolio

The objective of this portfolio review of current and past donor funded projects is to assess the sectoral distribution of financial flows, evaluate the extent to which projects are addressing government objectives (particularly GTP II) and are being implemented in climate vulnerable areas. The review was also performed to draw lessons from past and recent initiatives for the development of MSIP. The GTP II is used as a reflection of GoE priority and the review assesses whether projects are aligned with the country's development objectives.

The portfolio review is divided into three areas, specifically:

- Sectoral review.
- Size of projects
- Government priority development objectives.

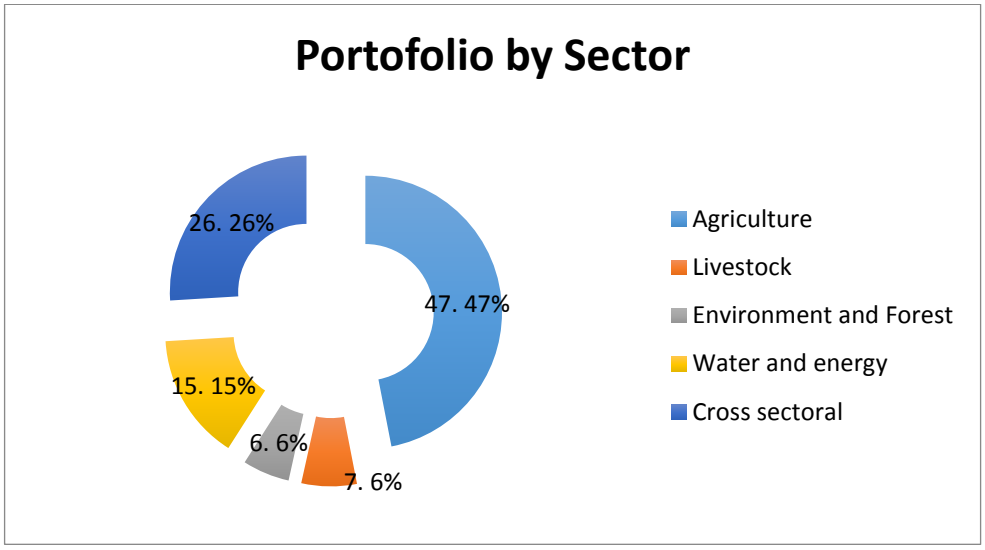
The total financial flow (through grants and loans) to Ethiopia in agriculture, livestock, environment and forest as well as water and energy between about 2010 and 2020 is approximately US$ 4.8 billion. This amount

includes FDRE co-financing through projects such as PSNP, SLM and AGP. PSNP III and PNSP IV, which together account for about US$ 1.2 billion of this amount (allowing for amounts committed).

Sectoral Review

The agriculture sector accounts for the largest share of funding, with about 47.5% of the total, followed by cross-sectorial activities at 26.3% (see Figure A6-2). While the latter category accounts for about a quarter of all projects, these projects are not necessarily implemented by multiple ministries, many instead involving different cross-sectoral components. For example, the GCCA pilot project on SLM includes a cookstove component that relates to both energy and forestry, and so the project is registered as cross-sectoral. However, only the Ministry of Agriculture has implemented the project.

FigureA6-2: Share of Investment by Sector



Agriculture accounts for about 45% of Ethiopia's GDP, and about 85% of the country's population relies on the sector for their livelihood. Considering the significance of the sector, donor interest and the significant amount of finance contributed to the sector is understandable. The Government of Ethiopia's contribution to the agriculture sector is about 8% of the total budget, reflecting the bold step the GoE has taken in building the economy base to leap frog the country into middle-income status through agricultural-led industrialization. High levels of donor support to the agriculture sector might indicate investment gaps in this sector are being filled by donor partners. Donors also prefer to work on single sector activities and get engaged in areas that have direct impact on the poor, women and communities with high need. The poor and communities with the most need are chiefly located in rural areas, where agriculture is the predominate economic activity. However, it is important to note that there are other reasons for the concentration of major funding in the agriculture sector. The forest sector until 2013, and the livestock sector until 2015, were under the Ministry of Agriculture, and a large share of the financial support to these sectors may therefore have been attributed to the agriculture sector. In addition, many of the large-scale multi-sector projects are implemented through the agriculture sector.

Size of Projects

The portfolio review divided the projects into five size categories as shown in Table A6-3. Almost 40% of the projects by number are considered small (Category 1) with a budget less than 10 million USD. However, these projects only account for about 5% of the total funding analyzed in the portfolio review.

Table A6-3: Projects by Size

Total Project Budget (US$)	Size Category	Number of Projects
100M+	5	12
75 to 99M	4	4
50 to 74M	3	8
11 to 49M	2	36
3 to 10M	1	42

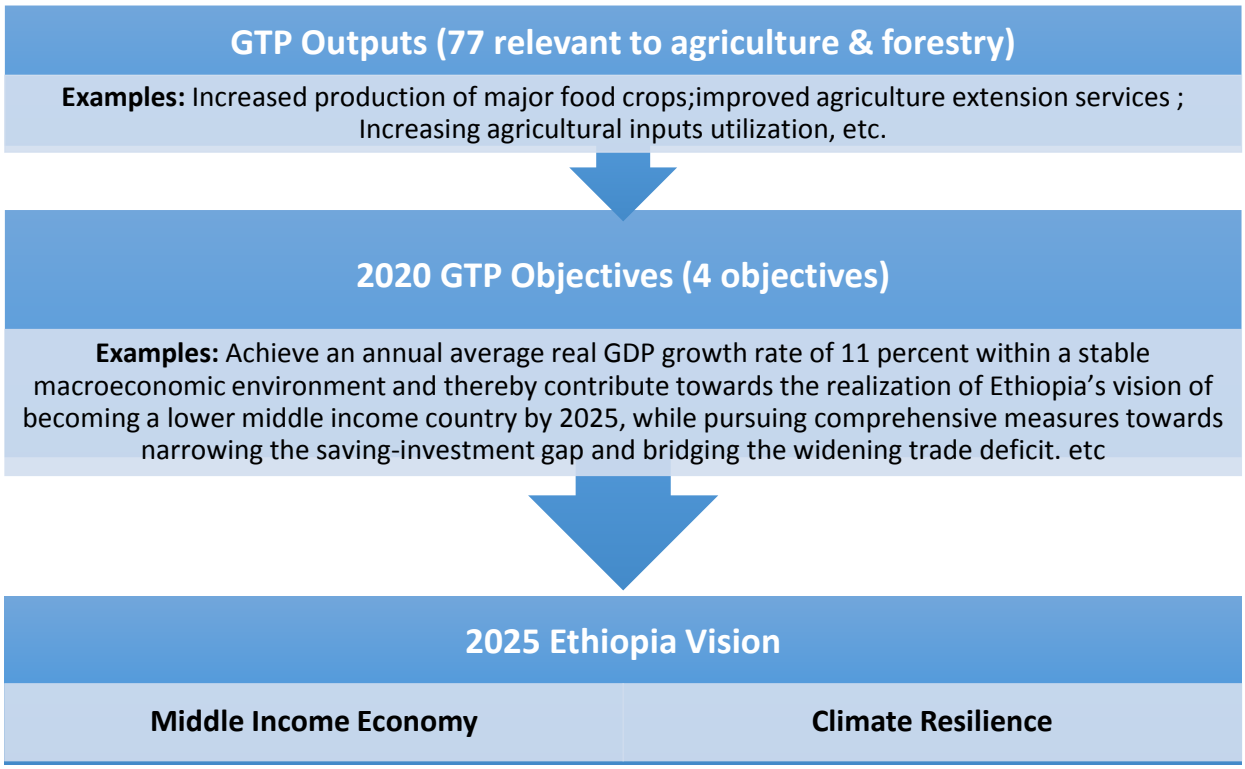
Projects less than US$ 50 million (Categories 1 and 2), including small-scale projects, account for about 70% of the projects in Ethiopia by number, but only about 20% of total funding. The remaining 30% of the projects by number account for approximately 80% of total funding, with twelve projects above US$ 100 million. Two of these are focused exclusively on large-scale irrigation. While many of the small-scale projects focus on a single sector and have fewer outputs associated with GTP II, the larger projects are multi-sectoral and have more outputs associated with GTP. From the seventy-seven GTP II targets in the four sectors that the assessment looked at, the large-scale projects on average have eight outputs directly correlated to GTP II targets.

Government Priority and Development Objective

The overarching development goal of the Government of Ethiopia is to achieve low middle-income country status by 2025, through sustaining rapid, broad based and inclusive green economic growth.[30] GTP II is intended to serve as a springboard towards realizing this national vision. The GoE has also developed the Climate Resilient Green Economy strategy to make the development agenda green and address resilience. The CRGE strategy and GTP have now been integrated, so that implementation of GTP will also contribute to the realization of CRGE objectives, and vice versa. As achieving GTP II outputs is expected to contribute to all national priorities, the review of project portfolio has focused on the extent to which projects are contributing to GTP II outputs. This has been done by mapping the intersection of GTP II outputs and project outputs to assess the extent to which the reviewed projects contribute to the development objectives of the country as expressed in the GTP II.

[30] GTP II

Figure A6-3: Connection between GTPII outputs and GoE Vision



To evaluate the extent to which projects are contributing to GTP II, the portfolio assessment looked at 77 GTPII outputs listed in the agriculture (including livestock), environment, as well as water and energy sectors. Using the financial intensity score of 1 to 5 for total funding of projects (Table A6-3, above) each output was given a score of 1 to 5 that reflected the project's size category. For example, projects that have over 100M budget are grouped in size category 5 and their associated outputs are given a score of 5. The score for each output is then aggregated across the projects to generate an index score (Table A6-4). The highest index score for any GTP II output is 63, indicating that this output is addressed by many large projects. The outputs are then categorized into five groups based on their index score within a given range. Group 5 includes outputs that currently receive significant donor attention, while Group 1 includes outputs that receive significantly less attention. Results of the GTP II output analysis are shown in Table A6-5 below.

Table A6-4: Correlation of index score and percentile

Index Score	Groups
0	0
1 to 12	1
12 to 23	2
24 to 36	3
37 to 48	4
49 to 63	5

Table A6-5: GTP outputs and priority reflected in projects

GTP Outputs	Index Score	Group Category
Increased production of major food crops	63	5
Strengthened and expanded natural resource management practices	56	5
Strengthened capacity	55	5
Strengthened water resource management and utilization	52	5
Increasing the productivity of crop	50	5
Strengthened capacity as a result of the climate resilient green economy strategy	47	4
Ensured household level food security	47	4
Increased livestock production	44	4
Established modern soil fertility management system	41	4
Organized and Strengthened Cooperatives	40	4
Increasing agricultural inputs utilization	36	3
Increased productivity of major food crops	34	3
Increased market share of cooperatives	32	3
Cooperative development and capacity building	30	3
Increased capital of Cooperatives'	29	3
Strengthened capacity of disaster preparedness and response	29	3
Increased supply of quality livestock feed	26	3
Increasing the access of agriculture extension Service	22	2
Growth of renewable green electric power	22	2
Plans Prepared and Implemented for Sustainable Land Administration and Utilization	21	2
Improved agriculture extension services	21	2
Increased size of land for agricultural investment	19	2
Improved forest coverage	19	2
Increased crop Productivity of female headed households	19	2
Installment of sustainable land administration system	16	2
Supply of technologies that help climate change adaptation	16	2
Increased production of vegetables, fruits and root crops	15	2
Increased productivity of vegetables, fruits and, roots	15	2
Land size under mechanized farming with reduced carbon emission	15	2
Increased Private investment and production of livestock	15	2
Increased number of genetically improved breeds	14	2
Average crop productivity of female headed households (quintal/ha)	14	2
Increased access to safe drinking water	14	2

GTP Outputs	Index Score	Group Category
Forest with increased ecological benefits	13	2
Increased production of industrial crops	11	1
Expansion of agricultural mechanization	11	1
Reduced amount of Greenhouse Gas Emissions using productivity enhancing methods and low carbon emitting technologies	11	1
Increased Number of Catalogues on Diversity and Distribution of species	11	1
Increased Conservation of Genes, species and ecosystems in situ and ex situ	10	1
Increased Number of Genetic resources utilized for research and development; Increased research information delivered to users	10	1
Reduced number of dysfunctional rural water stations	10	1
Increased productivity of export crops	9	1
Increased number of rural water supplying institutions	8	1
Newly established and strengthened small and medium scale agro industries	7	1
Number of prepared policy, strategy, laws, rules and guideline documents	7	1
Citizens' raised awareness on green economy development	7	1
Increased productivity of industrial crops	7	1
Minimized Expansion and Impact of invasive alien species	6	1
Increased production of export crops	5	1
Increased productivity of stimulus crops	5	1
Size of land covered by horticulture products	5	1
Increased Number of Characterized Genetic Resources and Evaluated for Use as Input in Agriculture, Industry and Further Research	4	1
Developed surface and underground hydrological information	3	1
Increased production of coffee, tea and spices	2	1
Increased amount of bioethanol production and utilization	1	1
Increased amount of biodiesel production and utilization	1	1
Increased productivity of spices	-	0

Consultative discussions with donors have indicated that donors align their activities with government priorities and GTP. Though activities and objectives of projects are not a one-to-one match with GTP, the activities they chose to implement are closely aligned. Many donors conduct a series of consultative meetings with government partners when designing programs or country strategies. Many donors have also recognized the impact of climate change and have integrated climate change responses focusing on resilience into their development agenda. Some donors have also shown a strong interest in aligning part of their activity with the CRGE strategy and even work directly with the CRGE Facility.[31]

[31] UK (DFID), Austria, Denmark and Norway.

The federal government also has a strong influence over funds and programs directed through Channel 1 mechanism as parliament and government ministries prioritize them. Thus, funds directed through Channel 1[32] and are more likely to be aligned with GTP where the government has already identified priorities and activities that can be best filled by donor partners.

The output review reflects that areas that have been given minor interest are those where the private sector can potentially play a major role, but may lack investment due to other bottlenecks such as policy, capacity and financial constraints.

[32] Channel 1 is on budget but further divided into two channels – channel 1a and channel 1b. Channel 1a refers to the allocations made by the government from domestic sources. Channel 1b refers to the pooled funds contributed by donors who work through the government structures. Channel 1b it is used by some donors such as the World Bank, the Department for International Development (DFID), and the African Development Bank (AfDB). Channel 2 refers to funds, which are not 'on-budget', but are 'on-plan' and are channeled either through budget institutions or through implementing agencies. Channel 3 refers to NGO funding to a specific sector and does not flow through the Government system.

Addendum 1: Small Project Case Studies

Case Study 1: Seeds for Needs: Integrating Farmer and Scientist Knowledge

Introduction

Climate change imposes severe threat to economic and social sectors in developing countries. This has been greatly manifested in agrarian countries like Ethiopia. With outmoded technologies and farming practices it is difficult for smallholder farmers to cope with the impacts of climate change. Even though it is well-known that farmers require new crops and crop varieties that can be grown within the changing environment, they are still restricted with the information and planting material necessary to match the diverse conditions they face. Recognizing these challenges to effective adaptation, ***Bioversity International introduced the "Seeds for Needs" (S4N) initiative with the objective of providing farmers with more crop varieties***, enhancing their knowledge about diverse traits, and strengthening their local seed systems to enable them to have access to seeds that fit their changing needs.

Background

In 2009, the Seeds for Needs initiative started in Ethiopia to help increase farmers' resilience to climate change through agricultural biodiversity. Currently, the project has several sites in 11 countries involving a range of crop varieties. [33] The project received an initial World Bank development marketplace award of US$200,000 over a three-year period.

Bioverstiy International, Italy, in partnership with the Ethiopian Institute of Biodiversity, Mekelle University and Sirinka Agricultural Research Centre, implemented the project. Other international organizations involved include the Food and Agriculture Organization of the UN (FAO) and Scuola Superiore Sant'Anna di Pisa. At the local level, farmers' groups/grassroots organizations, NGOs, and national and local research organizations have also been involved in this study. The initiative is coordinated by Bioversity International scientists offering necessary expertise, including genetic diversity, geography, social sciences, agronomy and plant breeding.

The project aims to have a direct impact on development by enabling vulnerable farmers to have access to better-adapted varieties of vital food crops to mitigate climate change risks to food security. The distinctive approach of this project is that it focused on using or (re) introducing a diversity of superior landraces available in genebanks rather than focusing on breeding and introducing new varieties. This approach requires the characterization of the genetic resources available and then to understand the performances of accessions in different climatic conditions, and finally to ensure these address farmers' needs. This reflects an integration of scientific knowledge with farmers' knowledge and needs, and provides evidence to adapt the adverse climate change.

Additionally, by taking into consideration the prevailing recurrent drought in Ethiopia, the study focused on identifying drought-resistant varieties. Barley, teff, durum and bread wheat are some of the most important crops, and are key to achieving food security in the country. Thus, the aim of this initiative was to identify landraces of durum wheat and barley with the potential to adapt to changing climatic conditions, and make them available to farmers and breeders.

[33] Cambodia: rice, sweet potato; Colombia: beans; Ethiopia: barley, wheat; Honduras: beans; India: rice, wheat; Kenya and Tanzania: sorghum, pigeon pea, cowpea; Laos: cucumber, long bean, rice, sweet corn, watermelon; Papua New Guinea: taro, sweet potato; Rwanda and Uganda: beans.

In 2010, the pilot of the S4N project was implemented in three communities in a highly agriculturally productive and commercialized region of Ethiopia. The study deployed modern Geographic Information Systems (GIS) technology to identify barely and durum wheat accessions that have the highest potential to be adapted to current and future climatic conditions. Using location coordinates, latitude and longitude information input into GIS can help to identify accessions already adapted to future growing conditions elsewhere in the world. The selected accessions were tested in the field to better characterize them under the present conditions and farmers evaluated the selected varieties using a participatory approach. A crowdsourcing approach was used to easily reach farmers and get their feedback. Thus, farmers received three varieties to blind test from a portfolio of 20 and one control variety. These mini trials helped to involve more farmers than a typical station trial. During the evaluation, women and men farmers expressed their preferences based on traits that are important to them.

Therefore, from 25,000 varieties of durum wheat and barley, 500 were short listed using GIX technology and characterization. Out of this short list, farmers and scientists selected 50 to test for local adaptation. Hereafter, the next step was creating access for farmers to have this diversity, which is not commercially available. After consulting the community, the study came up with a sustainable solution by proposing to create community seed banks. Thus, in 2014 community seed banks were established in three regions where Bioversity International works. Farmers built the infrastructure where seeds are stored in rooms below ground level to ensure more stable temperature and humidity conditions. The Ethiopian Institute of Biodiversity played a critical role through testing, selecting and distributing the wheat and barley varieties to farmers.

Results and impacts

The S4N initiative was judged a winner in the World Bank's Development Marketplace 2009, for its innovative and low-cost strategy to understanding the needs of farmers, particularly women, and improving access to crop varieties that could help them enhance their resilience to climate change impacts. The project was successful in addressing its objective by reducing the vulnerability and enhanced the adaptive capacity in smallholder farming communities by increasing the intraspecific diversity of important food security crops using barley and durum wheat

Some of the encouraging results of this study include that it has identified several varieties that are more resistant to drought than the one commercially provided by breeders with the same objective. In the meantime, a thorough study was conducted at the genetic level for the durum wheat accessions to provide a better understanding of the genetic diversity. This analysis discovered that the study introduced new valuable genetic traits for climate change adaptation to farmers. Predominantly, the study tried to identify where the traits preferred by farmers are located in the genome.

According to Bioversity International's annual project report, within a three-year period varietal diversity increased in Ethiopia by 23% across the sites where the project was implemented, and more than half of the farmers still share these varieties within their seed networks. The project has involved over 1,500 farmers in the country who are planting better adapted material in their farms, an achievement that would have taken far longer through a formal plant breeding programme. In addition, to ensure farmers have a reliable source of quality seeds, the study has set up a community seed bank with the Ethiopian Biodiversity Institute.

Major Results

- Created an atlas with the accessions suitability for present and future conditions.
- Understood the socio-economic context of the sites and farmers' criteria to select accessions.

- Created lasting solutions for resilience and climate by establishing community gene banks for making accessions available to farmers
- Provided high levels of support for women empowerment in the process.

Lessons Learned

1. ***The need to develop an adaptation strategy for major crops based on local genetic diversity conserved either on farm or in the gene bank.***
2. ***Local seed systems and conservation institutions are essential driving forces for implementing such climate resilient adaptation initiatives.*** In this project, the major barrier for sustainable impact was the limited spread of the new varieties beyond the immediate beneficiaries. Thus, the expansion and sustainability of S4N relied, inter alia, on the mechanism for seed distribution; inclusion of an analysis of the role of local seed systems and conservation institutions in seed sourcing in baseline assessments will be critical.
3. ***Engaging female farmers and female heads of households is an important contribution to female empowerment and gender equality, and was a main factor in the success of the project.***
4. ***The successful results and high scalability of the project nature attracted the interest of other international donors and consequently two other S4Ncprojects, using the same model and approach with other crop varieties, have been set up and implemented in other regions of Ethiopia***, for a total investment of over US$750,000 including one supported by the FAO International Treaty Benefit-Sharing Fund, aimed at supporting the use of broader genetic diversity.

Case Study 2: Wof Washa Project

Introduction

In Ethiopia, the forest sector makes a considerable contribution to various social and economic sectors of the national economy, i.e. agriculture, energy, water, health, tourism, etc. It contributes to job creation and income diversification, earning of foreign currency through exports, and savings through import substitutions. However, deforestation and degradation are imposing major environmental and social challenges in the country as there is a high demand for wood and forest products. Thus, effective management of its forests is crucial. A well-managed ecosystem can help societies adapt to both current climate hazards and future climate change by providing a wide range of ecosystem services (Turner et al., 2009). In addition, a secure flow of ecosystem services can significantly reduce social vulnerability. Therefore, Ethiopia has recognized that identifying and scaling up effective forest management practices is strategic to significantly enhancing the forest sector's contributions to local livelihoods, the environment and economy.

TREE AID, an international charity organization that focuses on unlocking the potential of trees to reduce poverty and protect the environment in Africa, has been awarded funding from the Darwin Initiative for the "Sustainable Management for Resilient Livelihoods" project in Wof Washa forest in Amhara region. The main objective of this project was to demonstrate sustainable land use practices and forest management while encouraging sustainable livelihoods. A total of £302,333 fund came from the UK's Department for Environment, Food and Rural Affairs (DEFRA) and Department for International Development (DfID) through the Darwin Initiative for over three years (2013-2016).

Background

The project started in April 2013 with the objective of creating effective forest management and natural resources management (NRM) that contributes toward building the resilience of the community living around

the forest. The lack of alternative livelihood options for local people exacerbated deforestation that resulted in increases to the rate of biodiversity degradation as well as soil and water erosion.

TREE AID Ethiopia in partnership with local Sustainable Natural Resource Management Association (SUNARMA) implemented this project in 14 of the total 15 kebeles in and around Wof Washa forest located in three districts in Amahra region. The project used SURAMA's Forest User Groups (FUGs) model to create communities' sense of ownership and interest in forest management and NRM practice. Moreover, they also applied the tested and refined Market Analysis and Development (MA&D) that takes forest users through the stages of identifying their local resources, and assessing and developing enterprise opportunities based on their resources and agreed upon plans to protect the integrity of natural resources on which their enterprise may then reply. Groups self-select into "Village Tree Enterprise" groups (VTEs). These groups provided an ideal platform to build a sense of ownership and implementation of Participatory Forest Management (PFM) plans. Royal Botanic Gardens Kew was also engaged in the planning stages of the project by providing expertise to the project in forest ecology, natural forest inventory, forest restoration strategies. Ethiopian Ministry of Agriculture-Forest Research Institute and Debre Birhan University were also engaged in this project to maximize resources toward research for the successful support for biodiversity conservation within the forest and surrounding landscapes

Major Results

The project was successful through delivering a holistic solution to the communities living around the forest by supporting forest users in coordinating their efforts to manage the forest and landscape through the formation of FUGs. It has met its target by reaching 56 communities living in and around Wof Washa forest, representing 70,805 people. These individuals directly benefited from improved access rights and better management of the forest through the FUGs that have been set up and graduated later to form cooperatives. According to TREE AID's annual report, households' income was increased based on the working profits that have been generated through the forest enterprise group. This was a great advantage for those who mainly depend on the forest for their livelihoods, enabled by formalizing their access to the forest's natural resources. Additionally, clear responsibilities were created among those concerned public and private actors in protecting and managing the forest. Therefore, this project has ensured that the forest retains its biodiversity while providing a vital source of food and income for today and for generations to come.

Lessons Learned

1. ***Strong government leadership and ownership of the cause*****:** The Amhara National Regional State Forest Enterprise (ANRSFE) has played a great role through whole process of the project. It was involved in the design, implementation, monitoring, reviewing and evaluation of the project. Work undertaken with the institution has helped to achieve the legal recognition of cooperatives and the transfer of management of the forest to these local groups.
2. ***Strong linkages between concerned actors:*** The offices of agriculture, women affairs, and cooperatives, environment and forestry, economy and finance, and administration were the key government offices closely worked with the project. Additionally, other local NGOs, cooperatives and Debre Berhan university delivered their share in this project in synergetic manner with the project's main implementers.
3. ***Contribution to SDGs:*** The project has integrated the SDG goals into its specific objectives. Thus, it was successful in improving food security and gender equality, and in diversifying income to create sustainable solutions to ending poverty.

Addendum 2: Summary of Project Portfolio

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
1	Strengthening National Capacity through Sustainable Increases in Agricultural Production and Productivity	50,000,000	Agriculture	Bill and Melinda Gates Foundation, Canada, Spain, UNDP	MoANR	Not Available	2011	2016
2	Sustainable Land Management Project Phase II	105,000,000	Agriculture	World Bank, (GEF), NORWAY Ministry of Foreign Affairs, KfW, Foreign Affairs, Trade and Development - Canada through GIZ	MoANR	Oromia, Amhara, Tigray, SNNP, Gambella and Benishangul	2013	2020
3	AGP I	44,900,000	Agriculture	World Bank, USAID, DFID, CIDA	Ministry of Agriculture and Rural Development	Oromia, Amhara, Tigray and SNNP	2010	2015
4	AGP II	350,000,000	Cross-sectoral	World Bank (International Development Association); Spanish Agency for International Development (AECID); Development of Foreign Affairs, Trade and Development of Canada; USAID; The Netherlands; possibly International Development Corporation (Italy); and in parallel co-financed by DFTAD (Department of Foreign Affairs, Trade and Development, Canada) and USAID	MoANR	Oromia, Amhara, Tigray, SNNP, Gambella and Benishangul	2015	2020
5	GRAD	25,600,000	Livestock	USAID	CARE Ethiopia	Amhara, Tigray, Oromia and the SNNP	2011	2015
6	PRIME	52,000,000	Livestock	USAID	MoANR	Afar, Somali and Oromia	2012	2015
7	PSNP III	580,000,000	Cross-sectoral	Canadian International Development Agency, Embassy of the Kingdom of the Netherlands, European Commission, Irish Aid, Swedish International Development Agency, United	MoANR	Oromia, Amhahra, Tigray, SNNP, Afar, Somali and Harar, Dire Dawa	2010	2015

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
				States Agency for International Development, UK Department for International Development, DANIDA and World Bank				
8	PSNP IV	100,000,000	Cross-sectoral	Canadian International Development Agency, Embassy of the Kingdom of the Netherlands, European Commission, Irish Aid, Swedish International Development Agency, United States Agency for International Development, UK Department for International Development, DANIDA and World Bank.	MoANR	Amhahra, Oromia, Tigray, SNNP, Gambella, Benishangul, Afar and Somali, Harari	2014	2020
9	Agriculture Fast Track Investment Project	7,590,000	Cross-sectoral	UK-DFID, Austrian Development	MoANR	Oromia, Amhara, Tigray, SNNP, Afar, Somali, Gambella, Bensanuel, Harari and Diredawa	2014	2016
10	Community based integrated natural resources management project in Lake Tana	25,400,000	Cross-sectoral	GEF, IFAD, Govt (ANRS), Beneficiaries	Ministry of Agriculture and Rural Development and the Amhara National Regional State	Amhara	2009	2016
11	Ethiopia's REDD+	3,600,000	Forest	Government, FCPF, UN-REDD Programme, Nordic Climate Facility-NCF, French Development Agency-AFD	MoEFCC	Oromia, Amhara, Tigray, SNNP, Afar, Somali, Gambella, Bensanuel, Harari and Diredawa	2012	2017
12	Scaling up Renewable Energy Projects in Low Income Countries (SREP)	443,200,000	Water and Energy	SREP, AfDB and IFC	MoWIE and EEPCO	Oromia, SNNP and Afar	2011	Ongoing
13	Energy + Project	6,500,000	Water and Energy	Norway	MoWIE and MoMPN	**Biofuel:** Oromia, Amhara, Tigray, SNNPR, Afar **Cookstove:** all over the country	2012	2013

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
14	Livestock Growth Program	6,000,000	Livestock	USAID	CNFA	Oromia, Amhara, Tigray, and SNNPR	2012	2017
15	Promoting Autonomous Adaptation at the community level in Ethiopia	24,720,000	Cross-sectoral	GEF, UNDP	MoEFCC	Oromia, Tigray, Gambella, and Benishangul Gumuz	2011	2016
16	Coping with climate change – GEF, WEP	2,860,000	Cross-sectoral	GEF (SCCF) and Government of Ethiopia	UNDP, Woreda Agriculture office	Amhara	2007	2013
17	Enabling pastoral communities to adapt to climate change and restoring rangeland environments project	4,000,000	Livestock	Spanish Government to UNDP, UNEP	MoANR	Oromia, SNNP, Afar and Somali	2009	2013
18	Irrigation and Drainage Project	173,600,000	Water and Energy	World Bank	MoWIE	Amhara	2008	2017
19	Four Towns Water Supply and Sanitation Improvement Program in Ethiopia	76,110,000	Water and Energy	African Development Bank Group (AfDB)	MoWIE	Oromia, Amhara, Tigray and Somali	2016	2020
20	Ethiopia Sanitation and Hygiene Improvement Programme (E-SHIP)	5,430,000	Cross-sectoral	Global Sanitation Fund	Ministry of Health	Oromia, Amhara, Tigray, SNNP, Afar, Somali, Gambella, Bensanuel, Harari and Diredawa	2012	2016
21	Harar Water Supply and Sanitation Project: Improving Livelihoods and Enhancing Water Security in Ethiopia	33,000,000	Water and Energy	African Development Bank Group (AfDB)	Ministry of Water, Irrigation and Electricity	Harari	2012	2016
22	Fantale Irrigation Construction Project	20,790,000	Water and Energy	Oromia Regional Government	Oromia Water Resource Bureau	Oromia	2006	2012
23	Ada'a Bacho Plain Irrigation Project	4,610,000	Water and Energy	Government of Ethiopia	Ministry of Water, Irrigation and Electricity	Oromia	2012	Ongoing
24	Welenchiti Irrigations Construction Project	51,630,000	Water and Energy	Government of Ethiopia	Wonji Sugar Factory	Oromia	2010	Ongoing
25	Kesem and Tendeho irrigation project:	361,000,000	Water and Energy	Government of Ethiopia	Ethiopian Suger Cooperation	Oromia and Afar	2012	Ongoing
26	Arjo- Dedesa Irrigation Projects	59,000,000	Water and Energy	Government of Ethiopia	MoWIE	Oromia	2012	Ongoing

