

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

ANNEXES TO THE FINAL DRAFT
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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.

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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 UNFCCC¹.

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 ME FCC. 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 SLMP II 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 SLMP II 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, subsidizing 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. MEFC 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 million⁹. 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 sector¹⁰. 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 systems¹⁹.

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 by 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)
NAME OF THE REVIEWER	Stephen Mutimba
DATE OF SUBMISSION	23/04/2017

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LIST OF ACRONYMS

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. *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.”* 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'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.”

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, while 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)
	<ul style="list-style-type: none"> 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 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 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 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.”*

1.2 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, while 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 Track 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 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”:	1 st JSC	Joint Scoping Mission for MSIP, February 15-19, 2016
	2 nd JSC	Joint Scoping Mission for MSIP, June 20-24, 2016
	3 rd 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	2 nd JSC
2	Paddy Abbot	Managing Director / Project Director	LTS	W-IPP
3	Yitayew Abebe	Mission Environment Officer	USAID	1 st JSC; 2 nd 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)	1 st JSC; 3 rd JSC
6	Hamdi Abdulahi	Environmental Protection Mines and Energy Development Agency	Somali	2 nd JSC
7	Mohamud Mohamed Abdulahi	Water & Energy Bureau	Somali	2 nd JSC
8	Hundessa Adugna	Researcher	Ethiopian Environment and Forest Research Institute (EEFRI)	W-PRGA; W-IPP; 3 rd JSC
9	Dereje Agonafir	Environmental Specialist	WB	1 st JSC; 2 nd JSC; W-PRGA; W-IPP; 3 rd JSC
10	Manish Kumar Agrawal	ACCRA Coordinator	Oxfam GB/ACCRA	1 st JSC
11	Mohammed Ahmed	Technical Specialist	WRDB	2 nd JSC
12	Munib Yonis Ahmed	Water and Sewerage Authority	Harari	2 nd JSC
13	Kazi Fateha Ahmed	Analyst	WBG	W-IPP; 3 rd JSC
14	Million Alemayehu	Senior NRM Specialist	WB	1 st JSC; 2 nd JSC

No.	Name	Title	Organization	Recorded Attendance
15	Eyob Alemu	CRGE focal person	MoLF	1 st JSC
16	Kassahun Alemu	Senior Expert	MoFEC	1 st JSC
17	Abubeker Ali	NRM/CCO	Food and Agriculture Organization of the United Nations	1 st JSC; 2 nd JSC
18	Ahmed Alkadir	Operations Officer	WB	2 nd JSC
19	Amadou Allahoury	FAO Representative	FAO	W-PRGA
20	Getenet Amare	RM Director	MEFCC	W-PRGA
21	Sahleselassie Amare		ECRC/EDRI	2 nd JSC
22	Ababu Anage	NCCS	United Nations Development Programme	1 st JSC; 2 nd JSC
23	Samson Andemeskel	Environmental Protection Authority	Addis Ababa	2 nd JSC
24	Tefera Arega	MSIP focal person	MoWIE	1 st JSC; 2 nd JSC; W-IPP; 3 rd JSC
25	Mersha Argaw	Program Manager	EU Delegation to Ethiopia	2 nd JSC
26	Tesfamariyam Asefa	Livestock Bureau	Tigray	2 nd 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; 3 rd 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	1 st JSC; 2 nd JSC
32	Lulseged Asfaw	Program Manager	Irish Aid	1 st JSC
33	Abebech Assefa	Team Lead Food Security Ag	Embassy of Canada	1 st JSC; 3 rd JSC

No.	Name	Title	Organization	Recorded Attendance
34	Berhanu Assefa	MRV Expert, MSIP focal person	MoANR	1 st 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	2 nd JSC
38	Shewakena Aytenfisu	Land Administration Specialist	WB	2 nd JSC; W-IPP; 3 rd JSC
39	Samir Bakir	Environmental Protection Authority	Harari	2 nd JSC
40	Ato Debasu Bayelegn	Director General, Climate Change Coordination	MEFCC	3 rd JSC
41	Frew Behabtu	Country Program Officer	International Fund for Agricultural Development (IFAD)	1 st JSC; 2 nd JSC
42	Desta Bekalu	Strategy Officer	BoA	W-PRGA
43	Eshetu Bekele (PhD)	Director	Save the Children	W-PRGA; 3 rd JSC
44	Dr. Wogayehu Bekele	Director	ATA	1 st JSC; 2 nd JSC; W-PRGA; W-IPP
45	Berhain Belay	Regional Bureau of Agriculture	Tigray	2 nd JSC
46	Fantahun Belew	CRGE Facility Advisor	CRGE Facility, MoFEC	1 st JSC
47	Hayelom Berhe	Mines & Energy Resources Development Office	Afar	2 nd JSC
48	Wondim Berihun	Water, Irrigation & Energy Bureau Development	Amhara	2 nd JSC
49	Dr. Abebe Beyene		ECRC/EDRI	2 nd JSC
50	Mandefro Beyene	Socio Economist	Beles Sub Basin	1 st JSC
51	Mengstu Beyessa	Environmental Protection Association	Benishangul Gumz	2 nd JSC

No.	Name	Title	Organization	Recorded Attendance
52	Birhane Bezabh	Senior Forest Expert/MSIP focal person	MEFCC	1 st JSC; 2 nd JSC; W-IPP; 3 rd JSC
53	Kinfe Birhanea	Bureau of Environment and Forest	Afar	2 nd JSC
54	Dessalegn Birkeneh	Planning Expert	MoLF	1 st JSC
55	Dejene Biru	CRGE Technical Advisor	Oxfam GB/ACCRA	1 st JSC; 2 nd JSC; W-PRGA
56	Jennifer Bloom	Second Secretary (Development)	Foreign Affairs, Trade and Development Canada	1 st JSC
57	Jan Bock	Forestry Advisor	GIZ Germany	2 nd JSC
58	Timothy Brown	Senior Natural Resources Management Specialist and Co-TTL, CRGE ASA and MSIP	WB	2 nd JSC; W-PRGA
59	Emilie Bruckmann	Second Counsellor	French Embassy	1 st JSC; W-PRGA
60	Tiina Byringllboudo	Counsellor	Embassy of Finland	1 st JSC
61	Emilie Bruckmann	Second Counsellor	French Embassy	1 st JSC
62	Biel Keat Chea	Environment, Forest and Land Administration	Gambella	2 nd JSC
63	Tesfaye Chekole	Program Officer	KfW	W-PRGA; W-IPP; 3 rd JSC
64	Dr. Thomas Cherenet	Policy & Research Advisor	Ministry of Livestock and Fisheries (MoLF)	2 nd JSC
65	H.E. Ato Kare Chawicha	State Minister for Environment and Climate Change	Ministry of Environment, Forest and Climate Change (MEFCC)	3 rd JSC
66	MORBIN Daniele	Program Manager, Rural Development & Food Security Section	EU Ethiopia Office	1 st JSC

No.	Name	Title	Organization	Recorded Attendance
67	Stephen Danyo	Senior Natural Resource Management Specialist and Task Team Leader	WB	1 st JSC; 2 nd JSC; W-PRGA; W-IPP; 3 rd JSC
68	Getachew Debalkie	CCMO	Food and Agriculture Organization of the United Nations (FAO)	2 nd JSC
69	Tolera Debela	Livestock Bureau	Oromia	2 nd JSC
70	Zerihun Dejene	Environment Coordinator	PHE-EC	1 st JSC; W-IPP; 3 rd JSC
71	Imruwa Demissie	Senior Program Officer	KFW	1 st JSC
72	Lulseged Desta		CGIAR	W-IPP; 3 rd JSC
73	Issa Diaw	Senior Power Engineer	WB	1 st JSC; 2 nd JSC
74	Bamba Diop	Principal Environment Specialist	AFDB	1 st JSC; 2 nd JSC; W-IPP; 3 rd JSC
75	Lea Doumnjou	International Coordinator	ACCRA/DCFAMUB	2 nd JSC
76	Mareile Drechsler	Climate Resilience Specialist	WB	1 st JSC; 2 nd JSC
77	Mark Eghan	Agricultural Economist	AfDB	2 nd JSC
78	Tesfaye Ejigu	Program Officer	Irish Aid	W-PRGA; W-IPP; 3 rd JSC
79	Lars Ekman	Counselor	RNE	1 st JSC
80	Samson Emeiru	Regional Bureau of Agriculture	Gambella	2 nd JSC
81	Abay Eneyewu	Livestock Bureau	Gambella	2 nd JSC
82	Dr. Zewdu Eshetu	Director	AAU Climate Science Centre	1 st JSC; 2 nd 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)	3 rd JSC

