ROADMAP FOR IMPLEMENTATION OF AGRICULTURAL SECTOR GHG ACCOUNTING FRAMEWORK
Roadmap for Implementation of Agricultural Sector GHG Accounting Framework

FDRE Ministry of Agriculture and Natural Resources

Agricultural Transformation Agency
Addis Ababa, Ethiopia

March 2016
Addis Ababa, Ethiopia

This report has been prepared by Echnoserve Consulting PLC on behalf of the Agricultural Transformation Agency (ATA). This project was funded by DANIDA
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EXECUTIVE SUMMARY

This report provides a roadmap for the implementation of agriculture sector greenhouse gas (GHG) accounting framework. The report is organized in two parts. The first part deals with roadmap to implement Ex-Ante Carbon-balance Tool (Ex-ACT) over a short and long time frame as well as the design and implementation of country specific framework. The second part focuses on international climate finance and modality to access them.

The goal of the short-term action is to roll out Ex-ACT system in the four large regional states, ie, Amhara, Tigray, Oromia and SNNPR. The time frame for the short-term plan is up to six months and during this time capacity building will be provided for experts from the four regions as well as federal MoANR. Once capacity is built at regional and federal level, the regions will prepare regional level GHG emissions report and communicate the report to the federal entity. The short-term program will be used to assess the program before the long-term plan is embarked on.

The long-term action for implementation of Ex-ACT is target to be implemented over three years. The key action that will be implemented during this time includes integrating the M&E system with GHG indicators, capacity building for the remaining regional as well as 180 woreda experts on Ex-ACT, strengthening the online report submission system as well as creating and strengthening linkage between woreda and regions and federal entity. During this time, MoANR will prepare two annual GHG inventory report and submit them to MEFCC.

Over the long term, it is recommended that country specific framework be developed as well as national level emissions factors prepared. This is expected to be done after three years of working on Ex-ACT. The development of the framework is expected to take up to two years. The framework to be developed will be a web-based application that enables aggregation of data and generation of periodic reports relating to the Monitoring, Reporting and Verification of greenhouse gases (emission & emission reduction) from the sector. The database will allow the MoANR build a picture of the sector’s emission/reductions and report it to the national coordinating entity (MEFCC) and UNFCCC on. The database also helps identify and record data on GHG emissions and related information within a certain boundary/scope (such as program/project/geographical area) in a manner that catalyzes the reporting and verification process.

The second part of this document provides an overview of the current international climate finance landscape as well as mechanism of accessing them.
PART I

ROADMAP FOR IMPLEMENTATION
I. About the frameworks

The agricultural sector GHG accounting framework was prepared to recommend GHG accounting framework for the agricultural sector so that Ethiopia can not only report its achievements in developing green economy but also access additional climate finance. Having a standardized and globally acceptable GHG accounting framework for the agriculture sector in Ethiopia will also help policy makers and experts develop effective policy options and interventions. The GHG accounting framework is built from lessons learnt from case studies of India, Brazil and Denmark; detailed evaluations of agricultural GHG accounting tools, databases, methodologies, protocols and standards; as well as field visits and capacity gap assessment. The development of the framework is made using components of GHG framework recommended by the World Resources Institute, the World Bank (and its programme on Partnership for Market Readiness) within the Guide for Designing Mandatory Greenhouse Gas Reporting Programs.

The short-term recommendation for the GHG accounting is to use EX-ACT tool and tier 1 emission factors. EX-ACT uses simple approach of calculating GHG emissions or sinks using activity data and emissions factors. It is recommended that GTP actions be used as activity data and default emission factor be used in EX-ACT. The short term strategy can be used for up to three years, while the long term framework is being developed. EX-ACT is recommended for the following reasons:

- The Ministry of Agriculture and Natural Resources is currently using it and there is some familiarity with the system at federal and regional level,
- The system has the ability to do all three greenhouse gases in the agriculture sector,
- It is simple to learn and use and training materials are already available,
- It can be rolled out quickly and tier 1 emission factors can be used,
- Large set of data to be used in EX-ACT is already being collected by experts, and
- Additional software downloading or complex IT system not required

However, EX-ACT also has some limitation which can be addressed and they are

- Additional excel sheet is necessary to aggregate data at regional or federal level
- Training materials needs to be customized to Ethiopian context, ie. include local examples and exercises
- Data collection template to be modified so that what experts are already using to report for GTP can also be used for EX-ACT.
- Centralized data depositary and communication protocol is also needs to be prepared.
Development of country specific framework is the recommended long-term plan. This recommendation is built upon lessons learnt from countries such as Denmark and India which have developed country specific framework that address national needs, goals and agro-economic situation. Other developing country that has developed a country specific framework includes Kenya which has an MRV* framework that integrates GHG reporting with resilience indicators. The country specific framework recommendation also includes developing country specific GHG calculating and reporting tool customized to current agricultural practices of Ethiopia. The system should also be aligned with the country’s policy of green economy and GTP. The long-term recommendation is also to develop country specific emissions factors.

The proposed system is a web-based platform that will allow primary reports, particularly regional level entities, account for their GHG reductions in line with their GTP actions. Another key feature of this system is linkage with the CRGE levers that were identified in the CRGE strategy. Thus, each GTP action that has GHG emissions reductions will be linked with the CRGE lever. By doing so, it will be easy to track achievements of targets against CRGE by actions. The system will also allow different sets of structures to report and show their GHG reduction, but also enable the reporting to expand in the implementation and eventually cascade it down to the woreda level. During the initial phase of the implementation regions and non-state actors would be the key reporting entities but eventually woredas will take on the task.

The other recommendation that is put forward in the framework is a system that is aligned with the compliance or voluntary carbon markets. Despite having several projects that have GHG reduction component such as SLMP and AGP, Ethiopia has failed to utilize any credit or financial reward from the carbon market. Though the carbon market has collapsed starting 2010, there are hopes that the Paris agreement (COP 21) will revitalize the system again. Furthermore there are programs such as the NORDIC climate fund which still buys CERs. In addition, the government of Ethiopia has expressed a plan to mobilize fund through carbon credit as stated in the CRGE. The aim of this framework is to facilitate carbon emissions reductions (CERs) through the mandatory or voluntary market for agricultural sector projects already being implemented in the country.
II. Roadmap for implementation of EX-ACT

The roadmap for implementation of EX-ACT is divided into two time frames, short term (up to six months) and long term (up to three years). The implementation is also divided into three different segments, human (including capacity building), technical (focusing on technology and infrastructure) and institutional (focusing on arrangements).