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
27	Ziway Irrigation Project	13,000,000	Water and Energy	Government of Ethiopia	MoWI	Oromia		
28	Institutional Strengthening for Forest Sector Development in Ethiopia	5,000,000	Forest	Embassy of Sweden	MEFCC & UNDP	Amhara, Oromia, SNNP and Tigray	2014	2017
29	Fast track project for Energy	6,100,000	Water and Energy	CRGE Facility; MoFEC	MoWIE	Oromia, Amhahra, Tigray and SNNP	2014	2015
30	Ethiopia: Biogas Dissemination Scale-Up Project – National Biogas Programme of Ethiopia (NBPE+)	22,470,000	Water and Energy	European Development Fund	MoWIE	Oromia; Amhahra; Tigray; SNNP; Afar; Somali; Gambella and Benishangul	2014	2020
31	Integrated approach to improving rural livelihoods, empowering communities and partners	5,600,000	Cross-sectoral	Embassy of Sweden	Farm Africa	Addis Ababa, Dire Dawa, Oromia, SNNP, Amhara, Tigray, Gambella, Afar, Somali and Benishangul	2016	2020
32	CRGE Fast- Track Investments on Forest Sector	3,270,000	Forest	CRGE Facility; MoFEC	MEFCC	Addis Ababa, Dire Dawa, Oromia, SNNP, Amhara, Tigray, Gambella, Afar, Somali and Benishangul	2014	2016
33	Greening Agricultural Transformation in Ethiopia (GATE)	25,730,000	Agriculture	DANIDA	ATA	Amhara, Oromia, SNNP and Tigray	2014	2017
34	Support to Responsible Agricultural Investment in Ethiopia (SRAIE)	4,070,000	Agriculture	EU and the government of Germany	MoANR	Gambella and Benishangul	2014	2017
35	Sustainable Agriculture and Food Security Enhancement through Integrated Recovery Support Mechanisms (SAFE) Project	3,530,000	Agriculture	EU	VITA	SNNP	2014	2016
36	Regional Pastoral Livelihood Resilience Project (RPLRP)	75,000,000	Cross-sectoral	World Bank	MoANR	Oromia, SNNP, Afar, Somali	2015	2019

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
37	Building Resilience and Adaptation to Climate Extremes and Disasters	6,900,000	Livestock	Farm Africa (lead), Mercy Corp, Lion's Head Global Partners and LTS International Limited	BoANR	Afar, SNNPR and Somali	2015	2017
38	Drought Resilience and Sustainable Livelihood Programme	50,000,000	Livestock	AfDB, Government of Ethiopia	MoLF and IGAD	Afar, Oromia, SNNP Somali	2013	2017
39	Participatory Small-scale Irrigation Development Programme Phase II	145,300,000	Water and Energy	IFAD	MoANR and regional agriculture bureau	Oromia, Amhara, Tigray, SNNP	2015	ongoing
40	Land Investment for Transformation (LIFT)	71,000,000	Agriculture	UKAID	DAI and Ministry of Agriculture's Rural Land Administration and Use Directorate (RLAUD)	Oromia, Amhara, Tigray, SNNPR	2016	2020
41	GCCA pilot project SLM	9,420,000	Cross-sectoral	GCF	MoANR and GIZ	Oromia, Amhara, Tigray, Gambella, Benshangul	2008	2013
42	Building Resilience Capacity and Recovery for the Vulnerable Population in Ethiopia (RESET I)	14,200,000	Cross-sectoral	EU	Consortium of NGO led by a consortium lead agency (CLA)	Oromia, Amhara, SNNPR, Afar, Somali	2012	2017
43	Sustainable Land management Project Phase I	29,000,000	Cross-sectoral	IDA	MoANR, World Bank, and GIZ	Oromia, Amhara, Tigray, SNNPR, Gambella, Benshangul	2008	2013
44	Disaster Risk Management and Livelihoods Recovery Programme (DRMLRP)	15,400,000	Livestock	AfDB;	MoLF and IGAD	Afar, Oromia, South, Ethiopia-Somali pastoralist areas	2013	2017
45	Climate High-Level Investment Programme (Ethiopia)	37,550,000	Cross-sectoral	DFID	Ethiopian Government	Oromia, Tigray, Amhara, SNNP, Gambella, Benishangul Gumuz, Somali, Afar, Harari, Dire Dawa and Addis Ababa	2012	2016
46	Mainstreaming Incentives for Biodiversity Conservation	19,320,000	Cross-sectoral	GEF	MoEFCC	Oromia, Amhara, SNNP and Somali	2015	2018

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
	in the Climate Resilient Green Economy Strategy (CRGE)							
47	Strengthening climate information and early warning systems in Africa for climate resilient development and adaptation to climate change – Ethiopia	37,840,000	Cross-sectoral	GEF/LDCF	NMA	Oromia, Tigray, Amhara, SNNP, Gambella, Benishangul Gumuz, Somali, Afar, Harari, Dire Dawa and Addis Ababa	2013	2017
48	Water Sanitation and Hygiene Transformation for Enhanced Resiliency (WATER) Project	11,400,000	Water and Energy	USAID	Consortium formed by the International Rescue Committee (IRC) and CARE Ethiopia including other local organizations	Oromia, Afar and Somali	2011	2014
49	Energising Develeopment (EnDev) Ethiopia	31,450,000	Water and Energy	EU	MoWIE	Oromia, Tigray	2010	2017
50	Small-Scale Irrigation (SSI) capacity building strategy	15,000,000	Water and Energy	Embassy of Kingdom Netherland	MoWIE	Oromia, Tigray, Amhara, SNNP, Gambella, Benishangul Gumuz, Somali, Afar, Harari, Dire Dawa and Addis Ababa	2013	2016
51	MERET-PLUS	151,000,000	Agriculture	Canada, Denmark, Finland, Norway, Japan, Private Donors, Russian Federation	MoANR & WFP	Oromia, Amhara, Tigray, SNNPR, Somalia and Dire Dawa	2012	On-going
52	New Business Model for Honey Value Chain Development	4,000,000	Cross-sectoral	OXFAM GB/ACCRA	MoANR, and regional Association	Amhara	2012	2017
53	Beekeepers Economic Empowerment through Long-term Investments in Entrepreneurship and Value chain in Ethiopia	5,330,000	Cross-sectoral	OXFAM GB/ACCRA	Bureau of Tigray Agriculture	Tigray	2017	2021

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
54	Managing Environmental Resources to Improve Food Security	20,000,000	Agriculture	Canada	WFP	Tigray, Amhara, Oromia and SNNPR	2008	2011
55	Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES)	19,860,000	Agriculture	Canadian International Development Agency	ILRI, IWMI, EIAR and MoANR	Amhara, SNNPR, Tigray and Oromia	2012	2013
56	Africa RISING Imitative: Feed the future initiative	8,820,000	Cross-sectoral	USAID	ILRI, ATA ICARDA CIAT and IWMI	Amhara, SNNPR, Tigray and Oromia	2011	2016
57	Engaging the Private Sector in Support of Smallholder Farms	7,640,000	Agriculture	Canada	ATA	Not available	2013	2017
58	Engaging the Private Sector in Support of Smallholder Farms	10000000	Agriculture	USAID's Development Assistance Fund	ATA	Not available	2011	2016
59	Agricultural Transformation through Stronger Vocational Education (ATTSVE)	14,000,000	Cross-sectoral	Canada	Dalhousie University Faculty of Agriculture MEDA & McGill University Jimma University College of Agri. & Vet. Medicine	To be confirmed in Project Implementation Plan (ongoing)	2014	2019
60	Capacity to Improve Agriculture and Food Security (CIAFS)	15,000,000	Agriculture	Canada	Save The Children Canada	Benishangul Gumuz	2010	2015
61	Ethiopians Driving Growth through Entrepreneurship and Trade	7,350,000	Cross-sectoral	Canada	Mennonite Economic Development Associates (MEDA)	Addis Ababa, Amhara and SNNPR	2010	2016
62	Food Sufficiency for Farmers	9,500,000	Cross-sectoral	Canada	Care Canada / Care Ethiopia	Oromia and Amhara	2013	2018
63	Increased Food Security for Mothers and Children	38000000	Cross-sectoral	Canada	UNICEF	Not available	2011	2016
64	Sustainable Agricultural Growth through Irrigation (SAGI)	11,500,000	Cross-sectoral	Netherland	Not available	Not available	2013	2017

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
65	Livelihoods, Agriculture and National Development (LAND) Project	14,000,000	Cross-sectoral	DFATD (CANADA) and Govt. of Ethiopia	MoANR and DFATD	Oromia, Amhara and Tigray	2014	2016
66	REILA	14,720,000	Cross-sectoral	Government of Finland	EPLUA	Benishangul-Gumuz and Amhara	2011	2016
67	Reducing Food Losses through Improved Post Harvest Management in Ethiopia – Phase 1	3,520,000	Agriculture	Swiss Agency for Development and Cooperation	FAO Ethiopia Office	Amhara, Oromia, Tigary, SNNP	2013	2017
68	Development Study on Ground Water Resource Assessment in the Rift Valley Lakes Basin	3,178,304	Water and Energy	JICA	Groundwater Directorate, the then MoWR	Not available	2009	2011
69	The Programme For Emergency Water Supply For Addressing Climate Change In Ethiopia	7,469,015	Water and Energy	JICA	MoWR and Regional Water Development Bureaus	Amhara, Tigray, SNNPR, Oromia, Afar, Somali, Gambella and Bensihangul Gumuz	2009	2011
70	The Study of "Jerer Valley and Shebele Sub-basin Water Supply Development Plan, and Emergency Water Supply	6,984,194	Water and Energy	JICA	MOWIE and Somali Region Water Resource Dev't Bureau	Somali	2012	2013
71	Development Study on Groundwater Assessment in Middle Awash Basin	3,179,609	Water and Energy	JICA	Groundwater Directorate, MOWIE	Oromia	2013	2015
72	The Project for Rural Water Supply, Sanitation and Livelihood Improvement through Dissemination of Rope Pumps (RPs) for Drinking Water	4,409,500	Water and Energy	JICA	MoWIE and SNNPR Region Water and Irrigation Dev't Bureau	SNNPR	2013	2016
73	Small towns water supply in southern part of Amhara Region	5,582,427	Water and Energy	JICA	MoWIE and Amhara Region Water, Irrigation and Energy Dev't Bureau	Amhara	2013	2015

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
74	Water Supply development for Small Towns in Rift Valley Basin in SNNPR	11,676,356	Water and Energy	JICA	MoWIE and SNNPR Region Water and Irrigation Dev't Bureau	SNNPR	2013	2015
75	Bahir Dar Water Supply Project (new)	20,471,216	Water and Energy	JICA	Amhara Region Water, Irrigation and Energy Dev't Bureau and Bahir Dar City Water Supply and Sewerage Service	Amhara	2016	2020
76	Project for Capacity Building in Irrigation Improvement	4,859,269	Water and Energy	JICA	Oromia Water, Mine, Energy Bureau	Oromia	2009	2014
77	Project on Enhancing Development and Dissemination of Agricultural Innovations through Farmer Research Groups (FRGs)	4,938,640	Cross-sectoral	JICA	Ethiopian Institute of Agricultural Research (EIAR), Regional Agricultural Research Institutes (RARIs) and Universities	Oromia	2010	2015
78	Quality Seed Promotion Project for Smallholder Farmers	4,233,120	Agriculture	JICA	Ministry of Agriculture Rural Development Department	Oromia, Amhara and SNNP	2010	2014
79	Rural Resilience Enhancement Project	9,700,900	Cross-sectoral	JICA	Ministry of Agriculture, Natural Resource Development Conservation and Utilization Directorate	Oromia and Somali	2012	2016
80	Index-Based Crop Insurance Promotion Project for Rural Resilience Enhancement	6,261,490	Water and Energy	JICA	Food Security and Rural Job Creation Ministry of Agriculture and Natural Resources	Not available	2017	2022

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
81	The Project for Smallholder Horticulture Farmer Empowerment Through Promotion of Market-Oriented Agriculture (Ethio-SHEP)	4,885,726	Water and Energy	JICA	Ministry of Agriculture and Natural Resources, Oromia Bureau of Agriculture and Natural Resources	Oromia	2017	2022
82	One Village One Product Promotion	3,351,220	Cross-sectoral	JICA	Ministry of Agriculture	SNNPR	2010	2015
83	Project for Supporting Sustainable Forest Management through REDD+ and Certified Forest Coffee Production and Promotion (REDD+FCCP)	65,000,000	Forest	WB	Oromia Forest and Wildlife Enterprise	Oromia	2014	2020
84	The Project for Development of Next-Generation Sustainable Land Management (SLM) Framework to Combat Desertification	3,527,600	Forest	JICA	Bahirdar university	Amhara	2017	2022
85	Test Well Drilling Project for Geothermal Development in Ethiopia	9,480,425	Water and Energy	JICA	Ethiopia Electric Power Geological Survey of Ethiopia	Afar	2016	2019
86	Project for Aluto Langano Geohtermal Development (LoaN)	176,380,000	Water and Energy	JICA	Ethiopian Electric Power	Oromia	2019	Un-defined
87	Geothermal Wellhead Power System (Grant)	17,638,000	Water and Energy	JICA	Ethiopian Electric Power		2017	2019
88	Addis Ababa Distribution Master Plan (Loan)	184,317,100	Water and Energy	JICA	Ethiopian Electric Power	Addis Ababa	2017	2019
89	UNDP Agricultural Growth Programme	16,026,908	Agriculture	UNDP	ATA, MoFEC and MoNAR		2009	2015
90	Support for Agricultural Marketing Development in Ethiopia	13,000,000	Agriculture	Bayu	EU	Oromia, Amhara, Tigray, SNNPR	2010	2015
91	Strengthening Resilience of Pastoral and Agro-pastoral	8,500,000	Agriculture	KfW	MoNR	Afar and Somali	2014	2018

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
	Livelihoods in Ethiopians Arid and Semi-arid Lands							
92	Innovative approaches to Food Insecurity-EC Project to improve the livelihoods for most vulnerable households in Southern Ethiopia (IAFIP)	3,000,000	Cross-sectoral	FSTP	World Vision Ethiopia	SNNPR	2012	2015
93	Capacity Development for Strengthening Drought Resilience of the Pastoral and Agro-Pastoral Population in the Lowlands of Ethiopia; Afar Region	5,200,000	Cross-sectoral	German Development Cooperation	German agro-action	Afar	2013	2018
94	CASCAPE (Capacity building for scaling up of evidence-based practices in agricultural production in Ethiopia)	13,000,000	Agriculture	Embassy of Kingdom Netherland	MoANR and BoAANR	Afar	2012	2016
95	Integrated Seed Sector Development 2	13,200,000	Cross-sectoral	Embassy of Kingdom Netherland	Centre for Development Innovation	Oromia, Amhara, Tigray and SNNPR	2012	2015
96	Small Scale irrigation	13,000,000	Water and Energy	Embassy of Kingdom Netherland	Tigray, Oromia and SNNPR	Gambella and Benishangul Gumuz	2012	2016
97	CRV (Central Rift Valley) and Gambella Land planning	14,000,000	Agriculture	Embassy of Kingdom Netherland	MoANR	Gambella	2012	2016
98	Enhancing Dairy Growth	13,000,000	Cross-sectoral	Embassy of Kingdom Netherland	MoANR	Afar	2012	2016
99	Ethiopia Netherlands Horticultural Partnership	34,400,000	Cross-sectoral	Embassy of Kingdom Netherland	MoANR	Oromia, Amhara, SNNPR, Tigray and Dire Dawa	2013	2016
100	Food Security and Rural Entrepreneurship	8,500,000	Cross-sectoral	Embassy of Kingdom Netherland	MoANR	Amhara and SNNPR	2012	2016
101	Integrated Community Based Nutrition	5,500,000	Cross-sectoral	Embassy of Kingdom Netherland	UNCIEF	Amhara, Tigray, SNNPR, Oromia, Somali, Gambella and Bensihangul Gumuz	2011	2015

#	Project Title	Project Amount (US$)	Sector	Donor	Implementing entity	Region (s)	Start Date	End Date
102	Pastoral Community Development Project II (PCDP II)	13,870,000	Agriculture	WB	MoANR	Oromia, Afar, Somali and SNNPR	2008	2013

Annex 7: GAP ANALYSIS

A7.1 Basis of the Gap Analysis

The gap analysis was undertaken to establish a clear, evidence-based assessment of where current committed investments would and would not meet Ethiopia's projected climate resilience requirements. This analysis could then be used to help inform future-focused multi-sectoral investment planning. The gap analysis was designed to ensure that a sufficiently accurate assessment of investment gaps was produced, bearing in mind available time and resources. This document provides a summary of the gap analysis methodology and findings. The analysis has been performed so that it can continually be refined, should this be considered necessary.

The gap analysis was performed using the following parameters:

- ***Gaps against GTP II targets:*** Assessment of gaps in activity levels compared to objectives established by in GTP II for each sector.
- ***Financial gaps:*** Assessment of gaps in levels of investment, comparing actual levels to the amounts projected as being necessary. Given that it was not possible to use impact data in the gap analysis, investment flows are a proxy for intensity of activity.
- ***Thematic gaps:*** Assessment of gaps in activities that are necessary to achieve the CR strategy looked at through each of the CR themes of agricultural and forest as well as water and energy.
- ***Spatial gaps:*** Assessment of gaps in investment activities, comparing actual levels to measures of climate vulnerability across woredas in Ethiopia.

The gap analysis has been performed using data gathered by the portfolio review. The portfolio review concentrated on project activity between 2010 and 2020. As GTP I commenced in 2010, this represents an appropriate point to commence the analysis. The gap analysis used outputs of GTP II and a comparative review of outputs of GTP I and II was also conducted and it was found that though there are some variation and change, the outputs are overall similar. 2020 marks the conclusion of GTP II; additionally, very few current projects have commitments beyond 2020. Therefore, investment activity during this period provides a reliable and relevant evidence base for the gap analysis. All analysis has been performed on a "Business as Usual" basis; that is, it has been assumed that underlying conditions remain the same, without any unforeseen changes in climate science, climate finance, economic development in Ethiopia, etc.

While the MISP will focus on addressing climate change in the agriculture, forest, water and energy sectors and the programs/ activities that will be designed for implementation directly or indirectly tackle climate change, the gap analysis looked at all projects within these sector areas. This point was clarified in the summary of the portfolio review on which this gap analysis has been based (see Annex 6). The underlying assumption is that most of the projects in the sector directly or indirectly contribute to building the resilience of households and communities to climate change. The Agriculture and Forest Climate Resilience Strategy indicates that only about 30% of project finance does not contribute to resilience building. The baseline financial requirement information used from the CR strategy included amounts not directly relevant to building climate resilience. Furthermore, data and information available from the projects in the portfolio review does not always identify funding that specifically targets climate resilience outcomes. Thus, it would be difficult to perform gap analysis focusing only on climate resilience finance and related activities.

Other methodological challenges have been encountered and addressed. Most significantly, within the portfolio that has been reviewed, many project documents do not disaggregate budget information in terms

of targets or themes. Even where disaggregated budget data is available, this does not necessarily correspond exactly to the themes as defined for this analysis. Therefore, reliable allocation of budget to the themes would require considerably more work than was possible given available time and resources. To assess the approximate financial gap on a disaggregated basis, it has been assumed that total budget has been allocated evenly across all targets/themes that, based on available documentation, the project aims to address. While this inevitably introduces some inaccuracy, it enables identification of the approximate magnitude of each thematic gap (that is, it enables estimation of the approximate shortfall in investment, not just the absence of activities). Based on this assumption, the thematic gap analysis has entailed the following steps:

- ***Weighted scores by theme plotted in the portfolio review matrix.*** The weighted scores correspond to those assigned to the size category of the overall project, as described in Annex 6 and summarized in Table A6-3 of this document. Thus, if a project has an overall budget of $60m and is in size category 3, all targets/themes that the project aims to address have been assigned a weighted score of 3.
- ***The portfolio review matrix lists the identified themes listed in rows, and identified projects in columns. The weighted scores are assigned against the identified themes.*** The scores for each theme are then totaled to generate an aggregate score. These aggregate scores indicate the relative intensity of the level of activity that has occurred against each theme.
- ***These aggregated weighted scores are then converted into financial values.*** This is achieved by dividing the total budget for all projects included in the portfolio by the aggregate weighted score, thus assigning the appropriate estimate of investment to each theme.

This process is intended to overcome the inaccuracy or lack of detail in budget documents. The process of allocating aggregate budget figures across project themes can result in an illusion of excessive precision. The weighting process overcomes this illusion by focusing on the approximate magnitude of a thematic gap (that is, we can estimate the shortfall in investment, not just the absence of activities). While the resulting estimates of the financial gaps by theme could not be claimed to be precise, they are considered robust enough to enable the identification of gaps and their relative magnitude to a level that will helpfully inform investment planning.

Overall, the gap analysis presented in this document has been based on what is considered the most practical approach given data limitations, and is considered to have produced findings that are reliable given the purpose of the exercise.

A7.2 The Approach to Analyzing Gaps Against GTP II Targets

The assessment of how much activity is addressing climate resilience objectives stated in GTP II.

Analysis of gaps against GTP II assesses the level of activity addressing specific climate resilience objectives defined in GTP II. It achieves this by mapping against each specific climate resilience objective in GTP II the number of projects that have been implemented during the 2010-2020 period. In addition to the number of projects, the mapping exercise also weights each relevant project by the size of its budget; this providing an indication of the relative intensity of the activity that has taken place. The weighting is assigned as indicated in the Table A7-1 below:

Table A7-1: Project Weight Relative to Budget Flows

Total Project Funding (US$)	Score
100M+	5
75 to 99M	4
50 to 74M	3
11 m to 49M	2
3 to 10M	1

The weighted scores have been plotted in the portfolio review matrix. The portfolio review matrix lists the GTP II CR outputs in rows, and identified projects in columns. The weighted scores are plotted against GTP II CR outputs, and the scores for each GTP II CR output have then been totaled to generate an aggregate score. These aggregate scores indicate the relative intensity of the level of activity that has occurred against each output.

At present, projected financial investment requirements have not been assigned to GTP II outputs. Consequently, it is difficult to evaluate the sufficiency of current investments against the objectives. The lowest aggregate weighted scores indicate the lowest levels of donor activity and hence the possibility of deficiency in investment activity. However, this does not mean that more investment is required as it is possible that relatively low activity corresponds with relatively low need. Conversely, higher levels of donor support do not mean a gap has been completely addressed, as the need might outweigh the provision.

Therefore, as the investment targets for GTP II outputs have not been identified, this dimension of gap analysis focuses on the relative size of financial flow per output. This may or may not reflect an actual gap but is indicative of a deficiency or lack of attention to those GTP outputs. This analysis therefore helps assess how well existing climate resilience activities in the agriculture and forest sectors are aligned with FDRE goals, as expressed in GTP II.

Based on this approach, the outputs that have received least attention in donor funded projects are indicated in Table A7-2 below, ranked in order of decreasing investment:

Table A7-2: GTP Outputs Least Targeted by Donor Projects

GTP Outputs	Index Score	Group Category
Increased production of industrial crops	11	1
Expansion of agricultural mechanization	11	1
Reduced amount of Greenhouse Gas Emissions using productivity enhancing methods and low carbon emitting technologies	11	1
Increased Number of Catalogues on Diversity and Distribution of species	11	1
Increased Conservation of Genes, species and ecosystems in situ and ex situ	10	1
Increased Number of Genetic resources utilized for research and development; Increased research information delivered to users	10	1
Reduced number of dysfunctional rural water stations	10	1
Increased productivity of export crops	9	1
Increased number of rural water supplying institutions	8	1
Newly established and strengthened small and medium scale agro industries	7	1

GTP Outputs	Index Score	Group Category
Number of prepared policy, strategy, laws, rules and guideline documents	7	1
Citizens' raised awareness on green economy development	7	1
Increased productivity of industrial crops	7	1
Minimized Expansion and Impact of invasive alien species	6	1
Increased production of export crops	5	1
Increased productivity of stimulus crops	5	1
Size of land covered by horticulture products	5	1
Increased Number of Characterized Genetic Resources and Evaluated for Use as Input in Agriculture, Industry and Further Research	4	1
Developed surface and underground hydrological information	3	1
Increased production of coffee, tea and spices	2	1
Increased amount of bioethanol production and utilization	1	1
Increased amount of biodiesel production and utilization	1	1
Increased productivity of spices	-	0

Similarly, the outputs that have received the greatest attention from donor funded projects are indicated in Table A7-3 below, ranked in decreasing order with highest at the top of the table.

Table A7-3: GTP Outputs that have Received Greatest Donor Investment

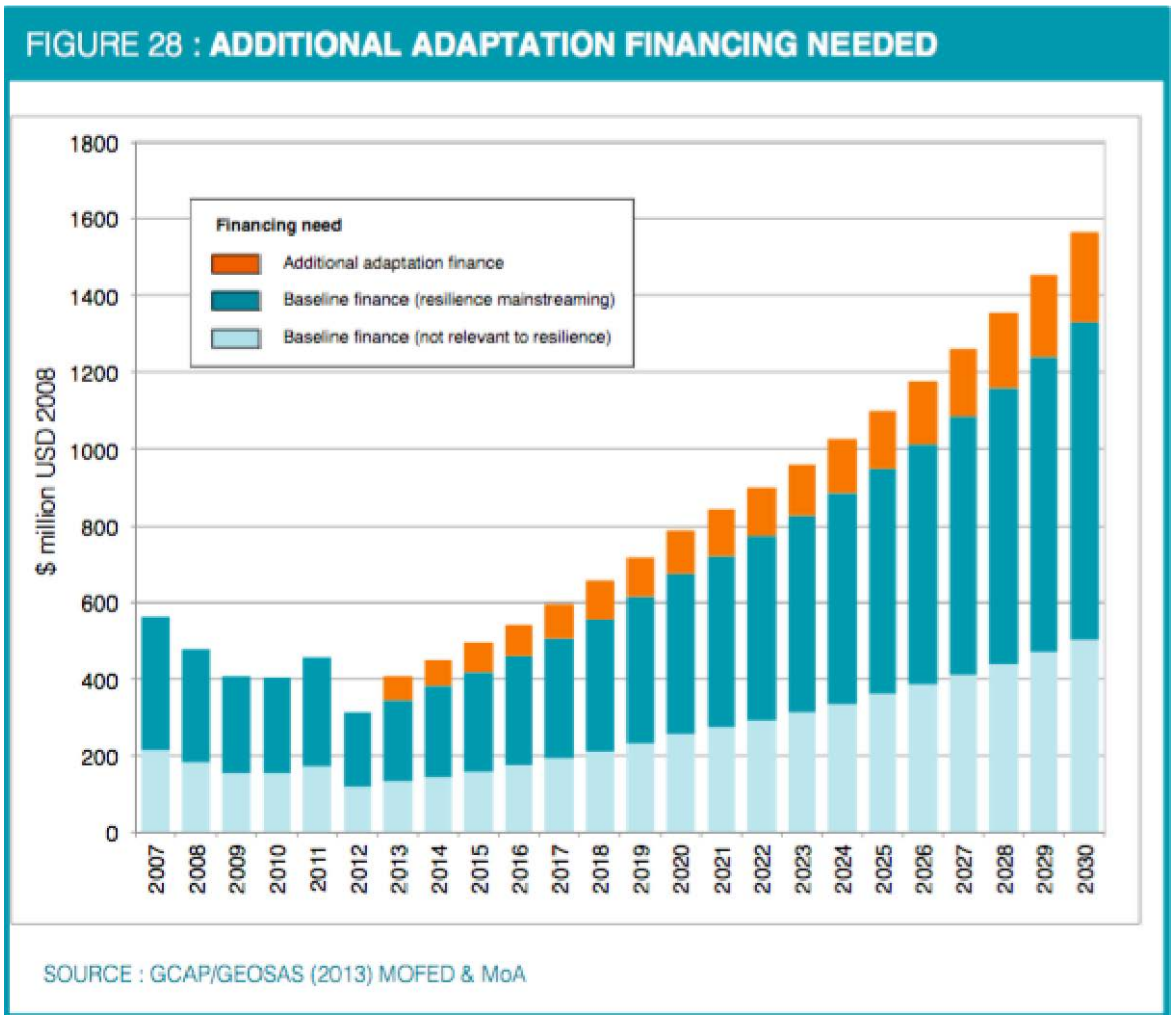
GTP Outputs	Index Score	Group Category
Increased production of major food crops	63	5
Strengthened and expanded natural resource management practices	56	5
Strengthened capacity	55	5
Strengthened water resource management and utilization	52	5
Increasing the productivity of crop	50	5
Strengthened capacity as a result of the climate resilient green economy strategy	47	4
Ensured household level food security	47	4
Increased livestock production	44	4
Established modern soil fertility management system	41	4
Organized and Strengthened Cooperatives	40	4
Increasing agricultural inputs utilization	36	3
Increased productivity of major food crops	34	3
Increased market share of cooperatives	32	3
Cooperative development and capacity building	30	3
Increased capital of Cooperatives'	29	3
Strengthened capacity of disaster preparedness and response	29	3
Increased supply of quality livestock feed	26	3

A7.3 The Approach to Analyzing Financial Gaps

The assessment of the difference between the level of investment that has been projected as being required to achieve climate resilience, and the investment that has currently been committed.

The baseline targets for financial investment in the agriculture and forest sectors in Ethiopia are defined by the current Climate Resilience (CR) Strategy for Agriculture and Forestry.[34] The CR strategy document (Figure A7-1 (extracted Figure 28 below) identifies the additional adaptation financing that will be required in each of the years from 2007 to 2020.

Figure A7-1: Agricultural CR Funding Requirements



[34] As the CR strategy acknowledges, the exact costs of resilience activities will depend to some extent on future climate change and the scale and level of autonomous adaptation. For the sake of the gap analysis, the projections in the CR strategy have been taken as read.

Excluding the first of these categories (baseline finance not relevant to resilience), this data shows that, in the period 2010-2020, the total funding requirement to achieve the sector's climate resilience objectives is an estimated $5.74 billion.

