# The Federal Democratic Republic of Ethiopia

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**Fast Track Investment Projects**

**CRGE Facility Consolidated Report**

**Reporting Period: July 2014 – March 2017**

**Date of Report: March 2017**

**Addis Ababa, Ethiopia**

## INTRODUCTION

The Ministry of Finance and Economic Cooperation (MoFEC) and the Ministry of Environment, Forest and Climate Change (MEFCC) in collaboration with development partners have been supporting to operationalize the CRGE Strategy through the implementation of the Fast Track Investment (FTI) Projects. To this end, the Facility has been supporting investments in six line-ministries and one Industrial Park Development, where funds are being used to support the FTIs and other investments to demonstrate the systems and potential of the Facility.

This is a completion report of the FTIs for the period July 2014 – February 2017.The report mainly provides summary of key performance and achievements of the FTIs implementation. The detailed reports from the Sector Ministries are annexed with this report for further reference. For the purpose of clarity, the report is presented in two major sections. The first section provides key performances and achievements at the Facility Level and the second section covers performance of the sector ministries (IEs).

## SECTION I: CRGE FACILITY SECRETARIAT IMPLEMENTATION AND DELIVERY SUMMARY

The CRGE Facility is responsible for helping to attract and secure funding that can be allocated to CRGE actions; guiding and advising parties interested in submitting Sector Reduction Action Plans and investment proposals for funding; helping determine the optimum allocation of available funds to approved actions; monitoring, evaluating, verifying and reporting on the results achieved by funded actions; and providing fiduciary assurance to the providers of finance. Accordingly, the following are the key operational results of the Facility-level over this reporting period.

## 1. Coordination, M&E of the Fast Track Investments (FTIs)

### *1.1. Monitoring and Evaluation Missions*

Over the FTIs implementation period, the Facility jointly with the IEs and development partners has organized various ad-hoc quality assurance as well as joint monitoring missions to the selected FTI Woredas. The ad-hoc Quality Assurance Missions were co-organized by Implementing Entities and the CRGE Facility Secretariat for the purpose of validating M&E information during site visits. A key part of these missions included reflection meetings at regional and woreda levels, observations, decisions and action points arising from the mission, which was distributed back to the IEs and EEs for learning timely corrective actions. During this period, the monitoring and reporting processes also included identifying risks and managing as per the risk management policy that is provided in the Operational Manual. Attempts were particularly made to manage the potential risks related to operational risks –the failure to deliver timely and quality results, or the breach of environmental or social safeguards during implementation; fiduciary risks.

The Facility arranged series of M&E missions and facilitated joint M&E mission to the FTI projects in all the nine regions and city administrations during this reporting period. These served to identify progresses, opportunities and challenges related to implementation and reporting and provided technical supports at grass roots levels so as to enhance implementation and reporting of the FTI projects. The mission reports were also presented to the CRGE Management Committee and the secretariat, and shared the recommendations of the management with line ministries for timely actions.

This M&E missions gather information on both financial and narrative reporting with a focus on: implementation progress against planned activities, financial disbursement, implementation

challenges including safeguard issues and on providing necessary technical and administrative support. Subsequently, the Facility followed upon actions taken by the respective line ministries and provided necessary technical and administrative supports.

The M&E missions ultimately contributed to improved implementation and reporting of the FTIs at all levels, smooth communications between the federal and regional IEs/EEs, skills transfer as well as identifying key lessons from the successes and challenges for the upcoming projects/programme phases.

### *1.2. Quarterly Management Meetings and key results*

Quarterly management meeting arrangement was one of the key mechanisms to monitor and evaluate the FTIs implementation progresses and achievements of results. The quarterly management meetings bring together key decision makers and experts from the federal line ministries and the development partners to review progresses, identify implementation challenges and take timely corrective actions on regular basis. This has demonstrated government commitments and ownership of the FTIs investments, and contributed to exercise participatory monitoring of implementation progresses that ensures learning and accountability for results. This also provided good opportunities for the decision makers to ensure integrated approaches to the national development and climate change responses.

### *1.3. Review Meetings at Federal level & regional levels including the final review workshop*

The other key FTIs management mechanisms include review meetings such as quarterly meetings, which bring together the IEs and development partners together to review the FTIs implementation progresses, identify challenges and seek solutions. The Facility has organized series of quarterly meetings where it presents progress reports on the FTI investments of the sector ministries, interact with implementing and executive entities as well as the development partner (DFID), which had significant contributions for the successful implementation of the

FTIs and timely corrective actions. These meetings particularly served to identify implementation challenges and to take timely corrective actions and facilitate implementations. It also contributed to identify relevant lessons both from the success and challenges of the FTIs processes.

## 2. Core Process and Systems Development

### *2.1. National Capacity Development Programme*

The FTIs implementation included building the capacity of the national system both to implement these projects as well as towards a full integration of the climate change objectives into a national development plan. During this implementation period, the capacity development scheme included strengthening government capacities to operationalize the CRGE strategy, plan, and resource and deliver green, climate resilient development results. It also included strengthening government institutional and regulatory systems for green, climate resilient development planning.

In the FTI period, the Facility organized various capacity building trainings for over 1000 experts and decision makers drawn from the federal, regional and woreda levels. These helped to create better understanding on the issue of climate change impacts at different levels, which also contributed for improved implementation, reporting and management of the FTIs. Further, this served for improved programme development and integration of the CRGE objectives in the national development plan (GTP-II).

The other key output achieved during the FTI period is the preparation of the National Capacity Development Programme (NCDP). It identifies detailed institutional, individual and system capacity assessment of finance and economic development at federal, regional and woreda levels; identify gaps and opportunities for further capacity development; and develop sustainable capacity development program as well as planning, budgeting and monitoring and

evaluation tools. The NCDP aims at identifying the available capacities and capacity gaps at system, institutional and individual levels for the implementation of CRGE initiative. This capacity development programme is locally driven and locally owned.

Through this assessment, the respondents put forward plenty of human and institutional capacity gaps and underlined training as one of the capacity development tools to address some of these capacity gaps. It is hoped that addressing these gaps would help the CRGE sector bureaus to effectively and efficiently play their role of planning, policymaking, coordination, organization and facilitation in association with the implementation of the CRGE Strategy.

## *2.2. Mainstreaming the CRGE into the National Development Plan*

The Second Growth and Transformation Plan 2016–2020 (GTP-2), which was put into operation in 2016, will be the primary vehicle to drive the mainstreaming of the climate change agenda across different sectors over the next five years. In this context, climate change and the CRGE has been integrated into the GTP-II as a cross-cutting developmental issue, with performance indicators articulated in GTP-II to track climate-related results in different sectors.

## *2.3. The CRGE Facility M&E System*

The Facility has prepared its Monitoring and Evaluation (M&E) system manual. This manual presents the M&E system for the CRGE Facility and related requirements for monitoring, reporting and evaluation. It also helps to guide all CRGE Facility-funded programmes and projects must meet the requirements it sets out. It also serves for Implementing and Executing Entities comply with such M&E requirements. Consistent with national procedures and international good practice, the M&E system comprises six components: (1) strategy and objectives, (2) performance indicators, (3) monitoring & reporting, (4) evaluation, (5) roles and responsibilities and (6) maintaining the M&E system.

Familiarization on the stakeholders has started during the FTIs period and the M&E results indicators are also aligned into the GTP-II policy matrix.

The Facility has also started dialogue with national research institutions and think thanks to further expand on key elements of the M&E framework, including development of baseline, indicators reference sheet, and strengthening alignment with the GTP-II policy matrix indicators, among others. In order to track implementation of Ethiopia's five-year development plan, GTPII (2015/2016 to 2019/2020), a high-level M&E system is in place. Considering the mainstreaming of CRGE into GTPII there is a need to further align the CRGE Facility and GTPII indicators. Ideally, the systems will be complementary, with the CRGE Facility M&E system feeding into the national GTPII monitoring and reporting system.

### *2.4. Private Sector Engagement and partnership*

As indicated the previous reports, the Facility has developed a private sector engagement strategy. This is one of the core systems that serve the Facility to provide access to and attract funds from the private sector to leverage more resources. This helps the Facility to scale up private sector investments relevant to the CRGE by bridging the 'viability gap' for such activities.

Further, the Facility has recruited a specialized private sector expert and is working on operationalization process of the strategy.

In the coming GTP-II period, series of familiarization workshops are expected to operationalize the strategy. This also requires dedicated human resources that coordinate and facilitate this process subsequently.

CRGE partnership encompasses broad areas of CRGE Facility engagement. It includes both formal and ad hoc engagements that will contribute to the fulfillment of CRGE objectives. Some of these engagements are highlighted hereunder.

**Ethiopia – Norway Partnership**

Ethiopia _ Norway CRGE partnership mainly focuses on REDD+ readiness and implementation in Ethiopia. While various actions have been in progress in the readiness segment, a follow-up implementation programme document has been submitted to the royal Norwegian embassy here in Addis Ababa. Reportedly, the programme document is currently under review by Norway. When, approved the resource available for REED+ will be about 100 million over five years. A joint partnership review consultation meetings of ongoing activities was also held in Addis Ababa and the overall assessment of the progress suggest that the initiative is on truck.

**Ethiopia – DfID partnership**

UK partnership in the CRGE area is one of the longstanding. UK/DFID has been one of the pioneering partnership for the facility, where UK/DFID committed about $20 million to the facility, that has effectively operationalized the facility. The UK contribution financed about 27 projects covering 6 CRGE sectors, all regions and had a considerable development and climate outcomes and outputs. DFID also supported various analytical works and seconded adviser to the Facility. The existing DFID partnership has continued and the second phase of the partnership is under discussion.