II.1 Ex-ACT Short term

The goal of the short-term actions will be to implement use of Ex-ACT in the four regional states where ATA is currently working, i.e., Tigray, Amhara, Oromia and SNNPR. This will be done over six months and during this time, capacity building will be provided for experts from the four regions as well as federal MoANR. Upon completion of training and capacity building, the plan is to conduct baseline and projected GHG reductions and emissions using GTP II plan and current CSA (Central Statistics Data).

Up on completion of the actions within six months, an assessment on the process and lessons learnt will be prepared for rolling out the system in the remaining six regions and woredas. The assessment will focus on issues such as data gap and quality in GTP II plan, training of EX-ACT and communications between federal and regional units. The assessment and lessons learnt will also be used to improve the system in the all the regions.

The next section will elaborate on necessary actions recommended under human, technical and institutional during the short period of time.
**Human/capacity building**

The goal is to conduct training for experts from the four regions as well as federal level. EX-ACT is developed by FAO and the organization also has a training package which also includes hands on exercise. The training program is given over five days and has examples as well as practical exercises. FAO can provide training for experts. However, the training uses examples and the practical exercise from other countries. The training for regional and federal experts can be enhanced and be more useful if local data as well as GTP numbers are used. Thus, one of the activities that can be undertaken before the training is improvement of the training materials so that locally applicable training is given. In addition, experts should be required to bring in actual data, preferably from GTP I or II so that the practice exercise can be used as an opportunity to generate regional level report.

**Technical**

Functional computers with Microsoft Excel and internet connection are the only IT requirements necessary to make use of EX-ACT. Thus, the initial technical requirement at regional and federal level is having a functional PC. Another key requirement is having the necessary IT infrastructure to share, exchange and store reports. This can be done through a dedicated web-base platform. While it is necessary to eventually create such a platform, the current web system being used by the CRGE unit (www.agcrge.info) can be used as a starting point. Having such a system will create sustainability as there won’t be loss of data due to change of personnel, file corruption or other unforeseen problem.

**Institutional**

In order to implement Ex-ACT in the short run, there is a need to strengthen linkage between regional and federal entities. At the federal level, the main entity is MoANR which is responsible for the overall coordination and reporting of GHG emissions coming from the agriculture sector. However, the regional bureaus and local agriculture offices will be responsible for data generation and reporting using Ex-ACT. In that case, MoANR will only be facilitating the process and conduct verification of results when necessary. For that MoANR should develop mandates for entities and individuals participating in the process. There should also be an MOU prepared and signed among the implementing and executing entities (federal and regional government bodies).
**Activity Work Plan**

**Short Term Implementation Plan**

**Length:** Six (6) Months

**Target:** 4¹ Regional States

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<tr>
<th>No</th>
<th>Activity</th>
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<tbody>
<tr>
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<td>1 2 3 4 5 6</td>
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<tr>
<td>1</td>
<td>Consultation with federal and regional entities on organizing the trainings. Develop/adopt a guideline on use of Ex-ACT</td>
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<tr>
<td>2</td>
<td>Communication with FAO or other entity for provision of training on Ex-ACT</td>
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<tr>
<td>3</td>
<td>Provide training on Ex-ACT for federal and regional experts</td>
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<td>4</td>
<td>Signing of protocol for exchange of data between regions and federals</td>
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<tr>
<td>5</td>
<td>Finalization of data exchange system between regional and federal entities</td>
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<td>6</td>
<td>Preparation of GHG emissions and reductions assessment by regions and submission to federal</td>
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<td>7</td>
<td>Technical support to regions</td>
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<tr>
<td>8</td>
<td>Validation of data and report by federal entity</td>
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<tr>
<td>9</td>
<td>Review of program and assessment for scale up as well as three year plan</td>
<td></td>
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¹ The four regions are Tigray, Oromia, SNNPR & Amhara
II.2 Ex-ACT Long term

The goal of the long-term plan is to expand the program into the remaining six regional states, woredas as well as integrate reporting with GTPII. The key activities that will be conducted over the long term can be categorized into three areas:

1. Capacity building: for regional and woreda experts on Ex-ACT.
2. Technical: Integration of GTPII M&E system with Ex-ACT and strengthening the data collection system.
3. Institutional: Creating and strengthening linkage between woreda and regions as well as regions and federal entity.

The long term plan is expected to be implemented over three years. During this time, integration of the MoANR MRV system with the national MRV system should also be conducted. MoANR can also prepare annual GHG emissions, reductions and sinks report and submit it to MEFCC.
### Human/Capacity building

The goal is to provide training to the remaining 6 regions and approximately 180 woredas from all regional states. During the first year, training will be given to regional experts from the six regions and about 110 woredas of the four regions (Amhara, Oromia, Tigray and SNNPR). During the second year training for 70 woredas of the remaining six regions will be conducted. In addition, there will also be at TOT training so that local expertise will be built to continuously provide training and support rather than rely on FAO for capacity building. Capacity building for MoANR on verification and quality assurance will also be given during the first year.

### Technical

One of the key technical activities to be undertaken during the long term period will be integration of the GTP M&E system with ExACT. Ex-ACT uses activity data in combination with emissions factor to generate GHG emission. Woredas and regions currently collect about 80% of the activity data that can go into Ex-ACT. However, rather than collecting the remaining 20% data, an integrated system will be used for both GTP II and Ex-ACT reporting. By doing so workload for woreda and regional experts can be reduced. The action taken here will be to further integrate the indicators necessary for Ex-ACT with the GTP II reporting or M&E system.

Another key action that will be undertaken here is to strengthen the web-based platform so that the reporting from woreda and regional level can be done through the system in a simplified manner. The IT system will be enhanced so that woredas and third party entities that conduct validation can also have access to it.