No.	Name	Title	Organization	Recorded Attendance
85	Mequanent Eyayu	Plan & Program Director	Ethiopian Biodiversity Institute	1 st JSC
86	Carlo Fadda	Biodiversity specialist, Country Rep.	Consultative Group for International Agricultural Research, CGIAR	1 st JSC; 2 nd JSC; W-IPP; 3 rd JSC
87	Shimelis Fekadu	CRGE Coordinator	CRGE Facility, MoFEC	1 st JSC; 2 nd JSC; W-IPP; 3 rd JSC
88	Prof. Masresha Fetene	Professor	Ethiopian Academy of Science	1 st JSC
89	Mulugeta Feleke	Mines & Energy Agency	SNNPR	2 nd JSC
90	Admasu Feyisa	Director, International Financial institutions	Ministry of Finance and Economic Cooperation (MoFEC)	3 rd JSC
91	Daniel Fikreyesus (Phd)	CEO	Echnoserve	W-PRGA; W-IPP
92	Medhin Fisseha	Environmental and social safeguards specialist	CRGE Facility, MoFEC	1 st JSC; 2 nd 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	2 nd JSC
97	Melaku Gebreyesus		Global Green Growth Institute	2 nd JSC
98	Beyene Geleta	PDQA Director	World Vision	1 st JSC; 2 nd JSC
99	Michael Gessesse	Director	Ministry of Mining, Petroleum and Natural Gas	W-PRGA; W-IPP; 3 rd JSC
100	Makonnen Getachew	MRV-CRGE Expert	MoANR	W-IPP; 3 rd JSC
101	H.E. Ato Sileshi Getahun	Minister	Ministry of Livestock and Fisheries (MoLF)	1 st JSC
102	Zerihun Getu	CRGE Facility Coordinator	CRGE Facility, MoFEC	1 st JSC; 2 nd JSC; W-PRGA; 3 rd JSC

No.	Name	Title	Organization	Recorded Attendance
103	Belay Gezahegn	Director	Enat Bank	W-PRGA
104	Asmerom Gilau	Climate Expert	AfDB	2 nd JSC
105	Dejene H/Giorgis	Planning M&E Director	Ethiopian Environment and Forest Research Institute (EEFRI)	1 st JSC
106	Mahlet Girma	Team Assistant	WB	1 st JSC
107	Fisaha Girmay	Water & Energy Bureau	Tigray	2 nd JSC
108	Evan Girvetz	Senior Scientist	International Centre for Tropical Agriculture (CIAT)	1 st JSC; 2 nd JSC
109	Solomon Gizaw	Technical Assis.	ECH P.L.C.	1 st JSC; 2 nd JSC
110	Tena Gobena	Regional Bureau of Agriculture	Oromia	2 nd JSC
111	Andrew Goodland	Program Leader	WB	1 st JSC; 2 nd JSC
112	Jamal Gore	Principal Consultant	E Co.	W-PRGA; W-IPP
113	Assefa Gudina	Program Coordinator	MoWIE	1 st JSC
114	Dr. Retta Gudissa	Director	ATA	2 nd JSC
115	Lelisa Gutema	Water, Mines & Energy Bureau	Oromia	2 nd JSC
116	Ghrmawit Haile	Director, Strategic Planning and Resource Mobilization Directorate GEF Focal Point	MEFCC	1 st JSC; 2 nd JSC
117	Kinfe Hailemariam	Director for Met & FCT	National Meteorological Agency	1 st JSC; W-IPP; 3 rd JSC
118	Afewerk Hailu	Executive Director	Ethio-Wetlands and Natural Resources Association	2 nd JSC
119	Habtam Hailu	SLMP-II Coordinator	MoANR	1 st JSC; 2 nd JSC
120	Mistre Hailemariam	Team Assistant	WB	1 st JSC; 2 nd JSC

No.	Name	Title	Organization	Recorded Attendance
121	Tsehay Atakit Hailemichael	Energy and private sector senior program officer	Royal Norwegian Embassy	2 nd JSC; W-PRGA
122	Anne Sofie Hammend	Political Assistant	Denmark Embassy	W-PRGA
123	Seid Hassen		ECRC/EDRI	2 nd JSC
124	Morten Heide	Counselor & Head, Dev't Coop	Royal Norwegian Embassy	2 nd JSC
125	Masahiko Hori	Expert	JICA	W-PRGA
126	Behonegn Itefa	Water, Mines & Energy Bureau	Benshangul-Gumuz	2 nd JSC
127	Gebru Jember	Advisor	Global Green Growth Institute	1 st JSC
128	Jorunn B. Johannessen	Trainee	RNE	1 st JSC
129	Marianne Johansen	Counsellor – Climate and Forests	Royal Norwegian Embassy	W-IPP; 3 rd JSC
130	Abigail Jones	Climate Advisor	United States Agency for International Development (USAID)	1 st JSC; 2 nd JSC
131	Oliver Jones	Senior Water and Sanitation Specialist	WB	2 nd JSC
132	Hikuepi Epi Katjuongua	Senior Agriculture Economist	WB	1 st JSC
133	Dereje Kebede	Program Manager	Austria Development Cooperation	1 st JSC
134	Hussien Kebede	Senior Expert	FAO	W-PRGA; W-IPP; 3 rd JSC
135	Mulat Kebede	Water Resources Engineer	Ministry of Water, Irrigation and Electricity (MoWIE)	W-PRGA
136	Tigist Kebede	Senior Program Officer	Denmark Embassy	1 st JSC
137	Dr. Baysa Kenawu	Livestock Bureau	Benishabgul Gumz	2 nd JSC
138	Getu Kibret	Water, Mines & Energy Office	Diredawa	2 nd 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	2 nd JSC
141	Ziyesu Lemma	DRM & REDD+ Advisor	Ethio Wetlands and Natural Resources Association (EWNRA)	W-PRGA; W-IPP; 3 rd JSC
142	Lulu Likassa	Program Officer	RNE	1 st JSC; 2 nd JSC; W-PRGA
143	Ferehan Mahamud	Regional Bureau of Agriculture	Somali	2 nd JSC
144	Tambi Matambo	Environmental Specialist	WB	1 st JSC
145	Bedilish G/Medhin	Team Assistant	WB	2 nd JSC
146	Hailesilasie A. Medhin	Centre Director	Environment and Climate Research Centre, Ethiopian Development Research Institute (ECRC/EDRI)	1 st JSC; 2 nd JSC; W-PRGA
147	Senait Mekete	Investment Officer	International Finance Corporation	2 nd JSC; W-IPP; 3 rd JSC
148	Teferi Mekonnen	Regional Bureau of Agriculture	Afar	2 nd JSC
149	Abebe Mekuriaw	Programs Coordinator of the Academy	Ethiopian Academy of Science	2 nd JSC; W-PRGA
150	H.E. Frenesh Mekuria	State Minister	Ministry of Agriculture and Natural Resources (MoANR)	1 st JSC; 2 nd JSC
151	Solomon Mengesha	Regional Bureau of Agriculture	SNNP	2 nd JSC
152	H/Mariam H/Meskel	Agricultural Economist	AfDB	2 nd JSC
153	Tamiru Messele		Kreditanstalt für Wiederaufbau (KfW)	2 nd JSC
154	Lakech Imru Mikael	Senior Director, Environmentally sustainable and Inclusive Growth	Agricultural Transformation Agency (ATA)	1 st JSC; W-PRGA; W-IPP; 3 rd JSC

No.	Name	Title	Organization	Recorded Attendance
155	Abraha Misghina	Coordinator, NICSP	MoWIE	2 nd JSC; W-PRGA
156	Dr. Yitebitu Moges	REDD+ Coordinator	MEFCC	1 st JSC; 2 nd JSC
157	Endashaw Mogesie	M,E&C coordinator	Population, Health and Environment- Ethiopia Consortium, PHE-EC	2 nd JSC
158	Daniele Morbin	Program Manager	EU Delegation to Ethiopia	2 nd JSC; W-PRGA; W-IPP; 3 rd JSC
159	Ueil Muller	Programme Head	GIZ Biodiversity and Forestry Program (BFP)	2 nd JSC
160	Temesgen Mulualem	Regional Bureau of Agriculture	Amhara	2 nd 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	2 nd JSC
164	Betelhem Negede		ECRC/EDRI	1 st JSC
165	Admasu Nebebe	Director, UN Agencies and Regional Economic Cooperation Directorate	MoFEC	1 st JSC; 2 nd JSC
166	Bayu Nebsu	Climate Change Expert	Echnoserve	W-PRGA
167	Adugna Nemera	M&E Specialist	CRGE Facility, MoFEC	1 st JSC; 2 nd JSC
168	Jemal Nesru	Regional Bureau of Agriculture	Harari	2 nd JSC
169	Sisay Nune	Program Officer	RNE	1 st JSC
170	Elmi Nure	Climate Change and Development Cooperation Analysis/MSIP focal person	CRGE Facility, MoFEC	1 st JSC; W-PRGA
171	Iretomiwa Olatunji	Environmental Specialist	WB	1 st JSC