**Ethiopia – GGGI partnership**

GGGI has been partnering with the institution of the Government of Ethiopia since 2010 and exclusively operates in the CRGE planning and implementation domain. The partnership has continued and now entered into new phase, upon the signing of the country programme framework. Currently, the organisation partnering with MOFCE/CRGE Facility, MEFCC, MOA, MOI, and PMO. It has deployed seven senior sector advisors in those organization and is

undertaking a number of need based analytical works, such as CRGE Financial need analyses, MRV, PES and job creation strategy formulation.

**Ethiopia – UNDP partnership**

UNDP has been a partner in CRGE and environment areas for many years including pre-CRGE period. Currently, UNDP is partnering with MOFEC-CRGE Facility and MEFCC in support of CRGE implementation. In particular, UNDP has deployed three senior advisors to the facility and has been financing the operation of the facility as well as a number of analytical and project design initiatives. UNDP partnership has continued and currently engaged in GCF finance access activities and facility capacity building through training. During the reporting period, about 8 staff members were trained in project management, which leading to certification.

**Ethiopia – The World Bank Partnership**

The world Bank has been partnering with the CRGE Facility on various thematic issues. Currently, multisector investment planning on climate resilience, carbon pricing study, and country environment analysis are undergoing through the World Bank partnership. during the reporting period, two workshops – the first stakeholders workshop on country environmental analysis and on country environmental analysis have been successfully conducted and understanding reached on the scope and expectations of the Government of Ethiopia has been clarified.

**Ethiopia – Denmark partnership**

Danish government is one of the CRGE partners. It has contributed to the CRGE Facility capitalization, which has financed projects in two sectors in 6 woredas. Further, Danish

government is providing support to the capacity building activities of the facility and CRGE sectors. The Facility – Denmark partnership has continued.

**Ethiopia – Austria Partnership**

The Government of Austria was the first contributor to the CRGE facility, which contributed to the confidence of other partners. The contribution of the Austria is financing projects in 2 woredas and the implementation is well undergoing.

**Ethiopia – UNCT Partnership**

The United Nations Country Team, under the leadership of UNDP, is partnering with GOE's institutions to undertake landmark diagnostic study on drought resilience. International food policy research institute has been contracted to undertake the study.

**Ethiopia – UNECA Partnership**

United Nations Economic Commission for Africa, as a regional organization, had a limited interaction with the CRGE Facility. However, given it renewed interest in the area of green economy, it has published a number of knowledge products. Recently, the Facility and ECA has initiated a new partnership in the thematic area of the Green Economy, with long-term perspective. The partnership focus areas and scope were driven by the Ethiopian need and the comparative advantage of the UNECA.

**Ethiopia – CDKN Partnership**

CDKN has been partnering with various institutions of the Government of Ethiopia. It has also partnered with CRGE Facility in a number of thematic issue. In particular CDKN supported CRGE Facility accreditation to GCF and AF and continued post accreditation technical support. CDKN

is also one of the partners who engaged in the GCF and AF programming. The partnership with CDKN has continued.

**New Initiatives**

A number of initiatives are under discussion. Some of these include Facility – EDRI partnership on M&E, and action research in CRGE; Japan-UNIDO- Facility partnership on green technology transfer; Vivid – Economics – Facility – EDRI - UK Space Agency on the climate resilience planning; Facility – European Space Agency - the WB partnership on the application of Earth Observation Technology in climate resilience planning and implementation are at different stage. The partnership as they mature, will support devilry of CRGE result through knowledge and cutting-edge technological solutions.

## 2.5. Environmental and Social Safeguards Framework

The CRGE Facility has developed an Environmental and Social Safeguards Framework for CRGE Initiative. The ESSF comprising of two components: Environmental Safeguards Framework and Social Safeguards Framework. To this end, having recruited a dedicated environmental and social safeguards professional, the Facility aims to mainstream the operationalization of this framework, build capacity for implementation and monitor the compliance of IEs and EEs in meeting the requirements stipulated.

Further, the ESSF was being applied retrospectively to the FTI portfolio to ensure compliance with ESSF principles and best practice. In this respect, technical support was provided for all of the CRGE line ministries with the FTI projects categorized under schedule II and sectors have submitted the mitigation measures taken in the implementation of their respective projects.

Moreover, the ESSF was applied during GCF and AF proposal development. Each Ministry will be expected to implement this safeguards framework, and roll out to their respective structures at regional levels to deliver this. Familiarization of the ESSF to key stakeholders conducted through series of training programmes organized both at the federal and regional levels. This will be further strengthened at large scale to ensure wider audiences of the framework are addressed during the GTP-II period beyond the FTI woredas.

The following points summarize some of the interventions undertaken to deliver on the aforementioned result on environment and social safeguards with a gender perspective:

- Ensured the implementation of the ESSF tools during proposal appraisal, review, and monitoring and evaluation of projects/programmes financed by the CRGE Facility
- Conduct a review of the ESSF and the screening sheet in the implementation of fast-track initiative project and seeking feedback on its improvement;
- As part of World Bank TA support, comprehensive Training of Trainers (ToT) for seven days on ESSF with gender perspective was organized to Facility team and sectors engaged in the FTI implementation with a final output being training module on safeguards which will be rolled out at the regional and Woreda level. After completion of the training sectors have prepared action plan for the roll out of the training
- Integration of the CRGE M & E reporting template (quarterly, annual and field visit reporting format) with ESS tools
- Field visit was organized to the selected woredas to monitor environmental and social risk and celebrate well managed projects. Field visit was organized by the CRGE Facility in collaboration with the Ministry of Housing and Urban Development(MoHUD) and DFID to Butajira. The overall objective of the visit is to assess the implementation of the two FTI projects in Butajira town i.e. greenery park and solid waste management and assess how the environmental and social safeguard issues are addressed in the solid waste management project

## 2.6. CRGE Registry

The Facility has also developed a registry for the serves to track CRGE initiatives, their implementation progresses and regular reporting followed by capacity building trainings for experts drawn from federal, regional and woreda levels to use this tool. Currently, the IEs and EEs have started posting the investment proposals, reports and lessons drawn from implementation on this registry to ensure transparency and accountability.

## 2.7. National Measurement, Reporting and Verification (MRV) System

The Facility Secretariat has developed a national MRV system pertaining to reductions in Greenhouse Gas (GHG) emissions. This serves the line ministries and regions as a guide to develop their sector specific MRV systems and frameworks. Some line ministries like the Ministry of Agriculture and Natural Resources (MoANR), Ministry of Industry (MoI) have already developed MRV systems to measure the reductions of the GHGs from their sector specific interventions and preparation of this is underway in other sectors as well.

## 2.8. Climate Finance Tracking System

The CRGE Facility has started initiative for setting up the climate finance tracking system. This engagement will focus on two aspects in relation to external support:

- Mapping all contributors that can potentially support Ethiopia's climate change response engagement, according to their likelihood to support the country in coming years. This aspect will involve a detailed mapping of the focus of these contributors and how this aligns with Ethiopia's climate change priorities. Moreover, it will also establish a matchmaking platform to link beneficiary implementing and executing entities to potential contributors. This tracking exercise requires constant updating in a centralized data file.
- Comprehensive tracking of existing external financial support to Ethiopia, which will inform the broadening of engagements with other contributors and the long-term strategic engagement with existing important contributors. To this end, the Facility will

customize and update existing global tracking systems to fit its need.

Moreover, the Facility will also put in place a mechanism for tracking domestic contributions – initially starting with contributions from the Federal government's treasury and later expanding to private sector and non-state actors' contributions.

## 3. Resource Mobilization and Programmatic Planning

This is one of the core duties of the Facility. In the FTIs period, the Facility continues to look for funding from multiple sources and engaged in discussions with development partners and potential supporters. The key achievements in this regard include: the accreditation of the Ministry of Finance and Economic Cooperation for direct access to the Green Climate Fund (GCF) and the Adaptation Fund (AF) to receive funds from both the GCF and the AF. MOFEC was one of the 13 new National Designated Authorities (NDAs) accredited by the Green Climate Fund Board on 9 March 2016. This followed the recent decision of the Adaptation Fund Board to approve the accreditation of this same ministry as a National Implementing Entity of the Adaptation Fund, as of February 26, 2016. This will enable MoFEC to access 10 and 50 million USD, respectively from AF and GCF, for the implementation of bankable adaptation and/or mitigation programmes and projects.

In light of a focus on sectoral programmatic planning, which closely relate to the GTP-II, the Facility has supported preparation of proposals for potential funding by the GCF. Accordingly, the Facility had developed an integrated sectoral programme, which was an ecosystem based, and submitted to the GCF through UNDP for funding and this has been waiting for the board decision in the near future. The Facility has also submitted proposal to access funding from AF as well. Preparation of an integrated programme on Sustainable Cities is underway, which is to be submitted to GCF for direct access. This will be followed by other series of programmatic planning for resources mobilization from different sources beyond the GCF and AF.

Further, discussion with development partners such as Norway, DFID and Denmark have continued to enhance supports during the GTP-2 period. Lima Declaration signatories wrote to

the Minister for Environment, Forests and Climate Change, and the State Minister for Environment, on 27 March to express their support for the CRGE Facility process and Ethiopia's efforts to develop and deliver a progressive climate agenda. They expressed their desire to engage with Ministers at a high level to improve the co-ordination of climate finance and to consider what actions need to be taken on the Road to the Paris COP 21 and beyond. Both the US and the EU are now signatories to the Lima Declaration.

