



GUIDELINE FOR MAINSTREAMING CRGE IN AGRICULTURE & LIVESTOCK SECTORS

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Guideline for Mainstreaming CRGE in Agriculture & Livestock Sectors

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DEFINITION OF IMPORATANT TERMS

Adaptation to climate change: is the process through which people reduce the adverse effects of climate variability on their health and well-being, and take advantage of the opportunities that their climatic environment provides. The term adaptation means any adjustment, whether passive, reactive or anticipatory, that is proposed as a means for ameliorating the anticipated adverse consequences associated with climate change.

Adaptation: is the ability to respond and adjust to actual or potential impacts of changing climate conditions in ways that moderate harm or take advantage of any positive opportunities that the climate may afford. It includes policies and measures to reduce exposure to climate variability and extremes, and the strengthening of adaptive capacity. Adaptation can be anticipatory, where systems adjust before the initial impacts take place, or it can be reactive, where change is introduced in response to the onset of impacts (IISD, 2003).

Adaptive capacity: is the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damage, to take advantage of opportunities, or to cope with the consequences (IPCC, 2001). Thus, the adaptive capacity of a system or a community describes its ability to modify its characteristics or behaviours so as to cope better with changes in external conditions. Adaptation to climate change is very crucial in order to reduce the impacts of climate change that are happening at present time and increase resilience to future impacts.

Climate Resilient Green Economy: Climate Resilient Green Economy (CRGE) was developed in 2011, by Government of Ethiopia after recognizing that this economic growth through the conventional development path would result in a radical increase in carbon emissions and unsustainable use of natural resources. The strategy has adopted a low-carbon climate resilient strategy looking at both adaptation and mitigation agendas together in order to become a middle-income country (~USD 1000 of GDP per capita) by 2025 through climate resilient green economy.

Climate Smart Agriculture: Climate Smart Agriculture is a practice that sustainably increases productivity and system resilience while reducing greenhouse gas emissions. CSA helps ensure that climate change adaptation and mitigation are directly incorporated into agricultural development planning and investment strategies. Therefore, when formulating agricultural investment programs/projects, it is necessary to explore and capture the tradeoffs and synergies between CSA triple pillars: productivity, adaptation, and mitigation. (FAO, 2012)

Climate variability: The weather represents variability in the atmospheric conditions on a daily and weekly basis. The term climate variability generally refers to variations of the climate system, which includes oceans and the land surface as well as the atmosphere, over months, years and decades. This encompasses predictability, i.e. the march of the seasons, but also includes an inherent uncertainty. The rainy season is a predictable occurrence, but the amount, timing and distribution of the rains is uncertain.

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Climate: Climate in a narrow sense is usually defined as the “average weather” or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). These relevant quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system (IPCC, 1997).

Exposure: is defined in the same report as “The nature and degree to which a system is exposed to significant climatic variations.” Sensitivity is “the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise).” Adaptive capacity is “The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.

Greenhouse Gases (GHGs): Gases present in the Earth's atmosphere, which reduce the loss of heat into space and therefore contribute to global temperatures through the greenhouse effect.

IPCC: Intergovernmental Panel on Climate Change, an international body of scientists tasked with evaluating the risk of climate change caused by human activity. The World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), two organizations of the United Nations, established it in 1988.

Mainstreaming: Refers to the integration of adaptation objectives, strategies, policies, measures or operations such that they become part of the national and regional development policies, processes and budgets at all levels and stages.

Mal-adaptation: Refers to any changes in natural or human systems that inadvertently increase *vulnerability* to climatic *stimuli*; an *adaptation* that does not succeed in reducing vulnerability but increases it instead.

Mitigation: Refers an anthropogenic (human) intervention to reduce the sources or enhance the sinks of greenhouse gases. It also refers to a technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social, economic and technological policies would produce an emission reduction, with respect to *climate change*, mitigation means implementing policies to reduce *greenhouse gas* emissions and enhance *sinks*.

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Resilience: is defined as the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a potentially hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions. Resilience depends on ecological dynamics as well as human organizational and institutional capacity to understand, manage and respond to these dynamics.

Scenario: Is a description of how the future may unfold based on “if-then” propositions, typically consisting of a representation of an initial situation, a description of the key drivers and changes that lead to a particular future state. For example, “given that we are on holiday at the coast, if it is 30 degrees tomorrow, we will go to the beach”.

Sensitivity: the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli.

Uncertainty: Implies anything from confidence just short of certainty to informed guesses or speculations; it is important to recognize that even good data and thoughtful analysis may be insufficient to dispel some aspects of uncertainty associated with the different standards of evidence and degrees of risk aversion/acceptance that individuals participating in this debate may hold.

United Nations Framework Convention on Climate Change (UNFCCC) was adopted on May 9, 1992 in New York and signed at the 1992 Earth Summit in Rio de Janeiro by more than 150 countries and the European Community. Its ultimate objective is the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. It contains commitments for all Parties. Under the Convention, Parties included in Annex I (all OECD member countries in the year 1990 and countries with economies in transition) aim to return greenhouse gas emissions not controlled by the Montreal Protocol to 1990 levels by the year 2000. The Convention entered in force in March 1994.

LIST OF ACRONYMS

AGP	Agricultural Growth Program
CRGE	Climate Resilient Green Economy
CSA	Central Statistics Authority
GTP	Growth and Transformation Plan
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
MEFCC	Ministry of Forest and Climate Change
MoANR	Ministry of Agriculture and Natural Resources
MoFEC	Ministry of Finance and Economic Cooperation
MoLF	Ministry of Livestock and Fishery
NAPA	National Adaptation Programs of Action
NAMA	Nationally Appropriate Mitigation Actions
NEPAD	New Partnership for Africa's Development
NGO	Non-governmental Organization
OECD	Organization for Economic Cooperation and Development
PIF	Policy and Investment Framework
PRSP	Poverty Reduction Strategy
RDPS	Rural Development Policy and Strategy
SLM	Sustainable Land Management
USAID	United States Agency for International Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

I. INTRODUCTION

This section deals with a general overview, intended objectives and method used to prepare this guideline.

I.1 Overview

This mainstreaming guideline is developed to provide guidance for the agriculture sector and particularly for the Ministry of Agriculture and Natural Resources and the Ministry of Livestock and Fishery to mainstream CRGE and climate smart agriculture (CSA) into different programs and projects in the sector as well as at policy level. The guideline has been prepared based on assessment of the current institutional arrangement and CSA practices at federal, regional, woreda and kebele level of the two institutions. Institutions providing support such as research centers were also included in the assessment. Field visit to selected regional & local institutions were conducted and made interviews with key informants, and experts. Document review was also part of the assessment & baseline tools.

Drawing from the assessment, literature review and lessons from other countries and programs, this mainstreaming guideline has been prepared. While the guideline provides overall framework that will support CRGE Directorates or Units in the mainstreaming, it should be noted that the entities are required to perform additional task based on each project or program. However, the guideline leads through on the preparation of additional actions for the mainstreaming. The program/ project level mainstreaming will guide CRGE Directorates or Units to see that CRGE or Climate Smart Agriculture is integrated in planning, implementation and monitoring and evaluation in different programs and project. The section also provides a tool to check on mainstreaming of CRGE at programs and project in different level. It has been done looking at several steps required in designing and implementing programs and projects.