The Water and Energy CR Strategy lists only total investment required between 2010 and 2030. The CR strategy has indicated that the total required funding for the sector is $895 million over 20 years. The strategy further divides this amount into the following five thematic areas:

- Power generation (CR funding requirement = $304 million);
- Access to energy ($246 million);
- Irrigated agriculture ($71 million);
- Access to WASH ($220 million); and
- Cross-cutting ($54 million).

However, the CR Strategy for Water and Energy identified 11 areas across these five themes, only four of which are relevant to investment planning for the agriculture and forestry sectors. Table A7-4 summarizes the 11 areas, highlighting the four that have been included in the MSIP Gap Analysis.

Table A7-4: Water and Energy CR Themes and Strategic Priorities

Theme	Strategic priority
Power Generation	1.1 Diverse energy mix 1.2 Improve energy efficiency
Energy Access	**2.1 Improve efficiency of biomass use** **2.2 Accelerate non-grid energy access**
Irrigation	3.1 Accelerate irrigation plans **3.2 Support the resilience of rainfed agriculture** 3.3 Balance water demands
Access to WASH	4.1 Accelerate universal access to WASH **4.2 Enhance the climate resilience of self-supply**
Cross-cutting issues	5.1 Data systems for decision support 5.2 Accelerate delivery of existing plans
	Selected SP 2.1,2.2,3.2 and 4.2

The CR Strategy for Water and Energy identified the funding requirement for the four relevant areas as summarized in Table A7-5.

Table A7-5: CR Financing Requirements by Relevant Water and Energy Themes, 2010-2020

Theme Defined in CR Strategy for Water and Energy	Area to be Included in Thematic Gap Analysis	Identified Financing Requirement (US$ m)
Energy Access	Improve efficiency of biomass use	250
	Accelerate non-grid energy access	73
Irrigated and Industrial Agriculture	Support resilience of rainfed agriculture	20
Access to WASH	Enhance the climate resilience of self-supply	20
Total		363

However, the strategy does not project funding requirements on an annual basis. In the absence of an annual breakdown, this gap analysis assumes an equal annual distribution of investment each year. Given funding allocated to the four relevant sub-themes, the required financial assistance for the 2010-2030 period (which is 20 years) is equivalent to about $18.15 million annually. Therefore, based on the cited information, the distribution of this financing requirement by year between 2010-2020 is summarized in the Table A7-6 below.

Table A7-6: Annual Funding Requirements for Agricultural CR 2010-2020

Year	Total Funding Requirement (US$ m)	
	Agriculture/ Forest	Water/ Energy
2010	400	18.15
2011	420	18.15
2012	350	18.15
2013	400	18.15
2014	420	18.15
2015	500	18.15
2016	550	18.15
2017	600	18.15
2018	620	18.15
2019	700	18.15
2020	780	18.15
Total	**5,740**	**199.15**
Total Funding Requirement, 2010-20		**5,939.15**

Therefore, based on data in the CR strategies of the concerned sectors, the total investment required by 2030 to achieve climate resilience in forest and agriculture is estimated to be about $5.9 billion.[35] Noting that these estimates dated from 2011-14, it is likely that not all climate resilience requirements were fully anticipated and that the actual current need could be 20-30 percent higher. Increasing the current number by 25% suggests that the total investment requirement is about $7.4 billion.

Some of this investment need has been met by the existing investments in the targeted sectors. The total value of all 102 projects included in the portfolio is around $4.8 billion. However, not all these project expenditures were committed to climate resilience. Available data makes it difficult to determine how much of the total

[35] The estimate does require qualification. The sectoral calculations of investment need included commitments made by on-going major programs at the time. Such amounts will likely have also been included in the portfolio review, and thus will already have been subtracted from total requirement. This introduces an element of inconsistency. Nevertheless, $5.9 billion is considered a valid assessment of investment need for the purpose of this analysis.

amount has been invested in climate resilience. Based on the rationale outlined in the box below, it is estimated that $1.85 billion was invested in climate resilience between 2010 and 2020.

To estimate how much of the project portfolio's total expenditure of $5.9 billion was committed to climate resilience, the MSIP referred to a 2014 report on "Climate Finance in Ethiopia",[36] which found that between 40-50% of agriculture sector expenditure and (depending on the year) 35-80% of MoWIE budget was considered "climate change" relevant. Taking the 2011/12 budget year as a benchmark, the MSIP assumes that 40% of investment in the forest and agriculture sectors and 35% of the spend in the water and energy sectors was relevant to climate resilience. On this basis, and given the sectoral split of the 102 projects in the portfolio, the assessed investment in climate resilience in the target sectors is calculated as follows:

- 72% of the total portfolio (thus $3.4bn of the total of $4.8bn) falls within the forest and agriculture sectors. By applying a weight of 40% it can be deduced that about $1.38bn has been invested in CR.
- 28% of the total portfolio ($1.3bn) falls within the water and energy sectors. By applying a weight of 35% it can be deduced that about $470mn has been invested in CR.
- Thus, the total assessed investment in CR across the target sectors is around $1.85bn.

From these calculations, the high-level conclusion from the financial gap analysis is that Ethiopia requires around $5.5 billion of additional, incremental investment to reach its 2030 climate resilience targets. While these calculations could be challenged, the benefit of limiting them to the amounts specific to climate resilience (and thus distinguished from more traditional development finance) is that the cases become more relevant to providers of climate finance. In addition, financing adaptation and resilience must catalyze larger financial support to make a difference at scale. For example, the Adaptation Fund, the GEF, the GCF and the PPCR currently have limited bandwidth and so are focused on achieving the greatest possible impact per transaction. These funds tend to invest tens of millions of US dollars per project, with co-financing requirements that may result in a total budget of upwards of $100 million. Even larger financiers such as IDA seek to leverage the impact of large scale investment projects by crowding in the private sector and government budget. These examples illustrate why fragmented financing is an opportunity lost for leveraging additional financing.

In addition to identifying the aggregate financing gap, existing investment flows have been analyzed in more detail to aid thematic and spatial gap analysis, as summarized below.

A7.4 The Approach to Analyzing Thematic Gaps

The assessment, disaggregated by pre-defined themes, of the difference between the level of investment that has been projected as being required to achieve climate resilience, and the investment that has currently been committed.

Thematic gap analysis is intended to help understand in detail where significant gaps exist in along the thematic areas. Theoretically, various approaches could be adopted to achieve this purpose. To provide the most insightful analysis, and to ensure that the analysis is aligned with existing climate resilience strategies,

[36] Eshetu, Z. Simane, B. Tebeje, G., Negatu, N. Amsalu, A. Berhanu, A. Bird, N., Welham, B., and Canales Trujillo, N. (2014). *Climate finance in Ethiopia.* Overseas Development Institute, London and the Climate Science Centre, Addis Ababa University, Addis Ababa.

themes have been defined by referring to the core CR documents for Ethiopia, namely the Climate Resilience Strategy for Agriculture and Forestry, and the Climate Resilience Strategy for Water and Energy[37].

The CR Strategy for Agriculture and Forestry identified nine themes, as follows:

- Social protection for high priority groups
- Disaster risk reduction
- Forestry, conservation and biodiversity
- Sustainable agriculture and land management
- Livestock
- Value chain and market development
- Crop and water management (on farm)
- Information and awareness
- Capacity and institutions.

All nine themes above are relevant to the MSIP. Again, by referring to the CR Strategy for Agriculture and Forestry, it is possible to determine the estimated financing requirements for each theme. Specifically, Figure A7-2 (extracted Figure 29 of that document) estimates "additional" financing required by resilience themes.

As evident from Figure A7-1 (Figure 28 of the CR Strategy presented in the preceding section)***, in addition to the "additional financing" detailed below, achievement of the objectives set in that strategy also requires the commitment of what has been described as "Baseline financing (resilience mainstreaming)".*** Annual requirements for this category of financing – by far the most significant category of financial requirement – are identified in the strategic document, but this does not provide a breakdown of the amounts by the nine themes. Therefore, to facilitate the gap analysis, it has been assumed that estimated requirements for "baseline financing (resilience mainstreaming)" are proportionately the same as specified for "additional adaptation financing". Applying this logic, Table A7-7 summarizes the breakdown of financing requirements across the nine themes in the CR strategy for agriculture and forestry, for the period 2010-2020.

Figure A7-2: Additional finance required, by resilience theme

[37] There are other significant documents – including the UNFCCC Intended Nationally Determined Contribution (INDC), Climate Change National Adaptation Programme of Action (NAPA), REDD+ Strategy, Agriculture Policy Investment Framework, Ethiopia Strategic Investment Framework for Sustainable Land Management (ESIF), and the Disaster Risk Management Strategic Programme and Investment Framework (DRM SPIF) – that could be considered relevant to thematic analysis. However, including more targets than identified above would make analysis excessively complex. In any case, all other significant documents should be aligned with the targets defined in the core reference documents.

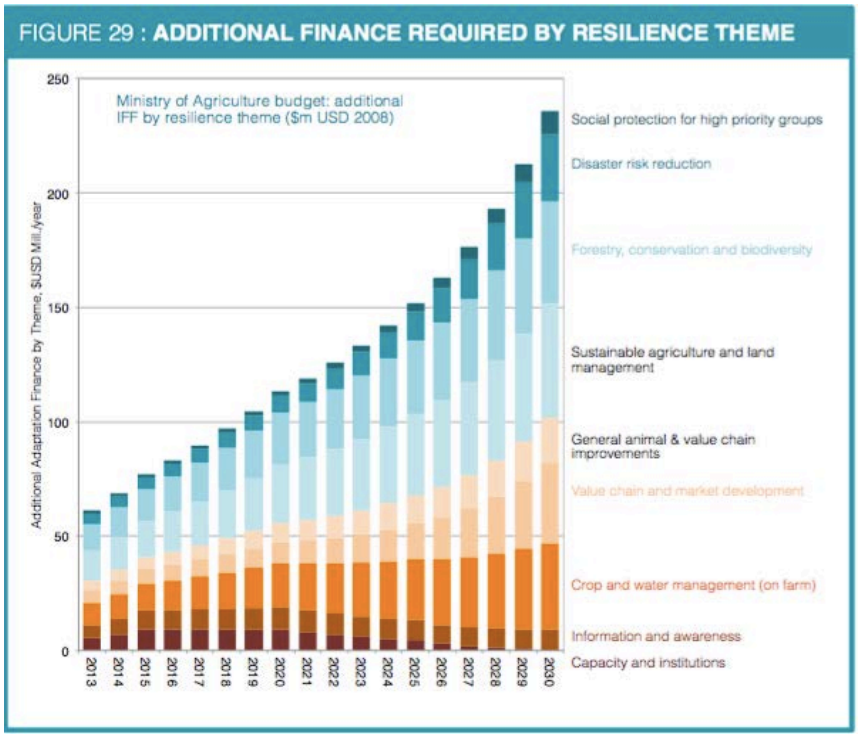


Table A7-7: CR Financing Requirements by Theme for Agriculture and Forest, 2010-2020

Thematic area	Financial need: baseline – resilience mainstreaming	% of total need for baseline financing	Financial Need: Additional adaptation financing	Total Funding Requirement (US$ m)
Social protection for high priority groups	284	5	3	287
Disaster risk reduction	846	15	9	861
Forestry, conservation and biodiversity	1,128	20	12	1,148
Sustainable agriculture and land management	1,410	25	15	1,435
Livestock	284	5	3	287
Value chain and market development	284	5	3	287
Crop and water management (on farm)	846	15	9	861
Information and awareness	284	5	3	287
Capacity and institutions	284	5	3	287

Thematic area	Financial need: baseline – resilience mainstreaming	% of total need for baseline financing	Financial Need: Additional adaptation financing	Total Funding Requirement (US$ m)
Total for all themes	**5,140**	**100**	**60**	**5,740**

In total, and given the previous assessment (see Table A7-7), 13 themes have been identified for inclusion in the MSIP gap analysis from both the Agriculture/ Forestry (nine themes) and Water/Energy (four sub-themes) sectors. Table A7-8 summarizes these, including their estimated financing requirements for the 2010-2020 period.

Table A7-8: Combined List of Themes for Inclusion in the Gap Analysis

CR Strategy	Thematic area	Total Funding Requirement (US$ m)
Agriculture and Forestry	Social protection for high priority groups	287
	Disaster risk reduction	861
	Forestry, conservation and biodiversity	1,148
	Sustainable agriculture and land management	1,435
	Livestock	287
	Value chain and market development	287
	Crop and water management (on farm)	861
	Information and awareness	287
	Capacity and institutions	287
Water and Energy	Improve efficiency of biomass use	125
	Accelerate non-grid energy access	36
	Support resilience of rainfed agriculture	10
	Enhance the climate resilience of self-supply	10
	Total for all themes[38]	**5,921**

A financial gap assessment has been conducted to analyze the extent to which financing for each theme has been meet by development partner financing for the period 2010 to 2020. The analysis, the findings of which are summarized in Table A7-9, considered the total amount of funds allocated for projects/programs with respect to the defined themes. The aggregated funding was converted into percentages to provide a comparison with the estimated total funding requirements. This analysis shows that there is sufficient spending in capacity

[38] The total calculated here is slightly higher than that derived in Table A7-7. This reflects the different method of calculation, and the variance caused by averaging annual totals for the relevant elements of the water and energy sectors.

building, followed by information and awareness and crop and water management, while there is significant under-spending in sustainable agriculture and disaster risk reduction (DRR).

Table A7-9: Agriculture and Forest CR Target and Spending Between 2010 and 2020

Agriculture & Forest CR themes	Current Financial Flow (%)	Total Funding Requirement (%)	Gap
Capacity building & institutional coordination	26	5	21%
Information and awareness	11	5	6%
Crop and water management (on farm)	21	15	6%
Livestock	8	5	3%
Value chain and market development	1	5	-4%
Sustainable agriculture and land management	12	25	-13%
Natural Resources Conservation and Management (NRM)	12	20	-8%
Disaster Risk Reduction	3	15	-12%
Social protection for high priority groups	9	5	4%
Total	**100**	**100**	**0%**

However, this assessment requires some qualification. Many projects include capacity building objectives and therefore the amounts assigned to this theme may well be overstated. Additionally, there are some overlaps in what is covered by projects categorized as either crop and water management or sustainable agriculture; if these two thematic areas are combined, then the assessed financial deficiency reduces to about 10%. The government of Ethiopia has also been spending significant amount of money on social protection under the PSNP, which had an estimated over US$ 2 billion of funding between 2010 and 2020. The estimated budget for PSNP IV is 1.4 billion out of which $828m has been committed (leaving a financing gap of $572m). PSNP IV has three components, a significant portion (about 80%) of the budget being placed under social protection with 8% allocated to DRR and 12% to capacity building.[39]

Determining thematic gaps by simply considering the flow of funds into each of the thirteen CR thematic areas or with respect to the more detailed GTP indicators is not necessarily sufficient for purposes of MSIP preparation. While this approach can highlight gaps at an aggregated level, it does not provide a nuanced understanding of where strategic priorities are not being met. This can be achieved by looking more closely at the priorities and activities within each theme, and comparing assessed investment flows against these. While it is not possible to distinguish all project level activities and examples of activities under each CR option, this approach should help identify which key activities considered essential for the country to meet its climate resilient objectives are receiving inadequate attention. To this end, each of the CR themes from the agriculture and forestry sectors is analyzed separately below.

[39] Component 1: Social Protection and Disaster Risk Management Systems (US$144 million total; of which, US$40 million IDA). Component 2: Productive safety nets and links to livelihoods services (US$3,031 million total; of which, US$530 million IDA). Three sub-components: (a) safety net transfers to chronically food insecure households and support to a scalable response mechanism for transitory needs; (b) sustainable community assets and human capital investments; and (c) enhanced access to complementary livelihoods services for client households through crop and livestock production, off-farm income generating activities, and labor/employment linkages. Component 3: Institutional Capacity Building and Project Management Support (US$219 million total; of which, US$30 million IDA).

CR Theme 1: Institutional Strengthening and Capacity Building

The CR strategy has identified two prioritized options under this theme, namely climate information, research and enhanced co-ordination, and institutional strengthening and building. Investments in climate information, research and enhanced co-ordination is expected to focus on activities such as training and the use of networks to co-ordinate resilience responses between communities and delivery agencies, and research on climate, future climate change and responses. Those in institutional strengthening are expected to focus on activities that ensure appropriate institutions have the capacity to influence the uptake of resilience measures. A key area is land security. These two prioritized options are themselves rather broad, and are considered separately below.

A. Climate Information and Research

Projects specifically addressing climate information have recently increased in Ethiopia. UNDP's project entitled "Strengthening climate information and early warning systems in Africa for climate resilient development and adaptation to climate change – Ethiopia" is one example. Many of the activities under this and similar projects have focused on strengthening the capacity of the National Metrology Agency in its infrastructure as well as human resources. The projects expect to address climate information generation, particularly rainfall and temperature that affects agriculture production and water resources, and the flow of data from local to national level. Despite the increase in these climate infrastructure investments, there is still a gap relative to the assessed need.

According to WMO standards, Ethiopia should have around 3,000 automated weather stations.[40] The country currently has approximately 1,200 manual weather stations; however, about 200 are non-functioning and an additional 2,000 are needed to fill the country's gap. There are sub-components of projects that have supported the establishment of weather stations. For example, the UNDP funded "Promoting Autonomous Adaptation" project financed purchasing and installation of weather stations in the projects it was implemented.

The major gap with respect to climate information remains the on-time distribution of relevant climate information to farmers. Through agricultural extension services, farmers currently get climate data and guidance on actions they need to take based on the weather predictions. However, gaps remain. The system is weak as the information produced by NMA is too general and does not contain the detailed climate information required at the local level. The information provided by NMA to farmers focuses only on rainfall availability in a specific day/week/month. Furthermore, due to lack of capacity at NMA, the analysis and prediction provided is poor and cannot be easily consumed by the smallholder farmers. Additionally, the turnover of NMA experts is very high.

There are currently few small-scale and pilot projects that have worked on generation and dissemination of climate information to farmers. Notable examples are:

- The Agricultural Transformation Agency has a program to pilot generation and communication of automated agro-meteorological services in 50 woredas;
- ACCRA had a pilot program to "develop and test GIS embedded dynamic early warning information communication feedback system (EWICFS)" in selected woredas of Oromia, Gambella and Tigray regions; and
- Irish Aid is working with NMA piloting ways of disseminating climate data in two woredas in Tigray.

[40] UNDP Project Document: Strengthening climate information and early warning systems in Africa for climate resilient development and adaptation to climate change – Ethiopia

These projects exclusively focus on areas in which projects happen to be active. Though many of them are in early stages, once a successful pilot has been implemented, there will be opportunities for national scale up. The capturing of lessons learned from the projects, coordinated efforts by NMA and financial support will all be needed to if dissemination of adequate climate information is to be achievable at national level, this therefore remaining a critical thematic gap under climate information and research.

B. Institutional Strengthening and Capacity Building

There have been few projects that have exclusively focused on capacity building. A notable example is *Strengthening National Capacity through Sustainable Increases in Agricultural Production and Productivity*. The objectives of this project included "provision of demand-driven support to strengthen operational systems and processes; and facilitating access to innovative solutions for institutional capacity development." Many of these projects – as well as some of the large-scale projects – have capacity building components. For example, SLMP II has a component to develop "capacity of relevant stakeholders, including relevant public sector organizations research and academia, rural communities and smallholder farmers for successful implementation" as well as "strengthening of institutional and policy framework for geo- referencing rural land administration and sustainable and climate resilient land and water management." AGP II also has a component addressing establishment and strengthening of Agriculture Development Partners Linkage Advisory Councils and agricultural extension. Other specific capacity building of AGP included strengthening the Central Veterinary Drug and Feed Quality Control Laboratory. PRIME also included a component to strengthen local governance systems for NRM.

While many of the programs that have institutional strengthening and capacity building focused on specific institutions and geographical locations that they worked on, there were some programs that have worked at national level. For example, the DANIDA-funded Greening Agricultural Transformation in Ethiopia (GATE) program focused on strengthening the GoE's efforts to mainstream and implement CRGE initiatives in the agriculture and forestry sectors. The program also worked on specific interventions such as maize, wheat, teff and sesame post-harvest loss.

Despite the numerous specific and sub-project capacity building and institutional strengthening programs, the main gaps noticed are in areas of planning and monitoring and reporting. Many of the capacity building programs are technical and address specific issues. Poor planning and reporting is still noticeable at government institutions. Furthermore, the capacity building and institutional strengthening focus on federal and regional level and capacity or system building activity at woreda level remains a gap.

One of the key gaps in the institutional strengthening and capacity building is poor national level coordination, absence of follow up and lack of demand driven programs. Many of the capacity building activities are designed at program level and that absence of centralized knowledge management or information exchange system leads to duplication of efforts and activities. Many of the capacity building activities are designed during the program development phase that the beneficiaries are not part of. Thus, they are not demand driven and may not necessary address the need of the beneficiaries.

To help stimulate coordinated and demand driven capacity building, the CRGE Facility, through financial support from Global Green Growth Institute (GGGI) and UNDP, had conducted capacity gap assessment for CRGE and developed a five-year national capacity development program. These identified key capacity needs such as M&E and MRV, and planning and reporting; proposal development and financing is required to address the capacity needs of government institutions at federal, regional and woreda levels.

CR Theme 2: Information and Awareness

The information and awareness thematic area focuses on three prioritized options. First, meteorological and agro-metrological data, including activities such as ensuring collection and communication of data to farmers and communities. As indicated in the climate information and research CR theme, one of the main gaps that exists in information generation is production of relevant and timely meteorological data for farmers. This gap has been understood by the government and donor agencies. There are currently small-scale programs such as GATE, which has capacity building activity for agricultural extension system to provide agronomic advice to farmers based on downstream weather forecasts. However, the program is only limited to few woredas that ATA is piloting intervention. USAID funded PRIME project also had a component to develop and update early warning response plans through use of climate information. There are two key constituents to addressing this gap, one being the infrastructure (means of communication) and the second being the information (relevant and timely climate data). Though the current programs address development of information dissemination mechanism through small and pilot programs, there remains a gap in the production of relevant information. These gaps are the capacity of the NMA to make and use climate forecasts (on daily to seasonal, as well as medium- to long-term timescales), preparation of tailor made sector specific early warning products that link climate, environment and socio-economic information on a range of timescales and capacity to assimilate forecasts and incorporate them into long term planning and poverty reduction strategies. The provision of additional capacity building of NMA to collect accurate data, generate and disseminate relevant and reliable data is essential.

The second prioritized option under this theme is agricultural research and development, important activities including research programs to develop new seed varieties, test-promising options, and monitor changes. Agricultural research has been a key part of the sector in Ethiopia since the first research center – the Ambo and Jimma Colleges of Agriculture – was established in the late 1940's. Ethiopian Institute of Agricultural Research (EIAR) is currently the umbrella entity overseeing the federal research centers. Over the past five decades, over 3,000 varieties of seed have been studied and dispersed to farmers. Almost 80% of the research conducted has been on crop and 20% on livestock and poultry. Some large-scale projects have also been focusing on support research and accelerating release of varieties. For example, the Agricultural Growth Program (AGP), which focus on high production areas, has a specific component addressing these matters as well as supporting adaptation and generation of demand driven agricultural crop varieties.

There are three key thematic gaps identified under this second prioritized area: the need for on-going research on crop and livestock varieties that are climate resilient; increase in livestock research; and strengthening extension services to disseminate findings. As climate change continues to impact the agriculture sector, the need for on-going research is essential and the research services in the country need to respond to these changes. Despite the large size of the livestock population in the country, the investment on livestock research is also minor compared to crops, thus there is a need to increase the financial as well as technical resources available to livestock research. Another of the key bottlenecks for farmers is limited availability of enhanced crops. Though these can be found in research centers, they have not been scaled-up to meet the demand of the farmers. While programs such as AGP include activities such as mass multiplication of disease and insect free tissue culture materials and production of breeder seed and pre-basic seeds of major crop varieties, these remain insufficient to address the demand.

The third prioritized option under this theme is enhanced extension services to ensure the dissemination of information to promote effective climate resilience so options can be implemented in the local context. The gap in shelf to farm of findings from research centers is one of the bottlenecks frequently mentioned by

extension workers. Though there are linkages between the agriculture bureaus and research centers, these are weak. Extension workers do not have full knowledge of what has been learned by the research centers. Recognizing this gap, activities such as support to adaptation and generation of demand-driven technologies and increasing collaboration on innovations and technologies for agricultural development are becoming part of small as well as large projects.

CR Theme 3. Disaster Risk Reduction

The prioritized options identified in the disaster risk reduction theme under the Climate Resilience Strategy of the Agriculture and Forest Sector overlaps with those of "institutional strengthening and capacity building" and "information and awareness". The four options identified under these themes are early warning systems, disaster risk management (DRM) planning, insurance, and structural protection. Some of the key activities envisaged to be undertaken under this theme include enhancing drought and flood warning systems, flood forecasting and drought monitoring systems, proper use of climate information, risk profiling, risk screening, enhancing the use of micro-insurance and weather insurance schemes as well as the erection of natural and manmade approaches such as river dikes to withstand flooding.

Each of the prioritized options is broad in scope as well as of a crosscutting nature, so thematic gaps are best analyzed by reference to relevant projects in Ethiopia. In most of these projects, disaster risk reduction (DRR) is considered as a component or sub-component of a major activity designed to serve as a tool for planning for forecasted risks. For instance, the Coping with Climate Change project supported by the Global Environment Facility envisages an outcome that focuses on enhancing the use of early warning information in agricultural systems in selected sites, as well as integrating drought information systems and building the capacity of community level institutions for climate information. The project Building Resilience and Adaptation to Climate Extremes and Disasters focuses, among other things, on improving access to climate information with the specific target of women empowerment. It uses ICT (radio programming) as well as climate forecasting and behavioral change to find solutions to climate disasters. The Disaster Resilience and Sustainable Livelihood Programme also has a component that aims to enhance the livestock market information system with improved communication networks to provide rural populations with information about livestock prices at secondary and terminal markets. The "Strengthening climate information and early warning systems in Africa for climate resilient development and adaptation to climate change: Ethiopia" program has a specific component that seeks to address gaps on early warning system through enhancing weather information.

While these synopses of projects shed light on the level of thematic attention given to the specific DRR theme at a superficial level, more comprehensive, project-wide and project-by-project assessments should be carried out to understand how far the themes have been attracting donor attention at the project level. With this qualification, it could be said that most of the projects have aimed to address the institutional capacity gaps related to information and weather data – which is a key ingredient of the DRR theme. Still missing in the projects are real-time information delivery systems to rural communities and pastoralists to better prepare them for climate related hazards. Poor and remote localities will thus continue suffering disasters without hands-on technologies to understand the level of risk they are in and without proper capacities being built on the technology application.

The GoE has been implementing several key programs to address Disaster Risk. In the last couple of years, a major programmatic shift has been taking place concerning disaster risk and food security. This is based on the development of the Productive Safety Net Programme (PSNP). The PSNP is framed within the Food Security Programme. The stated rationale for the PSNP is to address the food needs of the chronically food insecure through multi-year predictable resources, rather than through a system dominated by emergency humanitarian

aid. Crucially, this involves a shift from food to cash as the primary input. Furthermore, the GoE worked to transform Disaster Risk Management and Food Security Sector (DRMFSS) to a full-blown Commission, the National Disaster Risk Management Coordination Commission (NDRMCC), under the Ministry of Agriculture and Natural Resources. The aims of DRMFSS are to: improve identification and assessments of disaster risk; enhance knowledge management for DRR; and integrate DRR in emergency response management.[41] While these actions provide policy guidance and a programmatic approach, there remain a gap on some specific actions required to build DRR in Ethiopia.

CR Theme 4: Social Protection for High Priority Groups

The GoE has developed a National Social Protection Policy and endorsed this in 2014[42]. This policy identifies social protection as part of social policy framework that focuses at reducing poverty, social and economic risk of citizens, vulnerability and exclusion by taking measures through formal and informal mechanisms that ascertain accessible and equitable growth to all. The Policy mainly contains coordinated protective measures to those susceptible to serious vulnerability due to natural and manmade risks, to: establish multifaceted social insurance mechanisms to prevent exposure to risks; strengthen earnings and improving livelihoods of citizens; improve work opportunities and living conditions; and provide legal protection and support to vulnerable for abuse and violence.

In this policy, it was indicated that social protection initiatives that have been executed by different government, non-government, community and faith based institutions are multidimensional. To this end, studies demonstrated that services lacked standards, and had gaps in coverage, accessibility, complementarities of programs, structure, data management and exchange, and vertical and horizontal relationship among different implementing bodies.

The vulnerability of segments of society to different social and economic problems – especially children, women, people with disabilities, elderly living in difficult circumstances, labor constrained, the unemployed and those vulnerable citizens to risks by social, natural and other reasons – are given special attention in this policy. The policy document consists of five focus areas including promotion of the Productive Safety Net services in Ethiopia.

The PSNP was initiated with the objective of protecting and creating household assets for chronically food insecure households in rural Ethiopia. Activities comprise: (i) safety-net grants, including labor-intensive public works that provide transfers to able-bodied households; (ii) direct support that provides transfers to labor-poor households; (iii) drought risk financing—to provide timely resources for transitory food insecurity in response to shocks; (iv) capacity building to fill risk finance facility; (v) strengthening the delivery of demand-driven and market-oriented advice; and (vi) improving the efficiency and effectiveness of financial service delivery to food insecure households.

The Government has implemented the social protection related initiatives over a decade in different forms and phases. Under Phase I (until 2004), focus was on emergency responses with the aim of saving lives. In Phase II, there was a move to Social Safety Nets (2005-2014/15). This was demonstrated in the form of flagship and social protection programs. Phase III, which includes PSNP 4 and urban productive Safety Nets, seems a shift

[41] The Disaster Risk Management Strategic Programme and Investment Framework (DRM SPIF) - Disaster Risk Management and Food Security Sector Ministry of Agriculture.

[42] Government of the Federal Democratic Republic of Ethiopia 2014. National Social Protection Policy, November 2014, Addis Ababa Ethiopia.

towards a Social Protection System. Promoting Productive Safety Net is one of the key policy measures of the Government under this phase, which is a move to a more predictable system.

The PSNP continues to be important to Ethiopia's fight against poverty, hunger, and under-nutrition. It has been shown to help protect households from the impact of shocks such as drought and food price inflation, and has helped mitigate the reduction in cognitive skills associated with these shocks (Berhane et al. 2014). Combining PSNP with asset-building programs increases agricultural incomes, asset building, and food security more than possible with PSNP alone (Berhane et al. 2014). It also helps promote fertilizer use and investment in agriculture.