The Facility made an application to the Pilot Countries on Climate Resilience (PCCR) fund. We are confirmed as a pilot country for the PCCR and have been allocated $1.5 M USD to develop investments for larger scale funding from PCCR. Currently, the process of developing an integrated investment plan is underway.

The lessons from the FTIs implementation served the Facility to shift its activities to focus on sectoral programmatic planning and integration of the climate change agenda into the national development process. Accordingly, the Facility has developed a number of bankable programmes to be submitted for funding. Part of this include, an integrated programme, which was developed and submitted to the GCF and AF for funding, the ongoing programme on sustainable cities, which is for direct access from the GCF and other bankable proposals.

## 4. Public Financial management integration

Integration with the PFM systems of Ethiopia is critical for the proper functioning of the Facility. The Facility has conducted an assessment of the Facilities integration with the PFM systems and made recommendations. This is part of the due-diligence assessment of the CRGE financial flows, in relation to existing government public financial management systems, is now in place. This study identified key areas for the CRGE Facility to properly fulfill its designated roles and mandates. Accordingly, Facility fund flow and financial reporting has been made to fully align with the Channel One Arrangement, where funds from CRGE Facility will flow direct to BOFEDs and then to WOFEDs who assume responsibility for the management of the funds. In addition,

the Treasury directorate and COPCU will have an enhanced role in the financial management of the CRGE Facility including fund disbursement, account auditing, as well as preparation of periodic financial reports. The CRGE Facility Operational Manual has been updated in order to reflect the decision as well as the proposed changes. The upcoming Facility financed portfolios will apply this PFM system.

## 5. Human Resources

In terms of human resource capacities, the Facility has arranged itself with the necessary technical and financial experts. Currently, there are ten technical and four financial experts along with the Facility director and coordinator. The existing positions include the Programme Coordinators, M&E specialist, ESS Specialist, Private sector specialist, Finance officers and specialists, and advisors. All these serve to enhance the role of the Facility in terms of fulfilling its duties of resources mobilization and management, programmatic planning, implementation and management and delivery of desired results.

In order to fulfill its broadened mandate and responsibilities, the Facility requires investing on its staff – both in terms of having the required number of experts and their competence. Cognizant of this, the Facility has re-designed its organizational structure and intends to put the necessary human resource in line with the reorganized structure. This re-designed structure comprises six units, namely:

i) Resource Mobilization, Partnership and Private Sector -The principal role of the CRGE Facility is mobilizing financial resources from domestic public and private as well as international public and private. This team is expected to mobilize sufficient revenue that helps the Government to allocate finance to the CRGE initiatives. To this end the unit is expected to prepare and fully implement resource mobilization strategy.

ii) Project and Program Design, Preparation and Appraisal – This unit will focus on enhancing access to climate finance by coordinating the preparation of bankable projects and

ensuring the projects are prepared with high standard and can compete for funding globally. The unit will also focus on appraising projects submitted and negotiating with financers on the project details.

iii) Monitoring, Evaluation and Safeguards–The core responsibility of this Unit is to monitor and evaluate CRGE Facility funded projects, and ensure that environmental and social safeguards requirements are fulfilled. It will also work closely with the Ministry of Environment, Forest and Climate Change in rolling out the Monitoring, Reporting and Verification framework for accounting for GHG emissions

iv) Communication and Public Relations -The CRGE Facility is entrusted to play a coordination role in bringing all to engage in mobilizing the necessary resources and utilize in more efficient and effective manner in the pursuit of the CRGE objectives. This multifaceted function of the Facility entails an organizational structure dedicated to promote and communicate Ethiopia's climate change engagements and the associated results.

v) Technical Assistance and Capacity Building -As a leading and primarily responsible institution in realizing CRGE initiatives, the Facility is tasked with providing technical assistance and capacity building to Federal and Regional implementing and executing entities. Thus, this Unit is responsible for coordinating TA and capacity building support.

vi) Financial Analysis and Reporting –The role of this unit will be to provide overall support on financial management for CRGE Facility funded activities and to regularly provide financial progress report. This Unit will work very close with MOFEC's Channel One Coordination Unit - which is responsible for providing financial and program management support to the development Partners' assistance portfolio. Moreover, this unit, in collaboration and with inputs from other units, will establish and administer a climate finance tracking system that can be used for a more coordinated resource mobilization engagement.

The Facility's has designed its long-term business plan with re-designed structure which is currently under management review and will be finalized soon.

The CRGE Facility learned invaluable lessons from the first round of projects that were implemented between 2014 and 2016, through its fast-track investment initiative. Based on this experience and its overall mandates the unique profile and core competencies of the CRGE Facility is presented below:

- Strategic relevance: Piloting of management and technological innovations that foster the mainstreaming of climate relevant projects, programs and activities.

- Multi-stakeholder engagement: Multi-stakeholder involvement (International development partners, Private Sector, Civil Society, line ministries and local governments) in project funding, management and evaluation based on participatory approaches to build consensus in achieving set project outcomes.

Direct link and strategic positioning to facilitate and influence the implementation of national climate change related targets: Managed by the MOFEC and MEFCC, the CRGE Facility is dedicated to support the achievement of climate relevant targets.

- Inclusiveness: International development partners, governmental officials, private sector, CSO and academia are all represented in the CRGE Facility Advisory Board. Moreover, the CRGE Management Committee, the highest governing body, has an inter-ministerial set up and approves strategic directions, projects and other important decisions. It also includes key development partners as observers.

- Triggering and scaling up initiatives: The CRGE Facility is channeling and coordinating entity for internationally and domestically supported climate relevant projects and is entrusted to leverage public funds with private and international development partner funds into scalable high quality & cost-effective projects.

- Climate policy support to foster private sector investments in climate financed projects: The Facility has the role of supporting the coordination between private sector interests and public policy objectives thereby fostering the participation of the private sector.

## SECTION II: CRGE LINE MINISTRIES IMPLEMENTATION AND DELIVERY SUMMARY

The Facility is supporting investments in six priority sector ministries and one Industrial Park Development. Funds are being used to support 26 FTI investments approved by the Facility. This section presents the CRGE priority-sector results tracked by Implementing Entities and consisting of aggregate results of all Facility-funded activities for that sector and assessments of government systems and capacities to implement CRGE actions. There are also key results achieved at the Executing-Entity level; comprising results from projects / programmes financed by the CRGE Facility and implemented in woredas particularly in the context of Agriculture and Forestry.

Lists of the FTI projects by sectors are presented as follows:

| **Sector** | **FTI projects** |
|---|---|
| **MOANR** | Expansion of climate smart agriculture to 8 regions |
| | Developing climate relevant M&E for agriculture |
| | Rehabilitation of landscapes in the rift valley |
| **MEFCC** | Creating woodlots and livelihood activities in Harari region for 700 female headed HH |
| | Bamboo plantations in Oromia |
| | Creating climate change resilient communities via innovative way of Bamboo forest management in Benishangul Gumuz |
| | Reducing land degradation and improving livelihoods in the highlands in Amhara |
| | Afforestation and reforestation in Somali Region |

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|---|---|
| | Participatory Forest Management in Dire Dawa |
| | Prosopis Juliflora cement bonded particle boards for low cost house construction |
| | Integrated Forest Development in Tigray |
| | Rehabilitation of degraded lands and combatting charcoal and firewood |
| | Natural resource rehabilitation and conservation in SNNPR |
| | Enhancing highland bamboo management and processing in Oromia |
| | Mount Jemo Wechacha ecosystem rehabilitation |
| | Enhancing highland bamboo management and processing and improving livelihood of the community in Oromia Regional State |
| | Combating Forest and Land Degradation Induced by Charcoal Production and Firewood Collection in K/Bayah Wereda of Somali Regional State |
| | Mount Jemo Wechecha Ecosystem Rehabilitation, Addis Ababa |
| | Integrated Forest Development & Management in Tigray Regional State |
| | Natural Resource Rehabilitation in SNNPR |
| **MOWIE** | Improving the livelihoods and lifestyles of the rural community of the emerging regional states through the dissemination of solar energy technologies |
| | Strategic support upgrading climate and hydrological information systems in Ethiopia for climate resilient development and adaptation to climate change |
| | Water telemetry systems |
| | Accelerating the national biogas program in Ethiopia |
| | Solar power for water supply and irrigation |
| **MOUDHC** | Urban greenery |
| | Solid waste and compositing management |
| **MOT** | Sharing the road: - Development of walking & cycling Facilities 4 urban transportation of Addis Ababa |
| | Off-street parking as instrument to improve traffic flow and emission reduction in Addis Ababa City |

| | |
|---|---|
| **MOI** | Development of baseline & MRV system for GHG emissions from the industry sector and implementation of pilot GHG reduction through energy efficiency |
| **Industrial Park Devt** | Development of Green Area for Bole Lemmi Industrial Zone in Addis Ababa City |

### 2.1. MINISTRY OF AGRICULTURE AND NATURAL RESOURCES

The specific objective of the project was to improve climate resilient of households and communities as well as reduce GHG emissions from the agriculture sector, and contribute to augmented per capita income. The project was implemented in nine regions and one city administration that is encompassing 27 identified pilot Woredas. The MoANR also partnered with Echnoserve and Climate Change Forum, as Executing Entities, to implement the project. The project has three major components

- **Component I:** Agriculture Sector CRGE FTI Implementation in 22 Woredas of 8 Regions
- **Component II:** Technical Assistance and Capacity Building on M&E, MRV and Long-Term Investment plan for Selected Agricultural Sector CRGE Fast Track Project Woredas
- **Component III:** Piloting Agriculture CRGE in the Rift Valley Ecosystem (CCF-E)

**Component I: Agriculture Sector CRGE FTI Implementation in 22 Woredas**

The Agricultural Fast Track Investment pilot project aims to contribute to poverty reduction, sustainable development, and climate resilient green economy building efforts through piloting agriculture sector CRGE initiatives in selected 22 woredas located in nine regions and 1 city administration of Ethiopia. The Ministry of Agriculture and Natural Resources as Implementing Entity partnered with Echnoserve and Climate Change Forum, which functioned as Executing Entities. Echnoserve provided technical support and capacity building while Climate Change Forum focused on project implementation in Rift Valley areas.