### Institutional

In order to effectively implement Ex-ACT in the long run, there is a need to establish M&E team that will also report GHG emissions and reductions from each woreda and regions. These dedicated teams should establish working arrangements between regional and federal entities. At the federal level, the main entity is MoANR which is responsible for the overall coordination and reporting the GHG emissions coming from the agriculture sector. However, the regional bureaus and local agriculture offices are the main entities responsible for calculating and generating reports using Ex-ACT. Therefore, MoANR should develop directives and manuals for entities and individuals participating in the process of calculating and reporting emissions. And that should be supported by an MOU prepared and signed among the implementing and executing entities (federal - regional government bodies and regional – woreda entities).
## Year I: Activity Work Plan

<table>
<thead>
<tr>
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<th>Activity</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10 11 12</td>
</tr>
<tr>
<td>I.</td>
<td>Capacity Building</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I.1 Conduct TOT</td>
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<tr>
<td></td>
<td>I.2 Organize training expert from 110 woredas of the four main regions <em>this will be conducted after the M&amp;E indicators integration is completed</em></td>
<td>7 8</td>
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<tr>
<td></td>
<td>I.3 Organize training for experts from the 6 regions</td>
<td>8</td>
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<tr>
<td></td>
<td>I.4 Conduct Q&amp;A and verification training for federal and regional entities</td>
<td>7 8</td>
</tr>
<tr>
<td>II.</td>
<td>Technical</td>
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<tr>
<td></td>
<td>II.1 Integration of GTP II M&amp;E indicators with Ex-ACT</td>
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<tr>
<td></td>
<td>II.2 Strengthening of web-based reporting system</td>
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<td></td>
<td>II.3 Purchase and distribution of necessary IT system</td>
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<td>III.</td>
<td>Institutional</td>
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<tr>
<td></td>
<td>III.1 Prepare mandate and guidelines of CRGE or M&amp;E units on Ex-ACT/GHG reporting</td>
<td>1 2 3</td>
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<td></td>
<td>III.2 Validation and dissemination of the mandates and guidelines for woredas and regions. <em>this can be done with the capacity building</em></td>
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<td>IV.</td>
<td>Implementation</td>
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<td></td>
<td>IV.1 Regional level reporting</td>
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<td></td>
<td>IV.2 Prepare first national level agriculture sector GHG assessment report</td>
<td>7 8 9 10 11 12</td>
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## Year II: Activity Work Plan

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<tr>
<td>I.</td>
<td>Capacity Building</td>
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<tr>
<td>I.1</td>
<td>Organize training expert from 70 woredas of the six regions</td>
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<td><em>(this will be conducted after the M&amp;E indicators integration is completed)</em></td>
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<tr>
<td>I.2</td>
<td>Organize refresher training for experts regional level</td>
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<tr>
<td></td>
<td>Implementation</td>
<td></td>
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<tr>
<td>1</td>
<td>Woreda level reporting to regions</td>
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<tr>
<td>2</td>
<td>Technical support to woredas</td>
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<td>3</td>
<td>Regional level data aggregation</td>
<td></td>
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<td>4</td>
<td>Technical support to regions</td>
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<td>5</td>
<td>National level data aggregation</td>
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<td>6</td>
<td>Technical support to federal entity</td>
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</tr>
<tr>
<td>7</td>
<td>Second national level agricultural sector report</td>
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<tr>
<td>8</td>
<td>Annual program evaluation</td>
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# Year III: Activity Work Plan

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<tr>
<th>No</th>
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<td></td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10 11 12</td>
</tr>
<tr>
<td></td>
<td><strong>I. Capacity Building</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1 Organize refresher training for experts, regional and federal level</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Implementation</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Woreda level reporting to regions</td>
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<tr>
<td>2</td>
<td>Technical support to woredas</td>
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<td>3</td>
<td>Regional level data aggregation</td>
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<td>4</td>
<td>Technical support to regions</td>
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<td>5</td>
<td>National level data aggregation</td>
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<tr>
<td>6</td>
<td>Technical support to federal entity</td>
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<td>7</td>
<td>Second national level agricultural sector report</td>
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<tr>
<td>8</td>
<td>End of program evaluation</td>
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</table>
III. Roadmap for implementation for country specific framework

The plan of developing country specific framework as well as national level emissions factors will be taken over a long term. The framework will be implemented over two year’s period after Ex-ACT is used for three years. The development of the country specific framework is recommended to address the agricultural practice of the country, government structure and policy needs. Ethiopia's current agricultural practice is unique as small holders and subsistence level farmers dominate it. The administrative structure follows a federal system of governance that gives autonomous powers to regional and lowers level administrative Building on the lessons learnt from other countries and the unique policy decision Ethiopia is currently following, the recommendation for long term plan is to build country specific framework that will address the domestic needs and gaps. The system however also needs to be in compliance with international requirements. There are two broad activities that are to be implemented under this framework and they are 1) Development of country specific system and 2) preparation of country level emissions factors.

III.1 Development of country specific system

The plan under this framework is to develop country specific IT system that will be tailored to Ethiopia’s national circumstances to address the current agricultural practices and policy, create alignment with the country’s policy of green economy and assists to track progress towards greening the agriculture sector.

This approach is unique and innovative step towards Ethiopia's agricultural emissions tracking system. It will not only allow different sets of structures to report and show their GHG reduction plans as well as achievements, but also enable the sector to expand in the implementation and eventually cascade down to the woreda level. During the initial phase of the implementation regional and non-state actors will be the key reporting entities but eventually woredas will take on the task followed.

The tool to be developed will be a web-based application that will have a feature to aggregate data and generate periodic reports relating to the Monitoring, Reporting and Verification of greenhouse gases (emission & emission reduction) from the sector. The database allows the MoANR to build a picture of the sector's emission/reductions and report to the national coordinating entity (MEFCC) and UNFCCC on. The database also helps in identifying and recording data on GHG emissions and related information within a certain boundary/scope (such as program/project/geographical area) in a manner that catalyzes the reporting and verification process.
The development of the MRV IT database will follow the following major steps.

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<tbody>
<tr>
<td><strong>1. Identification of user’s/ client requirements</strong></td>
<td>Identification of user’s requirement will be the first step in the development of the application. This stage will include understanding of the program and user’s or client’s requirements. This stage will be done through review of existing documents, interview with key informants and discussion with final end users.</td>
</tr>
<tr>
<td><strong>2. Development of conceptual framework</strong></td>
<td>Based on the identification of user’s/ client’s requirement, a conceptual framework of the system will be developed. The conceptual framework will include applications that will be used in the development of the system, chart showing flow of document/information through the system, graphic interface of the system and other functionality.</td>
</tr>
<tr>
<td><strong>3. Refinement of the conceptual framework</strong></td>
<td>Once the conceptual framework is developed, it will be shared with stakeholders through workshops and a one-on-one meeting to get feedback as well as approval. Based on stakeholder’s feedback, additional refinement will be made to the framework.</td>
</tr>
<tr>
<td><strong>4. Development of IT application</strong></td>
<td>After an agreed upon conceptual framework is developed, the IT team will start the coding and design of graphic interface to develop the system</td>
</tr>
<tr>
<td><strong>5. Testing</strong></td>
<td>Once the IT application has been developed, testing will be done before making it public.</td>
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<tr>
<td><strong>6. Development of manuals and users guide</strong></td>
<td>In order to have continuity in use of the application, necessary user manuals and guidelines will be developed. The guidelines will have a step-by-step instruction on how to use the system.</td>
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<tr>
<td><strong>7. Training and handover</strong></td>
<td>After the IT system has been developed with the user manual, training will be given for the end users (in using and managing the system. The training will be followed by a formal handover. Additional training in a form of awareness workshop will be given to the wider public as well.</td>
</tr>
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</table>
III.2 Develop country level emission factors