No.	Name	Title	Organization	Recorded Attendance
172	Ambrose Oroda	Environmental Specialist	AFDB	1 st JSC
173	Ju Hyun Park	Manager	Korea Trade-Investment Promotion Agency (KOTRA)	1 st JSC
174	David Potter	Climate Change Adviser & Technical Adviser to the CRGE Facility	CRGE Facility, MoFEC	1 st JSC
175	Gareth Phillips	Chief Climate & Green Growth Officer	African Development Bank (AFDB)	1 st JSC; 2 nd JSC; W-IPP; 3 rd JSC
176	Gabriele Prinz	SLM Senior Advisor	GIZ	W-IPP; 3 rd JSC
177	Hege Ragnhildstveit	Senior Advisor	Norway's International Climate and Forest Initiative (NICFI)	1 st JSC
178	Kanta Kumari Rigaud	Lead Environmental Specialist and World Bank PPCR Coordinator	WB	1 st JSC
179	Sandra Romboli	Senior M&E Specialist	WB	1 st JSC
180	Fikre Sahile	Senior Expert	MoANR	2 nd JSC
181	Dr. Yigremachew Seyoum	Director - Forest Sector	MEFCC	1 st JSC; 2 nd JSC
182	Mahlet Shebabaw	Program Manager	IDH-Sustainable Trade Initiative	2 nd JSC
183	Sisay Shibrū	Senior Planning Expert	MoWIE	1 st JSC
184	Dr. Edmealem Shitaye	NIC Coordinator	Intergovernmental Authority on Development (IGAD)	2 nd JSC
185	Ciara Silke	Climate and Environment Adviser Wealth Creation and Climate Change team	Department for International Development (DfID)	1 st JSC; 2 nd JSC
186	Shimeles Sima	Senior Forest Landscape Specialist	WB	1 st JSC; 2 nd JSC; W-PRGA; W-IPP; 3 rd 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	2 nd JSC
189	Winfried Suess	Forest Expert	KfW	2 nd JSC
190	Abebe Tadesse	Senior Expert and ISP-PPP Coordinator	MoFEC	1 st JSC; 2 nd JSC
191	Meron Tadesse	Senior Financial Management Officer	WB	2 nd JSC
192	Tefera Tadesse	Director, NRM	MoANR	2 nd JSC
193	Habtam Tamir	Director	Abbay Basin	1 st JSC
194	Yuhei Tanahashi	Agriculture Sector Advisor	Japan International Cooperation Agency (JICA)	W-PRGA
195	Desalegn Tebratu	Development Economist/MSIP focal person	MEFCC	1 st JSC; 2 nd JSC; W-PRGA
196	Melanie Teche	Climate Change Specialist	AfDB	1 st JSC; 2 nd JSC
197	Lidya Tefaye	Project Analyst	Echnoserve	W-PRGA; W-IPP
198	Hailu Tefera	Senior Forest & Climate Change Specialist	WB	1 st JSC; 2 nd JSC; W-IPP; 3 rd JSC
199	Getachew Tegegn	CRGE Expert	MoLF	W-PRGA; W-IPP; 3 rd JSC
200	Ejigayehu Teka	Team Assistant	WB	3 rd JSC
201	Dawit Tekele	CRGE Expert	NoLF	W-IPP; 3 rd JSC
202	H.E. Ato Wondimu Tekle	State Minister	Ministry of Water, Irrigation and Electricity (MoWIE)	1 st JSC; 3 rd JSC

No.	Name	Title	Organization	Recorded Attendance
203	H.E. Dr. Shiferaw Teklemariam	Minister	Ministry of Environment, Forestry and Climate Change (MEFCC)	1 st JSC; 2 nd JSC
204	Dr. Hailemariam Teklewold		ECRC/EDRI	2 nd 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)	2 nd JSC
207	Yonas Teklemichael	Advisor to State Minister, Environment and Climate Change	MEFCC	1 st JSC
208	Negash Teklu	Ex. Director	Population, Health and Environment- Ethiopia Consortium, PHE-EC	1 st JSC; 3 rd JSC
209	Eyob Tenkir	Environment Safeguards Specialist	REDD+ Secretariat, MEFCC	W-IPP; 3 rd JSC
210	Sayuri Teramoto	Project Formulation Advisor- Agri Sector	Japan International Cooperation Agency	1 st JSC; 2 nd JSC
211	Firdawek Tesfaye	Livestock Bureau	Hareri	2 nd JSC
212	Andualem Tesfayea	Environmental Protection Authority	Dire Dawa	2 nd 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	2 nd JSC

No.	Name	Title	Organization	Recorded Attendance
216	Carolyn Turk	Country Director for Ethiopia, Sudan and South Sudan	World Bank (WB)	2 nd JSC
217	H.E. Dr. Kabba Urgessa	State Minister	Ministry of Agriculture and Natural Resources (MoANR)	3 rd JSC
218	Abdurahman Uyu	Forestry Specialist	GIZ Biodiversity and Forestry Program (BFP)	2 nd JSC; W-PRGA
219	Anders Vatn	Counselor	Royal Norwegian Embassy (RNE)	1 st JSC
220	Yacob Wondimkun	Environment Advisor	Ethiopia - Canada Cooperation Office	1 st JSC; 2 nd JSC
221	Ashebir Wondimu	Senior Forest Expert	MEFCC	2 nd JSC; W-IPP; 3 rd JSC
222	Getahun Worku	Legal Advisor	KOICA	1 st JSC; 2 nd JSC
223	Dr. Dawit Wubishet		ECRC/EDRI	2 nd JSC
224	Alemu Yami		FAO	W-IPP; 3 rd JSC
225	H.E. Ato Kebede Yimam	State Minister	MEFCC	1 st JSC; 2 nd JSC
226	Alemseged W/yohannes	DRM Consultant	WB	W-IPP; 3 rd 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)	2 nd JSC
230	Dr. Solomon Zewdie	REDD+ Pilot Coordinator	MEFCC	2 nd JSC
231	Selam Zewdu	Marketing & Research Manager	KOTRA	1 st JSC
232	Yared Zewede	MISP Core Team Member	MoLF	2 nd 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 information²⁸ 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 following 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.

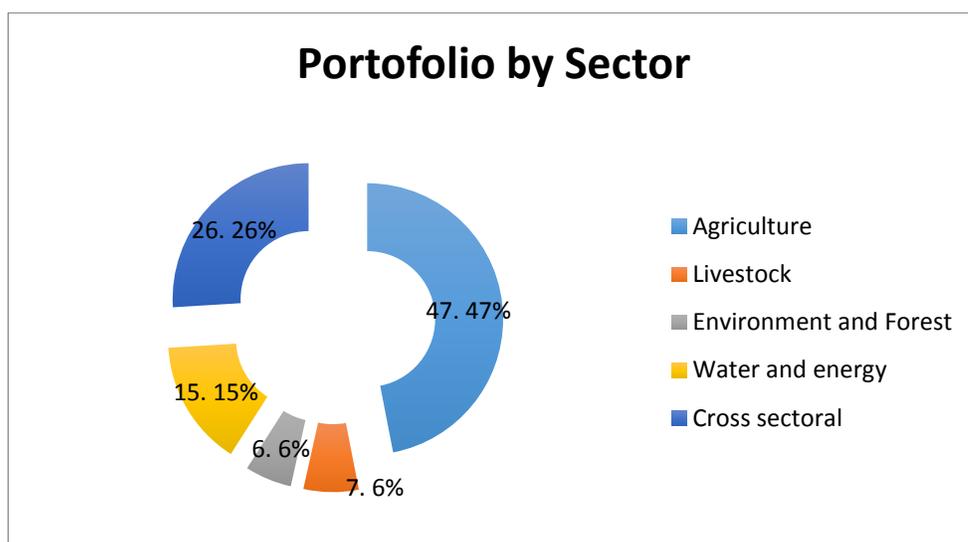
The total financial flow (through grants and loans) to Ethiopia in agriculture, livestock, environment and forest as well as water and energy between about 2010 and 2020 is approximately US\$ 4.8 billion. This amount

includes FDRE co-financing through projects such as PSNP, SLM and AGP. PSNP III and PISP 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-sectorial 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-sectorial. 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