The main project outputs to be delivered include:

1. Capacity development for institutions involved in the Agriculture sector CRGE implementation strengthened at national, regional and woreda level.
2. Increased productivity of crops through climate resilient agricultural practices that also contribute to GHG emission reductions.
3. Increased productivity of livestock through climate resilient agricultural practices that also contribute to GHG emission reductions.
4. Productive lands conserved and degraded lands rehabilitated through integrated NRM in pilot areas and contributed to sustainability and improved local livelihoods.
5. Resilience of farm and pastoral households to climate change in piloted woredas increased

**Project Benefits and Achievements**

**Output 1: Improving Capacity of Institutions involved in the Agriculture Sector CRGE Implementation Sectors at (National, Regional and Woreda) levels**

The capacity building component of the project focused on increasing the awareness and knowledge of experts at kebele, woreda and regional level about CRGE, climate change, planning and M&E. The focus on farmers was to increase their knowledge about climate smart agriculture. To this end, several trainings were given at various times to experts and farmers. An Exchange program for farmers was also given. The number beneficiaries from the capacity building were

- Regional, woreda and kebele expert = 947
- Development Agents = 81
- Famers and household = 7,422

**Results**: through the trainings provided regional and woreda experts were able to increase their knowledge of CRGE, prepare good quality plan and report. Famers have also been able to practice climate smart agriculture.

Hands on training being to farmers and woreda experts

Table 2 .1: Selected training dates, topics covered and location.

| Topic | Date | Location | No. of Trainees |
|---|---|---|---|
| **Planning and Baseline (Amhara and Tigray kebele, woreda and regional experts)** | Sept. 21-23, 2014 | Woldia | 50 |
| **Planning and Baseline (Oromia and SNNPR kebele, woreda and regional experts)** | Sept. 29 – Oct. 2, 2014 | Zeway | 66 |
| **Planning and Baseline (Gambella and Benshagul kebele, woreda and regional experts)** | Oct. 6-9, 2014 | Nekmet | 27 |
| **Planning and Baseline Afar, Somali, Dire Dawa and Hara kebele, woreda** | Oct. 6-9, 2014 | Dire Dawa | 47 |

| | | | |
|---|---|---|---|
| **and regional experts)** | | | |
| **M&E, MRV and long-term investment plan (woreda, regional and federal experts)** | June 8-10, 2015 | Adama | 96 |
| **CAS practices** | Various | Project woredas | 5,142 farmers/ 1,031 females |
| **Experience sharing on CSA practices** | Various | Project woredas | 1,242 farmers |

M&E training for regional and woreada experts

During the planning, baseline as well as M&E training, pre- and post training assessment was conducted to evaluate participant's knowledge and impact of the training on the different subjects. The results of the evaluation are as shown in table below.

Table 2.2: Participant knowledge on Agriculture CRGE and other related issues pre- and post training

| Knowledge about | Pre- testing | | | | | Post testing | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Rate(counted)** | | | | | **Rate(counted)** | | | | |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| CRGE | 32 | 60 | 76 | 20 | 4 | 0 | 4 | 80 | 88 | 18 |
| Agriculture sector CRGE | 12 | 80 | 80 | 16 | 4 | 0 | 0 | 84 | 88 | 18 |
| Climate change | 8 | 32 | 108 | 44 | 0 | 0 | 4 | 60 | 92 | 34 |
| Vulnerability | 24 | 68 | 84 | 16 | 0 | 0 | 4 | 32 | 132 | 22 |
| Vulnerability Assessment | 28 | 88 | 68 | 8 | 0 | 0 | 8 | 72 | 92 | 18 |
| Conducting FGD | 4 | 80 | 80 | 28 | 0 | 0 | 4 | 84 | 68 | 34 |
| GHG Emissions | 20 | 64 | 76 | 32 | 0 | 4 | 36 | 60 | 60 | 30 |
| Survey GHG Emissions (like above ground biomass) | 36 | 124 | 24 | 8 | 0 | 8 | 72 | 64 | 28 | 18 |
| GHG Emissions Livestock | 28 | 92 | 72 | 0 | 0 | 8 | 64 | 64 | 40 | 14 |
| Planning | 12 | 68 | 88 | 24 | 0 | 0 | 8 | 24 | 112 | 46 |
| **1 = low ……. 5 = high** | | | | | | | | | | |

Table 2.3: Percentage comparison of score given in pre- and post testing from planning and baseline training

| Knowledge about | 1-Very Low (%) | | 2-Low (%) | | 3-Fair (%) | | 4-High (%) | | 5-Very High (%) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| **CRGE** | 20 | 0 | 38 | 2 | 48 | 39 | 13 | 43 | 3 | 4 |
| **Agriculture sector CRGE** | 8 | 0 | 50 | 0 | 50 | 41 | 10 | 43 | 3 | 4 |
| **Climate change** | 5 | 0 | 20 | 2 | 68 | 29 | 28 | 45 | 0 | 12 |
| **Vulnerability** | 15 | 0 | 43 | 2 | 53 | 16 | 10 | 65 | 0 | 6 |
| **Vulnerability Assessment** | 18 | 0 | 55 | 4 | 43 | 35 | 5 | 45 | 0 | 4 |
| **Conducting FGD** | 3 | 0 | 50 | 2 | 50 | 41 | 18 | 33 | 0 | 12 |
| **GHG Emissions** | 13 | 2 | 40 | 18 | 48 | 29 | 20 | 29 | 0 | 10 |
| **Survey GHG Emissions (like above ground biomass)** | 23 | 4 | 78 | 35 | 15 | 31 | 5 | 14 | 0 | 4 |
| **GHG Emissions Livestock** | 18 | 4 | 58 | 31 | 45 | 31 | 0 | 20 | 0 | 2 |
| **Planning** | 8 | 0 | 28 | 4 | 70 | 43 | 15 | 24 | 0 | 18 |

**Output 2: Increased Productivity of Crops and Coffee through CSA Practices that Contribute to GHG Emission Reductions**

The crop production component focused on improving productivity through various climate smart agriculture interventions. To achieve improvement in crop production, the activities undertaken included distribution of various drought resistance crops and input such as bio-fertilizers and green manuring, trainings on crop rotation and intercropping and awareness raising on CSA practices as well as construction of water wells for farming. Through these interventions, about 2,998 hectares of land was covered by different CSA practices. Based on the baseline and post project assessment on the project areas, cropland productivity increased on average of 80 % compared with pre-project assessment result. At the same time due to improvement in crop production an average income of a household increased by about 20%. Table 8 shows improvement per crop achieved in each woredas on the various crops targeted in each woreda. Table 9 shows the change in income due to improvement in crop production.

Table 2.4: Results of crop production (baseline and post survey)

| Region | Woreda | Average Productivity of main crops | 2007 Baseline | 2008 Post survey |
|---|---|---|---|---|
| **Amhara** | Enebsesarmidr | Wheat | 12.01qt/ha | 27.97qt/ha |
| | | Barley | 20.15qt/ha | 20.6qt/ha |
| | | Potato | 47.08qt/ha | 72.87qt/ha |
| | Andebet | Maize | 19.13 qt/ha | 42.19 qt/ha |
| | | Teff | 15.11 qt/ha | 23.45 qt/ha |
| | | Wheat | 16.32 qt/ha | 29.56 qt/ha |
| | Wegidi | Wheat | 24.24qt/ha | 13.88qt/ha |
| | | Teff | 16.72qt/ha | 13.16qt/ha |
| | | Sorghum | 21.75qt/ha | 11.08 qt/ha |

| | | | | |
|---|---|---|---|---|
| | Wadla | Wheat | 15.51 qt/ha | 23.48 qt/ha |
| | | Barley | 11.2 qt/ha | - |
| | | Teff | 7.11qt/ha | - |
| **Oromia** | Akaki | Wheat | 11qt/ha | 10qt/ha |
| | | Teff | 7.92 qt/ha | 5.23qt/ha |
| | Darimu | Maize | 6.7 qt/ha | 17.4 qt/ha |
| | | Sorghum | 7.3 qt/ha | 17.9 qt/ha |
| | Chiro | Maize | 16.7 qt/ha | 13.4 qt/ha |
| | | Sorghum | 19.3 qt/ha | 9.5 qt/ha |
| | MidegaTola | Maize | 9.1 qt/ha | 10.74 qt/ha |
| | | Sorghum | 8.54 qt/ha | 8.76 qt/ha |
| | Gawokebe | Maize | 31.65 qt/ha | 42.43 qt/ha |
| | | Teff | 6.9 qt/ha | 7.85 qt/ha |
| **Tigray** | Alaje | Wheat | 24.09 qt/ha | 15.62 qt/ha |
| | Ahferom | Wheat | 11qt/ha | 15qt/ha |
| | Tahtaymaychew | Barley | 18 09 qt/ha | 23 09 qt/ha |
| | | Teff | 16 09 qt/ha | 18 09 qt/ha |
| | | Maize | 18 09 qt/ha | 40 09 qt/ha |
| | | Sorghum | 13 09 qt/ha | 39 09 qt/ha |
| | | Wheat | 16 09 qt/ha | 25 09 qt/ha |
| **SNNPR** | Sodo | Maize | 22.90qt/ha | 29.23qt/ha |
| | | Teff | 13.90qt/ha | 24.62qt/ha |
| | DamotPulasa | Maize | 8.77 qt/ha | 7.45qt/ha |
| | | Teff | 10.49 qt/ha | 8.5 qt/ha |
| | | Haricot bean | 9 qt/ha | 19.23 qt/ha |
| | Dara | Maize | 5.20 qt/ha | 13.5 qt/ha |
| | | Haricot bean | 3.9 qt/ha | 9.3 qt/ha |