Currently the productive- and social- safety net programs are designed in the context of rural and urban areas. Significant numbers of Ethiopians living in the rural areas are still vulnerable to shocks such as drought, environmental degradation, flood, and related sudden risks. On the other hand, many urban dwellers are vulnerable due to food price inflation, unemployment and other social and economic risks. Experiences from the PSNP implementations show that the Government has been promoting public work programs to ensure food security and community asset building to enhance the capacity of poor and vulnerable.

However, while there are many programs and interventions to promote food security and nutrition throughout the country, the coverage of such programs is not always concentrated in areas of the most need. Better targeting of food security and nutrition programs and interventions—along with better and more timely data on who and where vulnerable populations reside—can help to accelerate progress. Avenues to experiment with innovative modalities of gathering or obtaining data (for example, using information and communications technologies) should be explored to address this area. Further, there is a lack of capacity to implement nutrition-driven agriculture, especially at the community level.

Moreover, the key areas that need attention include: filling data and knowledge gaps, improving coordination, and enhancing capacities, etc. for the effective implementation of productive- and social- safety net programs. Data in terms of key groups (for example, pastoralists) and areas (for example, food-insecure hotspots), more gender disaggregated data and intrahousehold data are very important. Filling data and knowledge gaps also requires upgraded knowledge management and information-sharing systems.

Different organizations are involving in the implementation of productive- and social- safety net programs in Ethiopia. This entails improved coordination to complement each other's efforts while avoiding duplication. Coordination should be strengthened at all levels of government, down to the *woreda* level, and such coordination is expected to direct efforts toward common targets. Joint planning and budgeting can help to improve cooperation across sectors. While mechanisms are in place to coordinate across sectors and actors, existing platforms should be strengthened.

There is a need to strengthen in-country capacity at all levels, especially for food safety standards. Furthermore, joint capacity building activities should be implemented for actors across sectors working at the community level. Along the food value chain, capacity must be strengthened in order for all parties to enhance safety standards. At the household level, greater capacity, knowledge, and accountability are needed to accelerate progress.

CR Theme 5: Forestry, Conservation and Biodiversity

Forest and biodiversity conservation initiatives were covered under the agriculture theme of the CR strategy, because forestry was part of the former Ministry of Agriculture when the Agriculture Sector CR strategy was prepared. The split of forest and allied activities from the agriculture ministry and the existence of various forest

and biodiversity conservation and management related undertakings in the country calls for establishing a separate CR theme for forest and biodiversity conservation. The interventions under the Forest and bio-diversity CR Theme were extracted from the Agriculture CR Theme and the portfolio review and gap assessment reviewed the degree to which these CR initiatives were incorporated in the ongoing forestry and biodiversity projects both thematically, financially and geographically. Thus, most of the CR interventions for the forest and bio-diversity are thematically well reflected in the reviewed forestry and biodiversity projects and programs. These activities include participatory forest management, afforestation and reforestation, REDD+ project design, integrated watershed management, national and regional wildlife park management and biosphere reserve conservation. Spatially, these projects are concentrated mostly in Oromia and SNNPR, and thinly distributed in Amhara, Tigray, Benishangul Gumuz and Gambella. Financially, most of the resources were allocated towards PFM, REDD+ design, afforestation and restoration. Less resource was allocated towards on the ground interventions.

Ethiopia has undergone severe deforestation, particularly in the long-inhabited highlands area. The REDD+ Readiness Preparedness Plan (R-PP) has indicated that smallholder and large-scale agricultural expansion and the incidence of forest fires are the main drivers of deforestation in Ethiopia. While small-scale agriculture is found all over the country, large-scale agriculture is mainly in the lowlands, where the woodlands are found and where population densities are generally much lower. Forest degradation, on the other hand, is mainly caused by fuelwood extraction, livestock grazing, forest fires and illegal logging.

The GoE has made the forest sector one of its priorities and GTP I set ambitious forestry targets, including increasing agroforestry coverage from 6.06 to 16.21 million hectares of land, increasing the area of forestland protected with management plans from 0.07 million to 2.2 million hectares, and increasing the total land covered with forests from 12 million hectares to 18 million hectares. Under GTP II, forest is covered under "climate change" rather than "natural resources conservation and utilization" as in GTP I, as it had moved from Ministry of Agriculture to the Ministry of Environment Forest and Climate Change (MEFCC) in 2015, when MEFCC prepared the GTP II forestry strategy. The GTP II target is to increase forest coverage (as defined by the new forest definition) from 15.5 per cent to 20 per cent of land area (from about 16.67 million hectares to 22.09 million hectares) (NPC, 2016). GoE has also set targets for the forest in its REDD+ and CRGE strategy. Under the CRGE, the target is to protect four million hectares of forestland (2 million hectares in highland forest and 2m hectares in woodland). This will be mainly in Oromia and SNPPR regions, with the selection of target areas being determined by the key stakeholders. The other key CRGE target is to reforest three million hectares through plantations. GoE has also made a pledge through the Bonn Challenge to restore 15 million hectares of degraded land by 2030 through reforestation and forest restoration, including agroforestry.

GoE is currently finalizing a REDD+ strategy along with a five- year implementation plan. This will focus on the two key drivers of deforestation in the country, agricultural expansion and charcoal production. In the meantime, a pilot REDD+ programme focusing on participatory forest management (PFM) is being implemented at a sub-regional (jurisdiction) level in Oromia Region. Currently, REDD+ is the only vehicle for financing forest conservation in Ethiopia.

Despite the investment made on strategies and plans, gaps in the forest sector are evident with respect to the following activities:

- Conservation areas planning and implementation.
- Tree seeds supply (sources identification, collection, processing and supply).
- Forest protection (fire, disease, pest).
- Site identification for restoration, afforestation/reforestation and commercial plantation.
- Forest extension package for different objectives (specific, or multi).

Comparing lists of activities under the forest and bio-diversity theme with the prioritized list of activities for the MSIP, most of the activities, which were less prioritized by the ongoing forest and biodiversity projects, are picked up.

CR Theme 6: Sustainable Agriculture and Land Management

The Sustainable Land Management Program (SLMP) is one of GoE's key initiatives to combat land degradation, protect natural resources and restore soil fertility in the country. The SLMP emphasizes scaling-up of successful practices, approaches and technologies to prevent or control land degradation by pursuing integrated and cross-sectoral approaches to sustainable land management. The approach to scale-up best practices has been incorporate through the Ethiopian Strategic Investment Framework for Sustainable Land Management Investment (ESIF-SLM), which has been developed with the leadership of the MoA, and involvement and contributions of development partners, civil society organizations and other stakeholders. The ESIF-SLM advocates for coordination of efforts, harmonizing of approaches and alignments of the different activities.

To facilitate implementation of sustainable land management, the Ministry of Agriculture has developed a guideline that harmonizes technologies and approaches for SLM up-scaling, called the Community Based Participatory Watershed Management Guideline. Furthermore, the MoA has established proper institutions and platforms that oversee, follow up and monitor the scaling-up SLM interventions in the country at various levels, including federal, regional, zonal, woreda & community levels. The SLM Platforms has a Steering Committee (SC) and Technical Committee (TC) at federal, regional, zonal and worda levels. The National SC is the umbrella committee for SLM initiatives throughout Ethiopia and is responsible for providing strategic guidance to government pertaining to policies relevant to integrated land (soil, water, vegetation) management while the NSC works under the overall guidance of the SC and will be responsible for translating SLM policies into actions on the ground.

The Sustainable Land Management Project is part of the SLM, which is targeted to reduce land degradation, increase tenure security and improve agricultural productivity of smallholder farmers in the intervention areas. SLMP is now in phase II stage, phase I having focused on 45 woredas, phase II increasing the number to 135. These areas had been prioritized by the MoARD. The project is financially supported by The World Bank, Global Environmental Facility, German Development Cooperation (KfW, GTZ, DED) and the Government of Finland.

Gaps in implementation of sustainable land management include limited geographical coverage and Institutional capacity at lower level entities during implementation. SLM is limited in its integration of Income Generation Activities (IGA's) at the local level. Thus, increased focus on Agro-Forestry, and non-timber products into watershed rehabilitation will provide additional revenue stream for local communities, thereby increasing resilience. Despite the importance that GoE has attached to the forest sector in recent years, there is still a lack of understanding of the economic value of forests among policymakers, for example the value of timber products and of watershed protection.

Another major gap is absence of land use plans. Though there have been numerous efforts made to perform land use planning in various settings such as at regional, sub-zonal and river basin level, the country does not have a well-integrated national land use plan. However, there is a plan to design and introduce the first National Integrated Land Use Plan and Policy (NILUPP) led by the Prime Ministers' office.

CR Theme 7: Livestock

One of the highly-prioritized target areas in the agriculture sector is an improved livestock development system, the major target being to enhance livestock practices for higher food security and farmer income while reducing emissions. The interventions that are designed to achieve this objective include animal value chain improvements, herd diversification, breeding programs, improving animal health, fodder and feed improvement and resilience, rangeland rehabilitation and management, and resilience in animal housing. The driving factor that compelled focus on these priority options are future climate variability and climate related opportunistic diseases and pests.

Evidently, each prioritized option requires broad budgetary and project support. The government has attached huge importance to this and has, in the recent past, partnered with the donor community to realize specific objectives. Project examples that speak to the level of attention given to these themes include the AGP, PASIDP and PCDP.

With the objective of increasing productivity and market access for livestock products in targeted woredas, the AGP aims to support high potential areas in the production of major food crops and livestock. Specific to the dairy sector, the EDGET Project, aims at improving household income and nutritional status of children, through increased production, enhanced processing and marketing dairy products. Building on the *Mass Hormonal Synchronization and Insemination Project*, the breed improvement program of the Government of Ethiopia, EDGET is working towards enabling 65,000 dairy farmer households to achieve 100% income increase from dairy within five years of project inception. At the same time, it aspires to improve the nutritional status of 500,000 children through consumption of milk products. Most of the projects that focus on livestock development aspire to address the livelihood of smallholder farmers. There are some funds attached to such efforts. For instance, the *Food Security and Rural Entrepreneurship Fund (FSRE-Fund)* is set up to finance activities that improve the food security of farming families and enhance income, investment and jobs in smallholder farmers, producers and Small and Medium Enterprises (SMEs) linked to smallholder farmers.

The Drought Resilience and Sustainable Livelihood Programme covers IGAD countries including Ethiopia and focuses in one of its components to support livestock development through livestock production and health, feed production and livelihood diversification. Women are encouraged to engage in livestock activities in pass-on modalities through facilitated access to in-kind credits. The project envisages providing inputs to women for livestock products and marketing. The *Household Asset Building Program (HABP) of the PSNP* finances a set of asset creation and protection services. It also aims to enable beneficiaries use cash transfers to invest in farming inputs including livestock rearing that in turn plays a role in helping households avoid distress sales of assets. Some projects address extreme weather events and its impacts on livelihoods in selected localities. The *Building Resilience and Adaptation to Climate Extremes and Disasters / Market Approaches to Resilience (MAR)* employs market-based approaches to improve resilience of vulnerable pastoralist and agro-pastoralist households to climate change in the Afar, SNNP and Somali regions through public private partnership models. SNV supported *Enhancing Dairy Growth* project aims at contributing a sustainable increase in household incomes from dairy activities through enhancing farmers' capacity to make money from dairy in 51 woredas in Amhara, Oromia and SNNP regions. It assists in the establishment and strengthening of rural dairy markets through improving linkages between input suppliers, producers, cooperatives etc., the establishment of backyard and farmland forages, and developing women's entrepreneurial skills in the milk value chain.

Despite these project approaches to address the thematic priority in the livestock sector, there are still gaps when the level of attention is compared with the strategic ambition. One significant gap is the inadequacy of projects that aim to improve quality feed and health care supply as well as enhancing breed quality in the sector.

Currently the government is encouraging private sector involvement to address these gaps by indicating some intervention areas. The Livestock Master Plan (2014) for instance outlines a set of intervention lines yet not adequately covered through the projects assessed under this study. Examples of future thematic coverage in this sector include supporting forage seed industry development, forage seed production and certification, establishment and strengthening of calf rearing and heifer rearing farms, improving efficiency of artificial insemination and synchronization services, enhancing animal health regulatory capacity including through the facilitation of drug supply and control, expansion of animal health services and extension advice.

CR Theme 8: Value Chain and Market Development

The value chain and market development CR theme has three adaptation options, which focus on coffee, irrigated sugar and roads. These adaptation options are very limited and do not address the demand of smallholder farmers that are engaged in non-cash crop production. Post-harvest loss is one of the key bottlenecks for smallholder farmers from fully utilizing their output. Researches have shown that post-harvest loss is about 60% for fruits and vegetables, 50% for roots and tubers, and 20% for cereals in the country[43].

Recognizing the need for improvement in value chain, there have been few such VC projects. These have mainly been small scale, focusing on specific products or produce in specific geographical location. For example, the LIVES project focuses on livestock and irrigated products for Ethiopian Smallholders, the New Business Model for Honey Value Chain Development project focuses on honey producers in Oromia Region area. However, it is important to also note that the AGP II has a value chain component that has nationwide impact.

Value chain improvement is one of the most neglected activities but with the potential to have a major impact in building resilience of households and communities. Resilience literatures have indicated that linkage to market has a potential to greatly improve adaptive capacity of farmers as their incomes increase. Value chain improvement should not only focus on market linkages but also information and finance. Farmers need to have knowledge of the market and price of commodities as well as access to finance to market their product or add value to it. Access to information and finance will allow farmers to get fair or better prices for their commodities. This is one of the key gaps in the value chain as there is currently no system or mechanism for farmers to know the actual price their product is being sold for to end users. Absence of market information in a relevant and easily understandable format for farmers is a key gap in the value chain.

The Ministry of Agriculture and the Agricultural Transformation Agency are currently trying to develop value chains for some of the major crops such as maize, sorghum, and teff. Research is being done to understand the bottlenecks and identify the best form of intervention that will benefit small-scale farmers. At the same time, there are small-scale and pilot value chain projects that can provide lesson learning for national scale-up. However, they need to be systematically captured.

CR Theme 9: Crop and Water Management (On Farm)

The crop and water management theme has identified six options, namely: 1) Crop switching and new varieties, 2) Fertilizer use, 3) Farm management and technology, 4) Pests and disease (including post-harvest losses), 5) Irrigation, and 6) Water infrastructure, allocation and transfers. Many of the recommended activities under this CR theme focus on increasing crop production through input and farming methods. Endorsed activities include use of additional fertilizer to increase productivity including the use of organic manure and

[43] Mezgebe, Abadi Gebre and et al. *Post-harvest losses and handling practices of durable and perishable crops produced in relation with food security of households in Ethiopia: Secondary data analysis*. Journal of Stored Products and Postharvest Research. Vol. 7(5), pp.45-52, May 2016.

residues, improved farm practice including increased use of labor, diversified crop rotation and mechanization, and planting of heat resistant and drought tolerant crop varieties.

The GoE has accepted the fact that there will be tradeoffs in promoting use of fertilizer to increase crop production while at the same time aiming to reduce GHG emissions from the agriculture sector. There have been projects that have aimed to address this through implementation of climate smart agriculture. For example, the Sustainable Land Management Project Phase II has clearly indicated that one of the aims of the project is to increase crop production while at the same time implementing carbon sequestration (through treatment of farmland with slope < 30% with suitable bio-physical measures, and applying conservation agriculture). This approach clearly addresses the tradeoff in increasing productivity while at the same time considering GHG emissions.

The Agricultural Growth Program (AGP), which aims to increase productivity in high growth areas, also has a sub-component that focuses on improving irrigated agricultural productivity and management of selected small-scale irrigation systems. The project also focuses on introduction of improved on-farm irrigation water management systems. Other projects such as the GCCA have also focused on improving soil and water conservation and promoting agronomic and soil carbon-improving practices in the already existing crop production system. Some of the other crop and water related activities implemented through large and small scale projects included conservation tillage, use of compost, mulch, green manuring, bio-fertilizer, use of improved crop varieties and row planting. All these activities are considered climate smart agriculture (CSA).

These CSA practices are becoming a growing phenomenon, and NGOs as well as local community based organizations are changing their agricultural practices to incorporate CSA. Though the MoA and World Bank are developing CSA practices of sustainable land management, there is no locally acceptable standard on CSA practices that clearly guide local practitioners. Not only there is absence of acceptable guidelines, there is also limited research into and knowledge about interventions that are indeed climate smart and will contribute to resilience at the same time as reducing GHG emissions. These gaps in crop and on-farm water management need to be filled through research and knowledge management.

CR Theme 10: SP - Improve Efficiency of Biomass Use

The improved efficiency of biomass use is a sub-strategic priority of energy access and it focuses on reducing the demand for biomass by increasing fuel efficiency. Examples of action include the National Improved Cookstoves Program, which can contribute significantly to reducing demand. Ethiopia's energy sector is highly dependent on biomass (firewood, charcoal, crop residues and animal dung). It is estimated that biomass energy accounted for 89% of the total national energy consumption in 2010.[44] Approximately 99% of households, 70% of industries and 94% of service enterprises use biomass as energy source. Firewood was the major biomass type consumed in the country and Ethiopia is the highest producer of charcoal and woody fuel wood in Africa.[45]

Recognizing the impact of biomass used in the environment as well as health, the GoE has made reducing its consumption a priority. Indeed, the GoE has clearly indicated in the CRGE Strategy that the national cookstove program is a priority. The National Improved Household Biomass Cook Stoves Development and Promotion Program expects to deploy more than 9 million improved cookstoves by January 2018. This action is expected to result in reduction in emissions of up to 14 Mt of CO2e over three years, 1,000– 2,000 fewer deaths per year

[44] Energy Sector Mapping and Database Development, Draft Ethiopian Energy Policy Framework, August 2011.

[45] Guta, Dawit Diriba. Assessment of Biomass Fuel Resource Potential and Utilization in Ethiopia: Sourcing Strategies for Renewable Energies INTERNATIONAL JOURNAL of RENEWABLE ENERGY RESEARCH Vol.2, No.1, 2012.

from indoor air pollution, and 5,000 new jobs. Some of the challenges recognized by GoE in the program include consumer awareness, production capacity, and institutional capacity.

Despite the national effort in dissemination of improved cookstoves the gaps are poor institutional framework, particularly at regional and woreda level, inadequate linkage with federal entity, change of institutional structure, inadequate planning as well as lack of co-ordination. Furthermore, low levels of private sector investment and weak infrastructure is a gap, as is absence of other technology options, as the alternative choices such as non-solid form (biogas, bioethanol, and biodiesel etc.) have not been given as much emphasis as improved cookstove.

CR Theme 11: SP - Accelerate Non-Grid Energy Access

According to the Energy CR Strategy of the GoE, accelerating non-grid energy access is one of the key pillars to meeting its access to energy goal. Under this strategic priority, the GOE aims to explore various options such as micro-hydro power, solar lanterns, micro-solar, biofuel and biogas.

Renewable sources are being utilized more and more in mini-grid and standalone off-grid situations. A review of research by the International Renewable Energy Agency (IRENA) suggests that small-scale hydropower, for example, is currently the largest generation source for mini-grids. The same report states that mini-hydro is more prevalent in Asia than in Africa but has potential in hilly and mountainous locations such as in Cameroon, the Democratic Republic of Congo, Ethiopia, Kenya, Rwanda, Tanzania, Uganda and Zimbabwe. Wind and biofuels are also present in some mini-grid situations where resources allow. But the biggest technological change in recent years has been a rapid rise in the use of solar photovoltaic generation in both standalone home energy systems and mini-grids.

Looking back at the big projects implemented in the energy sector in Ethiopia since 2010, the focus seems mainly on promotion of fuel wood-efficient stoves, LPG stoves and Biogas stoves. One standout project in line with non-grid access to energy is Energizing Development (EnDev) Ethiopia. The project was funded by development partners and implemented by the ministry together with various non-state implementing partners. The project was executed in four woredas of Oromia and five woredas of Tigray. The project mainly focuses on the development of market and technologies for renewable energies. In addition, the project also focuses on policy and strategy development and communication.

CR Theme 12: SP - Support Resilience of Rainfed Agriculture

The water and energy CR has identified three strategic options under the irrigation theme. One of the sub-strategic priorities is to strengthen rainfed agriculture. This strategic priority is grounded on the fact that large irrigation projects will not solve all agriculture production challenges and thus strengthening rainfed agriculture is necessary. While the lead agency for implementation of this option is the Ministry of Agriculture, the Ministry of Water, Energy and Electricity (MoWEE) will provide support. The objective is to "support the resilience of rainfed agriculture by improving data from the National Meteorological Agency."

A recent study conducted on information and data gaps and requirements to support the MSIP has identified areas that are high to moderate priority.[46] Data associated with irrigation and rainfed agriculture – such as land cover and land use, elevation and slope, rainfall estimates, flood hazard and risks – are given high priority. The study has further identified that irrigation development requires more accurate information on water

[46] Integrating Satellite Earth Observation into Ethiopia's Multi-Sector Investment Plan (MSIP), European Space Agency, Frascati, Italy. March 2017 ESA7914 VERSION 2.

availability. Data modeling can be done through watershed based stream flow forecasting, which requires suitable monitoring and modelling systems, including stream discharge monitoring, rainfall monitoring, and other datasets such as elevation, soils, and land cover and land use. On the other hand, there is a gap in quality and availability of information on existing stream network, classification for stream types, including streamlining stream order scheme. Improvement in this requires provision of satellite-derived elevation data, such as WorldDEM or ALOS PRISM DEM. Other information gaps include stream monitoring caused by the lack of gauging stations on secondary streams, mainly seasonal (intermittent and ephemeral) streams, exhibiting higher variability in flood occurrence to improve flow regime predictions for ungauged stream based on their catchment area and river length.

CR Theme 13: SP - Enhance the Climate Resilience of Self-Supply

This strategic priority is a part of the WASH theme and it focuses on providing "additional approaches and interventions to supplement self-supply" such as, for example, improving local water storage facilities or participatory water resource management. This is a priority because access to safe water, adequate sanitation, and hygiene facilities can mitigate a person's risk of diarrheal and disease, which are key in building adaptive capacity and resilience. The provision of safe and adequate water supply, proper disposal of human excreta and refuse will allow better control and safety of food, vegetables, and beverages from disease causing organisms or their poisonous products, and the control of flies, lice, mosquitoes, and so forth are man's first line of defense against disease.

Ethiopia has made great advances in increasing sanitation and water coverage in the recent past. The establishment of Health Extension Programme in 2000 that has led to a training of over 30,000 Health Extension Workers in household sanitation promotion as part of the Model Household program contributed to this improvement. More recently, introduction of the Community Led Total Sanitation and Hygiene (CLTSH) approach to community and household hygiene and sanitation has re-invigorated the sector and helped reach more communities. Despite the well-coordinated effort by the Government of Ethiopia at federal and regional level and active involvement from donor communities and NGOS, there remaining a gap in access to proper sanitation. Notwithstanding this progress, it is estimated that about 30 million Ethiopians still lack basic sanitation facilities and less than 20 per cent of the country's population is regularly washing their hands with soap and water at critical times. Unsafe water handling and storage means that nearly 40 per cent of the water consumed in homes is contaminated with fecal matter. A study by Water Aid found that about 43% of Ethiopians also lack access to safe water and 72% lack access to improve sanitation.

A7.5 The Approach to Analyzing Spatial Gaps

The assessment of how much activity is addressing climate resilience objectives in relation to relative levels of vulnerability to climate change, by woreda.

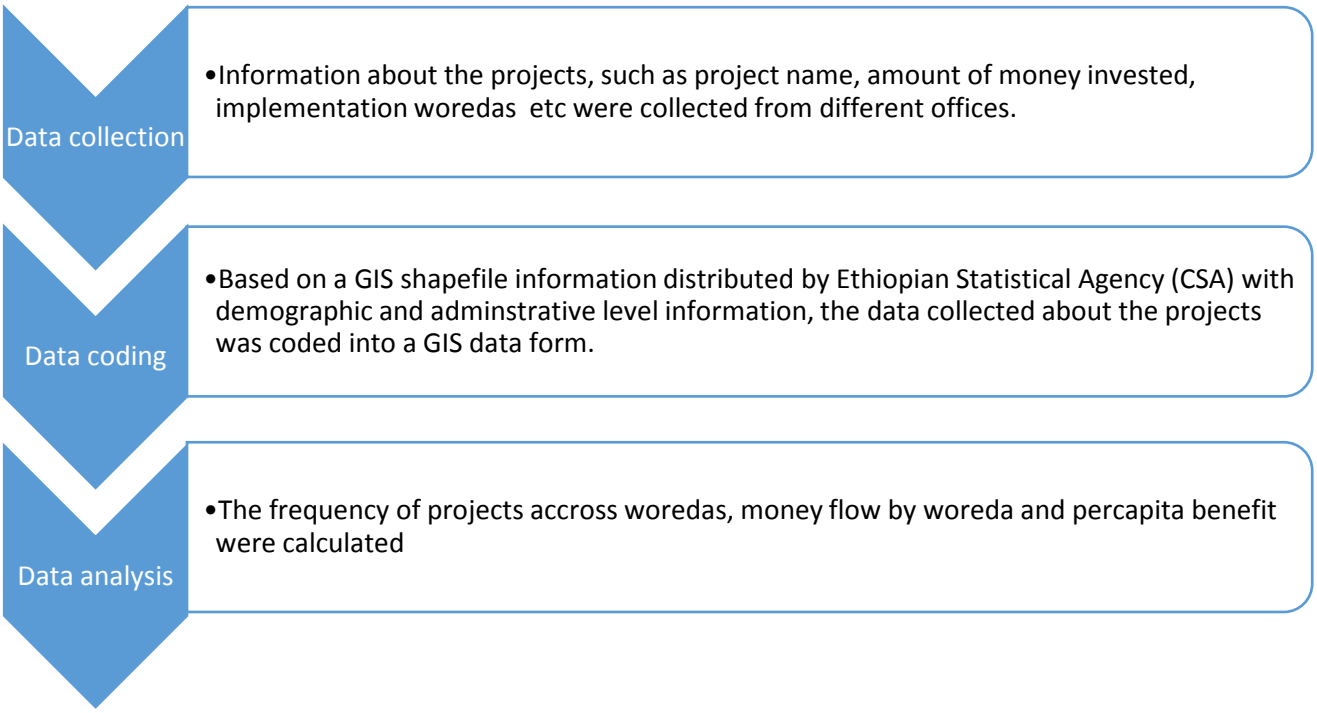
Limited availability of essential data, such as baseline targets (investment requirements by woreda), has limited the usefulness of the spatial gap analysis. Similarly, because project documents often do not detail the allocation of total budget by woreda, and have limited information on target beneficiaries, it was difficult to assess the level of financial flow to specific woreda in the country.

The methodology involved in the spatial analysis included two major steps: a) Spatial activity analysis; and b) Climate change analysis (Rainfall and Temperature changes).

A) Spatial activity analysis

The spatial activity analysis of the projects in the country involved three major activities: I) Data collection, II) Data Coding and III) Data analysis. The overall methodology followed for the spatial activity analysis is summarized in Figure A7-3. Each step in the process is described in more detail below.

Figure A7-3: Summary of the spatial activity analysis flow chart



I) Data collection

Data and metadata of the projects was first organized in an excel spreadsheet. The information includes, name of the project, donor agency, implementing entity, amount of project money, project area, etc. (see Figure A7-4).

Figure A7-4: Project data organization in excel spreadsheet

No.	Name of Project	Donor Agency	Implementing Entity	Amount	Year Project Started	Year Project Ended	Project Area
1	Agriculture Fast Track Investment Project	UK-DFID/US$ 6.8m, Austrian Developmnent /€630,000	MoANR	US$7,590,020	July 1,2014	April, 2016	Oromia Region:Gawo Qebe ; Akaki ,Darimu,Midagatola ,Chiro,Adamitulu, Amhara Region:Wegedi ,Andabet,Wadla,Enbsesar midir, Tigray Region:Alajie,Afherom,T/Michew SNNP:Sodo,Damote Fulasa,Dara,Doyo Gena Afar:Kuneba,Yallo
2	Community Based Integrated Natural Resource Management Project (CBINReMP)	GEF/US$ 4,400,000, Cofinancing /US$ 21,024,500 (IFAD/US$13m, Govt (ANRS)/ US$ 3m, Beneficiaries/US$ 5m)	Ministry of Agriculture and Rural Development and the Amhara National Regional State	US$ 25.4 million	2009	2016	Amhara Region: N/Achefer; S/Achefer; Mecha; Yilana Densa; Sekela; Quarit; B/Dar ketema; Bahir Dar Zuria; Dangila Zuria; Fagta Lekoma; Banja; Dangila Ketema; Wogera; Dembia; Alefa; Lay Armachiho; Chilga; Gonder Ketema; Gonder Zuria; Takusa; E/Estie; Ebinat; Dera; Woreta; Farta
3	Sustainable Land management Project Phase II	World Bank (WB), Global Environment Facility (GEF), NORWAY Ministry of Foreign Affairs,	MoANR	US$ 257M	2013	2020	Gumay; Hawa_Gelan; Horo; Jima_Arjo; Kersa; Kuyu; Lalo_Kile; Mena; Seyo; Sibu_Sire; Wara_Jarso; Ada'a Berga; Wonchi; Metu; Kondala; Haromaya; Begi; Ana Sora; Gechi; Boji Dermeji; Sasiga;
4	SREP	SREP/US$69.5M,AfDB/US$54M,IFC/US$4	MoNP,EEPCO	US$ 443.2 million	2011	ongoing	Oromia: Assela SNNPR: Alto Langno Afar: Dubiti
5	Promoting Autonomous Adaptation at the community level in Ethiopia	GEF (5,307,885 $)	MEFCC	US$ 24721020	2011	ongoing	Oromia: Adami Tulu Judo Kombolcha, Tigray: Enderta Gambella:Abol Benshangul:Assosa

A total of 102 projects were identified; out of which the implementation areas for 42 projects were not clearly indicated. Consequently, only 61 projects were coded into a GIS data format to show the project implementation location across the country. These 61 projects constitute more than 82 percent of the total portfolio project finance (see Table A7-10), and thus can be considered adequate to reasonably determine the picture of the spatial gap of the projects in the country (bearing in mind the limitations of the data). Most of the 61 projects were cross-sectoral, followed by water and agricultural based projects.

Table A7-10: Summary of the projects in terms of geography and project money

	Geographically coded	Unknown Geography	Total
Project	61	41	102
Project funding	US$ 3.79 billion	US$ 0.797 billion	US$ 4.59 billion

In most cases a single project was implemented in multiple geographical areas, sometimes in different regions of the country. Many woredas also benefited from multiple projects within different sectors, which made it difficult to distinguish the spatial gap by sector.

II) Data coding

The spatial information of the projects was coded into a GIS format by matching the woredas listed in the excel spreadsheet (see Figure A7-4) to the woreda boundaries provided by the Ethiopian Statistical Agency (CSA). If a woreda benefited from a project it was coded as 1, and if not it was coded as 0. In addition to containing information about the boundary of woredas, the CSA data also contained the demographic information of the 2007 census. This census information includes male population, female population, total population and population density.