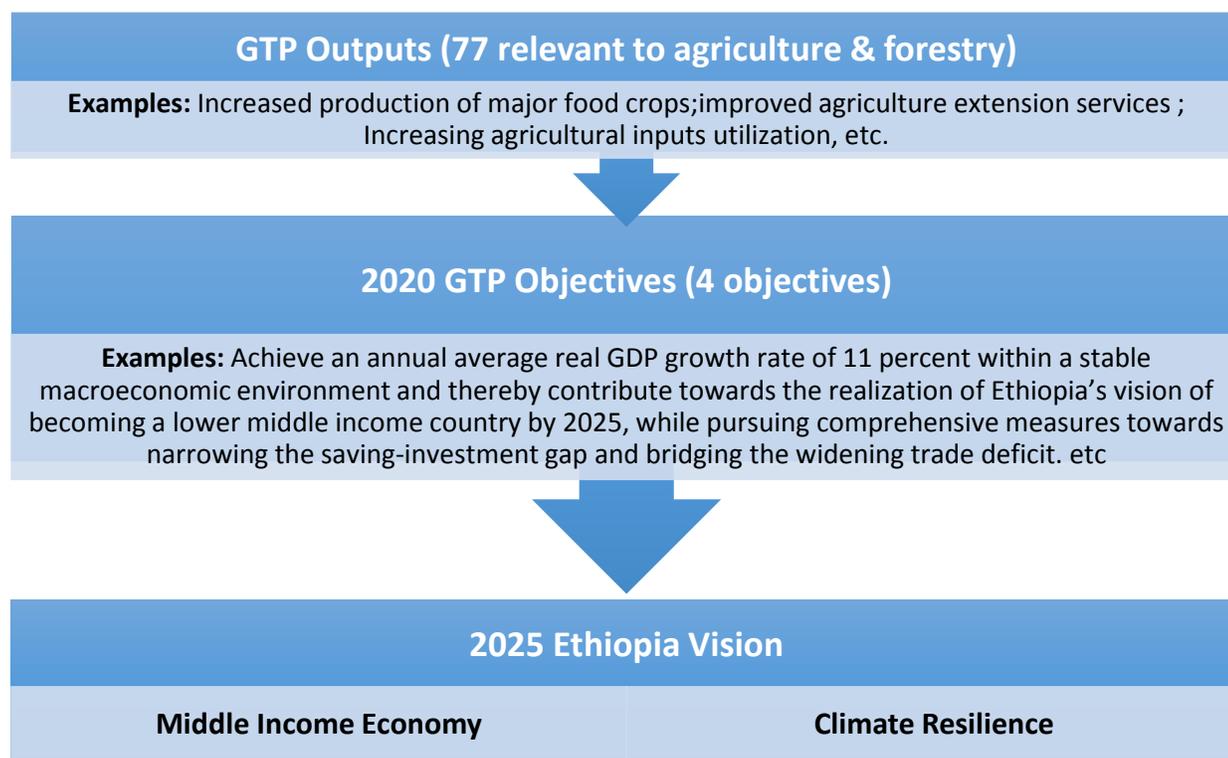
Projects less than US\$ 50 million (Categories 1 and 2), including small-scale projects, account for about 70% of the projects in Ethiopia by number, but only about 20% of total funding. The remaining 30% of the projects by number account for approximately 80% of total funding, with twelve projects above 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 1³² 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.

Bioversity 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 GIS 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, Amhara, 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 EEPKO	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, Amhara, 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; Amhara; 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 Development (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 Initiative: 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+FCPP)	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 Geothermal 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

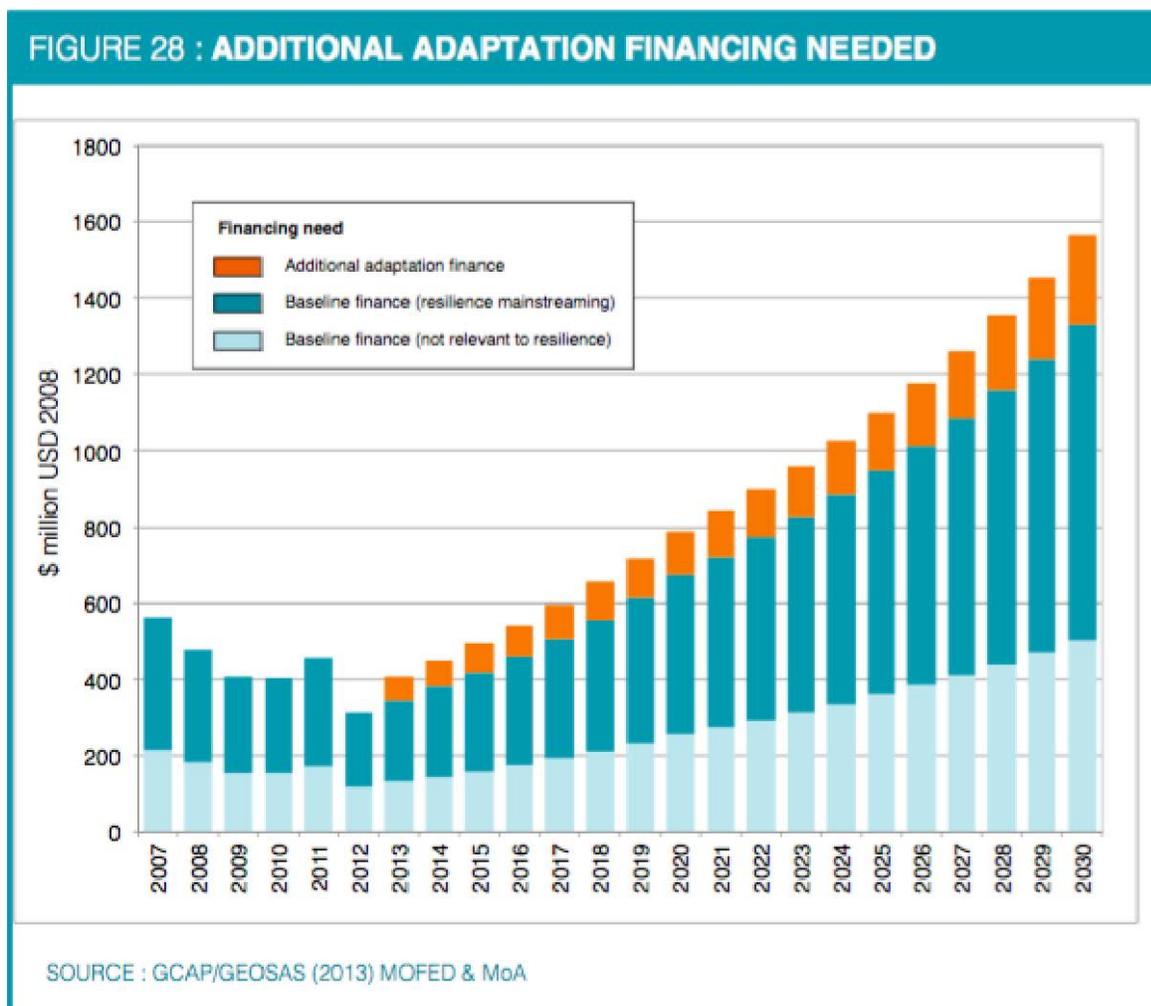
GTP Outputs	Index Score	Group Category
Increased production of major food crops	63	5
Strengthened and expanded natural resource management practices	56	5
Strengthened capacity	55	5
Strengthened water resource management and utilization	52	5
Increasing the productivity of crop	50	5
Strengthened capacity 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 Energy³⁷.

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.

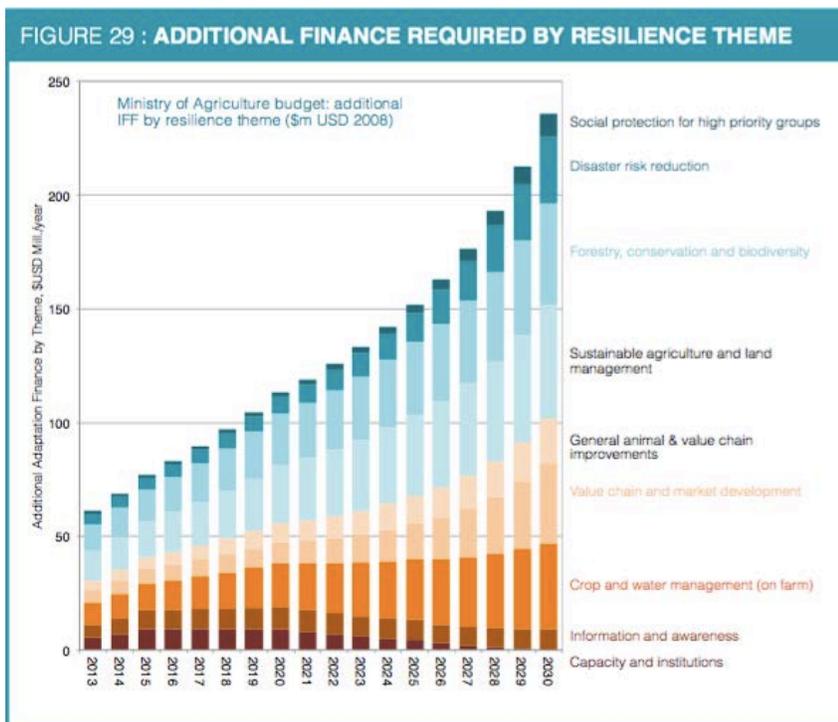


Table A7-7: CR Financing Requirements by Theme for Agriculture and Forest, 2010-2020

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 themes³⁸	5,921

A financial gap assessment has been conducted to analyze the extent to which financing for each theme has been met 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 2014⁴². 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 incorporated 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 woreda 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 country⁴³.

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.