The guideline is divided into two sections. The first part provides guideline for mainstreaming CRGE/CSA at program & project level and the second one at policy level, with a focus on the agriculture & livestock sectors.

I.2 Overall objectives of the CRGE/CSA mainstreaming Guideline

The main objective of this guideline is to provide direction on mainstreaming CRGE agriculture sector initiatives at policy, program and project level in the agriculture sector. The document provides guidance on mainstreaming climate smart agriculture and climate change principles in preparation of plans and programs/projects as well as checklist for national level oversight to see if programs have mainstreamed CSA into their plan of activities.

According to FAO's definition, CSA is a practice that sustainably increases productivity and system resilience while reducing greenhouse gas emissions. CSA helps ensure that climate change adaptation and mitigation are directly incorporated into agricultural development planning and investment strategies. Therefore, when formulating agricultural investment

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programs/projects, it is necessary to explore and capture the tradeoffs and synergies between the triple CSA pillars: **Productivity, Adaptation, and Mitigation**. (FAO, 2012)

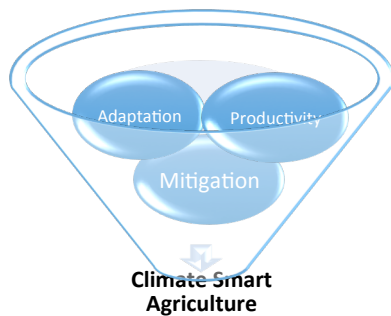


Figure 1: CSA triple pillars (components)

I.3 Method used to prepare the guideline

The methods used in the preparation of this guideline are:

- Assessment of current CSA practices in Ethiopia and CRGE task structure¹
- Review of relevant documents including mainstreaming guidelines on climate change as well as best practices.
- Review current CSA practices in the country and best practices from other countries.

¹ See CRGE/CSA mainstreaming assessment report which is the other deliverable of this project

II. UNDERSTANDING MAINSTREAMING

Mainstreaming climate change refers to whereby adaptation and mitigation objectives are integrated within development agendas. In other words, climate change risks are not addressed through separate initiatives but through ongoing development policy-making, planning and activities across all sectors².

Mainstreaming emerged as a tactical response because it was believed that these crosscutting issues should influence the ‘mainstreaming’ activities of development, rather than being addressed in separate initiatives. In order for CSA to be sustainable and applicable on a wide scale, it must be incorporated, integrated or “mainstreamed” into the policy and program apparatus of governments.

In the climate change context, mainstreaming refers to the incorporation of climate change considerations into established or on-going development programs, policies or management strategies, rather than developing adaptation and mitigation initiatives separately. In general, mainstreaming is informed integration of a relevant value, theme or concern into the decisions of institutions that drive national, local and sectorial development policy, rules, plans, investment and action. It refers to the process of incorporating climate and environment consideration to any action, policy, or legislation in order to ensure that adverse effects from any program/project and interventions are reduced.

Effective mainstreaming requires change in ideas, culture and practices of the institution. In the field of climate change, there is a common understanding that it is a concept that moves climate change from marginal discourse and puts it in the center of a discussion to redesign policies, legal frameworks and to re-think the operation of institutions, investments and all the relevant processes for climate action across the sectors, including governmental and non-governmental actors (Guzman, S. (2016).

Some of the definitions of climate change mainstreaming are:

- “Mainstreaming means integrating climate concerns and adaptation responses into relevant policies, plans, programs, and projects at the national, sub-national, and local scales.” (USAID).

- “Incorporating climate change risks and adaptation into:

(1) National policies, programs and priorities: ensuring that information about climate-related risk, vulnerability, and options for adaptation are incorporated into planning and decision-making in key sectors, such as agriculture, water, health, disaster risk

²The ‘mainstreaming’ approach to climate change adaptation: insights from Ethiopia’s water sector By Naomi Oates, Declan Conway and Roger Calow ODI Background Note April 2011

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management and coastal development, as well as into existing national assessments and action plans, including Poverty Reduction Strategies and Priorities.

(2) Development agency programs and policies: ensuring that plans and priorities identified in development cooperation frameworks incorporate climate change impacts and vulnerability information to support development outcomes...'

- According to United Nations Development Programme (UNDP) and United Nations Environment Programme (UNEP), mainstreaming is “the iterative process of integrating considerations of climate change [mitigation and] adaptation into policy-making, budgeting, implementation and monitoring processes at national, sector and sub-national levels” (UNDP and UNEP).
- “Mainstreaming by definition implies a shift from financing climate activities in incremental ways, to making climate change both in terms of opportunities and risk a core consideration and ‘lens’ through which institutions deploy capital” (MBD, 2015: viii).
- “Mainstreaming is the process by which actions to address the causes and consequences of climate change are implemented as part of a broader suite of measures within existing development processes and decision cycles” (UNDG, 2010).

There are two mainstreaming levels: strategic and organizational (CARE, 2009). Strategic level of mainstreaming addresses the organizational environment or structure in which policies and programs are developed and implemented. Operational level involves integrating climate risk assessment into plans and actions. This involves undertaking an evaluation of climate risks assessment and identifying effective, efficient and equitable adaptation measures to build adaptive capacity of communities and households³.

II.1 Mainstreaming CSA in agriculture sector

Mainstreaming CSA practice is vital in sector where climate change has significant influences. In developing countries, the sector is also a major contributor to the economic development and also influences mitigation options. Reliance on agriculture for livelihoods under increasingly erratic seasons and extreme weather events such as drought and floods, may lead to crop failure threatening food security, and livelihoods. The resilience of the agricultural systems to climate risks will depend on the extent to which agricultural practices incorporate flexible adaptive and mitigation measures into their plan. However, it is also important to indicate that in the context of developing nations, climate change adaptation and mitigation actions relate closely to, or directly overlap with, existing development strategies, policies and programs.

³The ‘mainstreaming’ approach to climate change adaptation: insights from Ethiopia’s water sector By Naomi Oates, Declan Conway and Roger Calow ODI Background Note April 2011

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The need to mainstream climate change consideration, into agricultural investment projects and programs, is increasingly apparent with the general recognition of the close linkage among food security, rural livelihoods and climate change. CSA meets these linkages results by improving productivity, enhancing resilience and reducing greenhouse gas (GHG) emissions. Therefore, for sustainable and effective result it is essential to mainstream CSA in to in the programs and projects planning, implementing and monitoring and evaluation process. The National Adaptation Plans (NAP) and Nationally Appropriate Mitigation Actions (NAMAs) are good examples of ongoing climate change planning processes. However, in the medium and long term, standalone projects like NAPAs and NAMAs are unlikely to meet all adaptation and mitigation requirements in a cost-effective and scalable manner.