III) Data Analysis

The implementation areas of each woreda and the amount of money flowing (normalized to the population size of the beneficiary woredas) was coded for each project. The normalization of the money flow to each woredas was achieved by dividing the total project money proportionally to the population size of the beneficiary woredas. Once all of the projects were coded in through this approach, the frequency of projects and the amount money flowing to each woreda were aggregated to get the total number of projects in each woreda and the sum of the total money flowing to each woreda from all the projects considered, respectively.

The frequency of projects was then calculated as one indicator of gaps in activity. However, the frequency of the projects alone cannot show the spatial gaps of projects, because each project is different in terms of the amount of funding. ***The more project money a woreda receives, the more it is assumed its population benefits.*** Therefore, it was necessary to sum up the normalized money flow in each project through adding the amount of money each woreda received through each project. Using the total woreda population and total amount of fund each woreda received, it was then possible to calculate the per-capita financial flow in each woreda.

The total money invested in a woreda was also aggregated to regional level. This was done simply by adding up the total money invested in woredas by region. This allows us to show the amount of benefit per head in each region; the regional per capita money flow was also calculated using total regional population and total amount of funding each region received.

B) Climate change analysis (Rainfall and Temperature)

Rainfall and temperature changes are the main driving factors that lead to drought, flood and heat waves. Full vulnerability assessment need to include other variables such as adaptive capacity and also consider future projection of climate change. The gap assessment here only focused on past climate change and trend to identify areas most affected by climate change. Further it is important to note that this assessment has not been meant to conduct vulnerability and climate projections. For this purpose, rainfall and temperature data was extracted from two major sources, as listed in Table A7-11. These data sources provide time series rainfall and temperature information globally, and are widely used for research and policy decision-making purposes.

Table A7-11: Sources of data for climate change analysis

Sn	Type of Data	Source	Spatial Resolution	Temporal Resolution	Unit
2	Rainfall	Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS) available at FEWS net	0.05^0	Pentad (5 days)	mm
3	NASS, Goddard Institute for Space Studies (GISS)	Estimate of global surface temperature change)	Resampled to 1km		^OC

Climate data was obtained from FEWS Net, from 1970 to 2016. Specifically, data was collected to determine the change in rainfall and temperature in each woreda during the period. For climate change analysis, at least 30 years of observation of climatic elements such as rainfall and temperature should be made. Therefore, a comparison was made of the most recent mean monthly rainfall to the mean monthly rainfall and temperature of 35 years' ago. Specifically, the changes in the mean monthly rainfall and temperature from the 1981-1984 base lines were subtracted from the mean monthly rainfall and temperatures of the 2012-2016 periods,

respectively, thus determining the level of rainfall and temperature changes by geography. It has been assumed that high decreases in rainfall and high increases in temperature indicate negative impacts of climate change.

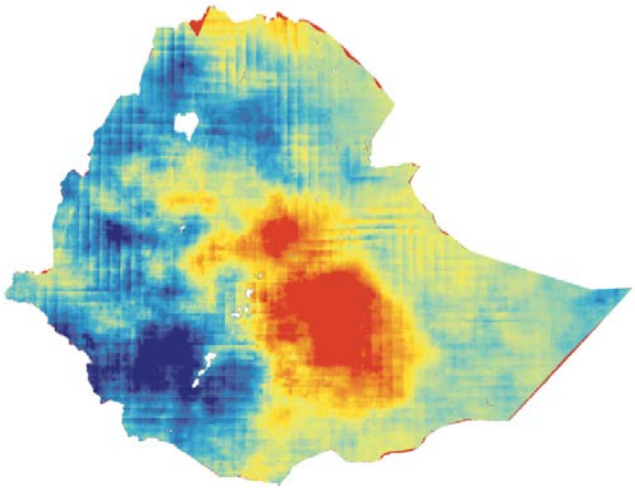
To aid analysis, the rainfall change was classified into 10 classes; a value of 10 was assigned for areas that experience the highest decrease in rainfall and a value of 1 was assigned for areas with increases in rainfall since the base line period. The rainfall change over 35 years was found to be between -41 to +42 mm across the country.

Since the range of temperature increment in the whole country was narrow (between 0.26 and 0.58 ^{0}C), the temperature change was classified into five classes, the areas with the highest temperature increase being assigned a value of 5 and those with the lowest a value of 1.

The findings of this analysis have been plotted in Figures A7-5 and A7-6 below.

Figure A7-5: Change in temperature 1970 -2016

Figure A7-6: Change in rainfall 1970 -2016



A combined indicator of climate change was then created (Figure A7-7)**.** For each measure, the range between maximum and minimum was determined. The numbers have then been converted into scales and combined to create a single indicator of change in climate. The classified images of rainfall and temperature changes were combined using weighted overlay techniques, by assigning equal weight for the rainfall and temperature changes.

The combined index highlights that southern, southeastern and northern parts of Ethiopia have been moderately affected by changes in rainfall and temperature over the past thirty years, with areas in the southeastern highlands being the most severely affected. Population Density was then overlaid to present climate impact relative to population density in the country (Figure A7-8).

Figure A7-7: Climate change map (Rainfall and Temperature combined)

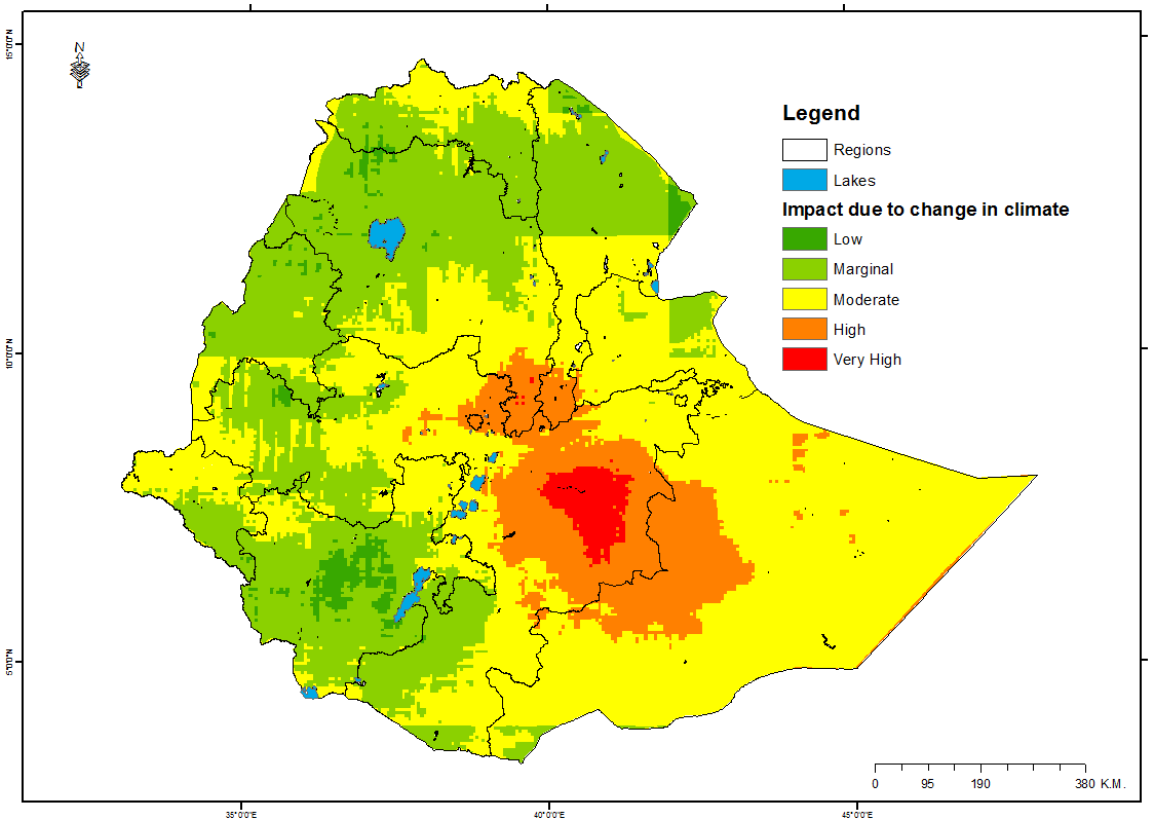
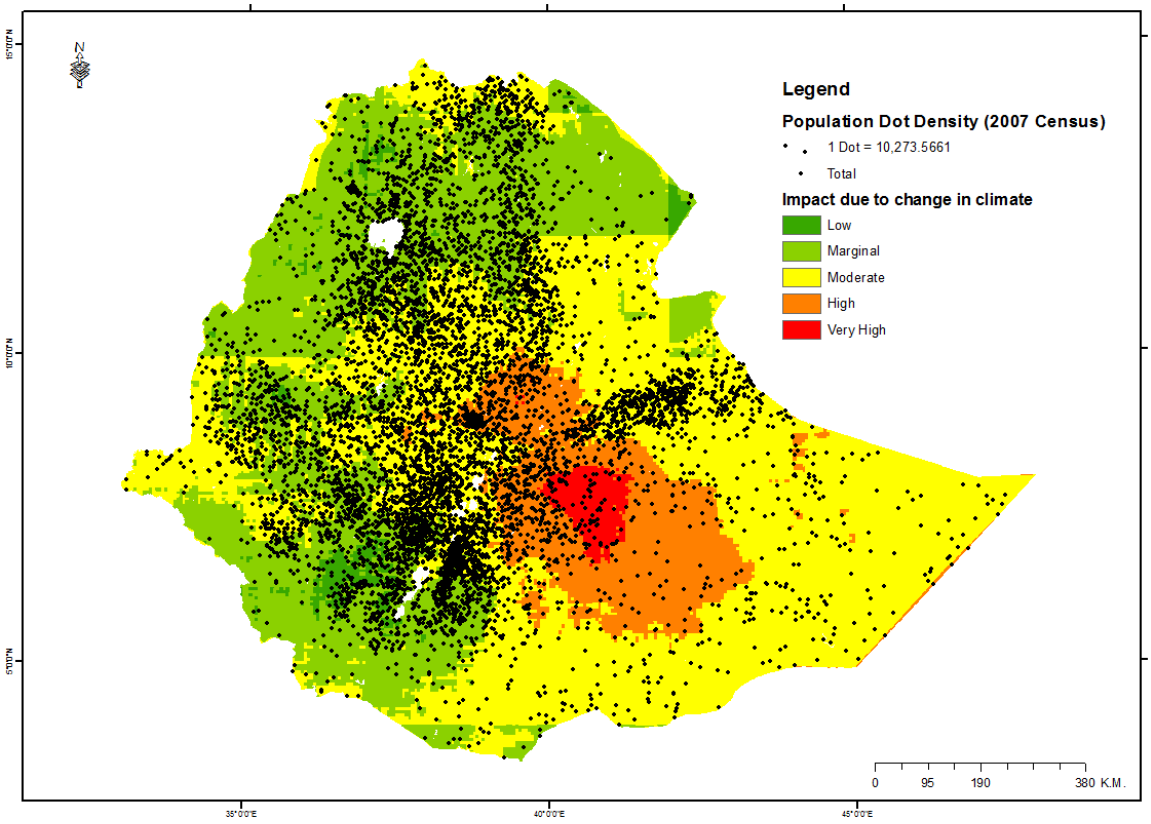


Figure A7-8: Population density and climate impact areas



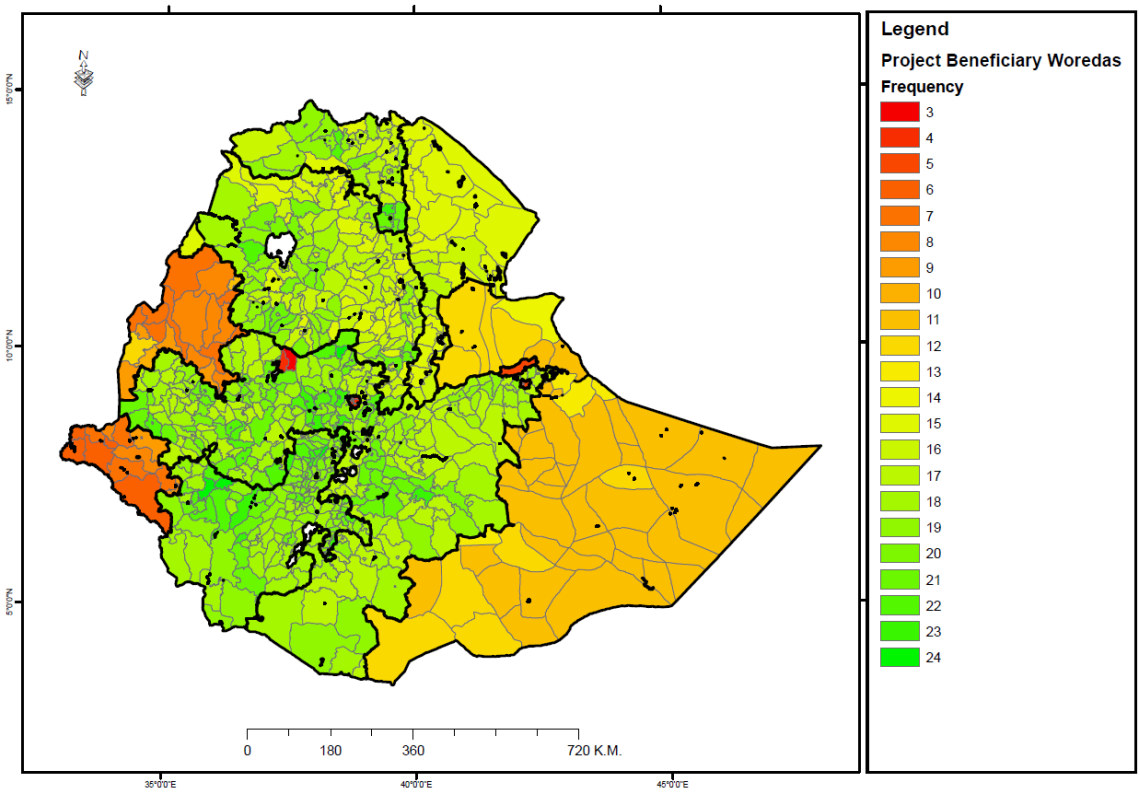
C) Investment per Woreda

The next assessment was then to look at the climate change impact against the committed levels of investment by woreda. The critical assumption in this assessment is that intensity of climate change impacts should be a proxy for investment need. As with other aspects of the gap analysis, the methodology does introduce some inaccuracies. This has been necessary to compensate for data deficiencies and to ensure meaningful analysis can be completed within the available timescales. The conclusions drawn are believed to be reliable enough to inform investment planning. Spatial analysis was undertaken by number of project and financial flow, in relation to woredas (Figures A7-9 & A7-10) and Regions (Figures A7-11 & A7-12).

This climate change indicators mapped against measures of committed investments to the woredas by project frequency have assumed that total project budget has been allocated proportionately to the population of the targeted areas, so that the analysis can indicate the relative flows of investments to different locations.

Woredas in central, southwestern and northern parts of the country had the highest number of recorded projects. They are also the areas where population density is higher. As Figure A7-8 shows, the central highlands, southwestern parts of Ethiopia and the northern highlands are relatively population dense areas. The exception to high population density and moderate or high levels of climate impact is the eastern part of Oromia, northern Somalia and areas around Dire Dawa. The spatial analysis further indicates that Afar and Benshangul regions receive higher levels of funding per capita (Figures A7-11 and A7-12). On the other hand, Gambella and SNNPR have the lowest funding per capita, followed by Somali and Tigray.

Figure A7-9: Project frequency by woredas



FigureA7-10: Per-capita financial flow by woredas

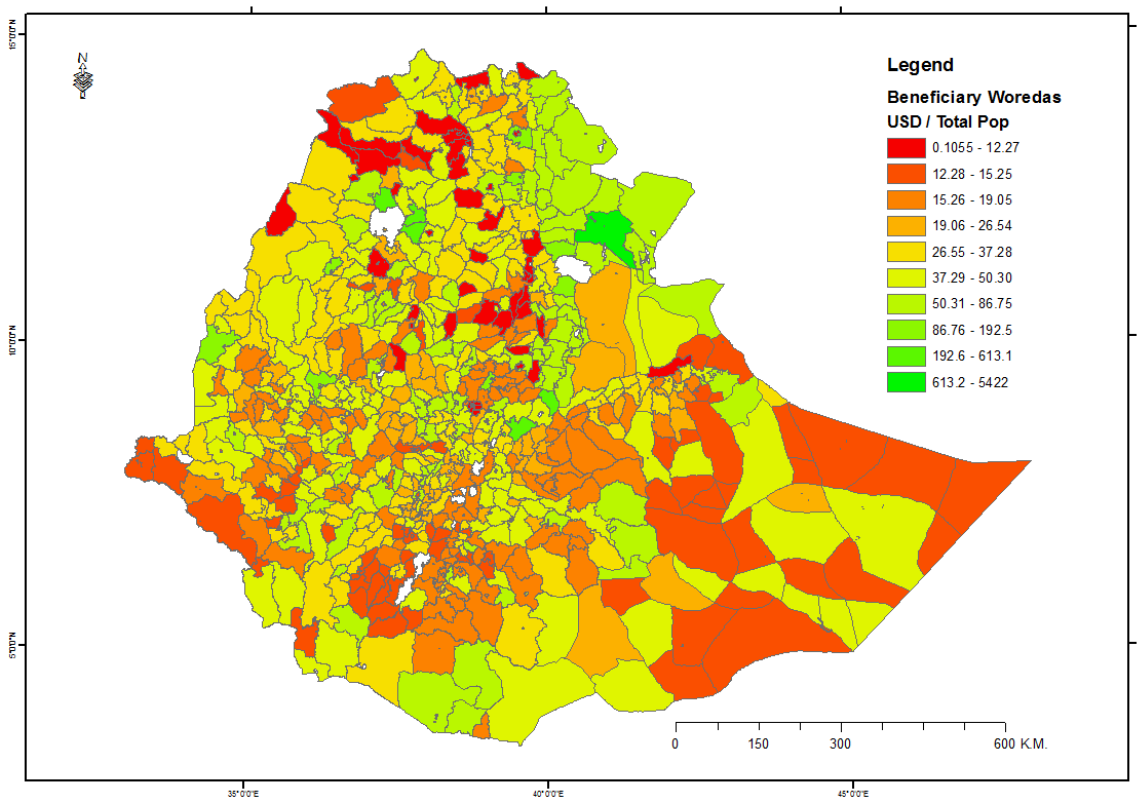


Figure A7-11: Total money flow (USD) by Region

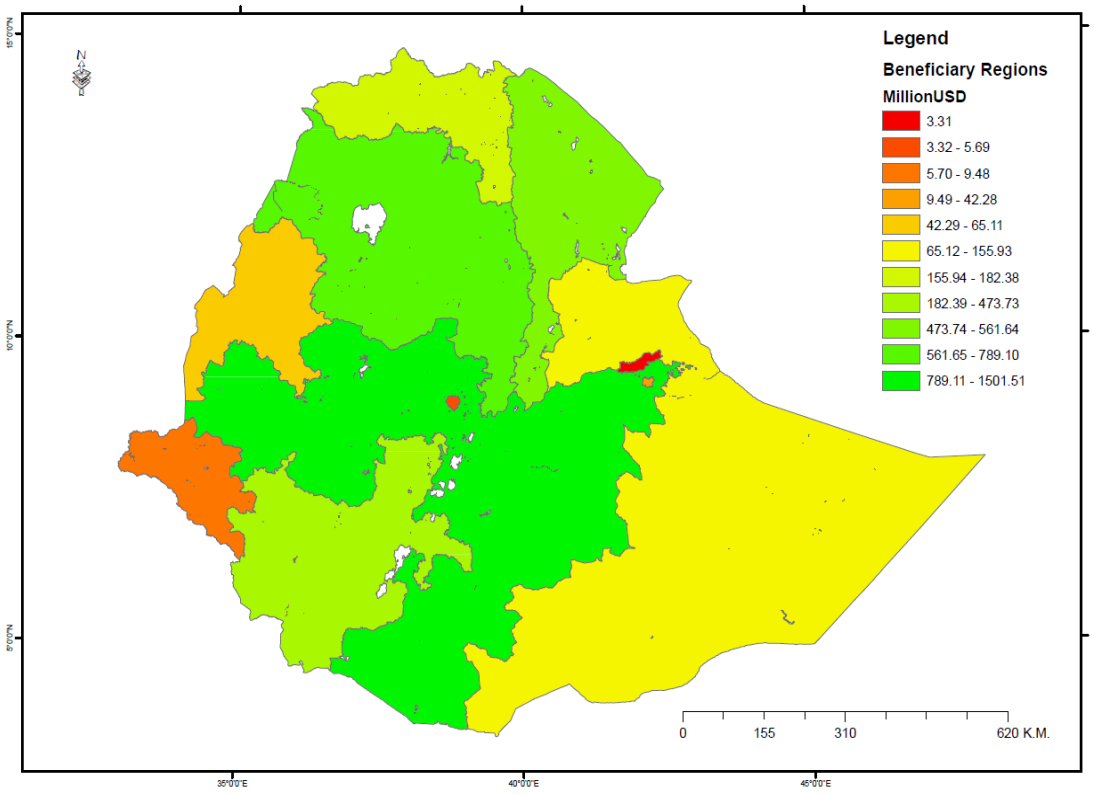
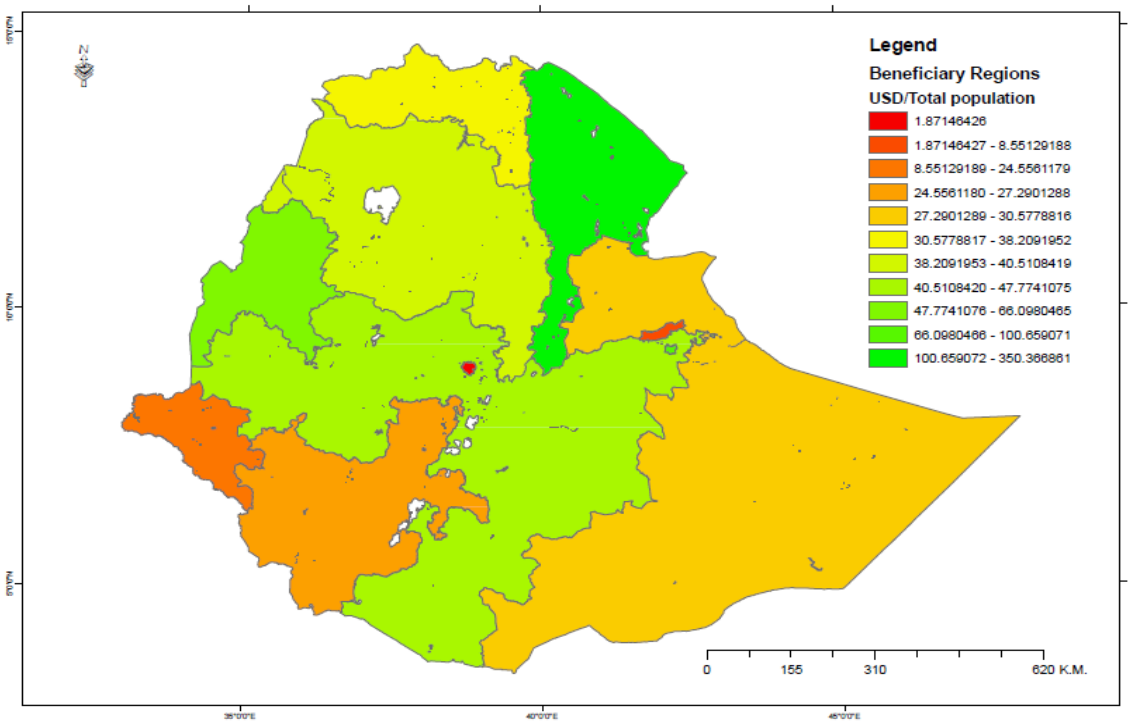


Figure A7-12: Per capita money flow (USD) by Region



D) Natural and built-in capital

Ethiopia has 12 river basins, eight of which are River Basins, one a Lake Basin and the remaining three Dry basins, with no or insignificant flow out of the drainage system. Four of the River Basins (Abbay, Baro-Akobo, Mereb and Tekeze) are part of Nile River System covering 33% of basins. Five Basins (the Omo-Ghibe, Awash, Rift-valley Lakes, Denakil and Aysha) are categorized as the Rift-valley system and cover 28% of basins. The remaining three (Genale-Dawa, Wabishebelle and Ogaden) are part of the Eastern Ethiopian Basin that covers 33% of basins.[47] The North-East Coast covers 6% of the basin. The country also has eleven major lakes.

Some studies show that climate change is projected to cause a drying of wetlands. Projections from the IPCC 5th Assessment show droughts are expected to intensify in Southern and Eastern Africa due to reduced rainfall or increased evapo-transpiration.[48] Based on the natural capital assessment conducted on lakes and rivers (Figure A7-13) and Ecoregions (Figure A7-14), the Eastern Ethiopian Basin and Rift-Valley System which combined cover 61% of the basin cover in Ethiopia are in moderate, high or very high areas. The central and south-eastern highlands, representing montane grassland, woodland and savannah bushlands are expected to be impacted highest, followed by escarpment areas representing montane moorlands, grasslands and woodlands.

[47] Matthew Savage, Ana Mujica, Federica Chiappe and Ian Ross. *Climate finance and water security. Ethiopia case study*. Oxford Policy Management, 2015.
[48] Ibid.

Figure A7-13: Natural capital and high impact areas

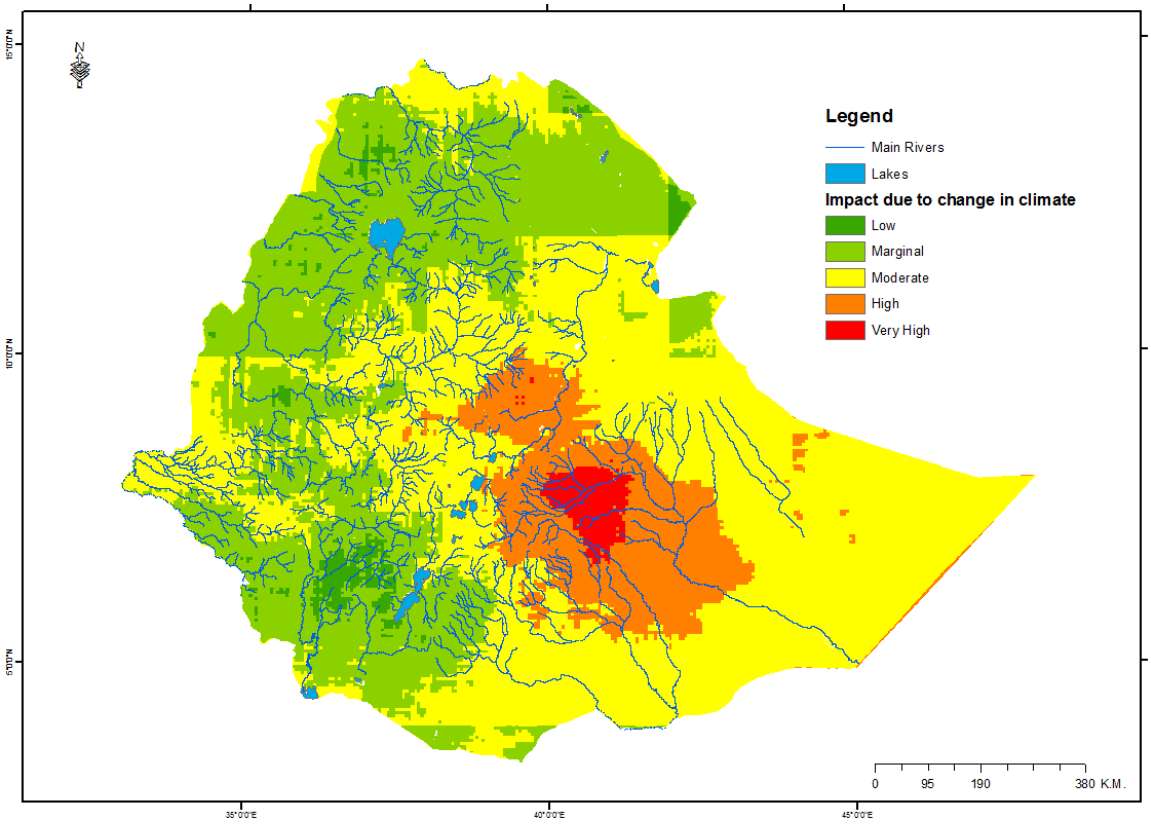
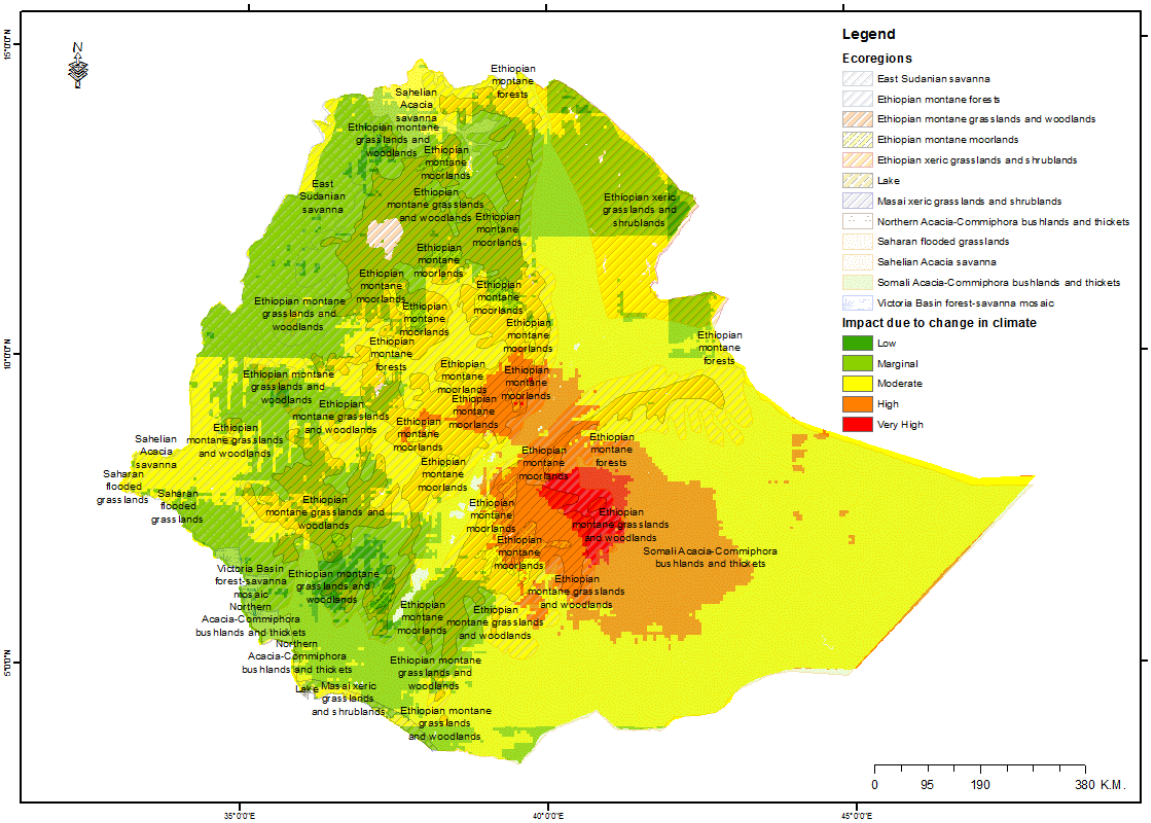


Figure A7-14: Eco-regions and high impact areas



7. p. 131

Acknowledging its importance to the economic growth of the country, the GoE has been investing heavily in the road sector for the past several years. The government first devised the Road Sector Development Program (RSDP) in 1997 to increase the quality and quantity of roads in the country. The size of the road network has increased from 26,550 km to 85,966 km by 2010. Roads are becoming important not only for economic growth but also for building the resilience of local communities. Connecting to urban sectors allows rural communities to have access to better markets and other essential services.