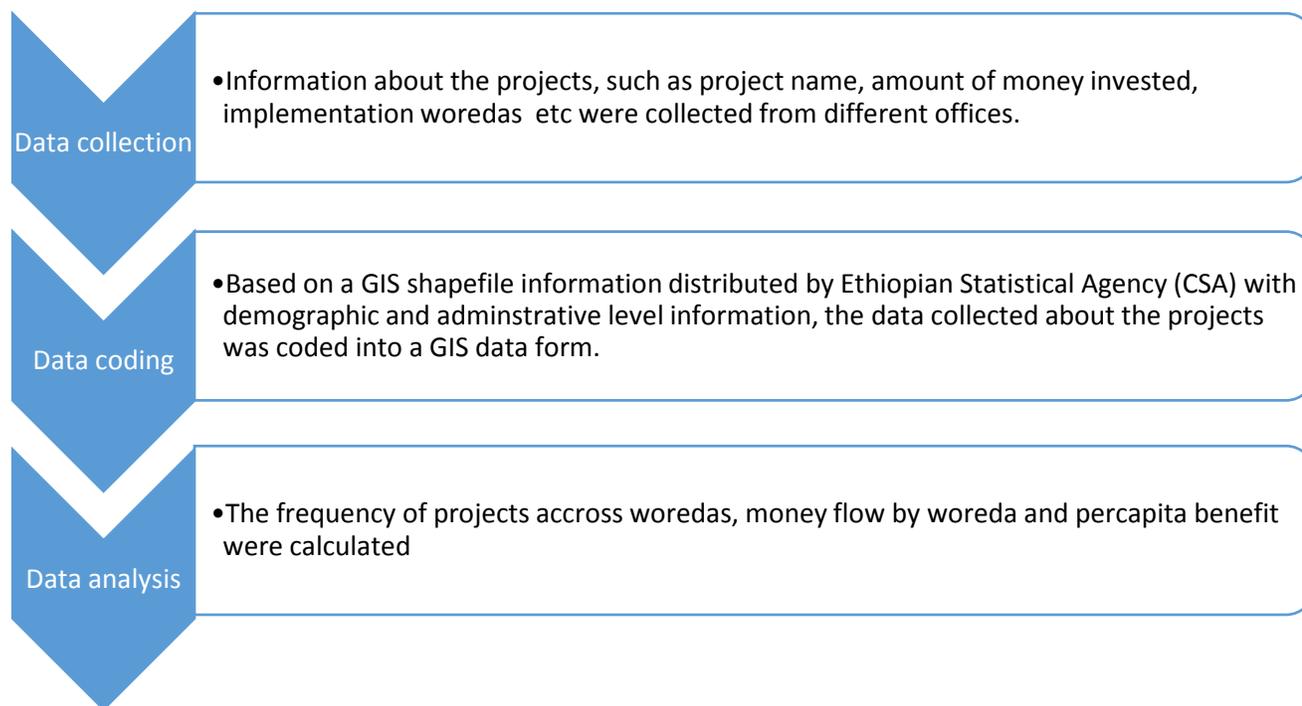
Limited availability of essential data, such as baseline targets (investment requirements by woreda), has limited the usefulness of the spatial gap analysis. Similarly, because project documents often do not detail the allocation of total budget by woreda, and have limited information on target beneficiaries, 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 Development /€630,000	MoANR	US\$7,590,020	July 1,2014	April, 2016	Oromia Region:Gawo QEBE; Akaki ,Darimu,Midagatoia ,Chiro,Adamitulu, Amhara Region:Wegedi ,Andabet,Wadla,Enbesar 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/Acheter; S/Acheter; 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,IF C/US\$4	MoNP,EEPCCO	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°	Pentad (5 days)	mm
3	NASS, Goddard Institute for Space Studies (GISS)	Estimate of global surface temperature change)	Resampled to 1km		°C

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.

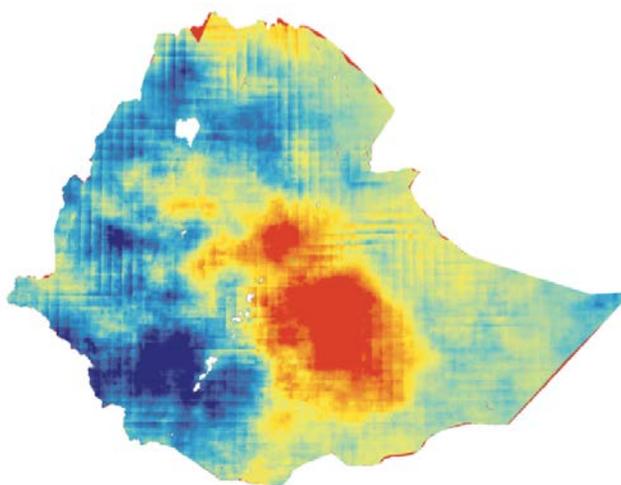
Since the range of temperature increment in the whole country was narrow (between 0.26 and 0.58 °C), the temperature change was classified into five classes, the areas with the highest temperature increase being assigned a value of 5 and those with the lowest a value of 1.

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)

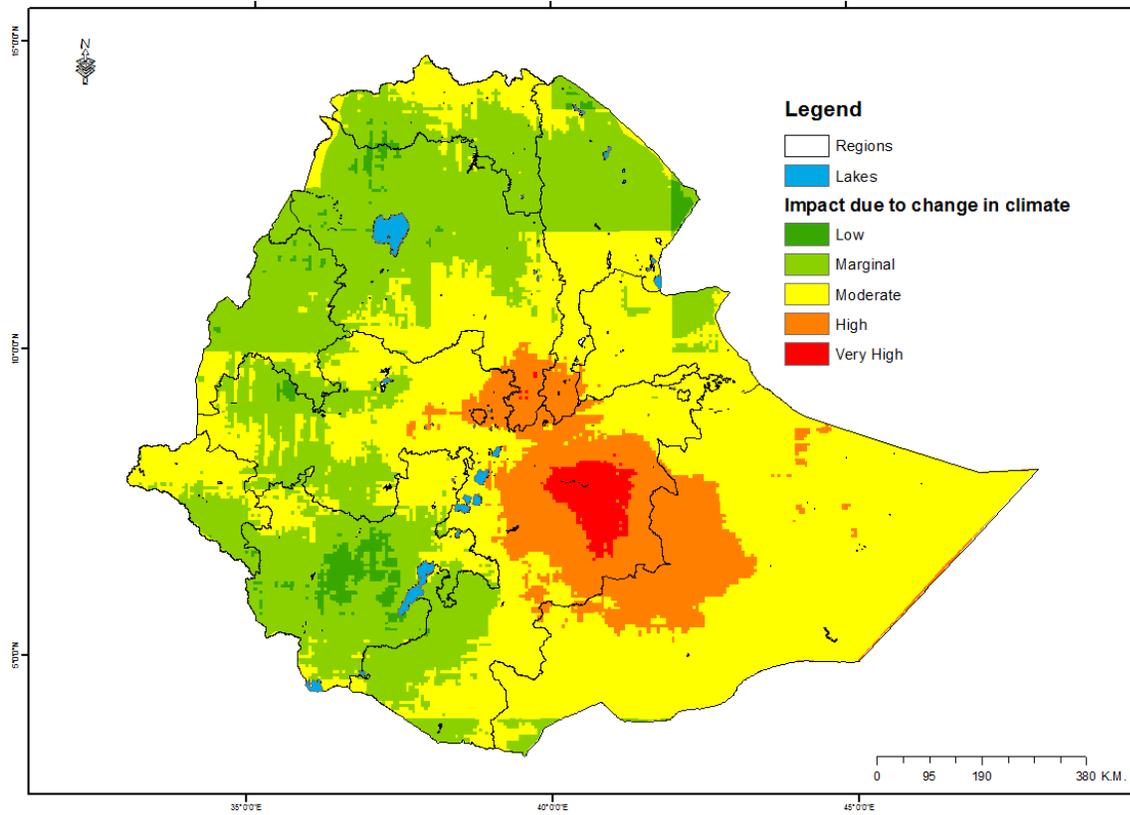
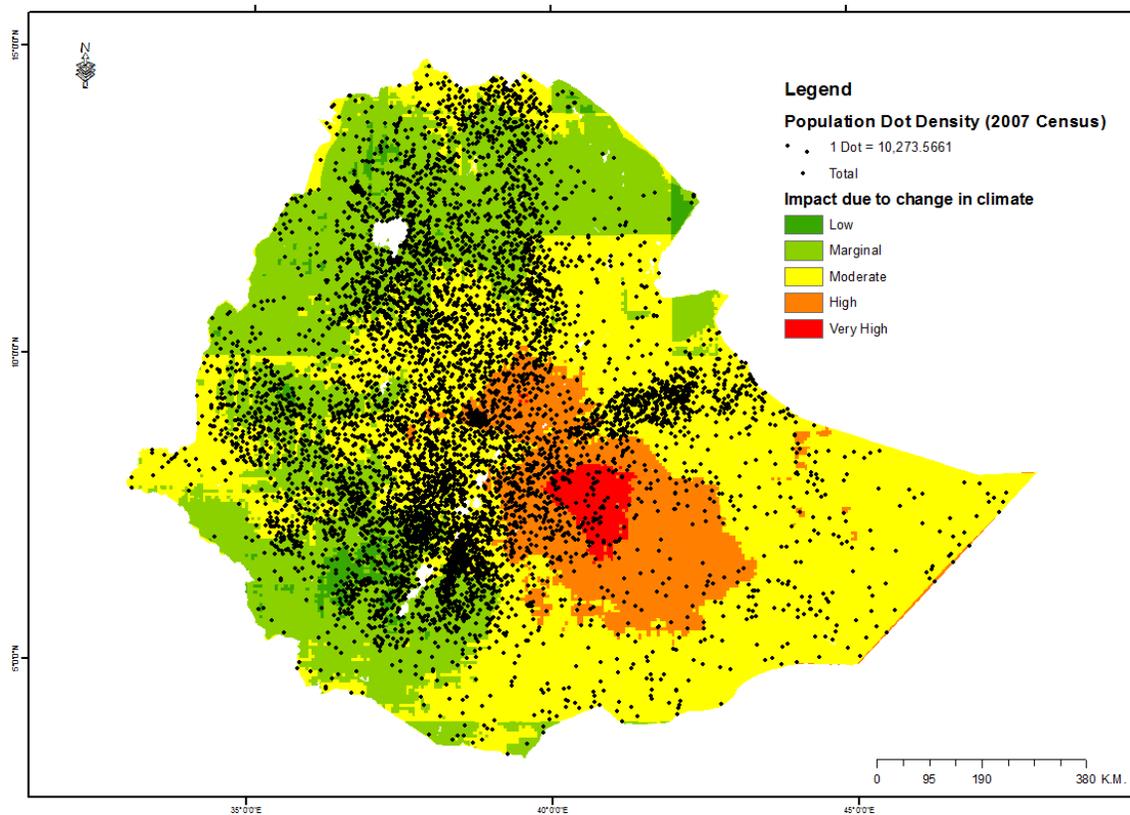