Mainstreaming CSA in the agriculture sector is not an option rather it is a must-do for Ethiopia in order utilize the sector's abatement potential and eventually meet the 2020 carbon neutrality goal. Some of the proposed interventions in the agriculture sector (to soil-based emissions from agriculture and limit the pressure on forests from the expansion of land under cultivation) according to the strategy documents are:

- Intensify agriculture through usage of improved inputs and better residue management resulting in a decreased requirement for additional agricultural land that would primarily be taken from forests,
- Create new agricultural land in degraded areas through small-, medium-, and large-scale irrigation to reduce the pressure on forests if expansion of the cultivated area becomes necessary,
- Introduce lower-emission agricultural techniques, ranging from the use of carbon- and nitrogen-efficient crop cultivars to the promotion of organic fertilizers. These measures would reduce emissions from already cultivated areas.

II.2 Mainstreaming CSA in livestock sector

In Ethiopia, livestock are sources of food, draught power, bio-fertilizer and fuel, cash income and wealth accumulation. Most important achievements in livestock production value chain in the recent past comprise efforts aimed at revamping the institutional set up. In summary, this comprises the establishment of Regional Livestock Development Agencies, transfer of Ethiopian Veterinary Medicine and Feed Administration Authority to the new livestock ministry, the current EAAPP and AGP implementation and the EDGET, LIVES and LDMPs commencements; improved relations with regions in terms of communication and information exchange, improved deployment of DAs to all kebeles.

Most notable achievement in strengthening the institutional set up is the establishment of a new ministry for the livestock sector. Ministry of Livestock and Fishery was organized as an independent entity very recently. Before that livestock was a subsector under the bigger agriculture sector in the Ministry of Agriculture & Natural Resources.

The livestock sector is one of the core sectors in the CRGE Strategy and Agriculture CR Strategy. According to the CRGE Strategy (2011), the agriculture sector (comprised from crop, soil and

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livestock) contribute to the highest margin in the 2010 baseline GHG emission. In agriculture, GHG emissions are attributable to livestock and crops in that order. The current cattle population is more than 50 million and other livestock nearly 100 million. Livestock generate greenhouse gases mainly in the form of methane emissions arising from digestion processes and nitrous oxide emissions arising from excretions. Livestock emissions are estimated to amount to 65 Mt CO₂e in 2010 – more than 40% of total emissions today. The cultivation of crops contributes to the concentration of greenhouse gases mainly by requiring the use of fertilizer (~10 Mt CO₂e) as well as by emitting N₂O from crop residues reintroduced into the ground (~3 Mt CO₂e).

Mainstreaming CSA in the livestock sector is not an option rather it is a must-do for Ethiopia in order to utilize the sector's abatement potential and eventually meet the 2020 carbon neutrality goal. Some of the proposed interventions in the livestock sector (to increase the productivity and resource efficiency) according to the strategy documents are:

- Increase animal value chain efficiency to improve productivity, i.e., output per head of cattle via higher production per animal and an increased off-take rate, led by better health and marketing,
- Support consumption of lower-emitting sources of protein, e.g., poultry. An increase of the share of meat consumption from poultry to up to 30% appears realistic and will help to reduce emissions from domestic animals,
- Mechanize draft power, i.e., introduce mechanical equipment for ploughing/tillage that could substitute around 50% of animal draft power, which – despite burning fuels – results in a net reduction of GHG emissions.
- Manage rangeland to increase its carbon content and improve the productivity of the land.

III. MAINSTREAMING CSA AT PROGRAM LEVEL

Mainstreaming CRGE/CSA at the program level requires CRGE Units/ Directorates to work closely with other directorates that are implementing programs, which either directly or indirectly address climate change. As this interaction needs to be structurally guided the following six steps approach provides systematic arrangement. However, it should be noted that as the program, project and interventions are vary for different ministries, each ministries that will use this guideline are recommended to the guideline as they see it best fit their organization.

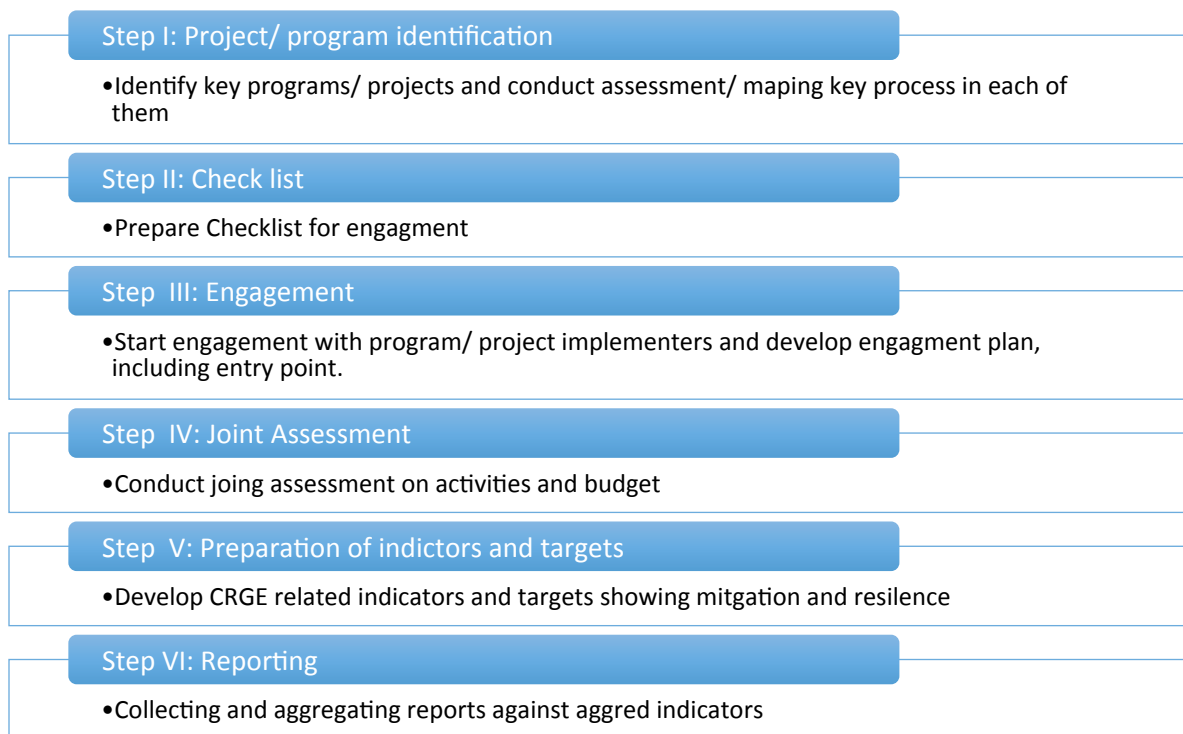


Figure 2: Steps for mainstreaming

III.1 Program/Project identification

This step will focus on identification of programs and project within each ministry. The objective of this step is to familiarize oneself with the various activities of the ministries, particularly related to climate change. This will allow the expert to better understand each project so that they will have better engagements with experts who are implementing or supporting the implementation of the program/projects. Experts are recommended to identify the programs and project through desk review and interview with key informants or experts.

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At this step, experts should collect key information about project and program and at the end the activity, the experts should have full list of project/projects and have gathered the following key information.