The assessment of built capital against vulnerability was done to see the extent communities have access to roads rather than the vulnerability of built capital to climate change. Based on the overlay of roads against vulnerability, Figure A7-15 indicates that areas that are moderately, highly or very highly affected by climate change are reasonably well connected to roads. However, some of the areas in the east/central part of the country have limited access. However, some of the areas in the east/central part of the country have limited access. Keeping in mind the population density in these parts of the country, access to road seems reasonable. On the other hand, northern, north western and western parts of the country have fewer roads.

Figure A7-15: Built in capital (road infrastructure) and vulnerability

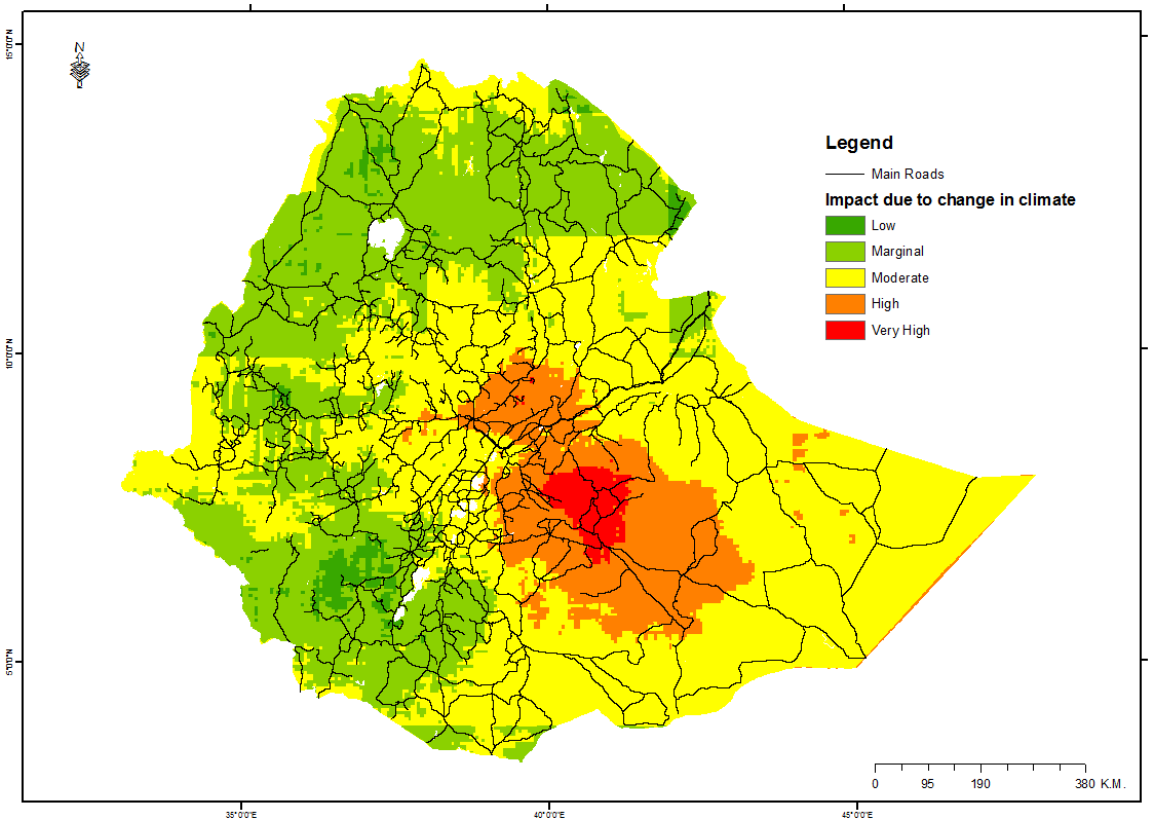


Table A7-12: Top 20 Beneficiary woredas (investment per capita)

Region	Woreda	Frequency of Projects	Total Population (2007)	Population Density (Sq.KM) (2007)	Project Investment (Million USD)	Per Capita Project Investment (USD)	Rainfall Change	Temperature Change	Climate Change Vulnerability Index
Oromiya	Asela Town	18	82,955.00	4,885.37	444.58	5,359.29	-13.22	0.48	6 (High)
Afar	Dubti	16	81,735.00	13.83	443.13	5,421.58	5.02	0.45	5 (Moderate)
Amahara	Dembia	20	295,423.00	229.46	79.75	269.94	10.26	0.42	4 (Marginal)
Oromiya	Adama Town	18	271,558.00	9,094.90	68.53	252.37	-5.79	0.48	5 (Moderate)
Amahara	Fogera	18	249,826.00	225.44	62.72	251.07	10.69	0.45	4 (Marginal)
Oromiya	Boset	19	165,518.00	115.08	56.00	338.33	-9.61	0.48	6 (High)
Amahara	Libokemkem	18	217,029.00	217.73	54.49	251.07	11.30	0.42	4 (Marginal)
Harari	Harer Ketema	6	210,000.00	13,186.75	34.80	165.69	3.32	0.50	5 (Moderate)
Benishangul Gumuz	Assosa	12	133,757.00	45.81	25.75	192.50	8.07	0.46	4 (Marginal)
Afar	Awash Fentale	16	37,816.00	37.16	23.18	613.06	-12.27	0.48	6 (High)
Somali	Jijiga	13	322,860.00	158.76	19.07	59.07	-0.52	0.50	5 (Moderate)
Oromiya	Omonada	22	286,176.00	176.37	16.88	58.97	8.21	0.48	5 (Moderate)
Tigray	Enderta	18	127,068.00	93.74	15.27	120.18	5.88	0.42	4 (Marginal)
Somali	Moyale	12	293,816.00	15.52	14.29	48.63	0.80	0.45	5 (Moderate)
Amahara	Chilga	20	241,627.00	84.46	14.05	58.15	14.43	0.42	4 (Marginal)
Oromiya	Gomma	22	245,836.00	284.37	13.63	55.43	12.78	0.48	4 (Marginal)
Tigray	Adwa Town	17	51,294.00	4,470.43	13.54	263.97	0.05	0.40	5 (Moderate)
Amahara	Yilmana Densa	20	234,269.00	251.81	12.80	54.62	0.75	0.45	4 (Marginal)
Somali	Kebribeyah	13	191,758.00	41.92	12.76	66.55	-0.37	0.50	5 (Moderate)
Oromiya	Dedo	20	331,918.00	224.53	12.69	38.22	13.89	0.48	4 (Marginal)

Table A7-13: Lowest benefitting woredas (investment per capita)

Region	Woreda	Frequency of Projects	Total Population (2007)	Population Density (Sq.KM) (2007)	Project Investment (Million USD)	Per Capita Project Investment (USD)	Rainfall Change (35 Years)	Temperature Change (35 Years)	Climate Change Vulnerability Index (CCI)
Oromiya	Hababo Guduru	3	52,277.00	53.90	0.01	0.11	5.36	0.47	5 (Moderate)
Gambella	Dima	6	10,083.00	1.27	0.14	13.53	17.21	0.49	4 (Marginal)
Gambella	Jore	6	11,170.00	3.36	0.15	13.53	6.60	0.48	5 (Moderate)
Oromiya	Dima	17	10,083.00	1.27	0.17	16.63	17.21	0.49	4 (Marginal)
Somali	Meyumuluka	11	13,831.00	11.65	0.19	13.73	1.64	0.50	5 (Moderate)
SNNP	BERO	18	14,384.00	23.23	0.21	14.82	20.06	0.49	4 (Marginal)
Tigray	Abiyi adi Town	15	20,410.00	852.98	0.25	12.27	7.17	0.42	4 (Marginal)
Oromiya	Sendafa Town	17	15,165.00	3,615.03	0.25	16.63	-9.82	0.48	6 (High)
Tigray	Korem Town	15	21,349.00	2,811.34	0.26	12.27	13.82	0.42	4 (Marginal)
Tigray	Shiraro Town	15	21,588.00	787.62	0.26	12.27	-5.56	0.40	5 (Moderate)
Somali	Lagahida	11	20,168.00	11.72	0.28	13.73	-4.42	0.49	5 (Moderate)
Amahara	Kemise Town	15	23,864.00	6,360.81	0.29	12.27	7.50	0.45	5 (Moderate)
SNNP	Gnangatom	18	20,136.00	5.00	0.30	14.82	14.23	0.45	4 (Marginal)
Oromiya	Shambu Town	17	18,491.00	3,602.15	0.31	16.63	8.21	0.48	5 (Moderate)
Amahara	Sehale Seyemt	15	25,507.00	22.05	0.31	12.27	3.71	0.42	4 (Marginal)
Oromiya	Halu	17	19,538.00	58.45	0.32	16.63	11.05	0.47	4 (Marginal)
Amahara	Menz Lalo Meder	16	18,638.00	48.95	0.33	17.53	-7.86	0.45	6 (High)
Tigray	Humera Town	15	27,424.00	1,718.87	0.34	12.27	3.41	0.40	4 (Marginal)

Table A7-14: Woredas worst affected by climate change

Region	Woreda	Frequency of Projects	Total Population (2007)	Population Density (Sq.KM) (2007)	Area (Sq.KM)	Project Investment (Million USD)	Per Capita Project Investment (USD)	Rainfall Change (mm) (35 Years)	Temperature Change ^{0}C (35 Years)	Climate Change Vulnerability Index (CCI)
Oromiya	Seru	17	55,337	29.81	1,856.39	0.92	16.63	-33.98	0.48	7 (Very High)
Oromiya	GOLOLCHA	17	116,316	51.74	2,248.02	1.93	16.63	-31.02	0.48	7 (Very High)
Oromiya	Amigna	17	84,699	65.40	1,295.13	1.41	16.63	-32.11	0.48	7 (Very High)
Oromiya	GINIR	20	161,978	68.14	2,377.28	6.19	38.22	-28.56	0.48	7 (Very High)
Oromiya	Bale Gasera	17	85,468	155.92	548.15	1.42	16.63	-28.09	0.48	7 (Very High)
Oromiya	SEWEYNA	18	75,975	13.51	5,622.66	4.11	54.16	-24.48	0.48	7 (Very High)
Oromiya	LEGEHIDA	17	72,005	18.21	3,953.70	1.20	16.63	-25.97	0.48	7 (Very High)
Oromiya	Daro lebu	17	229,029	51.75	4,425.83	3.81	16.63	-23.33	0.48	7 (Very High)
Oromiya	Chole	17	103,162	176.80	583.50	1.72	16.63	-24.05	0.48	6 (High)
Oromiya	GORO	17	96,207	63.92	1,505.13	1.60	16.63	-22.09	0.48	6 (High)
Oromiya	RAITU	18	38,381	413.93	92.72	2.08	54.16	-23.99	0.48	6 (High)
Oromiya	Dawe Qachen	19	35,504	12.09	2,937.56	1.24	34.91	-22.17	0.48	6 (High)
Oromiya	Sude	18	170,017	145.97	1,164.76	3.72	21.88	-20.35	0.48	6 (High)
Oromiya	Gasera	21	90,278	79.46	1,136.11	3.92	43.47	-18.74	0.48	6 (High)
Oromiya	Gololcha	17	198,121	117.01	1,693.20	3.29	16.63	-18.39	0.48	6 (High)
Amahara	Asagert	16	52,281	103.60	504.66	0.92	17.53	-22.56	0.48	6 (High)
Oromiya	Raitu	18	38,381	7.36	5,216.40	1.98	51.53	-19.28	0.48	6 (High)
Amahara	Ankober	15	83,057	124.05	669.55	1.02	12.27	-19.81	0.48	6 (High)
Amahara	Hagere Mariam	16	59,810	87.68	682.18	1.05	17.53	-19.15	0.48	6 (High)
Amahara	Angolelana Tera	16	89,533	113.37	789.75	1.57	17.53	-19.39	0.48	6 (High)

Table A7-15: Project list in Afar and Gambella

Region	Woreda	Frequency of Projects	Total Population (2007)	Population Density (Sq.KM) (2007)	Area (Sq.KM)	Project Investment (Million USD)	Per Capita Project Investment (USD)	Rainfall Change (35 Years)	Temperature Change (35 Years)	Climate Change Vulnerability Index (CCI)
Afar	Elidar	15	90,057	7.78	11,580.57	4.67	51.85	2.93	0.40	4 (Marginal)
Afar	Bedu	15	0	0.00	3,615.65	0.00		2.90	0.42	4 (Marginal)
Afar	Megale	15	30,999	20.07	1,544.31	1.61	51.85	6.89	0.42	4 (Marginal)
Afar	Kori	15	33,562	11.70	2,869.56	1.74	51.85	5.12	0.42	4 (Marginal)
Afar	Yalo	16	52,219	63.73	819.42	2.86	54.83	7.94	0.42	4 (Marginal)
Afar	Golina	15	55,737	69.64	800.42	2.89	51.85	8.54	0.42	4 (Marginal)
Afar	Teru	15	74,756	12.33	6,063.35	3.88	51.85	5.89	0.42	4 (Marginal)
Afar	Erebti	15	38,337	14.67	2,613.41	1.99	51.85	4.05	0.42	4 (Marginal)
Afar	Abala	15	44,752	37.81	1,183.58	2.32	51.85	4.37	0.42	4 (Marginal)
Afar	No Name	15	0	0.00	9,153.88	0.00		2.03	0.39	4 (Marginal)
Afar	Afdera	15	36,393	4.69	7,757.49	1.89	51.85	2.47	0.42	4 (Marginal)
Afar	Awura	15	38,401	16.58	2,315.82	3.03	78.92	6.98	0.43	4 (Marginal)
Afar	Dalol	15	92,444	38.23	2,418.27	7.30	78.92	-3.38	0.33	4 (Marginal)
Afar	Berehale	15	88,261	35.55	2,483.04	6.97	78.92	-1.34	0.38	5 (Moderate)
Afar	Dubti	16	81,735	13.83	5,910.14	443.13	5421.58	5.02	0.45	5 (Moderate)
Afar	Konaba	16	60,281	125.62	479.85	4.94	81.90	-3.08	0.41	5 (Moderate)
Afar	Adear	17	0	0.00	2,325.31	0.00		2.44	0.46	5 (Moderate)
Afar	Bure Modayitu	15	34,813	49.90	697.61	1.81	51.85	-3.30	0.46	5 (Moderate)
Afar	Hadeleala	15	39,259	26.03	1,508.35	2.04	51.85	-1.72	0.46	5 (Moderate)
Afar	Afambo	15	26,699	20.74	1,287.45	2.11	78.92	2.74	0.46	5 (Moderate)
Afar	Dalifagi	15	41,130	43.44	946.81	2.13	51.85	2.64	0.46	5 (Moderate)
Afar	Ewa	16	52,067	35.41	1,470.44	3.11	59.68	3.95	0.46	5 (Moderate)
Afar	Asayta	15	60,589	36.02	1,682.29	3.14	51.85	3.56	0.46	5 (Moderate)
Afar	Dewe	16	47,129	61.79	762.74	4.09	86.75	4.19	0.46	5 (Moderate)
Afar	Telalak	17	42,179	33.73	1,250.36	4.19	99.41	2.96	0.46	5 (Moderate)
Afar	Mile	15	103,677	35.64	2,908.67	5.38	51.85	5.27	0.46	5 (Moderate)

Region	Woreda	Frequency of Projects	Total Population (2007)	Population Density (Sq.KM) (2007)	Area (Sq.KM)	Project Investment (Million USD)	Per Capita Project Investment (USD)	Rainfall Change (35 Years)	Temperature Change (35 Years)	Climate Change Vulnerability Index (CCI)
Afar	Chefera	17	102,554	68.11	1,505.69	9.25	90.17	3.34	0.46	5 (Moderate)
Afar	Gewane	15	36,142	37.28	969.41	2.85	78.92	-3.15	0.47	5 (Moderate)
Afar	Semurobina Gelalo	15	35,351	24.46	1,444.98	1.83	51.85	-7.37	0.48	5 (Moderate)
Afar	Amibara	16	78,105	39.31	1,987.05	4.87	62.30	-10.24	0.48	6 (High)
Afar	Dulecha	15	23,019	15.71	1,464.89	1.19	51.85	-14.27	0.48	6 (High)
Afar	Argoba Liyu	15	24,532	64.26	381.76	1.27	51.85	-18.34	0.48	6 (High)
Afar	Awash Fentale	16	37,816	37.16	1,017.73	23.18	613.06	-12.27	0.48	6 (High)
Gambella	Goge	7	21,624	6.71	3,222.20	0.36	16.51	10.68	0.49	4 (Marginal)
Gambella	Mengesh	7	23,934	14.41	1,661.08	0.71	29.49	7.61	0.49	5 (Moderate)
Gambella	Godere	9	47,814	81.43	587.19	1.75	36.56	6.51	0.49	5 (Moderate)
Gambella	Abobo	8	19,818	6.33	3,128.63	0.68	34.29	6.21	0.48	5 (Moderate)
Gambella	Jore	6	11,170	3.36	3,325.08	0.15	13.53	6.60	0.48	5 (Moderate)
Gambella	Gambela zuriya	9	12,762	4.06	3,139.80	0.57	44.74	4.62	0.48	5 (Moderate)
Gambella	Wantawo	6	25,507	29.01	879.22	0.35	13.53	6.80	0.47	5 (Moderate)
Gambella	Akobo	6	29,064	13.64	2,130.13	0.39	13.53	6.40	0.48	5 (Moderate)
Gambella	Gambella Wild Life Reserve	6			477.16			3.27	0.47	5 (Moderate)
Gambella	Gambela Town	6	59,090	3793.72	15.58	0.80	13.53	2.21	0.47	5 (Moderate)
Gambella	Lare	8	38,985	56.50	690.00	1.05	26.97	1.28	0.47	5 (Moderate)
Gambella	Jikawo	7	42,359	39.22	1,080.10	1.25	29.49	3.33	0.47	5 (Moderate)
Gambella	Etang	7	43,787	20.05	2,183.79	1.29	29.49	2.95	0.47	5 (Moderate)

A7.6 Implications of Gap Analysis for Investment Planning

The portfolio gap assessment has been conducted to provide inputs for the Multi-Sectoral Investment Plan and feed into more informed program design. Based on the findings, the lessons that should be drawn and integrated into the MSIP include the following.

1. ***Climate and market information as well as relevant scientific data is a major gap both for policy making as well as smallholder farmers.*** Timely and relevant data is essential for planning purposes as well as monitor progress towards achieving targets. While there have been efforts to create a standardized data collection and transfer system, it remains weak, particularly on climate and markets. The National Metrology Agency has infrastructure as well as capacity limitations inhibiting the collection, analysis and dissemination of important climate information. While few efforts are being made to address these issues, the attempts are largely pilot programs and these to be scaled up once complete. Climate and market information are key as they address multiple climate resilient themes.
2. ***The gap assessment has found that few GTP II output areas have not directly received external (development co-operation) support. The gap areas are 1) agricultural mechanization, 2) productive export crops, coffee and spices and 3) rural water.*** These are gaps where there is potential for private sector involvement. Conventional development partner funded grants rarely fund the private sector and financial regulations in Ethiopia do not encourage private enterprises to access funds from donors.[49] On the other hand, gaps such as agricultural mechanizations are actions that both the GTP II and CRGE have prioritized as being important for resilience building and GHG reductions. Thus, a review of the policy and legal framework for rural investment and consideration of alternative financing approaches are required to trigger private sector actions. Examples of programs such as risk guarantees, which will also bring leverage to financing, could be considered in the MSIP.
3. ***The GoE has recognized the need for improving Disaster Risk Management and has invested in the sector.*** To respond to food insecurity, largely caused by climate change, the GoE has implemented several key programs. The Sustainable Development Poverty Reduction Paper (SDPRP) was one of the earlier policies devised which have recognized food security as a central element. In the last couple of years, a major programmatic shift has been taking place in Ethiopia concerning food security. This is based on the development of the Productive Safety Net Programme (PSNP). The PSNP is framed within the Food Security Programme. The stated rationale for the PSNP is to address the food needs of the chronically food insecure through multi-year predictable resources, rather than through a system dominated by emergency humanitarian aid. Crucially, this involves a shift from food to cash as the primary input. Another key milestone in GoE's response to food security is the transformation of the Disaster Risk Management and Food Security Sector (DRMFSS) to a full-blown Commission, the National Disaster Risk Management Coordination Commission (NDRMCC) now under the Ministry of Agriculture and Natural Resources with its own state minister. As stated in its strategic plan, the aim of DRMFSS is, among several others, to improve identification and assessments of disaster risk; to enhance knowledge management for DRR; and to integrate DRR in emergency response management.[50] The NDRMCCC was established with three strategic objectives: to save lives and reduce morbidity related to drought, to protect and restore livelihoods, and to prepare for and respond to other humanitarian shocks, including natural disasters, conflict and

[49] The GoE VAT (Value Added Tax) regulation doesn't distinguish income from sales and grant and thus private sector that access grant are also subjected to VAT as the tax authority also view grant as income.

[50] The Disaster Risk Management Strategic Programme and Investment Framework (DRM SPIF) - Disaster Risk Management and Food Security Sector Ministry of Agriculture.

displacement. Ethiopia's food security strategy has indicated that the government's plan to address the causes and effects of food insecurity in Ethiopia. The strategy has indicated two major approaches to achieve the target and they are enhancing agricultural productivity and asset building through PSNP. ***However, one of the key findings of the gap assessment is that there is currently inadequate investment in disaster risk reductions, both financially and thematically.*** One of the bottlenecks identified here is that resilience and resilience building have yet to be clearly articulated in program level interventions. Furthermore, investment in climate information, which is essential in disaster risk management, has been limited to pilot interventions only. Based on outcome of pilots and capacity building at NMA and other institutions, use of climate information needs to be scaled up.

4. ***Deficiencies in cross-sectoral coordination: although this is not something addressed directly by the gap analysis, in the process of data collection many donors have indicated that limited cross-sectoral coordination is a challenge.*** This difficulty could be a challenge and burden in designing and implementing multi-sectoral programs. The MSIP is expected to be implemented by four key ministries that have their own mandates, targets and goals. Though donors have indicated that they have a preference to work sectorally or coordinate their work with a single Ministry, they also understand the benefits of a multi-sectoral approach. Some even have emphasized that under the current climate change trend, unless programs have multiple components, their likelihood of transformational outcomes is limited. Whilst the advantages of multi-sectoral program approaches are acknowledged, the GoE, and particularly the CRGE Facility, which will be tasked with the design and oversight of MSIP, needs to design and implement a strong, effective co-ordination mechanism. Without this, the natural forces of sector ministry budgeting, prioritizing and implementation will hinder the success of a multi-sector approach.
5. ***Comparing the gap analysis to prioritized activity packages identified during MSIP preparation, it was found that about 85% of the activities fill in key financial or thematic gaps.*** The identified activities are either new activities that will build resilience of households and communities, or scalable activities from on-going pilot initiatives. For example, one of the recommended activities is crop and livestock insurance, which is currently being piloted at small-scale through programs such as GEF UNDP and USAID Index insurance program. To help highlight the degree to which activity packages meet identified gaps each one has been categorized into four groups, as follows.

Category	Color Code
1. Activity already being implemented (excluded from further listing)	
2. Activity covering significant part of the country and/or having sufficient budget	
3. Activity needing to be geographically scaled up and/or allocated increased funds	
4. Activity that is only in pilot stage or not yet being addressed	

The categorization is summarized in Table A7-16 below.

Table A7-16: Categorization of Activity Packages

Primary Economic Sector and Key Theme (From GOE Climate Resilience Strategies)	Activity Group[51] (from GOE Climate Resilience Strategies, GTP-2)	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Color code
Sector: Agriculture, Forest Theme: Information and decision support	Decision support systems	Market information	
Sector: Forest Theme: Information and decision support	Enhanced extension services	Forest extension	
Sector: Forest, water, agriculture Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Forest management	Forest development (expansion): smallholders and communities	
Sector: Forest, water, agriculture Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Forest management	Forest utilization	
Sector: Agriculture, water and Forest Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Crop management and intensification, forest management, water resources management, livestock management	Biodiversity conservation practices	
Sector: Agriculture, water and Forest Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Crop management and intensification, forest management, water resources management, livestock management	Develop payments for environmental services (PES)	
Sector: All Theme: Disaster risk reduction	Insurance	Livestock insurance	
Sector: All Theme: Disaster risk reduction	Insurance	Crop insurance	
Sector: All Theme: Disaster risk reduction	Insurance	Sovereign drought risk insurance	
Sector: Agriculture Theme:	Crop management and intensification	Pre-harvest plant protection	
Sector: Agriculture Theme:		Marketing	
Sector: Agriculture, forestry Theme:		Tourism	
Sector: Energy Theme:	Energy access	Micro-hydropower	
Sector: Agriculture, forest Theme:	Crop management and intensification	Value chain development	

[51] The term "Activity Package" has been taken from an early draft of the MSIP document. The Activity Packages that will be developed based on the findings of the PRGA may differ from these.

Primary Economic Sector and Key Theme (From GOE Climate Resilience Strategies)	Activity Group[51] (from GOE Climate Resilience Strategies, GTP-2)	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Color code
Sector: Livestock Theme:	Livestock management	Transboundary disease monitoring for livestock	
Sector: Agriculture Theme:	Crop management and intensification	Nutrition promotion and crop selection	
Sector: Agriculture Theme:	Crop management and intensification	Home gardens	
Sector: Forest Theme:	Disaster risk management planning	Wildfire management	
Sector: Agriculture, forest Theme:	Forest management	Invasive plant management	
Sector: Forest Theme:	Forest management	NTFP development and marketing	
Sector: Forest Theme:	Forest management	Wood processing industry development	
Sector: Forest Theme:	Forest management	Urban greening	
Sector: Forest Theme:	Forest management	Forest financing scheme (Forest Fund)	
Sector: Energy Theme:	Energy access	Mini-grid electricity	
Sector: Energy Theme:	Energy access	Micro and pico grid	
Sector: Energy Theme:	Energy access	Meso-scale energy	
Sector: Energy Theme:	Energy access	Energy efficiency	
Sector: Energy Theme:	R&D	R&D for energy	
Sector: Water Theme:	Water management	Water pricing	
Sector: Energy Theme:	Energy access	Energy tariff	
Sector: Livestock Theme:	Livestock management	Livestock value chain and market development	
Sector: Livestock Theme:	Livestock management	Livestock related infrastructure development	
Sector: Livestock Theme:	Livestock management	Livestock payment for environmental services	
Sector: Livestock Theme:	Livestock management	Enhanced livestock diversification / biodiversity	
Sector: Water, energy, agriculture, forest, transport Theme: Information and decision support	Decision support systems	Meteorological services, AgroMet and HydroMet services	
Sector: Forest Theme: Information and decision support	R&D	Forest R&D	

Primary Economic Sector and Key Theme (From GOE Climate Resilience Strategies)	Activity Group[51] (from GOE Climate Resilience Strategies, GTP-2)	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Color code
Sector: Livestock Theme: Information and decision support	R&D	Livestock R&D	
Sector: Water Theme: Information and decision support	R&D	Water resources R&D	
Sector: Agriculture, Forest Theme: Value chain and market development	Roads	Rural infrastructure	
Sector: Agriculture Theme: Sustainable agriculture and land management	Livestock management	Improved livestock management practices	
Sector: Agriculture Theme: Sustainable agriculture and land management, sustainable forest management, watershed management	Crop management and intensification, livestock management, forest management, water resources management	Planned rangeland and grazing management	
Sector: Agriculture, Forest Theme: Sustainable agriculture and land management, and land use	Land tenure and access	Land holding certification	
Sector: Agriculture, Forest Theme: Sustainable agriculture and land management, and land use	Land tenure and access	Individual land tenure and access	
Sector: Energy Theme: Sustainable energy, forest, and land use	Energy access	Off-grid household energy	
Sector: Forest, water, agriculture Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Water management, forest management, crop management and intensification, livestock management	Basin/Sub-basin Resources Planning and Management	
Sector: Forest, water, agriculture Theme: Sustainable agriculture and land management, land use, natural resources conservation and management	Forest management	Forest protection (conservation)	
Sector: All Theme: Disaster risk reduction	Disaster risk management planning	Improved risk profiling and risk screening	
Sector: All Theme: Disaster risk reduction	Structural protection	Strengthening key infrastructure against flood risks	
Sector: Agriculture, forest Theme:	Crop management and intensification	Non-farm livelihoods	
Sector: Agriculture, forestry Theme:	Crop management and intensification	Bamboo agro-forestry	
Sector: Theme:	Water management, crop management, livestock management	Riverbank stabilization	

Primary Economic Sector and Key Theme (From GOE Climate Resilience Strategies)	Activity Group[51] (from GOE Climate Resilience Strategies, GTP-2)	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Color code
Sector: Forest Theme:	Forest management	Small and large scale plantation establishment	
Sector: All Theme:	Disaster risk management planning	Climate change data accessible for decision makers	
Sector: Energy Theme:	Energy access	Solar and wind pumps	
Sector: Agriculture Theme: Crop and water management on-farm	Irrigation	Small-scale irrigation	
Sector: Agriculture Theme: Sustainable agriculture and land management	Land and water management	SWC structures/measures (landscape restoration and prevention of land degradation)	
Sector: Agriculture Theme: Sustainable agriculture and land management	Fisheries and aquaculture development	Improved fisheries practices and aquaculture development	
Sector: Agriculture Theme: Sustainable agriculture and land management	Livestock management	Apiculture and sericulture development	
Sector: Agriculture Theme: Sustainable agriculture and land management, and land use	Crop management and intensification, livestock management, market development	Post-harvest systems and practices	
Sector: Agriculture, Forest Theme: Sustainable agriculture and land management, and land use	Land tenure and access	Communal land tenure and access (livestock, rangeland)	
Sector: Forest, livestock Theme:	Forest management	Silvo-pastoral production systems (i.e., multi-purpose trees on rangeland)	
Sector: Agriculture, forest, livestock Theme:	Forest management	Agro-silvo-pastoral production systems (i.e., multi-purpose trees on integrated cropland and rangeland)	

Annex 8: SUMMARY OF PRIORITIZED ACTIVITY PACKAGES

A8.1 List of Priority Activity Packages

Table A8-1 below is excerpted from the MSIP Investment Prioritization Framework Tool. It lists the 50 priority activity packages identified through the prioritization analysis described in Part 2, Section VI of the MSIP, and 10 additional priority activity packages identified through the subsequent stakeholder feedback process.