| | | | | |
|---|---|---|---|---|
| | Doyo-Gena | Wheat | 10 qt/ha | 34 qt/ha |
| **Afar** | Yaloworeda | Milk (liter/HH/Month) | 20 | 32.5 |
| | | Meat (Kg/HH/Month) | - | 46 |
| **Gambella** | Lare | Maize | 5 qt/ha | 22 qt/ha |
| | | Sorghum | 3 qt/ha | 18 qt/ha |
| | Gog | Maize | 13qt/ha | 16qt/ha |
| | | Sorghum | 15 qt/ha | 16 qt/ha |
| **Somali** | Jigjiga | Maize | 9 qt/ha | 13 qt/ha |
| | Awebare | Maize | 16 qt/ha | 25 qt/ha |
| **Dire Dawa Administration** | Adada and LegaOdaGundufata | Sorghum | 24.45 qt/ha | 39.57 qt/ha |
| | | Maize | 12.97 qt/ha | 13.65 qt/ha |
| | | Bean | 23.34 qt/ha | 16.93 qt/ha |
| **Harari** | Sofi | Maize | 18 qt/ha | 35 qt/ha |
| | | Sorghum | 17 qt/ha | 9 qt/ha |
| | | Ground nut | 17 qt/ha | 10 qt/ha |

Table 2.5: Change/ improvement in income from crop production

| **Region** | **Woreda** | **Average Income from main crops** | **2007 Baseline** | **2008 Post survey** |
|---|---|---|---|---|
| **Amhara** | Enebsesarmidr | Wheat | 4,678.63 birr | 11,918.27 birr |
| | | Barley | 3,697.81birr | 42,47.81 birr |
| | | Potato | 1,410 birr | 6,602.50 birr |
| | Andebet | Teff | | 28,452.57 birr |

| | | | | |
|---|---|---|---|---|
| | | Wheat | 17377.09 birr | 15,523.54 birr |
| | | Maize | | 7,788.75 birr |
| | Wegidi | Wheat | 3067.8 birr | 2636.0 birr |
| | | Teff | 8753.1 birr | 5011.3 birr |
| | | Sorghum | 1759.6 birr | 2214.0 birr |
| | Wadla | Wheat | 8,372.41 birr | 24,829.34 birr |
| **Oromia** | Akaki | main crops | - | 6132.9birr |
| | Derimu | main crops | 1,428.6 birr | 3,422.6 birr |
| | | secondary crop | 1,193,3 birr | 1,016 birr |
| | Chiro | main crops | 5,040.6 birr | 2,433.3 birr |
| | | secondary | 2,068.2 birr | 3,327.3 birr |
| | MidegaTola | main crops | 5778 birr | 3250 birr |
| | | secondary | - | 1916 birr |
| | Gawokebe | main crops | 3173.5 birr | 4220.94 birr |
| | | secondary | 816.4 birr | 1314.4 birr |
| **Tigray** | Alaje | Wheat | 7341.96 birr | 3697.85 birr |
| | Aherom | Wheat | 3656 birr | - |
| | Tahtaymaychew | Barely | 657 birr | 3,469 birr |
| | | Teff | 6,172 birr | 7,433 birr |
| | | Maize | 2,626 birr | 5,129 birr |
| | | Sorghum | 4,071 birr | 6,395 birr |
| | | Wheat | 919 birr | 4,775 birr |
| **SNNPR** | Sodo | Maize | 5,225 Birr | 7,187.31Birr |
| | | Teff | 4,732 Birr | 20,862 Birr |
| | Damotpulasa | Maize | 2349Birr | 1058 Birr |
| | | Teff | 2200 Birr | 2256 Birr |
| | | Haricot bean | 1400 Birr | 2025 Birr |

| | | | | |
|---|---|---|---|---|
| | Doyo-Gena | Wheat | 2932.3 Birr | 2856.7 Birr |
| **Gambella** | Lare | Maize | 1,052 Birr | 7,035 Birr |
| | | Sorghum | 218 Birr | 5,730 Birr |
| | Gog | Maize | 762 birr | 3,948 birr |
| | | Sorghum | 342 birr | 3,430 birr |
| **Somali** | Jigjiga | Maize | 2698.2birr | 16520birr |
| **Diredawa** | Adada&Legagudaftna | Sorghum | 1986 Birr | 2286 Birr |
| | | Maize | 662.22 Birr | 762.22 Birr |
| **Harari** | Sofi | Maize | 2,673.91 Birr | 1647 Birr |
| | | Sorghum | | 3681 Birr |
| | | Ground nut | | 2692 Birr |

**Output 3: Increased Productivity of Livestock through CSA Practices that also contribute to GHG Emission Reductions**

Intervention in livestock was one of the activities undertaken to improve livelihood, build resilience and reduce GHG emissions. Livestock intervention focused on disseminate of poultry, goat, sheep and cattle, capacity building in livestock management practices and forage development among other actions. Based on the baseline assessment and post project evaluation, there was an average of 57% improvement in livestock fodder/forage development, increase in animal value chain efficiency. Promotion of lower emitting animals including climate smart technologies had also contributed to increase in household's income from livestock sector. Even though the outcome of this practice was at early stage during the post project assessment, based on the response of the majority surveyed household and focus group discussions held in micro watershed, households who start to own poultry and newly introduced sheep from the project had started to earn additional income. These interventions

were particularly beneficial for women. A total of 6,527 farmers/pastoralist have been benefitted of which about 3,085 were female headed households.

Table 2.6: Income from livestock's

| Region | Woreda | Watershed | 2007 Baseline | 2008 Post survey |
|---|---|---|---|---|
| **Oromia** | Akaki | Bilbilo | - | - |
| | Chiro | Gosha | 1,873 birr | 8,059.75 birr |
| | Darimu | Gejebu | 1,700 birr | 8,008.75 birr |
| | Gawokebe | Kombolcha | 536.25 birr | 1307.8 birr |
| | Midagatola | Ijadika | 5,210.3 birr | 17,293.2 birr |
| **Amhara** | Andabet | AbayTekeze | - | 668.83 birr |
| | EnebseSarMidir | Gaunsa | 2,319.44 birr | 2,455.19 birr |
| | Wadla | SigawMareja | | 2560.52 birr |
| | Wegidi | Abagulo | 2,089.80 birr | 1,414.07 birr |
| **Tigray** | Ahferom | EdagaArbi | - | 2,403 birr |
| | E/alaje | Atsela | 1541 birr | 2617 birr |
| | T/maychew | Myeseye | 2,319.44 birr | 2,455.19 birr |
| **SNNP** | Damotepullasa | lome | 1781.5 birr | 1435.47 birr |
| | Dara | JegesaBonkoka | 919.6 birr | 322.5 birr |
| | Doyogena | Hanjelo | 2935 birr | 5466 birr |
| | Sodo | Shefe | 3388.15 birr | 3267.86 birr |
| **Afar** | Kuneba | Kibamo | - | 865 birr |
| | Yallo | Mitcena | - | 3981 birr |
| **Gambella** | Gog | Hore | - | 269 birr |

| | | | | |
|---|---|---|---|---|
| | Lare | Wodege | - | 2,403 birr |
| **Somali** | Awbare | Armo | - | - |
| | Jigjiga | Hado | - | 3,738 birr |
| **Diredawa** | Adada&Odabuldi | Chore &Hurso | 1399 birr | 2814 birr |
| **Harari** | Sofi | Erer | - | 600birr |

**Output 4: Productive Lands Conserved and Degraded Lands Rehabilitated through Integrated NRM**

The natural resource management component of the project focused on rehabilitating degraded watershed through various activities. The rehabilitation of the watershed was expected to bring positive change to the community and increase assess to water. Furthermore, collective action of natural resource management and related activities was to be one of the most important sources of cash income for communities of the watersheds. Implementation of this activity in the watershed was also create a short term job opportunity and income for households who participated in the communal community construction of pond, gabion check dam, hillside terracing, trenches, construction and stabilization of artificial waterways, construction and stabilization of cutoff drains and other different activities of watershed management. However, the results of the post survey analysis showed that it was at early stage for HH's to collect income from sell of fodder and honey production. According to the focus group discussion conducted during the post project assessment, communities indicated that there has been an increase in ground water and vegetation cover in biophysical assessment of the watershed.

Through the intervention of the NRM, about 3,689 hectares of degraded land was rehabilitated through integrated physical and biological conservation measures. The implementation of different Integrated Natural Resource Management (INRM) was the potential contribution to soil erosion reduction; improved water retention capacity to recharge ground water and

surface stream flow and other ecosystem services also improved. As a result of conserving productive lands through various INRM activities production of crops were expected increased and income of beneficiaries was improved. In addition, ecosystems of the watersheds had also flourished.