Figure A7-8: Population density and climate impact areas



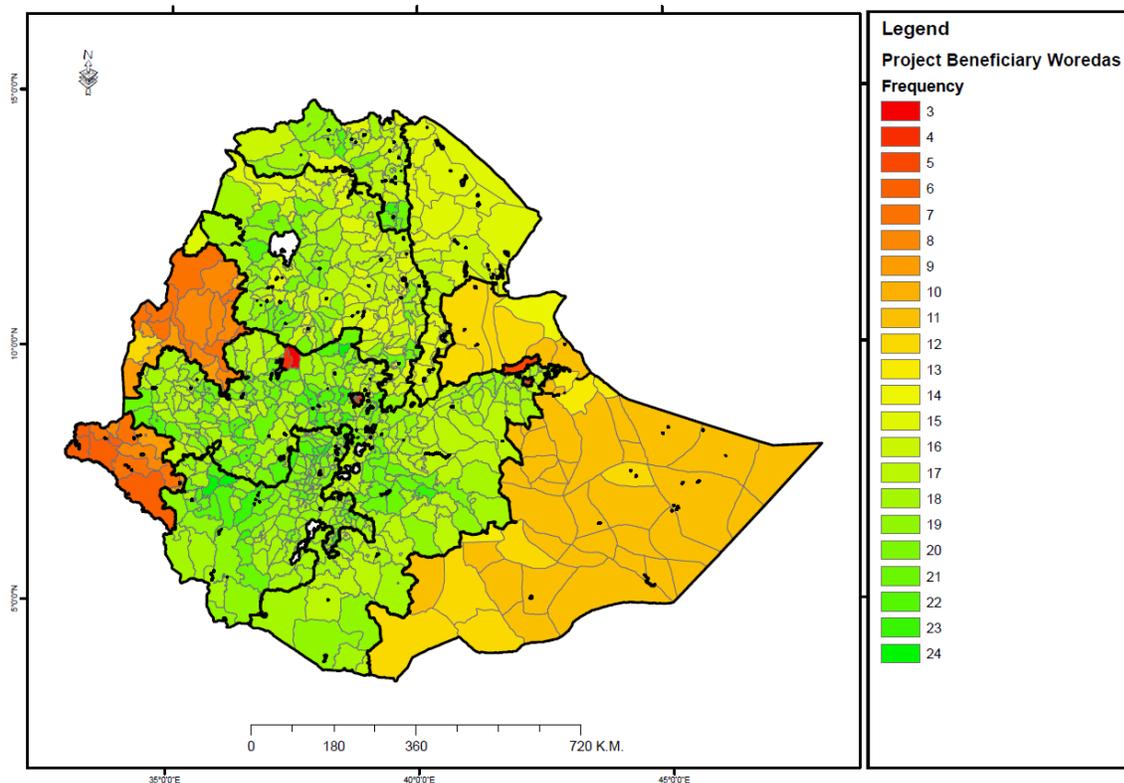
C) Investment per Woreda

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

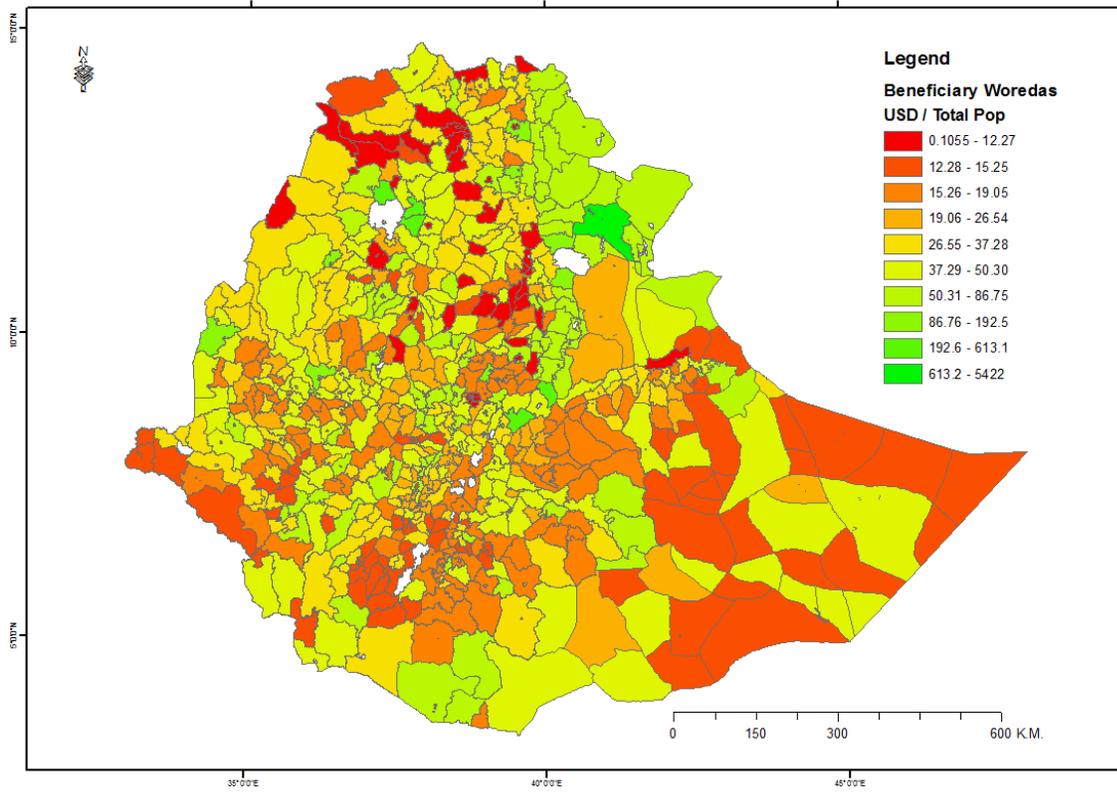


Figure A7-11: Total money flow (USD) by Region

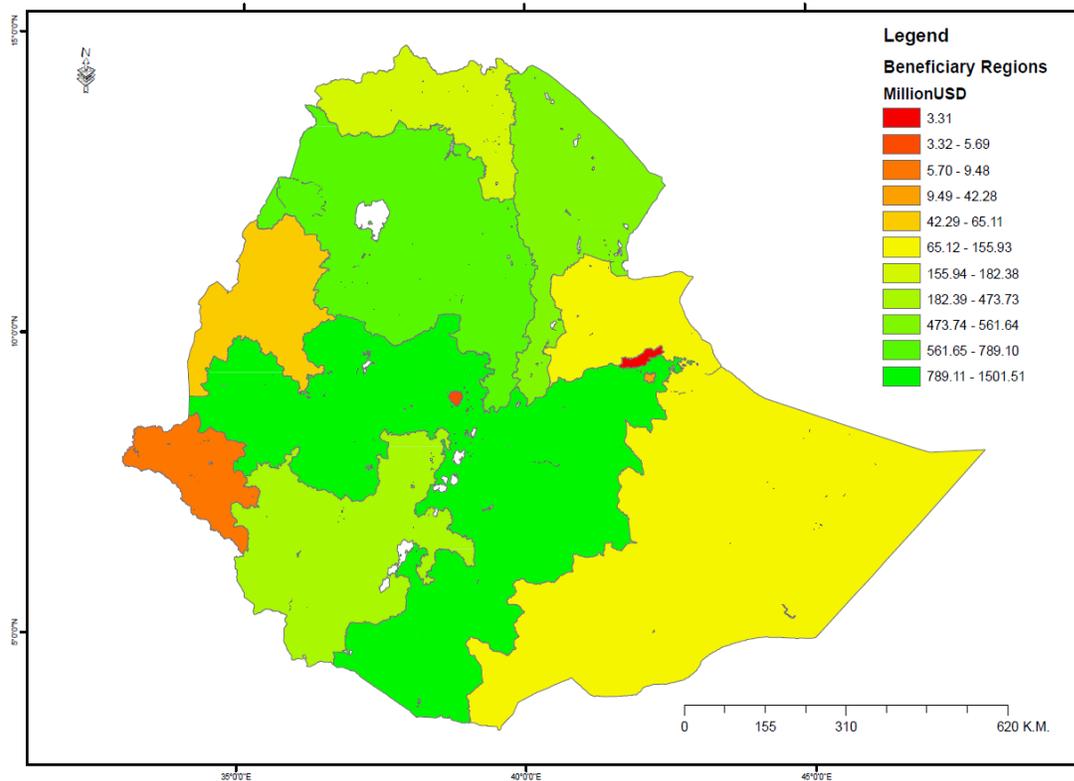