Emission factors (EF) are coefficients which quantify the emissions or removals per unit activity. EFs convert activity data to emission values. These factors are published by various entities, including government agencies and intergovernmental organizations. They are presented in specific units such as kilograms of CO2 per air kilometer traveled, pounds of CO2 per kWh of electricity, and kilograms of CO2 per liter of petrol/gasoline.

Emission factors are an important element in the calculation of emissions. As with the 1996 Guidelines and IPCC Good Practice Guidance the most common simple methodological approach is to combine information on the extent to which a human activity takes place (called activity data or AD) emission factors. The basic equation to calculate emissions is AD (Activity Data) X EF=Emissions. Thus, emission factors are a necessary element in the formula.

Emission factors can be developed for a country or sub-region or even facility/site level. Emission factors may be developed using data from periodic sample testing or stack testing, mass balances, control equipment specifications, and/or emission models. So, one way to improve the accuracy of the emission factors for all gases and sources is to develop site-specific factors. This requires testing at the source in a representative variety of operating conditions and then using the test data to develop an emission factor for the source itself. Although not all sources can use this process, companies with large stationary combustion units or other large sources that represent a significant percentage of their emissions may find that it greatly improves the accuracy of their inventory.

Preparing Country Specific Emission Factors (or Tier 2 data)

Country specific emission factors are prepared and approved through two approaches 1) Submission and approval by IPCC and 2) Rigorous research and publication in peer reviewed journals.

1) The submission of country's emissions factors to IPCC is the most acceptable and recognizable way of formalizing country specific emission factor. The IPCC as source of scientific, technical and socioeconomic information on climate change for UNFCCC has set up a mechanism to accept country specific emissions factors from researchers and other entities who wish to submit the data. The IPCC is the most important institute for UNFCC in terms of data approval. It plays a central role in preparing regular assessment reports of published scientific information on climate change and in communicating these assessments to the Convention. In addition to its regular assessment reports, IPCC prepares special and
technical reports, including methodology reports/guidelines, on topics that require in-depth scientific technical assessment, upon request from UNFCCC or other international organizations and conventions.²

The IPCC uses the EFDB Emission Factor Database to accept and review emission factors and other data sets from experts. The EFDB is open to any relevant proposals on emission factors or other related parameters. Acceptance of such proposals will be subject to evaluation by the EFDB Editorial Board using a set of criteria set by the agency. When submitting emission factors, the information must be accompanied with appropriate scientific background information. Submission of emissions factor is done through the IPCC website (http://www.ipcc-nggip.iges.or.jp/EFDB/main.php). The system has a set of required forms which has three broad components: 1) Administrative information: which includes data provider, date of receipt of the data, etc. 2) Technical information: descriptive name, value, unit, confidence limit, technical reference, properties, etc. 3) Usage/Review information: type of EF (Measured/Modelled/), external QC, etc.³

Once the emission factor has been submitted, the IPCC/EFDB Editorial Board will take three actions, approve the data, reject or request additional information. If additional information is requested, the research will be given a set time frame to submit the data which will then be reviewed again and either approved or rejected.

Submission to IPCC is open to any individual or research but the person needs to go through authentication by IPCC and receive approval to use the system. The person who is submitting the emission factor needs to have right to use the system. The individual can request an access to use the system by contacting IPCC/EFDB “Technical Support Unit (ipcc-efdb@iges.or.jp) to obtain the login

² WORKING RELATIONSHIP BETWEEN THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE AND THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE. UNEP/CBD/COP/11/INF/14. 17 September 2012

³ IPCC project on Establishment of a Database on GHG Emission Factors Katarina Mareckova SHMU, Tinus Pulles TNO
name and password. This procedure is meant to ensure traceability of all proposals to individuals or institutions and thereby allowing communication between the data provider and the EFDB Editorial Board.”

2. Publication in peer reviewed journal

The second method of getting country level emission factor is to conduct research and generate an article on peer reviewed journals. Though there is no specification on accepted scientific journals, they must those that are widely used by researchers and scientists for reference purposes. Independency of the journal also matters as transparency is an important factor in accepting emission factors. Data sources and methods of calculation should easily be accessed and checked.

Developing emission factors for Ethiopia

In a short term, preparing country level emission factor for Ethiopia isn’t necessary as default value or use of tier 1 approach will be acceptable for international standards. However, in a long run, the development of emission factor for Ethiopia should be looked as an option as it can take three to five years to generate scientifically acceptable data and report. National research centers are in a best position to generate emission factors as they have the necessary human capacity and technology infrastructure. However, financial constraints can limited the research centers or universities from taking on the task. In some cases extensive data collection might be necessary as there is a limitation on the current data and data quality might be a factor affecting approval of the emission factor. Donor partners can play a leading role in coordinating the task of preparing country level emission factor by playing the catalyst role and also support through the necessary financial contribution directly or indirectly. The work needs to be done by multiple researchers and scientist across several fields, coordination is essential.

The preparation of the emissions factors also should prioritize GHG emissions that are key to Ethiopian agricultural sector. Complexity of the process should also be considered when deciding with emission or sink to consider. Based on lessons learn on the development of the emission factor, the task could be expanded to the other areas. Thus, livestock – enteric fermentation and manure management should be done first. Emissions from livestock are proportionally significant in Ethiopia and the calculation of the emission factor isn’t as demanding and rigorous as soil or natural resources. Based on lessons learn on the process, the preparing of the emissions factor can be expanded to the other areas. The recommended steps for the preparation of the emissions factors are indicated in the action plan.