- **Name/ Title of the program/ project**
- **Objective/ goal of the program/project**
- **Implementing directorate or structure of the program/project**
- **Funding agency or financing modality of the program/project as well as total budget**
- **Time frame**
- **Locations**

III.2 Checklist

Based on the finding from step one activity, experts should then develop checklist that is customized to each project. The checklist will guide the rest of the mainstreaming and will be used for engagement modality. As each project is different, the checklist should also be produced based on the individual project objective, implementation modality and overall structure of the project. As mainstreaming should be informed by both national and local contexts, the development of the checklist should take the project locality into context as well. Some of the key issues that the checklist should include are indicated in the box below.

In Planning

1. Has climate risk assessment been done by the project?
2. Has GHG emissions and reduction potentials calculated?

In Implementation

1. Do identified interventions address the climate risk?
2. Are the interventions climate smart?
3. Do interventions contribute to GHG emissions reductions?
4. Are interventions designed in proper sequences?

In Monitoring and Evaluation

1. Has resilience building indicators clearly indicated?
2. Has GHG emission reduction indicators clearly indicated?
3. Are these indicators aligned with the CRGE M&E framework

At this step, experts should prepare customized/ project or program specific/ checklist that will allow them to frame engagement and discussions with experts at other directorates. The checklist at the minimum should outline topics on looking at CSA at planning and implementation level.

III.3 Engagement

The mainstreaming of CRGE should be viewed as a partnership engagement rather than an action of CRGE directorates or units. Thus, coordination of actors and alignment of policies, plans and programs should be viewed as cross cutting issue by all actors. This requires continuous engagement built on partnership. It should be understood by each part that progress towards climate compatible development requires multi-stakeholder, multi-sector working arrangements and the development of partnerships between actors who may not otherwise have worked together.

Dialogue played an important role in positive and successful mainstreaming. The objective of engagement with actors implementing each program is increase shared awareness of risks and concerns in climate change and the project, built community trust and confidence for monitoring and reporting as well as enabled actions that could barriers for mainstreaming and provide common solution.

At this step, experts should develop engagement agenda and start talking to other experts that are implementing programs and projects. At the end of this step, experts should have clearly developed agenda and timeframe for meetings to execute the remaining tasks.

III.4 Joint assessment

Once the checklist has been developed and engagement modality as prepared, the next step will be conducting joint assessment (CRGE directorate or unit with program/project implementers) against the checklist. The joint assessment is intended to contribute to a comprehensive discussion and reflection about mainstreaming climate change. This will build ownership of the mainstreaming as well as yield positive outcome. The joint assessment or reviews are appropriate if the project or the program is analyzed, in order to, e.g.

- See if climate components (at activity and monitoring level) are incorporated in the project
- Interpret already existing results for further enhancement
- Draw lessons learnt together, and
- Develop future strategies, which result from lessons learnt.

The joint assessment will contribute to secure the optimal impact interventions against climate change. They also help managers of projects and programs to manage and improve their implementation against climate change.

At this step, experts at the CRGE Directorates and Units as well as other directors should have gone through the checklist prepared on step two jointly and identified coherence and alignment as well as additional actions necessary to add CRGE/CSA actions at planning and implementation level. At the end of the activity, there should be a joint document prepared showing areas where projects or programs are aligned with the climate agenda and areas where additional actions are required to make the projects/ programs climate smart.

III.5 Preparation of indicators and targets

The identification of indicators should be aligned with the overall project M&E framework and should complement the ongoing project rather than add burden to project implementers. Thus, at this step the tasks should focus on identification relevant and suitable indicators from the logical framework, or log-frame.

One of the aims of mainstreaming CRGE at sector level is to be able to create a structured reporting mechanism for the CRGE Facility. Therefore, one of the tasks at this level should be finding a modality to be able to report against the CRGE Facility indicators. The CRGE Facility has developed an M&E system with result matrix and indicators. Project level M&E system should be linked to the CRGE Result Matrix, so that the agriculture sector can effectively and accurately report progress towards meeting resilience and mitigation goals. The key agriculture sector indicators from the CRGE M&E framework are the following.

- (Change in) Rain fed crop area under sustainable, climate smart land management practices (ha) – by crop type (private holders only)
- (Change in) Rain fed cropland productivity for major food crops (quintal per hectare). Conventional practices and Climate smart practices
- (Change in) Total cropland under modern, climate smart irrigation systems (ha and %). Medium and large-scale and Small-scale
- Small-scale irrigation: (Change in) crop land productivity where modern, climate smart and small-scale irrigation applied (quintal per hectare). Major food crops and High value crops
- Total area (individual & communal) of land under sustainable, climate smart, land management plans.

At this step, experts at the CRGE Directorates and Units as well as other directors should review the M&E framework add see to it that climate change, particularly, CRGE indicators are included. At the end of this step, there should be a clear indication that CRGE indicator and units are incorporated in the M&E framework.

III.6 Reporting

Monitoring and reporting is a planned, systematic process of observation that closely follows a course of activities, and compares what is happening with what is expected to happen. Monitoring and reporting are key component of any program/project cycle. Monitoring with in a program/project makes sure that goals, while working within the scope of allocated resources (i.e., time, financial, human, informational and technical) are met. With this in mind, the reporting to the CRGE Directorate or Unit should be an integral part of the project/program and should be done periodically as agreed by all parties.

The reporting here should also focus on identified indicators. It should also focus on assessing achievement against predefined criteria aligned with CRGE. An example of this could be GHG emissions reductions by certain percentage or tons of CO₂e. It should be noted that evaluation and reporting of the project should both be aligned to make sure that the climate change adaptation and mitigation programs determines the extent to which achievements (outputs, outcomes and impacts) are comparable with overall CRGE goals.

At this step, experts implementing programs and projects should be reporting to CRGE Directorates and Units per agreed indicators and timeframe. This step could happen several times within a project/program cycle. At the end of this step, CRGE Directorates or Units should have reports showing GHG reductions, resilience or other agreed indicators.

IV. MAINSTREAMING CSA AT POLICY LEVEL

In order for climate change responses to be sustainable and applicable on extensive scale, it must be incorporated, integrated or “mainstreamed” into the policy instrument of governments. Mainstreaming climate change adaptation describes a process of considering climate risks to policies, and of adjusting policy driven programs and approaches to address these risks. The assumption is that the policies are made with goals related to poverty reduction, livelihood security, or improved well being for target populations, and that the sustainability and impact of the initiative can be increased by integrating climate change. This is different from a “targeted” project level integration, where the explicit goal is to build resilience to climate change. Mainstreaming climate change adaptation at policy level will ensure that development programs and policies are not at odds with climate risks both now and in the future.