**Table 2.7: Access to water and water consumption in 2007 and 2008**

| Region | Woreda | Watershed | 2007 Baseline | 2008 Post survey |
|---|---|---|---|---|
| **Oromia** | Akaki | Bilbilo* | - | 5 jars (100 liters) |
| | Chiro | Gosha | 0.04 jars (1 liters) | 1.99 jars (39.7 liters) |
| | Darimu | Gejebu | 2.64 jars (52.8 liters) | 3.84 jars (76.88 liters) |
| | Gawokebe | Kombolcha | 1.96 jars (37.96 liters) | 5.28 jars (105.6 liters) |
| | Midagatola | Ijadika | 0.8 jars (15.5 liters) | 2.65jars (53.1 liters) |
| **Amhara** | Andabet | AbayTekeze | to 3.27 jars (65.4 liters | 4.16 jars(83.2 liters) |
| | EnebseSarMidir | Gaunsa | 1.33jars (20liters) | |
| | Wadla | SigawMareja | 3.78jars (75 liters) | 3.6 jars (70 liters) |
| | Wegidi | Abagulo | - | 3.23jars (65 liters) |
| **Tigray** | Ahferom | EdagaArbi | 2 jars (40 liters) | 2.8 jars (60 liters) |
| | E/alaje | Atsela | 2.27 jars (40 liters) | 2.53 jars (50 liters) |
| | T/maychew | Myeseye | 7 jars (140 liters) | 5 jars (100 liters) |
| **SNNP** | Damotepullasa | lome | 1.72 jars (34.4 liters) | 4.16jars(83.2 liters) |
| | Dara | JegesaBonko ka | 2 jars (40 liters) | 3 (60 liters) |
| | Doyogena | Hanjelo | 2.4 jars (48 liters) | 3.3 jars (66 liters) |
| | Sodo | Shefe | 2.42 jars 48.4liters | 2.29 (45.8 liters) |
| **Afar** | Kuneba | Kibamo | 4 jars (80 liters) | 5 jars (100 liters) |
| | Yallo | Mitcena | 4jars (80 liters) | 3 jars (60 liters) |
| **Gambella** | Gog | Hore | 4 jars (80 liters | 4 jars (80 liters) |
| | Lare | Wodege | 5 jars (100 liters) | 7 jars (140 liters) |

| | | | | |
|---|---|---|---|---|
| **Somali** | Awbare | Armo | 3 jars (60 liters) | 5 jars (100 liters) |
| | Jigjiga | Hado | 2 jars (20 liters) | 4 jars (80 liters) |
| **Diredawa** | Adada&Odabuldi | Chore &Hurso | 3 jars (60 liters) | 3 jars (60 liters) |
| **Harari** | Sofi | Erer | 3.4 jars (68 liters) | 3.1 jars (62 liters) |

**Output 5: Increasing of Resilient Farmer and Pastoral Households to Climate Change in Piloted Woredas**

The AFTP GHG emission reduction result was calculated using an Ex-Act tool. The Ex-Act tool is developed by FAO and used widely to account GHG for AFOLU (Agriculture, Forestry and Other Land use) projects. Ex-act is an excel sheet accounting tool that measures the carbon reduction potential of AFOLU intervention. The ex-act compares the emission of a project with and without (business as usual) intervention scenarios. These will help to analysis the emission reduction of a project before and/or after implementation. EX-ACT requires activity data for three points in time: the baseline situation, the with-project scenario and the without-Project scenario (business as usual).

Ex-Act tool is built with a general emission estimation formula that requires two data, activity and emission factors. Activity data on current land use, agricultural practices, and livestock is collected for communal land as well as individual households at baseline, with and without project situation. Ex-Act tool has a potential to estimate emission at tire 1 and 2 level. Tier 1 methods rely on default values and entail a lower level of effort (it has its own emission factors and defaults), whereas Tier 2 methods require regional specific carbon stock values and emission coefficients, implying higher precision and data needs. The project used tire 1 for GHG calculation.

The activities data were used from primary, secondary and AFTP report (see table below). Primary and secondary data were used for baseline and without situation of project. AFTP woreda activities report for 21 months was used for GHG emission reduction calculation under with project. The data then organized and feed into Ex-ACT tool. Two-year project implementation and eighteen years project capitalization is used to estimation GHG emissions.

| Ex-ACT Module | Secondary data | Primary data | Water shad AFTP Achievement Report |
|---|---|---|---|
| **General Description** | Woreda profile | Woreda documents | |
| **Land use Change** | Woreda land use information | | Afforestation/reforestation<br><br>Biological and physical conservation |
| **Cropland** | Woreda land use information | Household survey of crop production management practices | Soil fertility and crop production management |
| **Grassland and Livestock Production** | Woreda profile | Household survey of livestock management practices | Area closure, controlled grazing, Livestock production and management |
| **Degradation** | Woreda land use information | | Forest degradation and management |
| **Inputs** | | Household survey for energy and inputs | Fuel efficient stove and fertilizer application |

| | |
|---|---|
| | utilization (such as fertilizer) |

GHG Emission Reduction Calculation Result

The CRGE strategy document showed that more than 85% of GHG emissions came from the agricultural and forestry sectors. Agriculture GHG emissions are come from livestock and crops in that order. 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). In forestry emissions are driven by deforestation for agricultural land (50% of all forestry-related emissions) and forest degradation due to fuelwood consumption (46%) as well as formal and informal logging (4%).The CRGE envisage to reduce carbon emission from livestock (90 tCO2), soil (125 tCO2), deforestation (45 tCO2) and degradation (45 tCO2).

In line with the CRGE vision, the AFTP designed three major outputs, which have mitigation impacts on agricultural sectors GHG emission sources. These are mainly come from crop production, livestock production, and natural resources. Table 2 shows that the sectors and corresponding mitigation options implemented.

Table 2.8: Major Mitigation Options Activities Implemented

| Project outputs | Mitigation option |
|---|---|
| **Increased productivity of crops through CSA practices** | Improved agronomic practices, nutrient management, no tillage/residue management, |

| | |
|---|---|
| | water management, manure application and residue/biomass burning |
| **Increased productivity of livestock through CSA practices** | Improved feeding Practices and breeding Practices, Improved manure management<br><br>(biogas and fuel-efficient stove), Shift to poultry consumption, Increase animal value chain efficiently through fattening and milk production |
| **Productive Lands Conserved and Degraded Lands Rehabilitated through Integrated NRM** | Physical and biological measures such as afforestation, reforestation, terracing |

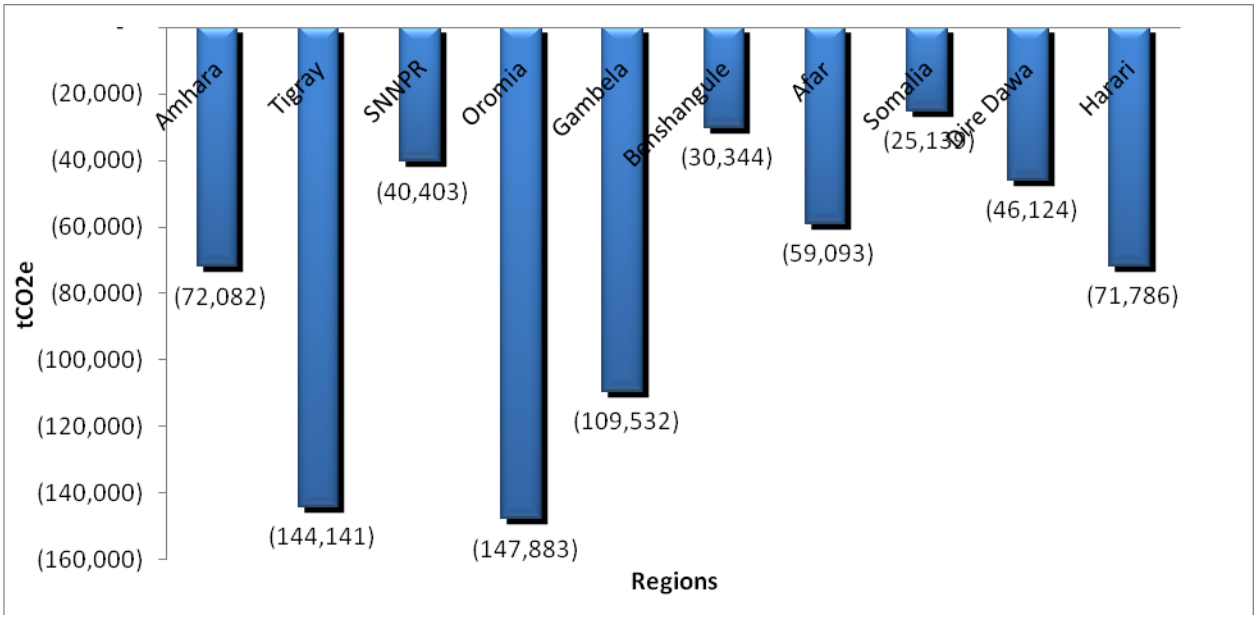
GHG Emission by Regions

The GHG emission reduction result is presented according to the emission reduction achieved by regions, sources and gases. The regions are Tigray, Afar, Amhara, Oromia, Somali, Gambella, SNNP, Benshanguel, Harari and Diredawa administration. The sources are natural resource management (afforestation, land degradation and other land use), agriculture (annual, perennial), grassland, livestock, and inputs. The main gases accounted based on CRGE priorities are carbon dioxide, methane and nitrous dioxide.

According to the baseline and implementation of the AFTP project, the GHG emissions reduction was estimated based on two years implementation and eighteen year of capitalization period. The calculation took into account baseline, with and without project implementation situation. Based on the finding, the total emission reduction achieved by implementation of the AFTP projects was about 746,527 tCO2eq per twenty years. The result showed that Oromia region takes highest figure and achieved about 147,883 tCO2eq per

twenty years. This is because the AFTP project was implemented was five woredas. The other regions in order of rank in GHG reduction were Tigray, Gambela, Amhara, Harari, Afar, Dire dawa, SNNP, Benshangule and Somali (see Figure 2.1).