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4 EFDB – User Manual for WEB Application (Version 2.0)
Once Country specific emission factors are developed and if they are found to be statistically different than the default value, it will be necessary to adjust baseline data or reports generated before the approval of the emissions factors. This might require additional coordination among stakeholders and task.
# Action Plan (Two Years)

<table>
<thead>
<tr>
<th>No</th>
<th>Activity</th>
<th>Year 1/ months</th>
<th>Year 1/ months</th>
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<tr>
<td></td>
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<td>1</td>
<td>3</td>
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<tr>
<td>1.</td>
<td>Development of country specific system</td>
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<tr>
<td>I.1</td>
<td>Building the necessary institutional framework for hosting of the system etc.</td>
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<tr>
<td>I.2</td>
<td>Finalization of the GHG reporting tool</td>
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<tr>
<td></td>
<td>• Developing the systems requirements/ Terms of Reference,</td>
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<td></td>
<td>• Selection and finalization of contract for system developer,</td>
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<td></td>
<td>• Develop the system in line with the steps indicated above,</td>
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<tr>
<td>I.3</td>
<td>Piloting the system at selected regions and non-state actors.</td>
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<tr>
<td>I.4</td>
<td>Making the necessary adjustment based on feedback and lessons learnt.</td>
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<tr>
<td>I.5</td>
<td>Full rolling out the system and make transition from Ex-ACT</td>
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<tr>
<td>I.6</td>
<td>Capacity building and ongoing support</td>
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## II. Country specific emissions factors

<table>
<thead>
<tr>
<th>No</th>
<th>Activity</th>
<th>Year 1/ months</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>II.1</td>
<td>Prepare a TOR for task force outline duties and responsibilities as well as deliverables.</td>
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<tr>
<td>II.2</td>
<td>Identify and source funding as well as international partnership for technical support</td>
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<tr>
<td>II.3</td>
<td>Establishment of a technical task force with a specific mandate to prepare emissions factor for two GHG emission sources. Also appoint a lead writer who will liaison with IPCC and submit the report</td>
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<tr>
<td>II.4</td>
<td>Conduct the necessary research and prepare the report</td>
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<tr>
<td>II.5</td>
<td>Stakeholder engagement and approval of the report nationally</td>
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<tr>
<td>II.6</td>
<td>Conduct lessons learn analysis for replicating of the process to other GHG sources</td>
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<tr>
<td>II.7</td>
<td>Replicate the process to other areas and produce country level emission factors</td>
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</tbody>
</table>
PART II

ACCESS TO INTERNATIONAL CLIMATE FINANCE
PART II: ACCESS FOR INTERNATIONAL CLIMATE FINANCE

I. Background

Significant financial resources will be needed to help developing countries deal adequately with climate change, both to reduce greenhouse gas emissions and to adapt to the impacts of climate change. This is an ideal firmed up by the United Nations Framework Convention on Climate Change (UNFCCC) under its principle of common but differentiated responsibilities. Climate change considerations are being increasingly integrated in most of the development aid programs of the developed countries. The size, predictability, adequacy and modality of flow of financial contributions from developed countries for the purpose of supporting climate smart initiatives of developing countries has been a crucial issue of recent climate debates. In line with this, it is common to see developing countries like Ethiopia map out climate smart action plans and present such for possible financing. The world is geared towards a common agreement for the post 2020 period where all countries assume emission reduction obligations. The source, distribution and modality of access by developing countries has become central during both the international debates and the recently crafted text negotiated under the aegis of the United Nations Framework Convention on Climate Change (UNFCCC). The government of Ethiopia (like the rest of the developing country counterparts) has an equity question as to what extent this finance is ‘new’, ‘additional’, ‘predictable’, and ‘adequate’. This is a cause for much of the debate and uncertainty as to the exact extent, size and origin of the available finance compared to the development demands of poorer countries. While developing countries express their voice on the circumstances surrounding both quality and size of the pledged funds thus far, developed countries on their part are claiming that both fast start and the long term financial commitments have already been complied with and are urging emerging economies like India and China assume similar commitments.

Since the Copenhagen negotiations in 2009 and that of Cancun in 2010, climate finance is shaped to have two phases: Fast start and long term financing. Fast start finance covered the period between years 2010 and 2012 to raise 30 billion US dollars from developed countries while long term finance considers the generation of climate finance to the tune of USD 100 billion per year by 2020. International climate finance plays catalytic role in leveraging finance used to scale up and sustain support activities under various climate smart agricultural initiatives. Each source of climate finance has different channeling modalities and purposes aimed at transforming public agriculture budgets and private agricultural investments into sources financing less GHG intensive practices. It is thus imperative to understand how to access and effectively use international
financing options in order to transition towards reducing GHG emissions from the sector as well as build resilience to future climate shocks.

II. The financing landscape

For purposes of identifying sources of climate finance for Ethiopian agriculture sector, we adopted the clustering done by Leipper et al. (2013). This grouping helps to understand the origin (i.e. national, bilateral or multilateral); source (i.e. public, private or alternative sources such as carbon finance); the respective financing periods as well as eligibility requirements for access. Accordingly, the following are the main sources of climate finance with potential for investment in the agriculture sector:

- Financing mechanisms under the UNFCCC;
- UN organizations or programmes;
- Multilateral Development Banks (MDBs);
- Bilateral public financing channels;
- Compliance and voluntary carbon markets; and
- Private sector investors and philanthropy.

II.1 Financing Mechanisms under the UNFCCC

There are a number of vehicles under this financing option with potential for supporting agricultural initiatives: The following are included among these mechanisms under the UNFCCC.

**Fast start Finance**

This is a pledge made by developed country parties to the UNFCCC at the climate conferences held in Copenhagen (2009) and Cancún (2010) to provide nearly $30 billion in what is known as 'fast start' finance to developing countries between the years 2010-2012. The purpose of this money is to support immediate actions on the ground that will enable these countries to withstand and adapt to climate impacts. In the long run, this financial contribution is foreseen to grow in size to the tune of $100 billion a year by 2020 from a variety of origins including public, private and carbon tax. Over the years the European Union and its Member States pledged €7.2 billion in fast start finance over 2010-2012, which sums up to almost one-third of the total money pledged by developed countries. Despite difficult economic circumstances, the EU is said to have met this pledge for the fast start finance.
Green Climate Fund

This is the vehicle established by the Conferences of the Parties to the UNFCCC to channel a significant amount of future international climate funding. The Green Climate Fund (GCF) became operational in May 2014 and has made the first round of financial disbursement decisions recently in October 2015. The fund is expected to play a vital role in channeling financial resources to developing countries and will catalyze climate finance, both public and private, at the international and national levels. Though its recent focus seems adaptation, it aims to establish a 50:50 balance in allocation of resources to climate mitigation and adaptation over the span of the years to come. In the case of sustainable development, the fund will promote transition towards climate resilient and low carbon development pathways by providing financial support for developing countries mostly vulnerable to the adverse effects of climate change. Ethiopia’s stand as an LDC but with a very high ambition in making this transition in the agriculture sector makes it an appealing case for funding from this resource. The GCF is expected to make a major contribution in channeling financial resources towards activities that enable and support adaptation, mitigation (including REDD+), technology development and transfer, capacity building and the preparation of national reports. The GCF will start out with only adaptation and mitigation funding windows, but the Board retains the flexibility to add others (ODI, 2012).