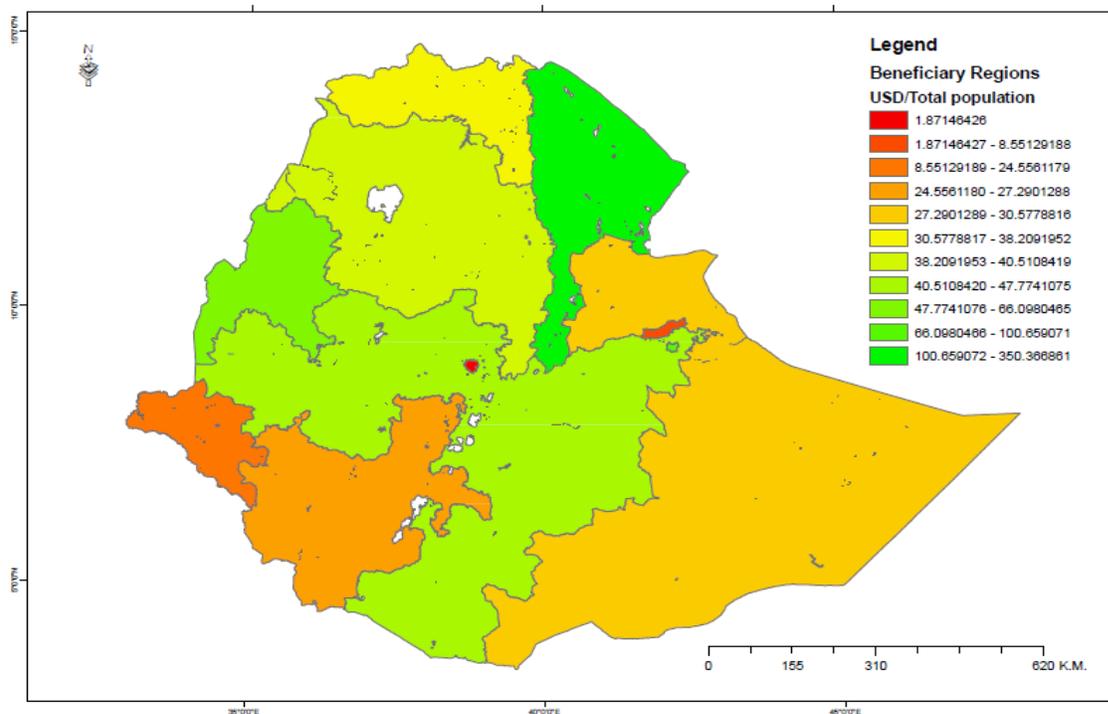


Figure A7-12: Per capita money flow (USD) by Region



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, Wabishebele 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

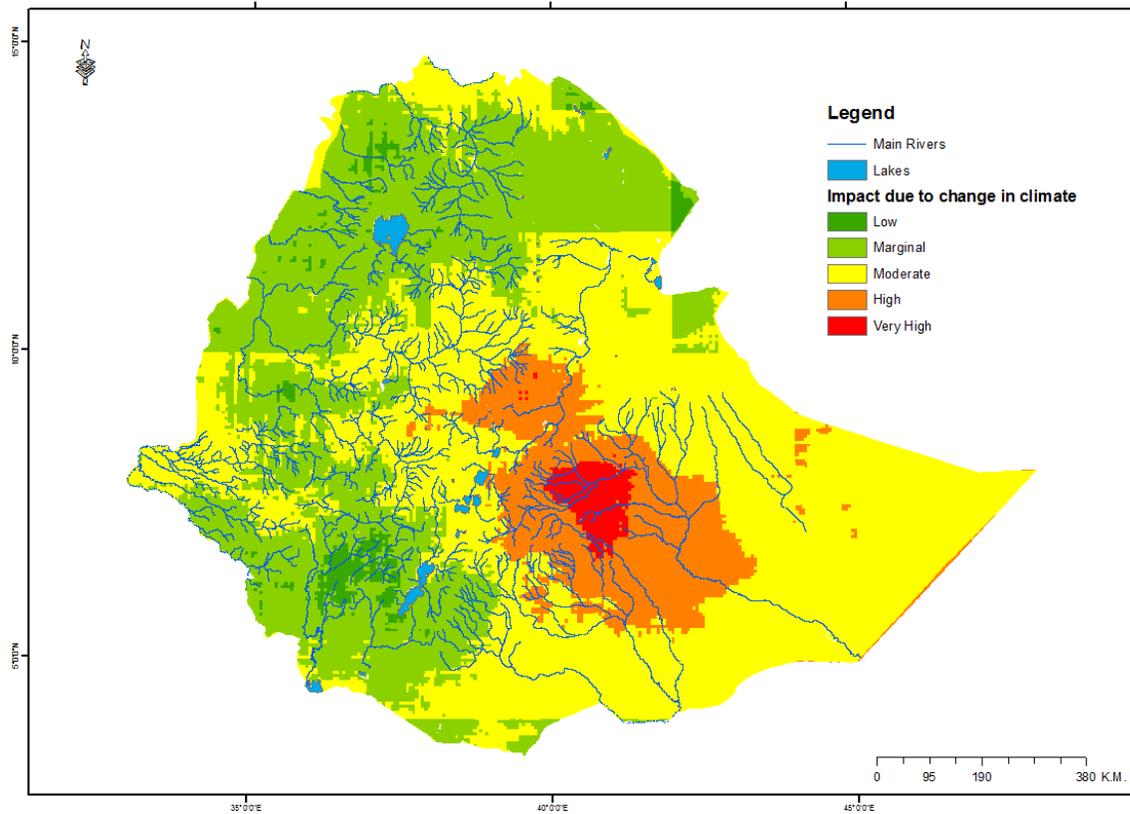
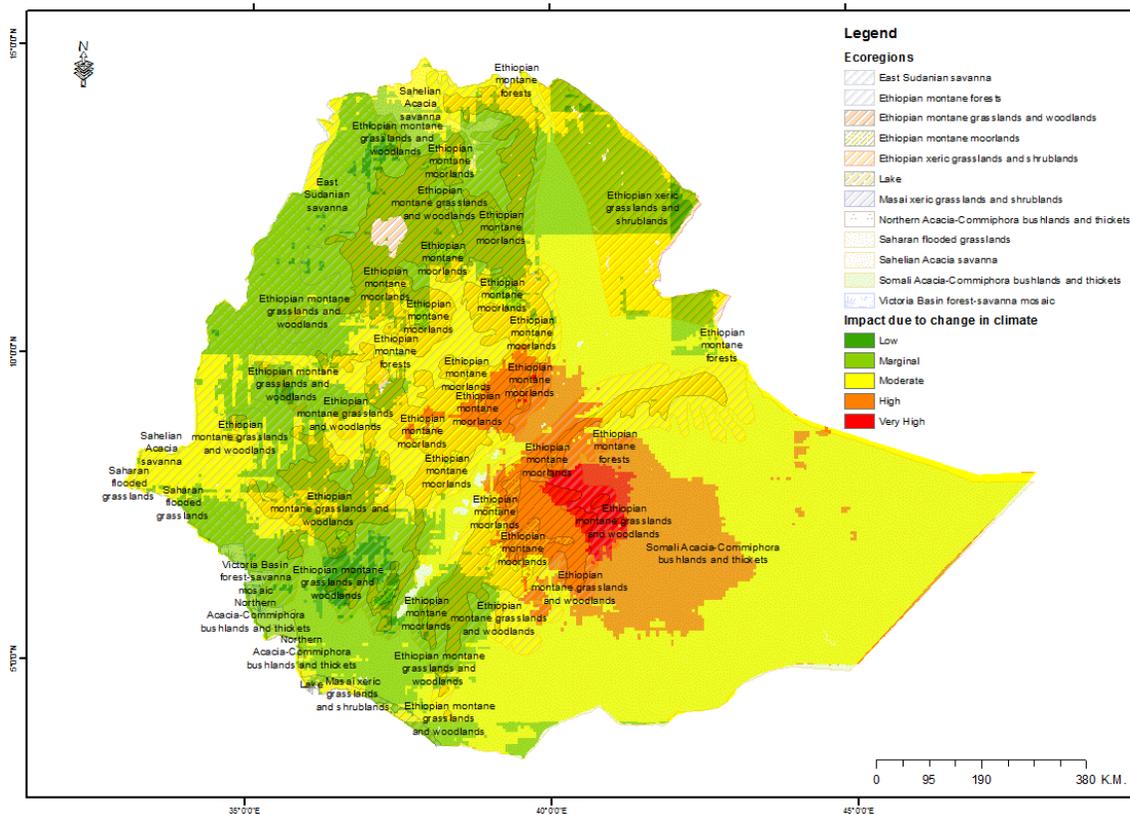