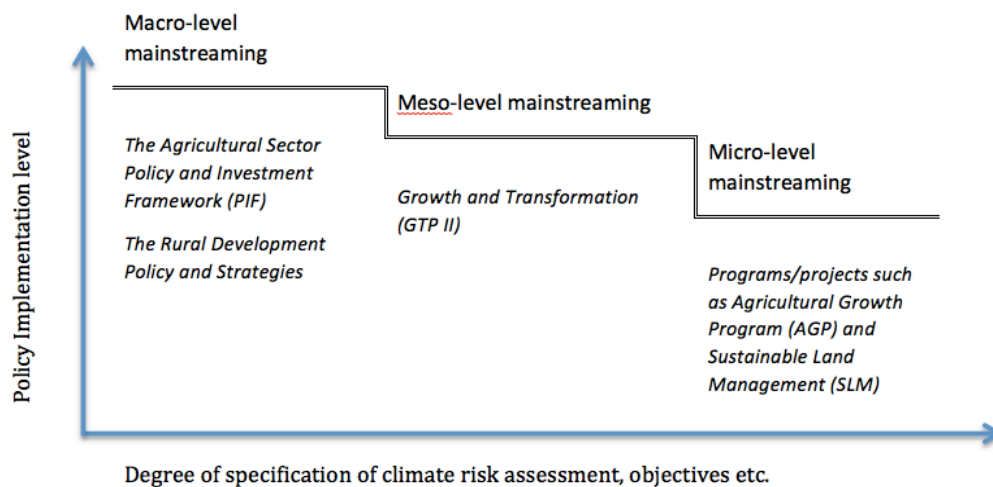


Figure 3: Policy and program linkage (Adopted from Persson and Klein, et al., 2006)

IV.1 Agriculture Policies/Strategies in Ethiopia

The Government of Ethiopia (GoE) has undertaken a number of measures to address climate change, beginning with ratification of the United Nations Framework Convention on Climate Change (UNFCCC) on 10 June 1992, developing a National Adaptation Action Plan (NAPA) in 2007, and Climate Resilient Green Economy strategy in 2010. In terms of setting policies for achieving these national and international goals, GoE has delivered a set of policies and strategies for agriculture, livestock, water and other developmental sectors. Mainstreaming climate change in agriculture sectoral policies starts by undertaking national climate change risk and vulnerability assessment, identifying appropriate mitigation and adaptation measures/options and design a Monitoring and Evaluation (M&E) system with relevant measuring indicators. There have been several studies already conducted that have identified the climate risk Ethiopia is facing and possible intervention options. The Agriculture and Forest Sector Climate Resilient Strategy has already identified several adaptation or climate smart agriculture options that can be integrated in to national level policies.

Prior to the Agriculture and Forest sector CR Strategy, the concept of climate change had been addressed as crosscutting issue in the agriculture sector policies and strategies. The following section explains the extent climate change had been addressed in agriculture sector policies and set out the steps to take to mainstream climate change in future agriculture policies.

Ethiopia's current agriculture sector policies and strategies have the potential to address these climate risks. The following table shows the objectives of the national 'Agricultural Sector Policy and Investment Framework (PIF)' in line with other relevant national development and climate change policies and strategies.

This policy alignment assessment helps identify conceptual overlaps between climate change responses and development, highlighting the need for integrated policy responses. However, when defining a coherent climate change mainstreamed policy; there are certain issues to be resolved. For example, if we take the case of Disaster Risk Reduction (DRR) in Ethiopia, it has tended to focus on short-term ex-post 'disaster relief', while climate change is a long-term problem requiring ex-ante intervention. Therefore, it is necessary to recognize climate change vulnerability in socio-economic term rather than only in the biophysical terms. This help in developing effective policies and strategies for long-term livelihood security.

Table 1: Agriculture Sector Policy Alignment

Agricultural Sector Policy and Investment Framework (PIF)		
Thematic Area	Strategic Objective	Policy Alignment
Productivity and Production	Increase in Agricultural productivity and production	CRGE and Rural Development Policy and Strategy (RDPS)
Natural Resources Management	Reduce Degradation and improve Productivity of natural resources.	CRGE and Agriculture sector CR strategy
Disaster Risk Management and Food Security	Achieve Universal food security And protect vulnerable households from natural disasters.	CRGE, Agriculture CR strategy and Disaster Risk Management
Rural Commercialization	Accelerate Agricultural Commercialization and Agro-industrial development.	Agriculture CR strategy and Rural Development Policy and Strategy (RDPS)

Ethiopia’s Agricultural Sector Policy and Investment Framework (2010-2020)

The Agricultural Sector Policy and Investment Framework (PIF) provided a strategic framework for the prioritization, and planning of agricultural investments that drove Ethiopia’s agricultural growth and development. Climate change is addressed as crosscutting issue in all areas of the PIF. The main objective of PIF was to sustainably increase rural incomes and national food security. The PIF addressed the concepts of climate change by only recognizing that climate change is increasing the vulnerability of rural people and the ecosystems they depend on for their livelihoods. However, it didn’t mention the climate change challenges and what actions are explicitly needed to address these climate risks. The PIF, however, proposed that climate change issues must be mainstreamed into the agricultural policies by undertaking carbon accounting studies and vulnerability assessment for all key agricultural investments with essential adaptation and mitigation interventions.

Rural Development Policy and Strategy

The Rural Development Policy and Strategies (RDPS, 2003) recognized that the development effort in rural areas cannot be limited to agriculture alone but it need rural infrastructure and social development programmes, trade and industry to build on and support developments in agriculture sector. In terms of addressing climate change and environment concept, the policy only stated there should be particular attention for execution modality in ensuring environmental protection, promoting sustainable natural resource management and livestock resources development. Beyond these points the RDPS didn’t not formally addressed the concept of mainstreaming climate change in rural development processes.

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Agriculture sector in Growth and Transformation Plan (GTP II)

The Growth and Transformation Plan (GTPII) provides a short term (five years) strategic agenda to achieve long term country's vision of becoming middle-income country by 2025. The Government of Ethiopia had given a strong consideration to mainstream climate change into national development process and has integrated the CRGE strategy in the second national development plan, GTP II. The GTP-II has set goals relation to building climate resilient green economy, environmental protection and forest development with the aim achieving the CRGE strategy. It has also clearly articulated that the country will focus Climate Smart Agriculture as a strategic approach. This is based on the assumption that incorporating CSA practices will help achieve the objectives of reducing greenhouse gas emission through enhancing productivity of the crop and livestock. It will also improve food security and increase income for farmers and pastoralists. However, CRGE integration into GTP II focused only on the macro and federal sector ministries. Harmonizing the regional development plans with the national strategies and plans embodied in GTP will further strengthen mainstreaming of CRGE at regional and local level.

Agriculture sector in CRGE Strategy & Agriculture CR Strategy

The agriculture sector is one of the core sectors in the CRGE Strategy and Agriculture CR Strategy. The CRGE Strategy states that the agriculture sector (which is comprised from crop, soil and livestock) contributes to the highest margin of the 2010 baseline GHG emission. The cultivation of crops contributes to the concentration of greenhouse gases mainly by requiring the use of fertilizer (~10 Mt CO₂e) as well as by emitting N₂O from crop residues reintroduced into the ground (~3 Mt CO₂e).