Adaptation fund

With increased instances of droughts and extreme rainfall events, and more variability in temperature and rainfall patterns, climate change is threatening agricultural production around the world but mainly so in Africa. The Adaptation Fund was established in 2001 in Marrakech on the basis of the decisions made by parties to the UNFCCC in Bali in December 2007 to finance concrete adaptation projects and programmes in developing country Parties that are particularly vulnerable to the adverse effects of climate change. It is financed from the share of proceeds of the Clean Development Mechanism of the Kyoto Protocol where every registered and credited project activities make a fixed amount of contributions towards this fund. The share of proceeds amounts to 2% of Certified Emission Reductions (CERs) issued for a CDM project activity. However, as the carbon market has collapsed in recent years, the sustainability of the fund in the future has become questionable.
**LDCs Fund**

The Least Developed Countries Fund (LDCF) was established to meet the adaptation needs of least developed countries as per Article 4.9 of the UNFCCC that calls for addressing the specific needs and special situations of the least developed countries. The Global Environment Facility administers the Fund. Over the past years, the fund has financed the preparation and implementation of National Adaptation Programs of Action (NAPAs) to identify priority adaptation actions for a country based on existing information. As agriculture is arguably the sector most vulnerable to climate change impacts, it is a priority for NAPA implementation in most countries including Ethiopia. For instance, the 2007 NAPA communication prioritized the promotion of crop insurance program, enhancing drought early warning system and the development of small-scale irrigation schemes as priorities for Ethiopia to cope with challenges posed by climate change. However, the NAPA still falls short of implementation, as there does not seem to be a financial resource attached for putting the actions plan into practicality.

**II.2 UN Agencies and Programmes**

UN Agencies also provide climate financing directly through multi-donor trust funds financed by member states. The UN REDD programme and the Rural Energy Enterprise Development (REED) Programme are two prominent examples for this category of international climate finance. UN REDD for instance is aimed at the reduction of GHG emissions from deforestation and forest degradation and the enhancement of carbon stocks through forest conservation and sustainable forest management, commonly referred to as REDD+. The REDD+ funds (e.g. Amazon Fund, Congo Basin Forest Fund, NICFI) have the

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**Box 1. Requirements for agricultural investment plans under the PPCR**

Ethiopia being piloted for PPCR is expected to develop investment proposals that meet the following core indicators:

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

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

3. Quality and extent to which climate responsive instruments/investment models are developed and tested,

4. Extent to which vulnerable households, communities, businesses, and public sector services use improved PPCR supported tools, instruments, strategies, and activities to respond to climate variability or climate change, and

5. Number of people supported by the PPCR to cope with the effects of climate change.

These core indicators are important as they relate to the PPCR results framework. While core indicators 1 and 2 measure progress at national level, core indicators 3, 4 and 5 measure progress at the PPCR project/program level.  
potential to provide funding to climate friendly agricultural practices to reverse a potential deforestation driver known as agriculture. Other cases for the support of REDD+ to climate smart agriculture is through reducing pressure on forests by way of agroforestry practices or farm woodlots to reduce demand for charcoal sourced from natural forests as well as productivity improvements to prevent expansion of agricultural land. Though there are no specific REDD+ funds that have been provided for climate smart agriculture as such some donors such as Norway and DFID have expressed a keen interest to incorporate these activities into their bilateral portfolios dedicated for climate financing. As these donors are significant supporters of Ethiopia’s CRGE initiative, their bilateral avenues have to be explored to solicit funding for climate actions in the agriculture sector.

II.3 Multilateral Development Banks

The primary role of these banks (MDBs) is to provide loans under conditions based on their overall objectives as well as the specific agreements between a particular country and the respective development bank. The agricultural sector remains one of the primary target sectors of MDB financing facilities. Climate Investment Fund (CIF) is one commitment designed to assist developing countries to pilot low emission and climate resilient development actions that is implemented through the multilateral development banks. Hosted within World Bank, the fund comprises four funding windows within two trust funds: the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). Within the SCF type, there is a funding window known as the Pilot Program for Climate Resilience (PPCR) that is quite relevant for direct financing of climate smart agricultural practices. PPCR has the broad aim of supporting practical action to mainstream climate resilience into development planning and budgeting. With pledges of approximately USD 1 billion, PPCR has been actively engaged in nine countries where Ethiopia has joined the group in March 2015.

Financing under this funding window is, however, earmarked for climate adaptation activities. As Ethiopia has recently been enrolled into the PPCR pilot countries program it is expected to develop its own investment strategy. It is thus an opportune moment to include agricultural resilience initiatives at this early stage in the development of the national investment strategy. Building Ethiopia’s ability to measure GHG emissions and setting baselines will place Ethiopia in a better position to design competitive and fungible investment proposals in the sector.

II.4 Bilateral public financing

Bilateral Financial Institutions play a central role as intermediaries disbursing climate funding to countries in need of
the support. In the context of Ethiopia these partners include the European Union, USAID, DFID, DANIDA, the French Development Agency, the German Development Bank and the Japan International Cooperation Agency as well as the governments and foreign development assistance wings of many of the developed countries with consular offices in the country. One important programme from an agriculture perspective is the Global Climate Change Alliance (GCCA). This programme was launched in 2007 as a European Union initiative coordinated by the European Commission (EC) and it has already disbursed €243 million from 2008-2012 with €47 million pledged for 2013. The priority areas of GCCA are mainstreaming climate change into poverty reduction, adaptation, REDD, participation in carbon markets, and disaster risk reduction. Most of these priorities are directly linked to the agricultural sector and hence pertinent to finance climate friendly practices that build resilience into the sector.