Table A8-1: Prioritised activity packages

Activity Number	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Example activities (e.g., individually costed items in a project proposal)
1	Meteorological services, AgroMet and HydroMet services	* Modern network of hydro-meteorological and groundwater monitoring stations, associated hardware, software, and information systems, special studies * Establishment of spatial data standards, preparation of baseline sand common mapping platforms across collaborating sectors and Ethiopian Mapping Agency. * Identification and use of appropriate spatial data for modelling and monitoring climate effects, potential investment effects, and investment outcomes. * Facilitation of the use of the system for pressing management and development problems, and connect with extension services
2	Market information	Pricing and exchange system and access
3	Agricultural R&D	Carry out research on resilience related issues and connect with extension services (e.g. heat resistant and drought tolerant crop varieties, changing planting dates, crop diversification.)
4	Forest R&D	Carry out research on resilience related issues and connect with extension services (e.g. heat and drought tolerant varieties, changed silvicultural practice)
5	Livestock R&D	* Carry out research on resilience related issues and connect with extension services * Genetic improvement * Feed, nutrition, rangeland and water * Health * Extension/management
6	Water resources R&D	Carry out research on resilience related issues and connect with extension services (e.g. irrigation potential and water efficient systems; strengthening data systems and improving water planning with NMA)
7	Forest extension	DA outreach on topics such as PFM, land use planning and silvicultural management

Activity Number	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Example activities (e.g., individually costed items in a project proposal)
8	Agriculture (crop and livestock) extension	DA outreach on topics such as CSA, build and staff FTCs, SWC structures, land use planning, micro-watershed planning
9	Energy extension	DA outreach on topics such as cookstoves, biogas, solar home systems
10	Medium and large-scale irrigation	Reservoirs, dams, diversions, channels, water user associations, water-efficient systems
11	Small-scale irrigation	Channels, diversions, drip systems, wells, treadle pumps, pond construction, rainwater harvesting for irrigation, water user associations
13	SWC structures/measures (landscape restoration and prevention of land degradation)	* Terraces and bunds * Gully rehabilitation *Low tillage where applicable * Afforestation/Reforestation
14	Soil fertility management	* Efficient use of fertilizer, organics mixing, deep placement of fertilizer, microdosing. * Composting, * Crop residue mulching * Green manuring of legume crops, double cropping of cereals * Livestock manure application *Low tillage * Inorganic fertilizer input supply * Pesticides input supply
16	Improved livestock management practices	* Improved feed management, including storing animal feeds and making better use of feed, growing grass varieties suited to the agro-ecological zone, fodder conservation and animal fattening. * Destocking, involving the reduction of the number of livestock, e.g. by selling animals when droughts are projected, to avoid distress sales of livestock. * Switching to livestock species and breeds better adapted to water scarcity and resistant to disease. * Improved livestock health, including animal health posts
17	Improved fisheries practices and aquaculture development	* Estimate annual sustainable fish production levels on all water bodies * Develop and implement participatory fisheries resource management and control system * Protect wetland, lake shore and water shade catchment * Capacity building (institutional, organizational and HR resources development – to improve readiness)
18	Apiculture and sericulture development	* Beekeeping in integrated watershed conservation areas * Establishment of small scale queen rearing and beekeeping training centers

Activity Number	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Example activities (e.g., individually costed items in a project proposal)
		* Establishment of Mulberry plant multiplication nursery sites that will engage unemployed youth and women to generate sustainable income * Capacity building and awareness creation program
19	Planned rangeland and grazing management	* Rangeland planning * Rangeland development including boreholes, stocking, fodder and pens * Area closures (livestock exclusion zones) plus assisted natural regeneration and pens/rope * Rotational grazing * Grazing corridors, * Setting paddocks aside in case of drought
24	Off-grid household energy	* Biogas (community or household) * Improved cook stoves * Solar power lighting * Woodlots (link to forest/ag)
25	Land use planning	* Land use planning and enforcement at woreda and kebele levels
27	Basin/Sub-basin Resources Planning and Management	* Knowledge base, analytical capacity, and structured stakeholder consultation to develop and implement "shared vision" plans and management instruments to optimize social, environmental, and economic opportunities in the sub-basin. * Supporting existing basin and sub-basin organizations in particular to strengthen their regulatory and management capacities. * Establishing new basin and sub-basin organizations where critical.
28	Forest development (expansion): smallholders and communities	Afforestation/reforestation, area closures plus assisted natural regeneration, public-private commercial plantations, farmer and communal woodlots, and agroforestry
33	Develop payments for environmental services (PES)	* Test modalities in key areas with interested buyers and sellers of environmental services (such as water provision and quality, or biodiversity protection) * Establishing appropriate legal frameworks (policy, laws and benefit sharing arrangement) for implementation of PES in Ethiopia * Developing required institutional setup (federal and regional level) including skilled manpower and budget for operationalization of PES
34	Capacity building for the collection and analysis of early warning data (e.g. LIAS data, bottom up data) and Creation of data storage and sharing platform	* Strengthening federal, regional and woreda-level capacity for collecting and analysing early warning data, including spatial data for prediction and effects monitoring * Establishment of a platform to consolidate different sources of early warning data, enabling the triangulation

Activity Number	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Example activities (e.g., individually costed items in a project proposal)
		of different data sources and facilitating access to early warning data
36	Livestock insurance	Development of a livestock drought risk insurance program for pastoral areas of Ethiopia building on existing pilots
40	Non-farm livelihoods	Promotion of handicrafts, local service businesses and other income generating activities
41	Pre-harvest plant protection	Crop switching; multi-cropping and permaculture techniques; Pest and disease management,
42	Mechanization / Small-scale mechanization	Not specified
45	Micro-hydropower	Not specified
47	Value chain development	Not specified
48	Bamboo agro-forestry	Not specified
49	Silvo-pastoral production systems (i.e., multi-purpose trees on rangeland)	Not specified
52	Transboundary disease monitoring for livestock	Not specified
54	Home gardens	Not specified
57	Tree nursery investment	Not specified
61	Urban greening	Not specified
63	Mini-grid electricity	Not specified
64	Micro and pico grid	Not specified
65	Meso-scale energy	Not specified
66	Biofuel	Not specified
67	Climate change data accessible for decision makers	Creation of databases, websites and presentation materials to help decision makers Provision of spatial products (maps and related analysis) for coordination of investments within landscapes
68	Energy efficiency	Energy efficient wood & charcoal stoves, efficient charcoal kilns, efficient brick kilns
69	R&D for energy	Not specified
70	Solar and wind pumps	Groundwater and wind resource mapping; deployment of surface and borehole pumps
71	Water pricing	Not specified
72	Energy tariff	Not specified
73	Livestock value chain and market development	Not specified
74	Livestock related infrastructure development	Not specified
75	Livestock payment for environmental services	Not specified

Activity Number	Activity Package (sub-component of a project proposal) (focus of prioritization exercise)	Example activities (e.g., individually costed items in a project proposal)
76	Enhanced livestock diversification / biodiversity	Not specified
77	Capacity development (institutional, organizational and HR resources development – to improve readiness)	Not specified
78 (new)	De-risking commercial lending for pro-poor and resilient agricultural investment	Improved credit scoring data; loan guarantees; establishment of microcredit cooperatives
80 (new)	Assisted natural regeneration (ANR)	Not specified
81 (new)	Development of out-grower schemes	Not specified
82 (new)	Medium and large-scale commercial forest development	Not specified
83 (new)	Design and implementation of Forest Fund	Not specified
84 (new)	Support to link forest sector with micro enterprises	Not specified
85 (new)	Improved on-farm and rangeland livestock practices to improve productivity for rangeland and mixed farming agro-ecologies	Not specified
86 (new)	Manure management to support biogas production	Not specified
87 (new)	Improved coordination between administrative, humanitarian and insurance-based disaster response systems	Not specified
88 (new)	Long-term risks considered in non-food responses to contribute to reduce vulnerability (e.g. infrastructure is "built back better" and non-food response funds are used to incentivize households to adopt more resilient livelihood options)	Not specified

A7.2 Activity Package Detail

Identifier: Number & Title of Activity Package	**Activity Package 1: Meteorological services, Agro-Met and Hydro-Met services**
Geographic area: Regions, woredas, kebeles	1.Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3Woredas) 4. Amhara (5 Woredas) 5. Gambela (2 Woredas)

	6. Benishangul Gumuz (2 Woredas) 7. Sumali (2 Woredas) 8. Afar (2 Woredas) 9. Harerri (1 Woreda) 10. Dire Dawa (1 Woreda)
Links with ongoing projects	ATA, DRMFS, Oxfam ACCRA local level agro-met information delivering pilot project in Tigray etc.
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to manage the risks of climate change by providing agro-met information. The programme is targeted in climate sensitive and vulnerable areas of Ethiopia.
Rationale for investment	The activity package is not yet being done widely in most of the woredas to provide up-to-date agro-met information to the farmers to reduce risk of climate change.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 2: Market information**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	ATA (agriculture commercialization programme), Forest product marketing enterprise
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to manage the risks of market failure by providing up-to-date market information for farmers, and create market information linkages between the forest producers and consumers.
Rationale for investment	The activity package is not yet being implemented widely.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 3: Agricultural R&D**
Geographic area: Regions, woredas, kebeles	1.Oromia (4 research centres) 2. SNNP (3 research centres)

	3. Tigray (2 research centres) 4. Amhara (3 research centres)
Links with ongoing projects	ATA research and development program
Relevant MSIP Activity Groups	1, 3
Development objectives	The objective of the activity package is to improve adaptive capacity of communities through research.
Rationale for investment	The activity package is not yet being implemented widely.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 4: Forest R&D**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Forest research and development regional offices in the country
Relevant MSIP Activity Groups	2, 4
Development objectives	Enhance forest productivity, in part by identifying climate resilient tree species and forest management techniques as the habitat for existing species shifts
Rationale for investment	Low productivity end uses and unsustainably high demand for forest products, coupled with insufficient research into alternatives to threatened species.
Delivery timeframe	Short – medium

Identifier: Number & Title of Activity Package	**Activity Package 5: Livestock R&D**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	AGP
Relevant MSIP Activity Groups	1, 3
Development objectives	The objective of the activity package is to enhance research into climate resilient livestock production and management techniques, both for smallholder livestock users, and commercial herd owners.
Rationale for investment	Livestock production in Ethiopia is relatively inefficient and not optimized for changing climatic conditions. Existing R&D programs are limited in

	scope and insufficient investment has been devoted to sharing the results with local people.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 6: Water Resources R&D**
Geographic area: Regions, woredas, kebeles	All Regions
Links with ongoing projects	Water and Sanitation Programme
Relevant MSIP Activity Groups	1, 3, 4, 5
Development objectives	To enhance and promote efficient, equitable and optimum utilization of the available Water Resources of Ethiopia for significant socio-economic development on sustainable basis |
Rationale for investment	Access to water supply and sanitation in Ethiopia is amongst the lowest in Sub-Saharan Africa. At the same time, research and development in the water sector is minimal and fragmented with little or no impact on the development of the sector that the investment will create a positive impact for the development of the water sector
Delivery timeframe	Five-year plan with annual action plan
Evidence	Project documents in the Ministry (Energy+, Fast track), CRGE implementation manual, MoWIE website

Identifier: Number & Title of Activity Package	**Activity Package 7: Forest extension**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Agricultural and livestock extension works
Relevant MSIP Activity Groups	Enhance the forest extension service, especially for reaching and working with women and marginalized people.
Development objectives	Enhance the development of small scale plantations (family forests), reducing the added pressure on forests caused by climate change.
Rationale for investment	Current forest extension activities tend to focus on male household members and influential community members in the expectation that this information will eventually reach the rest of the household or community. Further investment is required to ensure that extension activities are able to reach all members of the community, especially women and marginalized people.
Delivery timeframe	Medium – long term

Identifier: Number & Title of Activity Package	**Activity Package 8: Agriculture (crop and livestock) extension**
Geographic area: Regions, woredas, kebeles	1.Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3Woredas) 4. Amhara (5 Woredas) 5. Gambela (2 Woredas) 6. Benishangul Gumuz (2 Woredas) 7. Sumali (2 Woredas) 8. Afar (2 Woredas) 9. Harerri (1 Woreda) 10. Dire Dawa (1 Woreda)
Links with ongoing projects	Agricultural Growth Program (AGP), Sustainable Land Management Program (SLMP), Productive Safety Net Program (PSNP) etc.
Relevant MSIP Activity Groups	1, 3
Development objectives	The objective of the activity package is to manage the risks from recurring droughts, floods, landslides and erosion – both from current risks and under future climate change -through an integrated water, agriculture land and natural resource management approach. This is complemented with a climate resilient and livelihoods diversification programme. The programme is targeted in climate sensitive and vulnerable areas of Ethiopia.
Rationale for investment	Crop and livestock CSA activates have been tested in 35 agriculture sector CRGE-FTI pilot woredas and encouraging results were registered. The activity package is not yet being done widely in most of the woredas, if there are some activities in the normal government plan, they are not enough to solve the existing vulnerability, thus tested CSA activity packages by FTI project needs to scale-up.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 9: Energy Extension**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	SREP
Relevant MSIP Activity Groups	1, 2, 3, 4
Development objectives	The objective of the activity package is to improve DA outreach to energy users, so that they are better able to employ energy as a tool for

	enhanced climate resilience. This activity package includes ensuring that extension agents are better able to understand the differing ways that women and men use energy on the farm and in households and can adjust their messages to account for those differences.
Rationale for investment	While there are widespread energy promotion efforts involving improved cookstoves, these activities do not yet cover other important energy technologies. In addition, further investment is required to ensure that energy extension activities are gender sensitive.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 10: Medium and Large Scale Irrigation**
Geographic area: Regions, woredas, kebeles	All Regions
Links with ongoing projects	Different Irrigation Projects in Ethiopia
Relevant MSIP Activity Groups	1, 3
Development objectives	To contribute towards poverty reduction among smallholders through improvement in food security in the country, consistent with the government's policies of sustainable environment and agricultural development and improve agricultural production in a sustainable manner.
Rationale for investment	Ethiopia has 12 river basins with an annual runoff volume of 122 billion m3 of water and an estimated 2.6 - 6.5 billion m3 of ground water potential, which makes an average of 1575 m3 of physically available water per person per year, a relatively large volume. However, due to lack of water storage infrastructure and large spatial and temporal variations in rainfall, there is not enough water for most farmers
Delivery timeframe	Five-year plan with annual action plan
Evidence	Project documents in the Ministry (Energy+, Fast truck), CRGE implementation manual, MoWIE website

Identifier: Number & Title of Activity Package	**Activity Packcage 11: Small scale irrigation**
Geographic area: Regions, woredas, kebeles	1.Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigra (3Woredas) 4. Amhara (5 Woredas) 5. Gambela (2 Woredas) 6. Benishangul Gumuz (2 Woredas) 7. Sumali (2 Woredas)

	8. Afar (2 Woredas) 9. Harerri (1 Woreda) 10. Dire Dawa (1 Woreda)
Links with ongoing projects	ATA research and development program
Relevant MSIP Activity Groups	1, 3, 5
Development objectives	The objective of the activity package is to improve adaptive capacity of communities through irrigation.
Rationale for investment	The activity package is not yet being done widely to produce by using irrigation in the changing climate to reduce risk of drought and crop feller due to climate change impacts.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 13: Physical and biological soil and water conservation SWC (landscape restoration and prevention of land degradation)**
Geographic area: Regions, woredas, kebeles	1.Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3Woredas) 4. Amhara (5 Woredas) 5. Gambela (2 Woredas) 6. Benishangul Gumuz (2 Woredas) 7. Sumali (2 Woredas) 8. Afar (2 Woredas) 9. Harerri (1 Woreda) 10. Dire Dawa (1 Woreda)
Links with ongoing projects	ATA research and development program
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to improve adaptive capacity of communities through enhancing of land productivity.
Rationale for investment	The activity package must be implemented more widely than is currently the case to improve adaptive capacity of communities through enhancing of land productivity.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 14: Soil Fertility Management**
Geographic area: Regions, woredas, kebeles	1.Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3Woredas) 4. Amhara (5 Woredas) 5. Gambela (2 Woredas) 6. Benishangul Gumuz (2 Woredas) 7. Sumali (2 Woredas) 8. Afar (2 Woredas) 9. Harerri (1 Woreda) 10. Dire Dawa (1 Woreda)
Links with ongoing projects	ATA research and development program
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to improve adaptive capacity of communities through enhancing of land productivity.
Rationale for investment	The activity package must be implemented more widely than at present to improve adaptive capacity of communities through enhancing land productivity.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 16: Livestock Management**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	AGP, SLDP, etc
Relevant MSIP Activity Groups	1, 3
Development objectives	The objective of the activity package is to ensure that livestock management practices on farms and rangeland are climate resilient across Ethiopia, Africa's largest livestock producer. Activities include livestock intensification and productivity improvements, destocking and selling animals when droughts are projected, and switching to hardier breeds.
Rationale for investment	Livestock are particularly vulnerable to the higher temperatures and more variable rainfall patterns expected with climate change. While livestock improvement programs are currently underway in Ethiopia, the size of

	the country and pending threat of climate related weather impacts means these efforts must be scaled up as a matter of urgency.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 17: Fisheries and Aquaculture**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	
Relevant MSIP Activity Groups	1, 2, 3
Development objectives	The objective of the activity package is to enhance resilience by diversifying the incomes and food supply of rural families The activity package will encourage the establishment of fisheries and aquaculture in reservoirs other water bodies. In addition, these activities will provide a strong incentive for local stakeholders to protect wetlands, lake shore and watershed catchment areas.
Rationale for investment	Ethiopia has numerous lakes and streams, and increasing hydropower and irrigation dams leads to an increasing number of reservoirs. Current efforts to encourage aquaculture are not sufficient to address the need for these practices in the country's water bodies.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 18: Apiculture and Sericulture**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Agribusiness Market Development Project, Young Entrepreneurs in Honey and Silk Farming
Relevant MSIP Activity Groups	2, 3
Development objectives	The objective of the activity package is to encourage beekeeping and silk production in and around forested areas. These activities will encourage livelihoods that do not depend on cutting trees and help to diversify incomes in areas vulnerable to climate change impacts.
Rationale for investment	Despite its long history, beekeeping remains largely untapped as a formal industry in Ethiopia. More than 90 percent of Ethiopia's honey is still produced using traditional hives. Many farmers lack modern technologies, operate on a small scale, and are unaware of the quality of their product and potential markets outside of their immediate communities.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 19: Planned Rangeland and Grazing Management**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	AGP, SLMP
Relevant MSIP Activity Groups	1, 2, 3
Development objectives	The objective of the activity package is to reduce land and forest degradation by integrating rangeland and grazing management activities into agriculture, forest and watershed planning and management efforts. This activity will reduce the vulnerability of ecosystems and the people who live in them to climate change related weather impacts.
Rationale for investment	The activity package is not yet being implemented widely. Resource management activities tend to be undertaken separately by each sector ministry, with few fully integrated land use planning efforts underway to improve grazing practices.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 25: Land Use Planning**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	ATA research and development program, SLMP-2, USAID Land Administration Nurturing Development (LAND)
Relevant MSIP Activity Groups	Activity 1, 2, 3, 5
Development objectives	The objective of the activity package is to improve land use planning capacity of communities to enhancing of land productivity.
Rationale for investment	No “Master Land Use Plan”. The activity package is not done widely enough to improve land use planning capacity of communities to enhancing of land productivity.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 27: Basin/Sub-basin Resource Planning and Management**
Geographic area: Regions, woredas, kebeles	1.Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3Woredas)

	4. Amhara (5 Woredas) 5. Gambela (2 Woredas) 6. Benishangul Gumuz (2 Woredas) 7. Sumali (2 Woredas) 8. Afar (2 Woredas) 9. Harerri (1 Woreda) 10. Dire Dawa (1 Woreda)
Links with ongoing projects	ATA research and development program, Sustainable Land Management Program (SLMP)
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to improve adaptive capacity of communities through ecosystem conservation and enhancing land productivity.
Rationale for investment	Forests serve as water towers for many rivers and water bodies. The activity package is not done widely enough to improve adaptive capacity of communities through enhancing of land productivity.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 28: Forest management**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Private forest, Fast Track and Participatory Forest Management, State forest developments; Ecosystem, wildlife and biodiversity conservation; Forest industry, commercial forest, under forest economy
Relevant MSIP Activity Groups	2
Development objectives	To enhance and develop ecosystem and economy resilience to climate change; enhance the economic contribution of the forest sector to the national economy (GDP)
Rationale for investment	Forests are experiencing severe ecosystem degradation and less adaptability to climate change
Delivery timeframe	Medium – long term

Identifier: Number & Title of Activity Package	**Activity Packages 29, 33, 75: Develop payment for ecosystem services (PES) programs**
Geographic area: Regions, woredas, kebeles	All regions

Links with ongoing projects	Forest royalty fee revenues are collected by some regions, SLMP, AGP
Relevant MSIP Activity Groups	1, 2, 3
Development objectives	Provide financial incentives in the agriculture, livestock and forest sectors to enhance the provision of environmental services like soil conservation and forest protection, that will reduce vulnerability to climate shocks.
Rationale for investment	Current efforts to develop PES programs are limited in scale and geographic focus.
Delivery timeframe	Short – medium term

Identifier: Number & Title of Activity Package	**Activity Package 34: Capacity Building for the Collection and Analysis of Early Warning Data**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	PSNP
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to improve Ethiopia's long term weather forecasting capacity and strengthen federal, regional and woreda-level capacity for collecting, analysing and communicating early warning information, and using spatial data to inform risk assessment and monitoring.
Rationale for investment	The activity package is not yet being implemented widely. Ethiopia is experiencing a shortage of modern weather and hydrological monitoring stations, and has growing but still limited capacity to analysis and communicate the resulting data to decision makers, farmers, livestock owners and forest users.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 36: Livestock, Forest and Crop Insurance**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	SLMP, PSNP
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to increase resilience to climate related weather shocks by derisking the provision of private drought and flood insurance. This may be achieved through many measures, including improving the availability of information to insurers, or providing partial guarantees.

Rationale for investment	Pilot activities have been tested, but the activity package is not yet being implemented widely.
Delivery timeframe	Short-to medium-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 40: Non-farm livelihoods**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Not indicated
Relevant MSIP Activity Groups	1, 2, 3
Development objectives	Develop farmers' economically resilient livelihoods by encouraging family based off-farm / forest business
Rationale for investment	Off farm labor provides alternatives in the event of weather shocks, but over 80% of the population remains dependent on the agricultural sector for their livelihoods.
Delivery timeframe	Medium term

Identifier: Number & Title of Activity Package	**Activity Package 41: Pre-and Post-harvest Protection**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	AGP
Relevant MSIP Activity Groups	1
Development objectives	The objective of the activity package is to intensify crop production by reducing pre- and post-harvest crop losses. This will reduce incentives to expand production into marginal or climate vulnerable areas.
Rationale for investment	This activity has been implemented in a limited number of woredas, but further investment is required to roll it out across the country.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 42: Mechanization**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	AGP
Relevant MSIP Activity Groups	1, 2, 3

Development objectives	The objective of the activity package is to facilitate the adoption of mechanized agriculture and forestry production methods. This will encourage a shift from the use of livestock for animal traction and increase productivity – thereby increasing incomes and improving people's ability to cope with climate shocks.
Rationale for investment	The activity package is not yet being implemented widely.
Delivery timeframe	Short- to medium-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Packages 47 and 73: Value chain development / efficiency**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Forest industry promotion, AGP, SLMP
Relevant MSIP Activity Groups	1, 2, 3
Development objectives	Enhance economic value of forest, agriculture and livestock production by promoting supplier, producer and buyer linkages
Rationale for investment	Incomplete and ineffective value chain systems in many regions reduces returns to investment and encourages unsustainable extensive production practices.
Delivery timeframe	Medium-Long term

Identifier: Number & Title of Activity Package	**Activity Package: Bamboo Agroforestry**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Eastern Bamboo Project
Relevant MSIP Activity Groups	1, 2
Development objectives	The objective of the activity package is to encourage the sustainable production and use of bamboo products in Ethiopia. The activity addresses technical input requirements in present bamboo product production systems to increase quality and value, by the development of new products with large sustainable markets, by providing increased access to markets for producers and by enabling more equitable sharing of benefits amongst stakeholders.
Rationale for investment	The activity package is not yet being implemented widely.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 49: Silvo-Pastoral Production**

Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	This is not yet being implemented widely
Relevant MSIP Activity Groups	
Development objectives	The objective of the activity package is to encourage the establishment of multipurpose trees on rangeland and farmland.
Rationale for investment	The activity package is not yet being implemented widely. This measure can help to prevent soil degradation and provide an additional source of income or food supply for local people as well as forage resource for browsing livestock. It can be linked to zero-grazing and livestock fattening activities to improve multiple use productivity of land.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 52: Transboundary Disease Monitoring**
Geographic area: Regions, woredas, kebeles	Woredas adjacent to border areas
Links with ongoing projects	This is not yet being implemented widely
Relevant MSIP Activity Groups	3
Development objectives	The objective of the activity package is to increase the resilience of Ethiopia's livestock population by monitoring and preventing the spread of disease by livestock movements across the country's border Increased disease resilience will help Ethiopia's livestock population better cope with climate-related weather shocks.
Rationale for investment	The activity package is not yet being implemented widely but ranges of pests and diseases related to changes are changing with trends in rainfall & temperature. Combined with livestock stresses, the introduction of pests and diseases needs to be monitored so that mitigating action can be implemented rapidly.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 54: Home Gardens**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	AGP, PSNP
Relevant MSIP Activity Groups	1, 5
Development objectives	The objective of the activity package is to enhance climate resilience by encouraging the establishment of home gardens. This measure can help

	diversify household incomes, strengthen food security and improve gender equality as a result of its focus on an activity traditionally undertaken by women.
Rationale for investment	The activity focuses on "soft" adaptation measures rather than technology driven approaches. However, its multiple benefits suggest the potential for a transformative climate resilience impact.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 57: Tree nursery investment**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Private, community and state tree nursery activities
Relevant MSIP Activity Groups	2
Development objectives	To promote forest development with tree plantations
Rationale for investment	Tree seedling production is limited and unable to cope with the rate of forest degradation. Climate change is expected to further stress the forest sector.
Delivery timeframe	Short-medium term

Identifier: Number & Title of Activity Package	**Activity Package 61: Forest (urban greenery)**
Geographic area: Regions, woredas, kebeles	All urban areas
Links with ongoing projects	Urban food security
Relevant MSIP Activity Groups	2
Development objectives	Deliver ecosystem services to urban areas, reduce impact of urban "heat island" effect that will be intensified by higher expected temperatures under climate change.
Rationale for investment	An integrated and planned approach is required to fully implement urban greenery activities. This approach is currently lacking.
Delivery timeframe	Medium – long term

Identifier: Number & Title of Activity Package	**Activity Packages 24, 45, 63, 64, 65, 66: Off-grid electrification, micro-hydropower, mini-grids, micro-grids, meso-scale electricity, and biofuels**
Geographic area: Regions, woredas, kebeles	All Regions
Links with ongoing projects	Energy+ Program, SREP

Relevant MSIP Activity Groups	4
Development objectives	Increase clean energy access in Ethiopia's rural communities through the creation of mini-grids powered (mostly) on renewable energy. This aims to accelerate the transition from the use of fossil fuels (such as diesel and kerosene), and fuelwood to sustainable energy sources, while improving livelihoods.
Rationale for investment	In line with the national energy policy, the investment enhances electrification access on a least cost basis for people denied access to electricity. Improved energy access increases on-farm productivity and strengthens resilience against climate shocks.
Delivery timeframe	Five-year plan with annual action plan
Evidence	Project documents in the Ministry (Energy+, Fast truck), CRGE implementation manual, **'Off-grid Rural electrification in Ethiopia' NAMA developed within the Mitigation Momentum project**

Identifier: Number & Title of Activity Package	**Activity Package 67: Climate change information accessible to decision makers**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	ATA, DRMFS, PSNP, Oxfam ACCRA local level agro-met information delivering pilot project in Tigray etc.
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to manage the risks of climate change through disaster risk management planning. The programme helps decision makers understand near term and longer term climate risk forecasts and make informed decisions.
Rationale for investment	The activity package is not yet implemented widely in most of the woredas that require disaster risk management planning to reduce risk of climate change.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Packages 68, 69, 72: Energy efficiency, energy R&D, energy tariffs**
Geographic area: Regions, woredas, kebeles	All Regions
Links with ongoing projects	Energy+ Programme, SREP
Relevant MSIP Activity Groups	4

Development objectives	Better characterize the current energy context in Ethiopia and evaluate the potential for various energy technologies to increase energy access in rural areas and contribute to strengthened resilience; reduce fuelwood consumption and indoor air pollution associated with biomass stoves; develop equitable tariffs to encourage efficient use of electricity.
Rationale for investment	Electricity still not be accessible from the grid to sparsely located rural communities and villages distant from the grid. Hence, other options of decentralized power generation systems must be sought for off-grid electrification. Investment is required to create a strong link, both nationally and internationally, between experts in the field of Renewable Energy Technologies, Energy Applications, Energy Conversion and Conservation, Energy Management, Energy Auditing and Optimization and stakeholders.
Delivery timeframe	Five-year plan with annual action plan
Evidence	Project documents in the Ministry (Energy+, Fast truck), CRGE implementation manual, 'Off-grid Rural electrification in Ethiopia' NAMA developed within the Mitigation Momentum project

Identifier: Number & Title of Activity Package	**Activity Package 70: Solar / Wind Pumps**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	AGP, SLMP
Relevant MSIP Activity Groups	1, 2, 3, 5
Development objectives	The objective of the activity package is to support the use of solar and wind pumps in areas with sufficient hydrological resource. These pumps can increase the supply of available water for agriculture, livestock, tree nurseries, and household supply and sanitation. In addition, solar and wind pumps can contribute to gender equality by reducing women's labor burdens associated with water collection.
Rationale for investment	The activity package is not yet being implemented widely. Solar and wind pumps are capital intensive and rural households and producers may lack the resources to cover the upfront cost.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 71: Water Pricing**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	AGP, SLMP
Relevant MSIP Activity Groups	1, 2, 3,

Development objectives	The objective of the activity package is to introduce an equitable system of water tariffs to encourage efficient use of increasingly variable water resources.
Rationale for investment	The activity package is not yet being implemented widely. Climate change is expected to lead to increasingly unpredictable rainfall patterns, and more frequent and severe drought. Water pricing provides a financial incentive for water conservation.
Delivery timeframe	Short- to medium-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 74: Livestock Infrastructure**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	No recorded
Relevant MSIP Activity Groups	1, 3
Development objectives	The objective of the activity package is to support the improvement of livestock infrastructure such as abattoirs, sanitary processing facilities, and health monitoring stations. These infrastructure improvements are intended to allow intensified production in the livestock sector, raising incomes while allowing a reduction in livestock numbers.
Rationale for investment	The activity package is not yet being implemented widely.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 76: Livestock Diversification / Biodiversity**
Geographic area: Regions, woredas, kebeles	All regions
Links with ongoing projects	Not recorded
Relevant MSIP Activity Groups	1, 3
Development objectives	The objective of the activity package is to encourage the adoption of livestock varieties that are more tolerant to drought conditions and better able to cope with other expected climate change related weather impacts. This measure helps to build climate resilience on the part of on-farm livestock users and owners of rangeland herds.
Rationale for investment	Components of this activity package are being promoted actively, but more investment is required given Ethiopia's status as one of Africa's largest livestock producer.
Delivery timeframe	Short-term (three to five years)

Identifier: Number & Title of Activity Package	**Activity Package 77: Livestock Management**
Geographic area: Regions, woredas, kebeles	1.Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3Woredas) 4. Amhara (5 Woredas) 5. Gambela (2 Woredas) 6. Benishangul Gumuz (2 Woredas) 7. Sumali (2 Woredas) 8. Afar (2 Woredas) 9. Harerri (1 Woreda) 10. Dire Dawa (1 Woreda)
Links with ongoing projects	Agricultural Growth Program (AGP), Sustainable Land Management Program (SLMP), Productive Safety Net Program (PSNP) etc.
Relevant MSIP Activity Groups	1, 3
Development objectives	The objective of the activity package is to build capacity within the livestock sector to understand, anticipate and manage the risks from more frequent and more intense droughts and floods as a result of climate change.
Rationale for investment	The activity package is not yet being done widely in most of the woredas, and if there are some activities in the normal government plan, they are not enough to solve the existing vulnerability.
Delivery timeframe	Short-term (three to five years)
Evidence	https://www.adaptation-fund.org/wp-content/uploads/2016/08/Ethiopia_Full_proposal_combined.pdf

Identifier: Number & Title of Activity Package	**Activity Package 78 (new): De-risking commercial lending for pro-poor and climate resilient agricultural investment**
Geographic area: Regions, woredas, kebeles	All rural woredas
Links with ongoing projects	Agricultural Growth Program (AGP)
Relevant MSIP Activity Groups	1
Development objectives	The objective of this Activity Package is to encourage private sector lending for climate resilient agricultural investments. By de-risking commercial lending, this suite of activities will help poor farming families and communities overcome capital constraints that hinder improved agricultural productivity, while leveraging government investments in climate resilience.