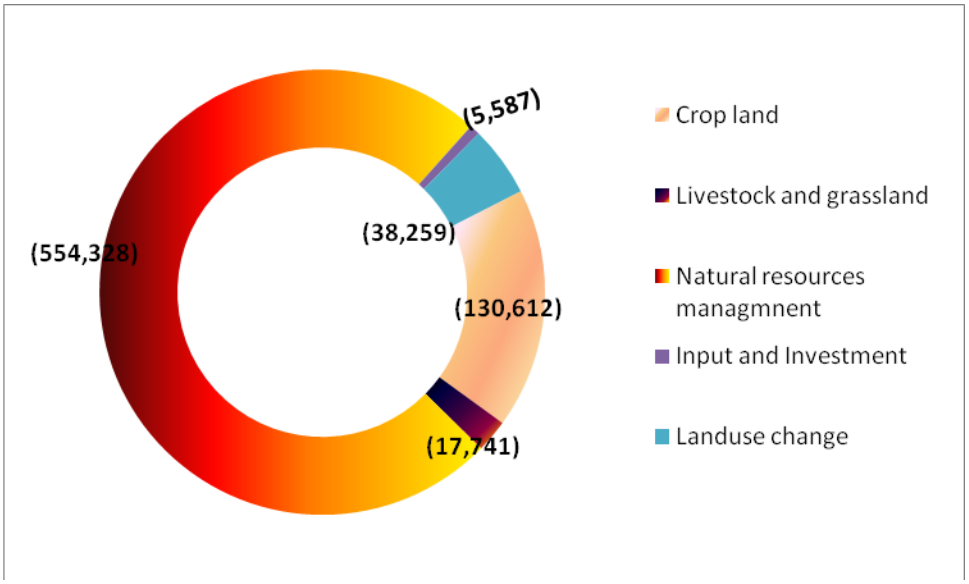
Figure 2.1: GHG Reductions by Regions




GHG Emission Reduction by Sub- Sector (Sources)

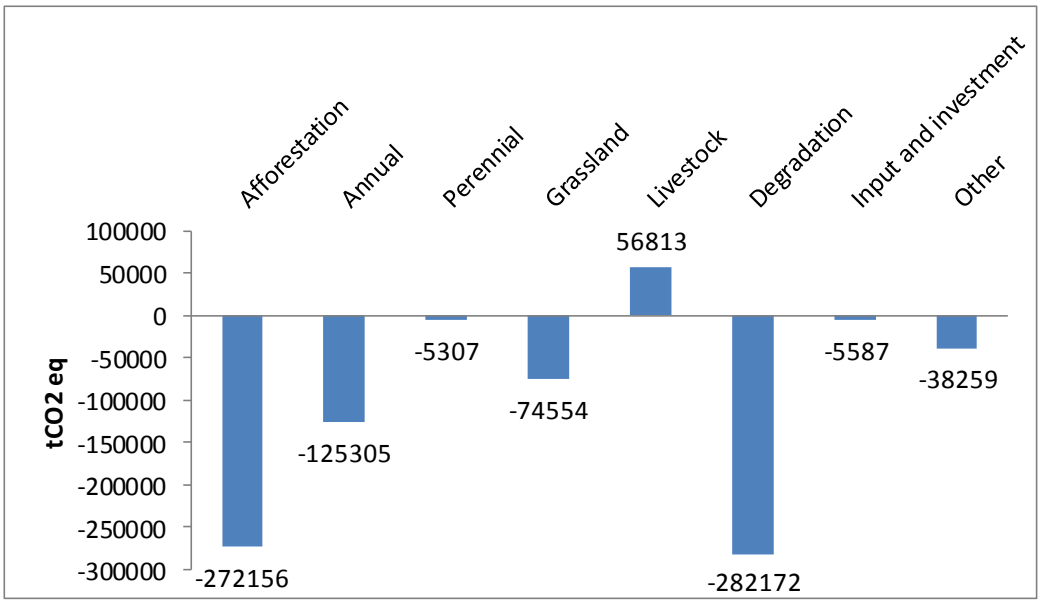
The GHG emission reduction analysis by sub-sectors showed that natural resource management activities reduced the highest GHG emission reduction which is about 554,328 $tCO_2eq$.The others sub-sectors: crop lands, landuse change, livestock and grass land, and inputs are took the rank respectively (see Figure 3)

**Figure 2.3: GHG Emission Reduction by Sub-sectors (sources)**




GHG Emission Reduction by AFTP Activities

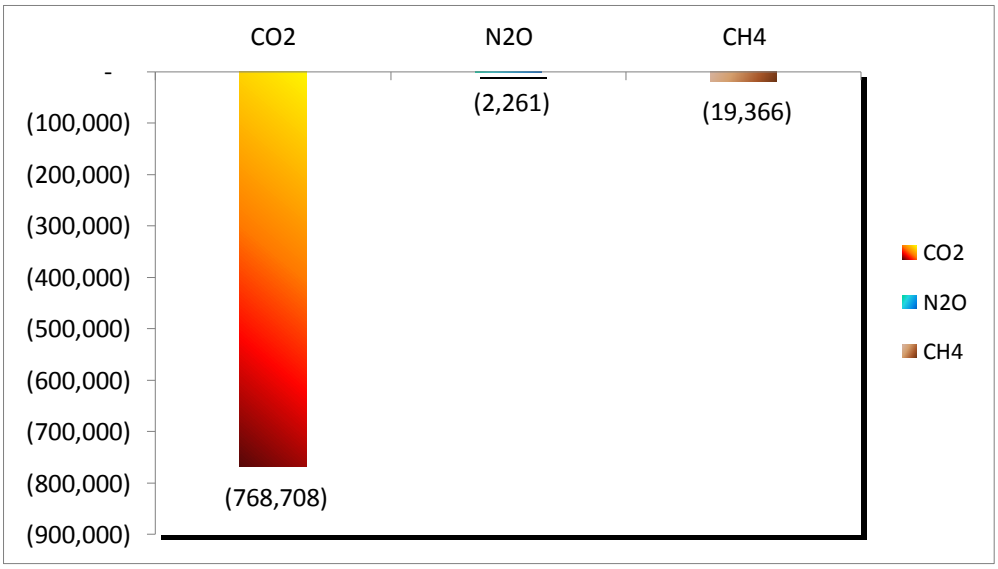
The GHG calculation result also views the performance of GHG reduction by activities. The result showed that rehabilitation in degraded area activities implemented by the project registered highest emission reduction, which is about 282,172 tCO2eq. This is almost more than double emission reduction compared to other sources except degradation, which is about 236,612 tCO2 emission reduction (see figure 2.4).




GHG Emission Reduction by Gases

The GHG calculation result showed that the reduction of three main GHG gases focused by CRGE strategies. Thus, AFTP bring about emission reduction of 768,708 tCO2, 2,261 tN2O and 19,366 tCH4 (see figure 2. 5).

Figure 2.5: GHG Emission reduction by gases




**Component II:** Technical Assistance and Capacity building on M&E, MRV and long-term Investment plan for selected Agricultural Sector CRGE Fast Track Project Woredas

Echnoserveas an Executing Entity was responsible for conducting capacity building on M&E, MRV, long term investment plan preparation; develop an M&E system as well as MRV framework, woreda investment plan and baseline study preparation. Echnoserve also supported in facilitating the implementation of activities at federal and regional level to ensure the delivery of required results. Accordingly, the overall achievements and deliverables provided by Echnoserve are indicated in the table below. Prior to getting engaged with MoA, Echnoserve had prepared agriculture sector GHG accounting tool which it worked with World Resources Institute (WRI). Echnoserve was also one of the few institutions in Ethiopia that has a wealth of working experience in MRV. As it was necessary to properly account for the GHG emissions reductions and resilience building and build a platform for wider system in the agriculture sector, MoA partnered with Echnoserve to prepare the baseline on time, build local capacity as well as provide technical assistance in M&E. Echnoserve conducted both baseline

assessment and post project assessment which allowed MoA to properly monitor progress and achievement. Echnoserve implemented the project in partnership with MoA at federal, regional and woreda level and thus, it provided capacity building training for experts and worked with the experts in the preparation of the various reports.