Ethiopia has some experience over its climate change focused bilateral relationships. And these have allowed donor partners to work closely in building capacity, involve in planning and delivering jointly owned results. An example in this regard is the USAID Pastoral Livelihoods Initiative in Ethiopia with funds allocated towards agricultural activities in the pastoralist areas. Of a more strategic significance to the agriculture sector are the following two bilateral programmes – the Strategic Climate Institutions Programme (SCIP) and the NAMA Facility. While the former is a nationally agreed upon programme, the latter is a competitive international funding vehicle rolled out on a yearly basis.

**Strategic Climate Institutions Programme (SCIP)** - initially forerun by the government of UK is a financing option where €9 to 12 million was assigned with the objective of building the capacity of Ethiopia’s sectoral institutions to enable them cope with climate change. The fund has now brought multiple donors on board such as the governments of Denmark and Norway to finance projects that aim to remove key obstacles in the particular sectors’ strides at building climate resilience, or seizing opportunities to transition to a green economy. As there are possibilities that the fund may extend beyond the 2016 period, the agriculture sector should design projects of strategic significance that removes key barriers and paves the way for a transition into green development practices.

**NAMA Facility** - the Nationally Appropriate Mitigation Actions (NAMA) Facility is a joint initiative of Germany and the UK that aims to provide support for the implementation of the most transformational NAMAs on a competitive basis. While its focus remains mitigation only, the Facility has a total volume of public grant finance currently amounting
to €120 million. The Facility hopes to leverage significant amounts of additional public and private finance. As of September 2014, five NAMAs have received support under the initiative (Chile, Colombia, Costa Rica, Indonesia, Mexico). This is another opportunity where Ethiopia can participate in the international call by designing agricultural NAMAs that have massive mitigation potentials.

II.5 Alternative sources / Carbon markets/

In global negotiations parlance, alternative sources of finance usually refer to revenues generated through the carbon markets. These have the potential to mobilize climate finance for agricultural initiatives that intend to mitigate emissions of GHGs from the sector by enabling routes to market, skills development and fostering innovation. The carbon markets consist of compliance markets (that has hitherto been anchored within the Kyoto Protocol’s flexible mechanisms) as well as those through the voluntary schemes. The use of market-based measures has the advantage of encouraging private sector investments that has potential to generate significant revenues. However, when it comes to the agriculture sector there are yet uncertainties and challenges to use carbon markets. Some of the challenges that held back the offset markets for agriculture are lack of carbon methodologies for agriculture and insufficient aggregation at the smallholder level. The latter particularly reflects to the situation of the agricultural system in Ethiopia. While the initiative of setting baseline emissions and installing capacity to enable GHG accounting in the sector is vital in making efficient use of these markets, the problem of aggregation still remains a pressing one.

In addition to this, despite all its promises, the carbon market is currently near collapse pending a new agreement yet to be adopted in November-December 2015. The market requires some degree of certainty and demand for offsets by developed countries through a legally binding agreement. If such is to be attained by the end of the year in 2015, it will be a potential financing source for Ethiopia’s climate smart agricultural initiatives.

II.6 Private sector and philanthropy

The landscape of climate finance indicates that the private sector is in fact the single largest source of financing though the overall global share of private sector finance in adaptation, agriculture or otherwise, still remains negligible (Buchner, 2011). However, private finance can play a role in low carbon agriculture development initiatives – for both smallholders and other value chain actors (such as commercial farmers with out-grower schemes; agribusinesses etc.) This type of climate finance option may entail the form of debt financing, equity financing, financial services such as insurance, and premiums generated
through compliance with sustainable agriculture standards.

**II.7 Performance-based donor finance**

This funding approach is also referred to as a Results-based financing (RBF) where payments are only made after specified outcomes can be proven to have taken place\(^5\). RBF is increasingly becoming common as donor interests lean towards matching money with outputs and outcomes. It is an integral part in funding component for existing climate finance mechanisms such as CDM, REDD and is widely being discussed in the context of NAMAs and the GCF. It increases accountability and incentives to deliver and sustain results, improve the effectiveness and efficiency of government-owned agriculture programs, promote institutional development, and enhance development effectiveness.

**III. Modalities of access**

For developing countries like Ethiopia, access to international climate finance has an opportunity as well challenges. In order to successfully access, and more importantly, to effectively use increasing volumes of international finance in the agriculture sector, the government of Ethiopia needs to ensure that the necessary prerequisites are in place. While significant readiness activities have been ongoing in other sectors (for instance in renewable energy sector), there are still gaps to be filled in the agricultural sector to improve the basis for larger-scale investments in climate friendly agriculture initiatives. Some of the prominent challenges are;

- quality and quantity of available data,
- effectiveness of monitoring systems to track both emissions reductions and resilience actions,
- technical implementation capacity at all administrative levels, and
- suitability of policy and legal frameworks. The government of Ethiopia has to team up with supporters of its climate initiatives to fill these gaps.

The present steps taken by the Ethiopian government in the agriculture sector to install capacity for quantifying GHG emissions and build an MRV system is a way forward to attract investment from global climate finance sources. Without such MRV systems, donors, investors and commodity buyers are unlikely to understand the benefits of investments in the agriculture sector which leads to insufficiently quantitative terms to make decision to invest in agricultural practices that pursue low carbon pathways. MRV data management system is also important as it can enable greater efficiencies and improvements in the functioning of the agriculture system. This can include user-friendly web-based data management system that can serve as a platform to exchange information among actors and serve as means to remove requirements for extensive

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\(^5\) Eurodad (2012), Hitting the target: Evaluating the Effectiveness of Results-based approaches to aid
technical expertise in data analysis and reporting. The CRGE Registry currently in place can serve as a platform for such data management and exchange. This system can track the progress of climate smart agricultural activities and promote transparency, which contributes to access international climate finance.

Box 2. Requirements for accessing global finance

In order to access and also scale up finance for climate friendly agricultural practices, it is essential to ensure the following:

- Simple and cost-effective GHG accounting and Measurement, Reporting and Verification (MRV) systems for quantification of mitigation benefits need to be developed.

- All climate friendly agricultural must be validated and approved for claimed GHG emissions reductions. This process is conducted by third party verifiers who are associated with the appropriate bodies and are approved under the relevant certification scheme.

- Knowledge exchange strategies are essential for increasing the productivity and resilience of the agriculture sector. A formalized innovation system with public, private, and academic actors is important for knowledge generation, collection, and dissemination. Here we can take the experience of other countries like Mexico who have advanced knowledge sharing mechanisms (World Bank, 2015).