The CRGE-GTP II policy level integration process involved the interaction of different actors including federal and regional participants and other key line ministries and bureaus/offices, development partners, academic and research institutions, and civil society organizations. The Ministry of Environment, Forest and Climate Change (MFECC) developed integration checklist and issued this through the National Planning Commission (NPC) to sector ministries (including the non-CRGE sectors) to facilitate the CRGE-GTP II integration process. A series of awareness creation trainings on this checklist and how to use it was also organized for sector ministries and regions. Further, a team of experts from the CRGE Facility Secretariat and the NPC evaluated the draft sectorial GTP plans and provided inputs to improve their CRGE content. However, the same level of effort was absent to integrate the CRGE into regional and woreda plans. Some of the adaptation options, as part of the crop and water management on farm, given in the CR Strategy are:

- Crop switching and new varieties
- Fertilizer use
- Farm management and technology
- Pests and diseases including post harvest losses
- Irrigation
- Water infrastructure, allocation and transfers

IV.2 Livestock Policies/Strategies in Ethiopia

Some of the policy and strategy documents (standalone or merged with agriculture sector) are briefly discussed below.

Livestock sector in GTP II

Various strategies were undertaken with regard to livestock development during the GTP I period throughout the country. Although relative improvements have been registered in cattle and poultry subsector during the later period of GTP I, it was not satisfactory. GTP II came up with an ambition to build upon on those unsatisfactory results with increased targets and commitments.

According to GTP II, the implementation of the past lessons and best practices calls for proper identification of three agro-ecological zones that are suitable for the proposed intervention. This will assist the effective implementation of the sector plans that determines the realization of the transformation agenda. The three agro-ecological zones identified in the economic plan are:

- Highland/mid altitude agro-pastoral with adequate moisture
- Highland/mid altitude agro pastoral with moisture stress
- Lowland pastoral and semi pastoral agro-ecological zones

Major interventions identified in the plan are:

- Identification of production methods, preparing detail plans for each agro-ecological zone
- Genetic improvement will be carried out through crossbreeding selected local breeds based on the identified livestock development zones
- Selection of cattle for 123 production of red meat is based on the local breeds (Borana type)
- Extensive crossbreeding with exotic varieties assisted by synchronization
- Dairy development

Livestock sector in CRGE Strategy & Agriculture CR Strategy

The livestock sector is one of the core sectors in the CRGE Strategy and Agriculture CR Strategy. The CRGE Strategy states that the agriculture sector (which is comprised from crop, soil and livestock) contributes to the highest margin of the 2010 baseline GHG emission.

In agriculture, GHG emissions are attributable to livestock and crops in that order. The current cattle population is more than 50 million and other livestock nearly 100 million. Livestock generate greenhouse gases mainly in the form of methane emissions arising from digestion processes and nitrous oxide emissions arising from excretions. Livestock emissions are estimated to amount to 65 Mt CO₂e in 2010 – more than 40% of total emissions today. The cultivation of crops contributes to the concentration of greenhouse gases mainly by requiring the use of fertilizer (~10 Mt CO₂e) as well as by emitting N₂O from crop residues reintroduced into the ground (~3 Mt CO₂e).

The Agriculture CR Strategy clearly states the negative impacts of climate change on the livestock sector. According to the strategy, the livestock production and net revenues are affected by temperature and rainfall variability. Future climate change will impact on animal health, growth,

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reproduction and value. There are also the possible changes in incidence and prevalence of some pests and diseases. With increases in rainfall associated with higher incidence of certain animal diseases.

The CR Strategy also outlines possible adaptation options for the livestock sector which are:

- General animal and value chain improvements
- Herd diversification
- Breeding programs
- Improved animal health
- Fodder and feed improvement and resilience
- Rangeland rehabilitation and management
- Resilient animal housing

Ethiopia's Livestock Master Plan (LMP)

This Master Plan was developed in 2015 by Ministry of Agriculture & Natural Resources and the Ethiopian Meat and Dairy Industry Development Institute of the Ministry of Industry in collaboration with other developmental partners.

The LMP sets out investment interventions—better genetics, feed and health services, which, together with complementary policy support—could help meet the GTP II targets by improving productivity and total production in the key livestock value chains for poultry, red meat-milk, and crossbred dairy cows. If the proposed investments—of 7762 million Ethiopian birr (USD 388.1 million), 57% and 43% from the public and private sectors respectively—were successfully implemented, they could eliminate poverty in approximately 2.36 million livestock-keeping households, helping family farms move from traditional to improved market-oriented systems and adding to agricultural GDP.

The LMP interventions were tested using the sector model measures of GoE livestock development and policy objectives for the GTP I and GTP II. The GTP objectives employed to assess the investment interventions of the Ethiopia LMP were to:

- Reduce poverty;
- Achieve food and nutritional security;
- Contribute to economic growth (GDP);
- Contribute to exports and foreign exchange earnings; and
- Contribute to climate mitigation and adaptation.

IV.3 Steps for Mainstreaming Climate Change in Agriculture Policies

Policies provide long-term (15 to 20 years) visions as well as overarching framework for the development of operational plans and resource allocation while national development strategies offer shorter-term (3 to 5 years) national plans or actions (such as GTP and poverty reduction strategies PRS). Mainstreaming (or integrating) climate change at a policy level will provide framework and guideline for national as well as sectoral plans. It will also ensure that climate change adaptation and poverty reduction are implemented hand-in-hand. Mainstreaming climate change at a policy level takes into account risks and opportunities while putting in place adaptation measures that are attuned to the long-term vision of development. Policy formulation at sector level provides a key entry point for adaptation. It will allow coherence during program and project development as well. It will also ensure not only that climate change adaptations priorities are established at the sector level are operationalized, but also that the setting of such priorities is informed by sector-specific information and experiences.

The steps to follow during climate change mainstreaming in policy level are shown in the figure 4.

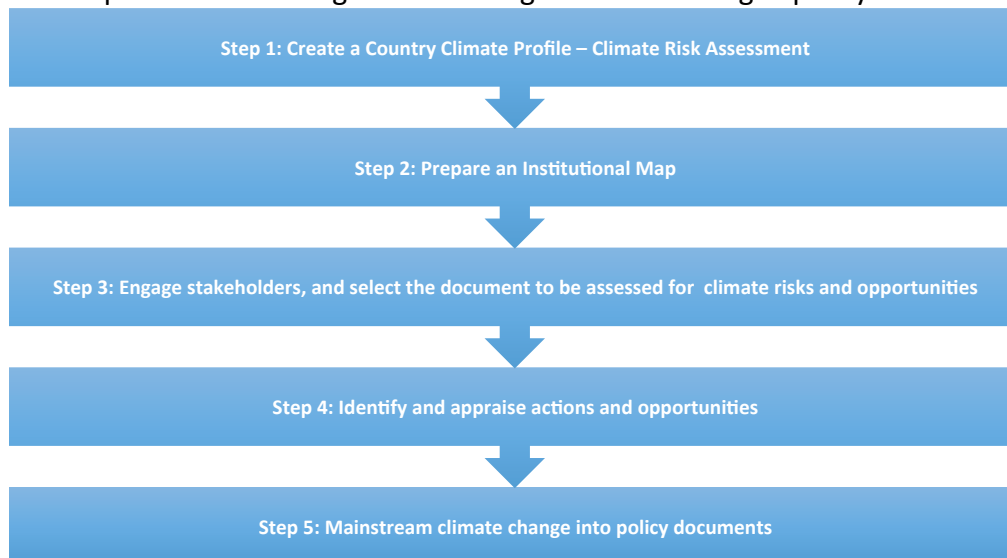


Figure 4: Steps to follow during climate change mainstreaming in policy level

Step 1: Create a Country Climate Profile – Climate Risk Assessment

An important prerequisite for informed decision-making on adaptation is that it is based upon the best available information on the implications of both the current and the future climate on the country. This includes information on current climate and extremes, projections of climate change, and assessments of impacts and vulnerabilities. Several sources of information already exist on Ethiopian climate contexts. Some of the well-researched documents showing Ethiopia’s climate risk are listed below. Weather and historical climate data are also available from National Meteorological Agency for further assessment. Assessments of the climate change impacts and vulnerabilities have also been conducted in most recent national communications Ethiopia submitted to the UNFCCC. Nevertheless, specific climate risk assessment for the agriculture sector is also essential for use as a reference in the mainstreaming of climate change in agriculture sector policy.