Rationale for investment	One problem Ethiopia's farmers face is lack of access to finance, which they need to modernize their practices and purchase machinery. Ethiopian banks generally require collateral valued at a minimum of 100 percent of the value of the loan plus interest, which is unreachable for most farmers. Since all Ethiopian land belongs to the government, farmers cannot use the farmland they lease as collateral and banks do not accept crops or other farm stock as collateral. As of June 2000, agricultural lending made up only 8 percent of the total value of outstanding loans in Ethiopia. Initiatives like USAID's DCA loan guarantee demonstrate the potential to increase lending to the agriculture sector. However, the agriculture finance sector appears to be still largely underserved.
Delivery timeframe	Short-medium term (1-5 years)
Evidence	https://www.usaid.gov/sites/default/files/documents/2151/DCA_Ethiopia_Impact_Brief_5_26_10.pdf

Identifier: Number & Title of Activity Package	**Activity Package 80 (new): Assisted natural regeneration (ANR)**
Geographic area: Regions, woredas, kebeles	All areas experiencing severe forest degradation
Links with ongoing projects	Humbo Ethiopia Assisted Natural Regeneration Project
Relevant MSIP Activity Groups	2
Development objectives	This Activity Package aims to support the restoration of biodiverse native forest, while supporting local income and employment generation. The core of this Activity Package is a focus on farmer-managed natural regeneration (FMNR) techniques. The FMNR technique enables rural communities to assist re-sprouting of native species by identifying, selecting, and pruning existing tree and shrub root stocks in the soil.
Rationale for investment	Initiatives like the Humbo Ethiopia Assisted Natural Regeneration project demonstrate the potential for ANR activities to expand Ethiopia's forest cover. However, estimates show that Ethiopia has less than 2.7% of its original high forest and current investments in ANR are insufficient to make a material impact on forest cover.
Delivery timeframe	Medium to long-term: 5-20 years
Evidence	https://wbcarbonfinance.org/Router.cfm?Page=Projport&ProjID=9625

Identifier: Number & Title of Activity Package	**Activity Package 81 (new): Development of out-grower schemes**
Geographic area: Regions, woredas, kebeles	All woredas

Links with ongoing projects	AGP, Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES)
Relevant MSIP Activity Groups	1
Development objectives	This activity package aims to build climate resilience through development of equitable outgrower schemes that help farmers reduce overall market uncertainty and secure the highest possible returns on their investment. For smallholders, this translates into obtaining access to markets, appropriate levels of reasonably priced credit, and technical assistance to satisfy market requirements.
Rationale for investment	Outgrower schemes can be an important part of agriculture, livestock and forest sector value chains. However, these schemes are relatively limited in extent at present and do not cover the entire country. Incremental investment is required to build on small scale initiatives and further contribute to climate resilience.
Delivery timeframe	Short to medium term (3-5 years)
Evidence	https://lives-ethiopia.org/2016/10/25/an-outgrower-farmer-bridges-market-challenges-in-seka-chekorsa-district-in-oromia-region/

Identifier: Number & Title of Activity Package	**Activity Package 82 (new): Medium and large-scale commercial forest development**
Geographic area: Regions, woredas, kebeles	All regions amenable to medium and large-scale forest development
Links with ongoing projects	National REDD+ Program
Relevant MSIP Activity Groups	2
Development objectives	This activity package contributes to enhanced climate resilience in the forest and landscapes sector through policy measures, support and incentives for commercial forest development. It promotes participatory forest management (PFM) approaches to engage communities in responsibly managing and using forests and woodlands. Working with the private sector can help the Government of Ethiopia expand more cost effectively the development, conservation and sustainable utilization of vital forest resources.
Rationale for investment	There is currently limited private sector interest in investing in commercial forest development. While agricultural crops destined for export or domestic markets generate immediate returns, incomes from forestry investments take years to be obtained due to long gestation periods. Also, unlike most agricultural crops, managing trees and forests for commercial purpose is required to observe and achieve certain ecological objectives. Yet, except for land tax exemption by some regional states, those investing in forestry get no specific support or incentives. Incremental funding is required to improve the policy environment surrounding commercial forest development, and develop

	other forms of support or incentives to encourage medium and large-scale commercial forest development.
Delivery timeframe	Medium to long-term 5-10 years
Evidence	"Enhancing the Role of the Forestry Sector in Ethiopia: Strategy for Scaling up Effective Forest Management Practices"

Identifier: Number & Title of Activity Package	**Activity Package 83 (new): Design and implementation of Forest Fund**
Geographic area: Regions, woredas, kebeles	All regions amenable to forest development activities
Links with ongoing projects	National REDD+ Program
Relevant MSIP Activity Groups	2
Development objectives	This activity package contributes to climate resilience by supporting GoE work to self- finance climate-related development, conservation and utilization in the forestry sector. The Forest Fund is intended to encourage investment, and encourage private investment by setting conducive policy and legal instruments.
Rationale for investment	There is currently limited private sector interest in investing in commercial forest development. While agricultural crops destined for export or domestic markets generate immediate returns, incomes from forestry investments take years to be obtained due to long gestation periods. Also, unlike most agricultural crops, managing trees and forests for commercial purpose is required to observe and achieve certain ecological objectives. Yet, except for land tax exemption by some regional states, those investing in forestry get no specific support or incentives. Incremental support is required to enable the GoE to provide capital to forest enterprises and make direct investments in activities related to development, conservation and utilization in the forestry sector.
Delivery timeframe	Medium – term (3-5 years)
Evidence	"Enhancing the Role of the Forestry Sector in Ethiopia: Strategy for Scaling up Effective Forest Management Practices"

Identifier: Number & Title of Activity Package	**Activity Package 84 (new): Support to link forest sector with micro enterprises**
Geographic area: Regions, woredas, kebeles	All regions amenable to forest development activities
Links with ongoing projects	National REDD+ Program
Relevant MSIP Activity Groups	2

Development objectives	This new activity package focuses on outreach, support and technical assistance to help micro- and small enterprises access and utilize sustainably sourced wood and wood wastes, as well as non-timber forest products. Potential activities include NTFP development, value addition and marketing, promotion of small and medium scale wood processing industries, and support for value added wood products.
Rationale for investment	Insufficient investment is currently available for promotion of value additive private enterprises in the forest sector. More support for private activity in this area could significantly increase the forest sector's contribution to the economy, in accordance with national targets for 2020 and 2030.
Delivery timeframe	Short to medium (1-5 years)
Evidence	"Enhancing the Role of the Forestry Sector in Ethiopia: Strategy for Scaling up Effective Forest Management Practices"

Identifier: Number & Title of Activity Package	**Activity Package 85 (new): Improved on-farm and rangeland livestock practices to improve productivity for rangeland and mixed farming agro-ecologies**
Geographic area: Regions, woredas, kebeles	All rural woredas.
Links with ongoing projects	SLMP
Relevant MSIP Activity Groups	3
Development objectives	The objective of this activity package is to enhance resilience through improved productivity of onfarm and rangeland livestock practices.
Rationale for investment	Livestock remains an important component of on-farm and pastoral rangeland livelihoods. Existing participatory rangeland management projects have shown success in engaging communities in activities that improve productivity and develop non-farm incomes. However, most of these initiatives have been limited to only a few kebeles at a time. Greater resources are required to deliver these benefits at a regional and national scale.
Delivery timeframe	Medium- to long-term (3-10 years)
Evidence	"Cattle-rangeland management practices and perceptions of pastoralists towards rangeland degradation in the Borana zone of southern Ethiopia". http://www.fao.org/ag/AGP/AGPC/doc/counprof/ethiopia/ethiopia.htm#4.%20RUMINANT%20LIVESTOCK%20PRODUCTION%20SYSTEMS

Identifier: Number & Title of Activity Package	**Activity Package 86 (new): Manure management to support biogas production**

Geographic area: Regions, woredas, kebeles	All rural woredas
Links with ongoing projects	OLMP, AGP2
Relevant MSIP Activity Groups	3, 4
Development objectives	The objective of this activity package is to develop an efficient and effective livestock manure management system in Ethiopia. A study in northern Ethiopia showed that the fuel wood and charcoal consumptions of biogas adopter households were on average reduced by 143.55 kg/hh-month (45% reduction) and 16 kg/hh-month (50.9% reduction) respectively compared to their non-adopter counterparts. A well-functioning manure management system is a necessary prerequisite to the expanded use of biogas as an alternative to wood fuel and charcoal for household and commercial thermal energy.
Rationale for investment	Ethiopia is one of the largest livestock producing countries in Africa, yet remains heavily reliant on fuel wood as a primary source of energy. Significant work has been done in other countries to promote livestock manure management as a source of biogas energy, but significant incremental investment is required to apply these lessons and develop the practice in Ethiopia.
Delivery timeframe	Medium to long-term (3-10 years)
Evidence	Biogas as an alternative energy source and a waste management strategy in Northern Ethiopia http://www.tandfonline.com/doi/abs/10.1080/17597269.2016.1163211 Potential of biogas production from livestock manure in China http://publications.lib.chalmers.se/records/fulltext/136686.pdf

Identifier: Number & Title of Activity Package	**Activity Package 87 (new): Improved coordination between administrative, humanitarian and insurance-based disaster response systems**
Geographic area: Regions, woredas, kebeles	All woredas
Links with ongoing projects	SLMP, PSNP
Relevant MSIP Activity Groups	5
Development objectives	The objective of this activity package is to increase climate resilience by enhancing the ability of commercial insurance systems to contribute to disaster mitigation and response, alongside the contributions of government and humanitarian organizations. Commercial insurance can reduce the response burden or government and humanitarian bodies, but will work most effectively when information and expertise is shared between these different actors.

Rationale for investment	Strong coordination mechanisms exist between government (administrative) and humanitarian (civil society) DRM systems. However, insurance-based responses are relatively under-developed in Ethiopia. Additional investment is required to ensure that commercially run insurance mechanisms can make an important contribution to climate related DRM in Ethiopia.
Delivery timeframe	Short to medium term (1-5 Years)
Evidence	"Weather Insurance for Farmers: Experience from Ethiopia" https://www.ifad.org/documents/10180/4ae3f78b-40a7-4ad4-a3ea-cdb16da06c28

Identifier: Number & Title of Activity Package	**Activity Package 88 (new): Long-term risks considered in non-food responses to contribute to reduce vulnerability (e.g. infrastructure is "built back better" and non-food response funds are used to incentivize households to adopt more resilient livelihood options)**
Geographic area: Regions, woredas, kebeles	All woredas
Links with ongoing projects	SLMP, PSNP
Relevant MSIP Activity Groups	5
Development objectives	This activity package contributes to the seven pillars of Ethiopia's DRM system – and especially the recovery and rehabilitation pillar. It ensures that climate-related development and humanitarian actions are inextricably linked and employs lessons learned to strengthen future resilience.
Rationale for investment	Climate change is expected to result in more frequent and more intense droughts and floods. While the principle of "build back better" is already a part of Ethiopia's DRM strategy, the increased disaster burden expected as a result of climate change calls for increased investment in this long-term resilience building activity.
Delivery timeframe	Medium to long-term (3-10 years)
Evidence	"Disaster Risk Management Program, Strategic Programme and Investment Framework" (DRM-SPIF)

Annex 9: SUMMARY OF COSTING INFORMATION

Summary of Activity Group Costings		
Activity Group Number	**Activity Group** (see Note 1)	**Indicative Cost (million USD)**
1	Activity Group 1: Enhancing Climate Resilience in Agriculture	5,992
2	Activity Group 2: Climate Resilient Forest Landscapes for Development, Conservation and Utilization	5,414
3	Activity Group 3: Ensuring Climate Resilient Livestock Management and Livelihoods	2,628
4	Activity Group 4: Improved Resilience Through Affordable Access to Climate-Smart Energy	654
5	Activity Group 5: Enhanced Climate-Resilient Disaster Risk Management and Early Warning Systems	107
	Note 1: Activity Packages and Groups are not projects or proposals, and the costings are not project budgets. They serve to indicate the types of activities that could become resilience-enhancing add-ons to existing projects and programs or form components of new projects and programs. Please see individual Activity Group tabs for a cost breakdown by Activity Package.	
	Note 2: Individual Activity Packages can contribute to the resilience goals of more than one Activity Group. Where they appear more than once, this may lead to an overestimate of the cumulative cost of the Activity Groups.	
	Note 3: Indicative costs are for each individual Activity Group undertaken in isolation. Synergies between Activity Groups may result in cost economies that are not reflected in the cumulative cost.	

Summary of Activity Package Costings		
Activity Package Number	**Activity Package (sub-component of a project proposal) (focus of prioritization exercise)** (see Note 4)	**Indicative Cost (million USD)**
1	Meteorological services, Spatial, AgroMet and HydroMet services	6.8
2	Market information	10.7
3	Agricultural R&D	2.0
4	Forest R&D	2.0
5	Livestock R&D	2.0
6	Water resources R&D	2.0
7	Forest extension	53.9
8	Agriculture (crop and livestock) extension	106.4
9	Energy extension	25.0
10	Medium and large-scale irrigation	3,503.5

Summary of Activity Package Costings		
Activity Package Number	**Activity Package (sub-component of a project proposal) (focus of prioritization exercise)** (see Note 4)	**Indicative Cost (million USD)**
11	Small-scale irrigation	1,502.1
13	SWC structures/measures (landscape restoration and prevention of land degradation)	30.3
14	Soil fertility management	317.3
16	Improved livestock management practices	545.3
17	Improved fisheries practices and aquacutrure development	2.5
18	Apiculture and sericulture development	29.0
19	Planned rangeland and grazing management	250.4
24	Off-grid household energy	144.6
25	Land use planning	75.7
27	Basin/Sub-basin Resources Planning and Management	13.5
28	Forest development (expansion): smallholders and communities	828.9
33	Develop payments for environmental services (PES)	106.0
34	Capacity building for the collection and analysis of early warning data (e.g. LIAS data, bottom up data) spatial data and creation of data storage and sharing platform	28.3
36	Livestock insurance	67.7
40	Non-farm livelihoods	52.8
41	Pre-harvest plant protection	44.8
42	Mechanization / Small-scale mechanization	147.6
45	Micro-hydropower	18.5
47	Value chain development	197.3
48	Bamboo agro-forestry	434.3
49	Silvo-pastoral production systems (i.e., multi-purpose trees on rangeland)	278.2
52	Transboundary disease monitoring for livestock	66.4
54	Home gardens	97.4
57	Tree nursery investment	15.6
61	Urban greening	4.7
63	Mini-grid electricity	20.3
64	Micro and pico grid	10.3
65	Meso-scale energy	21.0
66	Biofuel	390.2
67	Climate change and related spatial data accessible for decision makers	1.9
68	Energy efficiency throughout the value chain to reduce wood and charcoal consumption	21.2
69	R&D for energy	2.6
70	Solar and wind pumps	43.5
71	Water pricing	6.6

Summary of Activity Package Costings		
Activity Package Number	**Activity Package (sub-component of a project proposal) (focus of prioritization exercise)** (see Note 4)	**Indicative Cost (million USD)**
72	Energy tariff	0.5
73	Livestock value chain and market development	88.0
74	Livestock related infrastructure development	376.3
75	Livestock payment for environmental services	754.6
76	Enhanced livestock diversification / biodiversity	135.3
77	Capacity development (institutional, organizational and HR resources development – to improve readiness)	17.2
new (78)	De-risking commercial lending for pro-poor and resilient agricultural investment *(new Activity Package)*	26.6
new (80)	Assisted natural regeneration (ANR) *(new Activity Package)*	538.8
new (81)	Development of out-grower schemes *(new Activity Package)*	16.6
new (82)	Medium and large-scale commercial forest development *(new Activity Package)*	50.2
new (83)	Design and implementation of Forest Fund *(new Activity Package)*	0.2
new (84)	Support to link forest sector with micro enterprises *(new Activity Package)*	6.1
new (85)	Improved on-farm and rangeland livestock practices to improve productivity for rangeland and mixed farming agro-ecologies *(new Activity* Package*)*	304.7
new (86)	Manure management to support biogas production *(new Activity* Package*)*	3.1
new (87)	Improved coordination between administrative, humanitarian and insurance-based disaster response systems *(new Activity Package)*	0.5
new (88)	Long-term risks considered in non-food responses to contribute to reduce vulnerability (e.g. infrastructure is "built back better" and non-food response funds are used to incentivize households to adopt more resilient livelihood options) *(new Activity Package)*	1.5
	Total (million USD)	**11,851**

Note 4: Activity Packages 78-88 were added as a result of stakeholder input after the prioritization process.

Annex 10: LOGICAL FRAMEWORK FOR THE MSIP

General Objective: To directly support Ethiopia's target of a climate resilient and green economy reaching lower-middle income status by 2025			
Narrative	**Indicators**	**Means of Verification**	**Risks and Critical Conditions**
Goal: Resilience of households improved	• Change in climate vulnerability of rural communities; • Strengthened adaptive capacity of rural communities and rural businesses	CSA national census statistics; FSCD food security survey Global Adaptation Index (if adapted to Ethiopia)	
Outcomes			
• Enhanced climate responsive and climate resilient development planning	• Degree of integration/ mainstreaming of climate change in national and sector planning and coordination • Evidence of line ministries or functional agencies lead in updating or revising country strategies	Country sector and development strategies investment frameworks and plans Country sector and development strategies investment frameworks and plans	Ministries are given the mandate and institutional structures to plan and implement CRGE priorities in an integrated cross-sectoral manner
• Climate responsive investment opportunities are increased	• Number and value of investments (national and local government, non-government, private sector, etc) in $ by type of climate resilient investments [A]	Program reports and records, Business survey	Climate financing can leverage significant national and international development financing to deliver transformational objectives
• Knowledge, skills and capacities: Strengthened government capacities to plan, resource and deliver green, climate resilient development results	• Evidence of strengthened government capacity to collect, analyze and apply climate information to planning and decision-making	CRGE Capacity Scorecard assessed by CRGE Secretariat and all CRGE priority Ministries	

General Objective: To directly support Ethiopia's target of a climate resilient and green economy reaching lower-middle income status by 2025			
Narrative	**Indicators**	**Means of Verification**	**Risks and Critical Conditions**
Outputs			
1. Climate Resilient Agricultural Production and Food Security is enhanced	• (Change in) Rainfed crop area under sustainable, climate smart land management practices (ha) – by crop type (private holders only) • (Change in) crop land productivity where modern, climate smart and small-scale irrigation applied (quintal per hectare) for: Major food crops; High value crops • (Change in) Total crop land under modern, climate smart irrigation systems (ha and %) by type: Medium and large-scale; Small-scale • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Program reports of IEs and independent evaluations Household Surveys CSA National Statistics	Rainfall variability is low enough to enable investments in climate resilient agricultural practices. Land tenure rights for small farmers are clear and supportive of climate resilient investments in land management and agronomic practices.
2. Climate resilient forest landscapes enhance their development, conservation and utilization	• Total area (individual & communal) of land under sustainable, climate smart, land management plans • Cumulative area of land covered with forest (ha), disaggregated by: Protected (%); Plantation (%); Under improved forest management systems and	Program reports of IEs and independent evaluations	Land tenure rights for small farmers are clear and support potential for agricultural intensification and land use improvements. Alternative rural energy sources are technically, politically and economically viable.

General Objective: To directly support Ethiopia's target of a climate resilient and green economy reaching lower-middle income status by 2025			
Narrative	**Indicators**	**Means of Verification**	**Risks and Critical Conditions**
	reduced carbon emissions practices (%) • Change in household fuelwood consumption • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed) • Area of land developed with community based watershed program • Area of land rehabilitated		Integrated land use planning provides a basis for all stakeholders to manage landscape in a multi-functional way.
3. Climate resilient livestock management and livelihoods is ensured	• Area of pasture under improved pastureland management [B] • Productivity of communal pasture and rangeland (tons/ha) – feed / forage • Number of households reporting a wider variety of livelihood strategies (disaggregated by male and female-headed)	Program reports of IEs and independent evaluations	Rainfall variability is low enough to enable investments in climate resilient livestock management
4. Access to climate-smart energy is improved	• Annual energy savings (GWh): disaggregated by type of energy-saving measure • Installed capacity renewable energy, including from solar, wind, geothermal and/or biomass (type, GWh) • Quantity of wood fuel displaced (tons): disaggregated by type of	Program reports of IEs and independent evaluations	Alternative rural energy sources are technically, politically and economically viable Energy pricing policy is conducive to investment in small scale and off-grid/mini-grid energy generation

General Objective: To directly support Ethiopia's target of a climate resilient and green economy reaching lower-middle income status by 2025			
Narrative	**Indicators**	**Means of Verification**	**Risks and Critical Conditions**
	energy-saving or alternative fuel measure		
5. Climate-related disaster risk management and response systems is enhanced	• Perception of men, women, vulnerable populations, and emergency response agencies of the timeliness, content and reach of early warning systems • Evidence of strengthened government capacity to collect, analyze and apply climate information to decision-making	Program reports of IEs and independent evaluations Household survey Survey of managers of emergency response agencies with data disaggregated by sex. CRGE Capacity Scorecard	Climate related shocks are amenable to probability and impact assessment necessary for assigning risk.

Annex 11: POTENTIAL INTERNATIONAL FUNDING SOURCES FOR THE MSIP

The following table includes a summary of the potential international funding sources that may be available to support the rollout of climate resilient development program described in this MSIP. Depending on their mandate, interest and available funding, each of the potential international funding sources might contribute financial resources to all, or selected components of one or more Activity Groups. Because the international funding landscape for climate resilience is constantly evolving, the findings from this analysis are liable to change rapidly. This summary should therefore be considered a starting point for further investigation and discussion with each funder.

Funding Source	**Relevant Thematic Interest**	**Potential Activity Groups**	**Scale of Funding**	**Relevant Past Ethiopia Funding Commitments**
World Bank (IBRD & IDA)	Support for GTP II	1, 2, 3, 4, 5	Greater than $1 billion	SLMP I, SLMP II, AGP I, AGP II, PSNP 3PSNP4, Irrigation and Drainage Project, Regional Pastoral Livelihood Resilience Project (RPLRP)
African Development Bank	Agricultural transformation, energy, basic services	1, 3, 4	Greater than $1 billion	Four Towns Water Supply and Sanitation Improvement Program in Ethiopia, Harar Water Supply and Sanitation Project: Improving Livelihoods and Enhancing Water Security in Ethiopia,
International Finance Corporation	Private sector infrastructure, financial inclusion, agribusiness	1, 3, 4	Approx $20 million per IDA country investment	SREP advisory
European Investment Bank	Water and Energy	1, 4	€40 million in 2015	Water supply infrastructure
Climate Investment Funds – PPCR	Climate change adaptation	1, 2, 3, 4, 5	Approx $16 million average investment	Community
Global Environment Facility / LDCF	Biodiversity, land degradation, climate change mitigation, sustainable forest management	1, 2, 4	$2 million - $25 million	Strengthening climate information and early warning systems in Africa for climate resilient development and adaptation to climate change, Mainstreaming Incentives for Biodiversity Conservation in the Climate Resilient Green Economy Strategy (CRGE), Coping with Drought and Climate Change, SLMP II, Community based integrated natural resources management project in Lake Tana, Promoting Autonomous Adaptation at the community level in Ethiopia
Adaptation Fund	“Concrete” climate change adaptation	1, 2, 3, 4, 5	Approx. $5-$10 million	
Green Climate Fund	“Transformational” climate change mitigation and adaptation	1, 2, 3, 4, 5	Approx $10-$250 million	None to date
Austria Development Agency	Humanitarian response	5	Not available	Agriculture Fast Track Investment Project

Funding Source	Relevant Thematic Interest	Potential Activity Groups	Scale of Funding	Relevant Past Ethiopia Funding Commitments
Canada Department of Foreign Affairs, Trade and Development	Food security, agricultural productivity, access to markets for farmers and rural producers, improved soil and water conservation	1, 3	Approx $100 million overall budget	MERET-PLUS, Capacity to Improve Agriculture and Food Security (CIAFS), Livelihoods, Agriculture and National Development (LAND) Project, Increased Food Security for Mothers and Children, Ethiopians Driving Growth through Entrepreneurship and Trade, Food Sufficiency for Farmers, Agricultural Transformation through Stronger Vocational Education (ATTSVE), Managing Environmental Resources to Improve Food Security, Engaging the Private Sector in Support of Smallholder Farms
DANIDA	Humanitarian response, energy, climate	4, 5	$25 million	PSNP III, PSNP IV, Greening Agricultural Transformation in Ethiopia (GATE)
EU Ethiopia Office	Humanitarian assistance and resilience	5	$3-$31 million per project	RESET, Support to Responsible Agricultural Investment in Ethiopia (SRAIE), Sustainable Agriculture and Food Security Enhancement through Integrated Recovery Support Mechanisms (SAFE) Project, Energising Develeopment (EnDev) Ethiopia
Finland Embassy	Food security, access to water and energy, and the sustainable use of natural resources	1, 2, 4	Approx $14 million	MERET-Plus, REILA
Food and Agriculture Organization of the United Nations	Crop production, Livestock and fisheries, Sustainable natural resource management, climate change, disaster risk resilience	1, 2, 3, 5	$3 million	AGP, Improved Postharvest Management Phase I, Pursuing Pastoral Resilience, CDAIS, REDD+ readiness, remote sensing
Agence Francaise de Developpement	Water and sanitation, energy infrastructure	1, 4	Not specified	REDD+
International Fund for Agricultural Development (IFAD)	Integrated NRM, rural financial intermediation, pastoral community development, small scale irrigation	1, 2, 3	$145 million	Participatory Small-scale Irrigation Development Programme Phase II, Community based integrated natural resources management project in Lake Tana
Kreditanstalt für Wiederaufbau (KfW)	Biodiversity, food security / agriculture	1, 2, 3, 5		Strengthening Resilience of Pastoral and Agro-pastoral Livelihoods in Ethiopians Arid and Semi-arid Lands, SLMP II
Norway's International Climate and Forest Initiative (NICFI)	REDD+	2		REDD+

Funding Source	Relevant Thematic Interest	Potential Activity Groups	Scale of Funding	Relevant Past Ethiopia Funding Commitments
Norwegian Agency for Development Cooperation (NORAD)	Food security, environment & energy, emergency assistance, economic development & trade	1, 2, 4, 5		Energy+, REDD+, SLMPII
Switzerland Embassy	Food security	1, 3, 5	$3.5 million	Reducing Food Losses through Improved Post Harvest Management in Ethiopia – Phase 1,
UK Department for International Development (DfID)	Increasing resilience to changing weather patterns	1, 5	Approx. $10 million per project	AGP I, Agriculture Fast Track Investment Project, Climate High-Level Investment Programme, PSNP III, PSNP IV, Land Investment for Transformation (LIFT)
United States Agency for International Development (USAID)	Humanitarian support, agriculture and trade with resiliency	1, 3, 5	$5 - $350 million	PSNP, AGP I, AGP II, GRAD, PRIME, Livestock Growth Program, Water Sanitation and Hygiene Transformation for Enhanced Resiliency (WATER), Feed the Future Initiative, Engaging the Private Sector in Support of Smallholder Farmers
United Nations Development Programme (UNDP)	Growth & poverty reduction, climate change and environment vulnerability, governance	1, 2, 3, 4, 5	Approx. $10 million	Promoting Autonomous Adaptation at the community level in Ethiopia, Coping with climate change