- Climate risk management strategies such as early weather notifications, warning systems, and agricultural insurance along with capacity building and extension services need to be in place.
References

Climate Investment Funds (2014), *PPCR Monitoring and Reporting Toolkit*. Available at www.climateinvestmentfunds.org/cif/measuringresults D.C.


### ANNEX I: Proposed Training Schedule for training on Ex-Ante Carbon Balance Tool

<table>
<thead>
<tr>
<th>Session Topic</th>
<th>Objective: The objective of this session is to give participants an overview of the emissions from AFLOU sector as well as relationship between GHG emissions and climate change.</th>
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</table>
| **Session I: AFOLU sector in climate change** | **Outcome of the session:** At the end of the session, participants are expected to know  
- Major sources of GHG emissions in the AFOLU sector  
- Relationship between GHG emissions and climate change  
- GHG sinks in the AFOLU sector |

<table>
<thead>
<tr>
<th><strong>Session II: Carbon accounting tools in Agriculture</strong></th>
<th><strong>Objective:</strong> The objective of this session is to give an overview about carbon accounting tool in agricultural sector.</th>
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</thead>
</table>
| **Outcome of the session:** At the end of the session, participants are expected to know  
- Different types of agricultural carbon accounting tool  
- Criteria to select the tools  
- Identify suitable tool for our country |

<table>
<thead>
<tr>
<th><strong>Session III: Over all EX-ACT</strong></th>
<th><strong>Objective:</strong> The objective of this session is to give brief overview about EX-ACT and general structure of the tool.</th>
</tr>
</thead>
</table>
| **Outcome of the session:** At the end of the session, participants are expected to know  
- The meaning and over all about EX-ACT  
- Who are going to use EX-ACT  
- The features and basic structure of Ex-ACT |

<table>
<thead>
<tr>
<th><strong>Session IV: Core concepts of EX-ACT</strong></th>
<th><strong>Objective:</strong> The objective of this session is to give brief knowledge of some basic terms that are useful to use EX-ACT and interpret the results from the tool.</th>
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</table>
| **Outcome of the session:** At the end of the session, participants are expected to know  
- The meaning of some terms like landscape approach, carbon pool and etc  
- Where to use the terms in EX-ACT |

<table>
<thead>
<tr>
<th><strong>Session V: Methodology used to develop EX-ACT and its data needs</strong></th>
<th><strong>Objective:</strong> The objective of this session is to give brief knowledge on how the tool was developed and about the data required to calculate GHG emission /emission removal.</th>
</tr>
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<tbody>
<tr>
<td><strong>Outcome of the session:</strong> At the end of the session, participants are expected to know</td>
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</tbody>
</table>
| Session VI: Building baseline scenarios | **Objective:** The objective of this session is to give brief overview on how to develop baseline scenarios by using different methods to compare it with project achievement.

**Outcome of the session:** At the end of the session, participants are expected to know  
- The meaning of baseline scenario  
- How to generate baseline scenario data  
- Why it is important to calculate project GHG emissions/removals |
| --- | --- |
| Session VII: Brief guide to data entry | **Objective:** The objective of this session is to give brief guide on how to organize required data and insert it into the tool.

**Outcome of the session:** At the end of the session, participants are expected to know  
- Identify base year data, business as usual data and with project data  
- How to generate activity data matrix  
- Where to obtain the EX-ACT tool  
- Where to insert the above mentioned data  
- The color code of EX-ACT |
| Session VIII: Step by step guide and exercise on EX-ACT description and land use change block | **Objective:** The objective of this session is to give brief overview on the importance, data required and the result of description and land use change block in detail.

**Outcome of the session:** At the end of the session, participants are expected to know  
- The importance of description and land use change block  
- The content of each block and their tiers.  
- Required data to calculate emission/removal  
- How different data gives different result and identify whether the practice emitting or removing GHG when compared to business as usual practices. |
| Session IX: Step by step guide and exercise on EX-ACT crop production block | **Objective:** The objective of this session is to give brief overview on the importance, data required and the result of cropland block in detail.

**Outcome of the session:** At the end of the session, participants are expected to know |
| Session X: Step by step guide and exercise on EX-ACT grassland & livestock block | Objective: The objective of this session is to give brief overview on the importance, data required and the result of grassland and livestock block in detail.  
Outcome of the session: At the end of the session, participants are expected to know  
- The importance of grassland and livestock block  
- The content of the block and the tiers  
- Required data to calculate GHG emission/removal  
- How different data gives different result and identify whether the practice emitting or removing GHG when compared to business as usual practices. |
| Session XI: Step by step guide and Exercise on EX-ACT land degradation block | Objective: The objective of this session is to give brief overview on the importance, data required and the result of land degradation block in detail.  
Outcome of the session: At the end of the session, participants are expected to know  
- The importance of land degradation block  
- The content of the block and the tiers  
- Required data to calculate GHG emission/removal  
- How different data gives different result and identify whether the practice emitting or removing GHG when compared to business as usual practices. |
| Session XII: Step by step guide and exercise on EX-ACT input and investments block | Objective: The objective of this session is to give brief overview on the importance, data required and the result of input and investments in detail.  
Outcome of the session: At the end of the session, participants are expected to know  
- The importance of input and investments block  
- The content of the block and the tiers  
- Required data to calculate GHG emission/removal  
- How different data gives different result and identify whether the practice emitting or removing GHG when compared to business as usual practices. |
| Session XIII: Application of EX-ACT on | Objective: The objective of this session is to give brief overview on the application of EX-ACT which includes different kinds of watershed management |
### Watershed management and the Expansion and Adjustment of EX-ACT data

activities like deforestation, afforestation/reforestation, and etc........

**Outcome of the session:** At the end of the session, participants are expected to know
- Applicability of the tool for different watershed activities
- How to manage and develop activity data matrix for project activities

### Session XIV: Application of Ex-ACT to account institutional component and how to use local coefficients

**Objective:** The objective of this session is to give brief overview application of EX-ACT to calculate organization carbon footprint and the possibility to use local coefficients or country specific factor to calculate the emission or removal.

**Outcome of the session:** At the end of the session, participants are expected to know
- How to calculate organization carbon footprint
- How to use country specific coefficients or factors
- What kinds of data are required to have country specific factors

### Session XV: Sensitivity analysis in EX-ACT

**Objective:** The objective of this session is to give brief overview about sensitivity of EX-ACT and on what type of factors the results are very sensitive.

**Outcome of the session:** At the end of the session, participants are expected to know
- The meaning of sensitivity during carbon accounting
- Major factors that change the result of the tool
- Uncertainties of the tool versus use of higher tier