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Step 2: Prepare an Institutional Map

Agriculture sector climate change integration requires input and linkage from several institutions such as the National Metrology Agency, research centers, universities and support institutions such as the Agricultural Transformation Agency (ATA). Clear institutional mapping and linkage is necessary to identify roles and responsibilities of each institution. Furthermore, for effective integration of adaptation at the national level, it is critical that the coordination of adaptation is done at the federal level. As mainstreaming of climate change or adaptation in the agriculture sector requires the establishment and management of cross-sectorial co-ordination mechanisms, it is important that federal level entity lead the coordination. In addition to national co-ordination mechanisms and regulatory processes, there is also a need to integrate considerations of adaptation within various stages of the policy cycle at the national level. This is particularly critical as it affects the way resources are allocated and therefore has significant downstream implications.

Step 3: Engage stakeholders, and select the document to be assessed for climate risks and opportunities

This step is only necessary to review past policies and strategies and find a way to integrate climate change into the policy. For example the PIF had only stated that the policy has a strong consideration of climate change but fails to fully address climate risk. The document has limitation clearly identifying the climate risk in Ethiopia and what actions need to be taken to address those risks. The review of national polices or development of new the national long-term visions should bring together different groups of individuals to agree common development objectives.

Step 4: Identify and appraise actions and opportunities and opportunities

This is the stage where national policy directions are translated into sector-specific policy options, which then provide the basis for designing plans (such as GTP) or programs (such as AGP). At this stage, key actions that will address the climate risk should be identified without going to specificity for implementation. The policy should only provide a broad overview of key actions that will address the climate risk to guide programs and projects. While some of these actions may be within the authority of the Ministry of Agriculture, others might require multi-sectorial coordination and thus multi-sectorial response might be necessary once the policies are converted into actions.

Step 5: Mainstream climate change into policy documents

Once the main climate risks, responses and crucial stakeholders are identified, the next step will be to integrate it into policy level document. As sectorial polices provide an opportunity to define more concrete climate change adaptation actions, agricultural sector policy should be specific enough to address impact of climate change in the agriculture sector. The key approaches while developing the national level document are:

- Applying a climate lens in the formulation of the sectorial plan;
- Build in sector-level top-down proactive adaptation activities and projects;
- Build in cross-sectorial adaptation activities and projects identified at the national level.

V. OPPORTUNITIES AND ENTRY POINT FOR CSA MAINSTREAMING

For decades Ethiopian farmers have relied on rain-fed agriculture but since the launch of CRGE the opportunity of millions of farmers to make CSA farming decision improved from time to time. The launch of CRGE as a strategy of the country with the ambition to become green economy by 2025, the key role of MoANR in introducing new CSA initiatives and building the capacity from federal to local level and the existing agriculture extension systems have supported the mainstreaming process to put in place CSA in practice. The following points are the also the opportunities and entry points for mainstreaming CSA:

V.1 CSA practices

Various agriculture and livestock climate smart practices and technologies can be an entry point to mainstream into policy, project or programs. The detail CSA practices can be referred from the Agriculture CR Strategies.

V.2 CSA systems

CSA has its various systems that are critical to achieve the triple objectives of productivity and food security, enhanced farmer resilience and reduced greenhouse gas emissions. The main systems are the landscapes and ecosystems and value chains. The landscapes and ecosystem system refers the landscape management while the value chains refers the various agriculture and livestock products value chains. Thus, systems are highly considered as strategic entry points for mainstreaming CSA.

V.3 Enabling environment

Enabling environments for mainstreaming CSA includes the legal framework, financial provisions and institutional arrangements that facilitate the adoption of climate-smart technologies and practices. This also includes policies, stakeholder involvement and gender considerations, infrastructure, insurance schemes, as well as access to weather information and advisory services. Experience has shown that investing in the enabling environment is essential for implementing CSA at larger scales.

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ANNEX I: Tool for Climate Risk Assessment

This tool will help on conducting climate risk assessment and vulnerability of the particularly location or beneficiaries of the program/project. The tool can be used to conduct local level climate risk through primary data collection which will further enhance the program/project through development of climate focused programs/projects and interventions. Data collected through this approach can also be used as a baseline for the program/project. The approach elaborated below is built on use climate data (trends, forecasts) and impacts assessments undertake through a preliminary assessment of focus group discussions, household survey and key informants interview.

I. ADAPTIVE CAPACITY

Step one: Identify specific sub-category based on local environment

Category	Sub-category (examples)
Human Capital	Labor
	Skills and knowledge
Natural Capital	Farm
Social Capital	Eder
Physical Capital	Water harvesting structure
Financial Capital	MFI

Step two: Identify rating criteria/ indicators

Category	Sub-category (examples)	Indicator (example)
Human Capital	Labor	Number of working size (age 15 to 55)
	Skills and knowledge	% of educated force (high school, college etc.)
Natural Capital	Farm	Farm size
Social Capital	Edir	Number and size of edir
Physical Capital	Water harvesting structure	Number and size of structures
Financial Capital	MFI	Number and value of lending capacity

Step three: Score based on criteria and indicator

Category	Sub-category (examples)	Indicator (example)	Score (example)
Human Capital	Labor	Number or percentage of working size (age 15 to 55)	20%
	Skills and knowledge	% of educated force (high school, college etc.)	High school 10% College 1%
Natural Capital	Farm	Farm size Less than 1 ha, 1 to 2 ha, 2+	
Social Capital	Edir	Number and size of edir	
Physical Capital	Water harvesting structure	Number and size of structures	
Financial Capital	MFI	Number and value of lending capacity	

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II. EXPOSURE/ VULNERABILITY CONTEXT

Step One: List all known or potential exposures / hazards

Hazard
1. Flood
2. Extreme heat
3. Drought
4. Etc

Step Two: Create list of categories that can be affected by exposures/hazards

Hazard	Categories of exposure
	Human, Animal, Property, Crop, etc.
1. Flood	
2. Extreme heat	
3. Drought	
4. Etc	

Step Three: Identify if each of the hazard will impact the category

Hazard	Categories of exposure
	Human, Animal, Property, Crop, etc.
1. Flood	Human, Animal etc....
2. Extreme heat	
3. Drought	
4. Etc	