Figure A7-14: Eco-regions and high impact areas



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

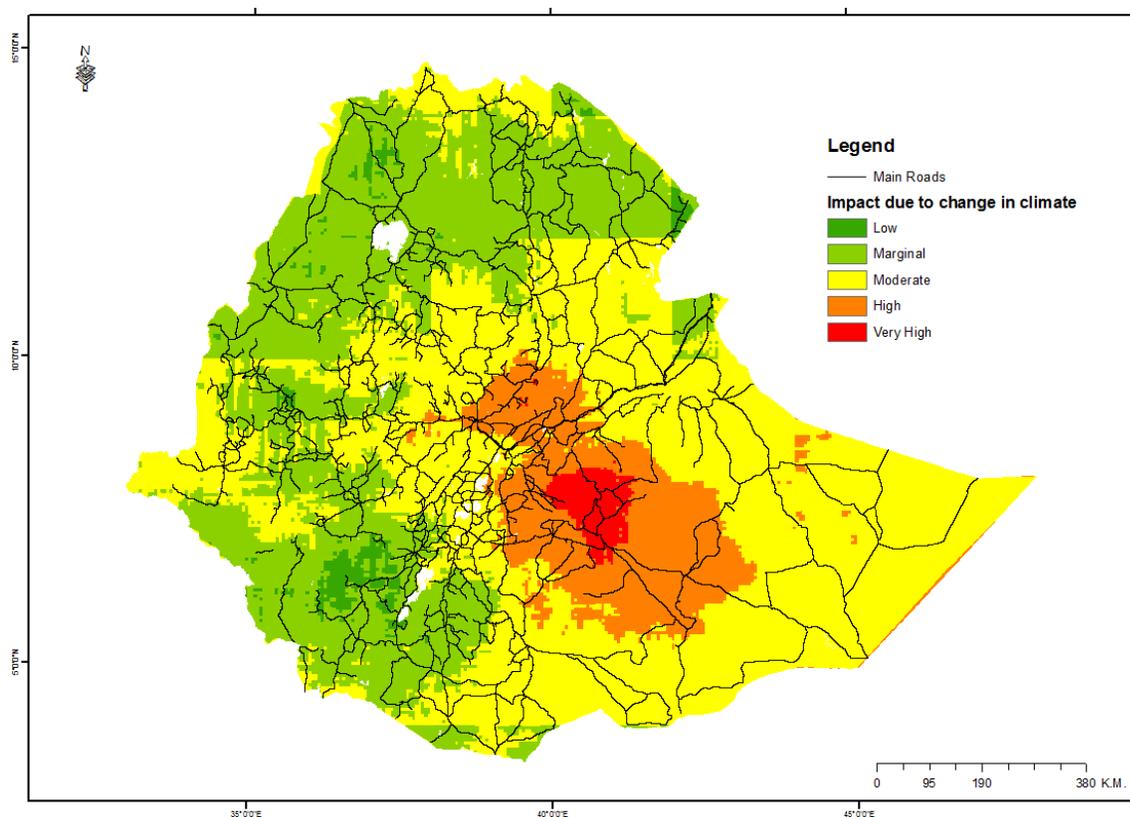


Table A7-12: Top 20 Beneficiary woredas (investment per capita)

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 °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	Erebt	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 Group⁵¹ (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 Group⁵¹ (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 Group⁵¹ (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	<ul style="list-style-type: none"> * 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 and 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	<ul style="list-style-type: none"> * 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)	<ul style="list-style-type: none"> * Terraces and bunds * Gully rehabilitation * Low tillage where applicable * Afforestation/Reforestation
14	Soil fertility management	<ul style="list-style-type: none"> * 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	<ul style="list-style-type: none"> * 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	<ul style="list-style-type: none"> * 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	<ul style="list-style-type: none"> * 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)
		<ul style="list-style-type: none"> * 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	<ul style="list-style-type: none"> * 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	<ul style="list-style-type: none"> * Biogas (community or household) * Improved cook stoves * Solar power lighting * Woodlots (link to forest/ag)
25	Land use planning	<ul style="list-style-type: none"> * Land use planning and enforcement at woreda and kebele levels
27	Basin/Sub-basin Resources Planning and Management	<ul style="list-style-type: none"> * 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	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> * 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	<ul style="list-style-type: none"> * 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	<ol style="list-style-type: none"> 1. Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3 Woredas) 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	<ol style="list-style-type: none"> 1. Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3 Woredas) 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 activities 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 m ³ of water and an estimated 2.6 - 6.5 billion m ³ of ground water potential, which makes an average of 1575 m ³ 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 Package 11: Small scale irrigation
Geographic area: Regions, woredas, kebeles	<ol style="list-style-type: none"> 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 (3 Woredas) 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	<ol style="list-style-type: none"> 1. Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3 Woredas) 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 (3 Woredas)

	<p>4. Amhara (5 Woredas)</p> <p>5. Gambela (2 Woredas)</p> <p>6. Benishangul Gumuz (2 Woredas)</p> <p>7. Sumali (2 Woredas)</p> <p>8. Afar (2 Woredas)</p> <p>9. Harerri (1 Woreda)</p> <p>10. Dire Dawa (1 Woreda)</p>
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
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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	<ol style="list-style-type: none"> 1. Oromia (6 Woredas) 2. SNNP (5 Woredas) 3. Tigray (3 Woredas) 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	<p>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.</p> <p>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.</p>
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
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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 on 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
	<i>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.</i>	
	<i>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.</i>	
	<i>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.</i>	

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 aquaculture 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
<i>new (78)</i>	De-risking commercial lending for pro-poor and resilient agricultural investment (<i>new Activity Package</i>)	26.6
<i>new (80)</i>	Assisted natural regeneration (ANR) (<i>new Activity Package</i>)	538.8
<i>new (81)</i>	Development of out-grower schemes (<i>new Activity Package</i>)	16.6
<i>new (82)</i>	Medium and large-scale commercial forest development (<i>new Activity Package</i>)	50.2
<i>new (83)</i>	Design and implementation of Forest Fund (<i>new Activity Package</i>)	0.2
<i>new (84)</i>	Support to link forest sector with micro enterprises (<i>new Activity Package</i>)	6.1
<i>new (85)</i>	Improved on-farm and rangeland livestock practices to improve productivity for rangeland and mixed farming agro-ecologies (<i>new Activity Package</i>)	304.7
<i>new (86)</i>	Manure management to support biogas production (<i>new Activity Package</i>)	3.1
<i>new (87)</i>	Improved coordination between administrative, humanitarian and insurance-based disaster response systems (<i>new Activity Package</i>)	0.5
<i>new (88)</i>	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) (<i>new Activity Package</i>)	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	<ul style="list-style-type: none"> • 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			
<ul style="list-style-type: none"> • Enhanced climate responsive and climate resilient development planning • Climate responsive investment opportunities are increased • Knowledge, skills and capacities: Strengthened government capacities to plan, resource and deliver green, climate resilient development results 	<ul style="list-style-type: none"> • 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 • Number and value of investments (national and local government, non-government, private sector, etc) in \$ by type of climate resilient investments ^A • Evidence of strengthened government capacity to collect, analyze and apply climate information to planning and decision-making 	Country sector and development strategies investment frameworks and plans Country sector and development strategies investment frameworks and plans Program reports and records, Business survey CRGE Capacity Scorecard assessed by CRGE Secretariat and all CRGE priority Ministries	Ministries are given the mandate and institutional structures to plan and implement CRGE priorities in an integrated cross-sectoral manner Climate financing can leverage significant national and international development financing to deliver transformational objectives

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	<ul style="list-style-type: none"> • (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) 	<p>Program reports of IEs and independent evaluations</p> <p>Household Surveys</p> <p>CSA National Statistics</p>	<p>Rainfall variability is low enough to enable investments in climate resilient agricultural practices.</p> <p>Land tenure rights for small farmers are clear and supportive of climate resilient investments in land management and agronomic practices.</p>
2. Climate resilient forest landscapes enhance their development, conservation and utilization	<ul style="list-style-type: none"> • 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 	<p>Program reports of IEs and independent evaluations</p>	<p>Land tenure rights for small farmers are clear and support potential for agricultural intensification and land use improvements.</p> <p>Alternative rural energy sources are technically, politically and economically viable.</p>

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
	<ul style="list-style-type: none"> 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 		<p>Integrated land use planning provides a basis for all stakeholders to manage landscape in a multi-functional way.</p>
3. Climate resilient livestock management and livelihoods is ensured	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<p>Alternative rural energy sources are technically, politically and economically viable</p> <p>Energy pricing policy is conducive to investment in small scale and off-grid/mini-grid energy generation</p>

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	<ul style="list-style-type: none"> • 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 	<p>Program reports of IEs and independent evaluations</p> <p>Household survey</p> <p>Survey of managers of emergency response agencies with data disaggregated by sex.</p> <p>CRGE Capacity Scorecard</p>	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 Development (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+, SLMP II
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