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III. SENSITIVITY

Step one. For each of the hazard identify, establish a matrix and factors that will be looked at

Hazard	Categories of exposure Human, Animal, Property, Crop, etc.	Frequency (example)	Magnitude (example)	Impact assessment (example)
1. Flood	Human, Animal etc....			
2. Extreme heat				
3. Drought				

Step two: Establish/ create a measuring tool for each of the factors identified

Hazard	Categories of exposure Human, Animal, Property, Crop, etc.	Frequency Number per year (example)	Magnitude 1-5, 1 low – 5 high (example)	Impact assessment 1-5, 1 low – 5 high (example) score of 5 10+ people died score of 1 only some property damage
1. Flood	Human, Animal etc....			
2. Extreme heat				
3. Drought				

Step three: Score each hazard and exposure based on criteria

Hazard	Categories of exposure Human, Animal, Property, Crop, etc.	Frequency Number per year (example)	Magnitude 1-5, 1 low – 5 high (example)	Impact assessment 1-5, 1 low – 5 high (example)
1. Flood	Human	Every year	1	1
2. Extreme heat				
3. Drought				

IV. Use of Climate Data

Climate data are increasingly being used to assess past trends as well as future projections. Rainfall and temperature changes are the main driving factors for most of the climate change impacts such as drought, flooding and heat waves, and thus the most appropriate indicators to use for climate vulnerability assessment. Furthermore, these are the two data sets available in Ethiopia

Climate data is available from the National Metrology Agency. The agency has 1,200 weather stations and can provide data for the past thirty years. Additional national level data can be obtained from FEWS Net to conduct national level analysis.

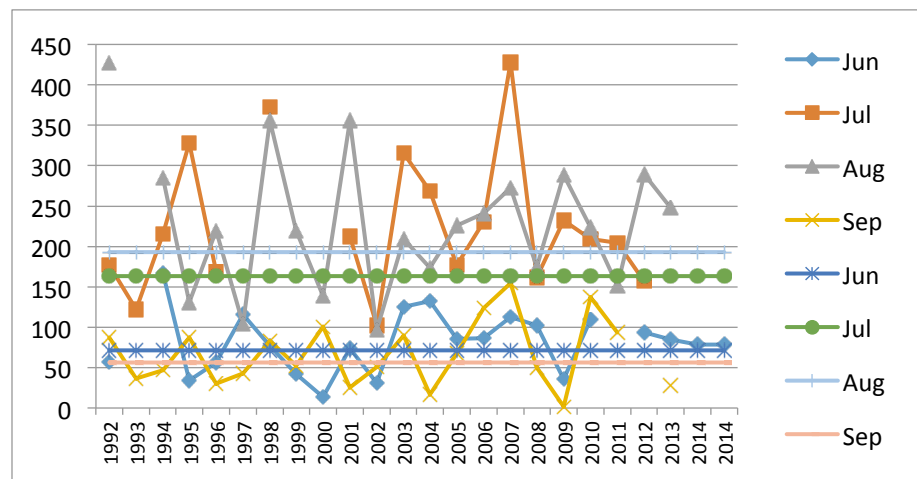


Figure 5: Example of analysis of rainfall

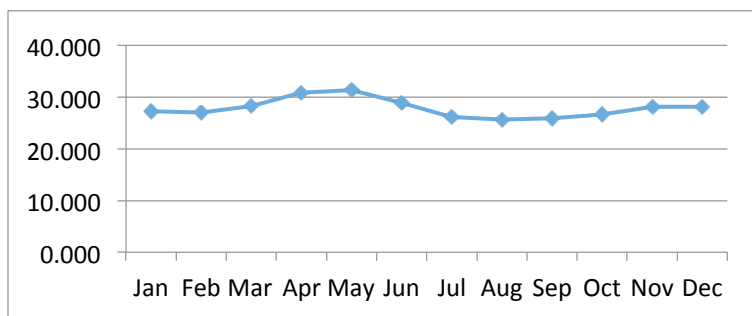


Figure 6: Example of analysis of temperature annual average temperature

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ANNEX II: Tool - Identifying and prioritizing CSA/ adaptation options

Step 1: Identify CSA options

Referring back to the hazards you have identified, select the top three climate risks you will address and list out all the adaptation options that can be implemented in your area.

(Example)

Hazard	Adaptation options
Flood	<ol style="list-style-type: none"> 1. Mountain terraces 2. Water shed management 3. etc.

Step 2: Conducting Analysis

First, list the evaluation category and selection criteria. Second, identify and create analysis matrix including evaluation category and selection criteria

(Example)

Hazard	CSA options	Evaluation Category	Selection Criteria	Score
Flood	Water shed management	Effectiveness	% of effectiveness	1-5 (1 low, 5 high)
		Cost	Cost per hector	1-5 (1 low, 5 high)
		Feasibility	Likelihood of implementing considering local financial, human etc capacity	1-5 (1 less likely, 5 most likely)

Step 3: Select Course of Action

1. Create a score card for the most feasible adaptation option
2. Present finding to the group/ community and solicit feedback

Annex III: Climate Resilience–Agriculture Sector adaptation Options/Levers

Theme	Prioritized Options (41)
Capacity building and institutional coordination	Climate information, research and enhanced co-ordination
	Institutional strengthening and building
Information and awareness	Meteorological and agro metrological data
	Agricultural research and development
	Enhanced extension services
Crop and water management on-farm	Crop switching and new varieties
	Farm management and technology
	Fertilizer use
	Water infrastructure, allocation and transfers
	Irrigation
	Farm management and technology
Livestock	General animal and value chain improvements
	Herd diversification
	Breeding programs
	Improved animal health
	Fodder and feed improvement and resilience
	Rangeland rehabilitation and management
	Resilient animal housing
Value chain and market development	Coffee
	Irrigated sugar plantations
	Roads
Sustainable agriculture and land management	Conservation agriculture
	Soil and water conservation (SWC) structures
	SWC cover crops and wild plants
	SWC water harvesting
	Agro-forestry

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	Soil management
Natural Resources Conservation and Management	Resilience measures for forests
	Conservation and rehabilitation
	Promoting biodiversity in agriculture
	Payment for ecosystem services
	Resilience measures for forests
Disaster risk reduction	Early warning systems
	Disaster risk management planning
	Insurance
	Structural protection
Social protection for high priority groups including women & children	Safety net
	Asset creation and protection
	Access to credit
	Livelihood diversification
	Resettlement/migration

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Annex IV: Green Economy –Agriculture Sector Mitigation Options/Lever

Sector	Goal	Action/Lever
Forestry	Reduce GHG by 131 Mt Co2 e	Reduce deforestation
		Reduce degradation
		Increase sequestration
Livestock	Reduce GHG by 48 Mt Co2 e	Animal diversification
		Value chain improvement
		Large scale mechanization
		Small scale mechanization
		Pastoral land management
Soil	Reduce GHG by 30 Mt Co2 e	Lower emitting techniques
		Yield increase techniques
		Irrigation and new agriculture land in arid areas