**Vulnerability assessment guideline**

| | | |
|---|---|---|
| Vulnerability assessment guideline | | This guideline aimed to provide broader understanding on how to conduct community and household vulnerability assessment. The adaptation option could be developed into practical implementation plan at regional and woreda level. |
| Project woreda Baseline study report | | This report presented benchmark information on CRGE pilot watershed about socio-economic characteristics of the people, vulnerability situation, GHG emission and other relevant data which are useful latter to provide a comparison for assessing the net effect of future performance of the project. |
| Woreda wide Long-term investment plan | | This document offered the type of investment needed for farmers, pastoral and agro-pastoralist own and communal lands which are useful for reduction of GHG emission through CSA intervention and reducing vulnerability that latter combatting climate change impact. |
| Short documentary | | The aim of the short documentary was mainly to share the performance of the Agricultural Fast track project to international and donor community and to have an evidence for the works that the Agriculture sector CRGE and achievements from the local perspectives. |
| Development of IT | Website (www.agcr | This component was an innovation approach for the ministry of Agriculture and Natural Resource in which web-based electronic |

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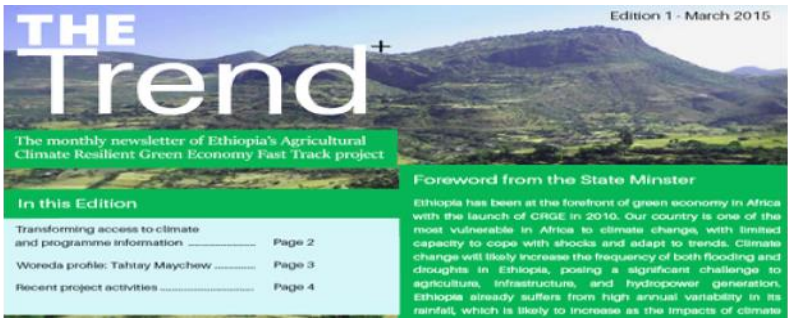
|---|---|---|
| application tool | ge.info) | newsletter and project monitoring and evaluation system developed through www.agcrge.info that is very useful for the organization to be informative and creative to offer valuable information for subscribers as well as collecting questions and feedbacks from readers. |
| | Planning, M&E database | This database was aimed to manage all the plans developed by woreda for their intervention. The planning database will in the future be linked to M&E database so that progress will be entered into the system and tracking of achievement will be systematically done. |

**Quarterly Newsletter**: -was another means used to distribute access information about the project. four editions of newsletter were released through email and print copy.




Short documentary: - The aim this documentary was show and share the performance of the project to international and donor communities. The documentary was used as lesson sharing during the COP 21 meeting in Paris. This document was prepared through Echnoserve's contribution to the project.

Web-based project planning and reporting tool: - The website was developed through Echnoserve's contribution for easy dissemination of detailed project implementation, findings, and knowledge sharing processes. This portal provided several functions and included a new web-based project planning and reporting tool with a database to input all the plans developed

by woreda for their intervention. The planning database was linked to M&E database so that progress was going to be entered into the system and tracking of achievement will be systemically done.

**Component III:** Piloting Agriculture CRGE in the Rift Valley Ecosystem

Climate Change Forum (CCF) Ethiopia, a national civil society entity was an Executing Entity that worked on "Piloting Agriculture Climate Resilient Green Economy (CRGE) in the Rift Valley ecosystem" as part of the agriculture fast track investment project. The outputs of the project and the contributions are as follows.

Output 1: Farmer Association and Participating Communities Climate Resilience Capacity Built and Strengthened

- 425 community members of which 170 women were made aware on climate impact adaptation and mitigation strategies, climate smart practices and started implementing grass root practices;
- 36 community members (24 were women) and seven government office experts were given exposure and practical trainings in modern apiculture development and management;
- 72 selected community members were participated on external experience sharing visits to areas that have best practices on environmental rehabilitation and management;
- 270 different hand tools, 400 kg tie wire and 1652 cubic meters of soil and water conservation inputs were supplied to support the degraded hillside rehabilitation;
- Two micro watershed community groups (300 members) organized and participated on physical land rehabilitation practices;

- Two women only group were organized and started modern bee keeping practices to create alternative livelihoods opportunities.

Output 2: Degraded hillside managed and improved through area closure intervention

- 430 hectares of land was managed under different physical and biological conservation measures
- 2300-man day was mobilized to participate on different site-specific soil degraded environment rehabilitation practices
- 640 gabion boxes of different dimensions and 400 kg of gabion tying wires made available to the community participating in conservation structures building;
- 983 cubic meters of local materials were supplied for building used for physical conservation structures
- 657.92 cubic meter gabion wire was built,
- 29.781 Kms. of soil bund and 37.66 Kms of stone face bund constructed;
- 37,520 different multipurpose tree seedlings planted to augment physical structures.

Output 3: Sustainable livelihood diversification measures facilitated and adopted

- 120 farmers (35 women) have accessed seedlings of multipurpose tree and fruit trees in an attempt to diversify their income;
- 46,352 different multipurpose tree seedlings planted,
- Two women group organized into beekeeping and saving groups,
- 20 modern beehives with necessary accessories and spare parts were made available to beneficiary community members.

Output 4: Experience in the project site replicated to adjacent communities

- Two consultation workshops were organized to share experiences and process of the project
- Two experience sharing visits were organized

- One training event was facilitated were mostly farmers share their experiences to their neighboring ones.

Output 5: Planned activities followed, Adjusted and evaluated

- Five quarterly based regular follow up field visit conducted;
- One external evaluation of the project conducted;
- Three bimonthly and one annual progress report produced;
- Salaries of one technical field staff was covered for 18 months

## IV. Value for Money (VfM)

The Value for Money analysis is developed from conceptual framework identified by DFID. The end of project valuation for the CHIP conducted by LTS International Limited and B&M Consultants PLC has a wealth of analysis on VfM. Thus, the analysis provided here is to supplement that report

- Economy: looks at if buying of inputs of the appropriate quality at the right price.
- Efficiency: looks at how well agents convert inputs into outputs.
- Effectiveness: looks at how well outputs from an intervention achieving the desired outcome on poverty reduction
- Cost-effectiveness: looks at how much impact the interventions have on poverty reduction

**Economy**

The MoANR, as well as regional and woreda offices, used the Government of Ethiopia procurement and purchasing guideline for all purchased of goods and services. This has allowed the project to making buying of goods at the right price. Some items such as hand-held tractors and motorbikes were purchased by the Federal MoA office while a significant amount of purchase of other inputs such as seeds were passed on to regional and woreda offices.

However, at woreda level lack of local suppliers and on time delivery of goods was major problems.

The Ministry of Agriculture, particularly at regional and woreda level, also used local staff and didn't hire additional personnel for the project implementation. This has allowed for greater economic efficacy. No additional budget was also allocated for staff time and thus the expense for personnel is considered the GoE contribution to the project.

**Efficiency**

The success of the efficiency can be reflected by the project outputs. However, it is important to note that some outputs can't be measured during the short period of time, as the interventions require a longer period of time to show results or yields. Outputs of trainings were recorded through the post training assessment and participants had shown an increase in knowledge of CRGE, climate change, planning and M&E by about 25%. Moreover, as woreda experts were able to submit reports in the last three quarters using proper templates and with minor errors, it was possible to observe the outcome of the trainings.

The end of project evaluation has also indicated that crop production has slightly improved, compared to areas where there was no CRGE intervention in the woreda. Income of households that have participated in the project has also increased. These improvement or changes has happened during the time when El Neno had brought one of the worst climate change impact into the country and when absence of rainfall had led to drought in most part of the country. As households and communities that participated in the project were able to overcome the impact of El Neno, it is possible to conclude that the project has some level of contribution in helping communities overcome climate change.

**Effectiveness**

While the overall outcome of the project is to contribute to CRGE and GTP targets, it also expects to show process towards meeting those objectives. As the project was implemented in a short period of time, seeing project outcome was difficult. However, it was possible to see if project outputs were met. Based on the end of project assessment and finance utilization, it was possible to see that 97% of the project outputs were met.

**Equity**

Poverty reduction is a long-term outcome of an intervention and it should be noted that an activity implemented over 18 months or within one harvest cycle won't yield poverty reduction. However, what is looked at in this assessment is if there is a trend that shows poverty reduction due to the project intervention.

The various components of the project intervention are meant to bring diversification of income for households. Households who previously relied on one crop have now been able to grow vegetables as well as include livestock in their assets. Through this diversification, households have been able to build their asset and thus reduce their poverty level. Over the short period of time, income has also increased for households that have used drought resistant crop and also practice livestock growth. Increase in income is one of the indicators of poverty reduction.

## V. Beneficiaries Testimony

Testimonial 1: (male farmer from Doyogena , SNNPRS)

Mr. TafeseJelano lives in Doyogena Woreda, within the Hanjelo watershed, in SNNP region. He is one of the successful beneficiaries of this Agricultural Fast Track Project. During the field visit, he demonstrated the benefits he acquired from the project. The continuous technical training he has received from the agricultural development agents has been instrumental for him to

start producing agricultural products in a more climate smart, systematic and efficient way. This technical advice was intended to acquaint farmers well with the knowledge of climate smart agricultural practices including, among other things, how to deploy improved seedlings for enhanced productivity, building individual farmer based hand dug wells near backyards that can be used as a source for domestic consumption as well as for producing cash crops and vegetables. Cumulatively, these efforts assisted him to produce vulnerability from unforeseen shocks and build resilience of his and other households within the community through scaled up agricultural production techniques that would enhance production while at the same time helping to preserve the environment. Currently, he is sharing his best experience with other farmers so that they could draw lessons.

Testimonial 2: a male farmer from EnebeseSarmidir Woreda, Amhara

Name: GetnetAdamu

Age: 42

Marital Status:Married

No. of Children: 4

Ato Getnet had never used any agricultural input before he becomes one of the CRGE pilot project beneficiaries. He was provided training on various climate smart agriculture practices specially how to increase crop and livestock productivity. Based on the training he prepared standardized compost and applied on his plot of land sawn with 0.375 ha Wheat, 0.25 ha of Barely 0.25 ha of Potato and 0.125 ha Bean with added bio-fertilizers and improved seeds. Previously under the conventional cultivation he couldn't get enough production from his farmland. Now he said that from the 0.375 ha of

land produced 15 quintals of wheat from the earlier production which was 5 quintals of similar land size. In addition to this he grown various vegetables and has got 15,000 Birr from product sales.

Ato Getnet had one cow with calf before the project and after the project with the project support he received one cross breed pregnant heifer, one ram and five ewes and he engaged in livestock rearing. Then he got 7,500 Birr from sale of 5 offspring of sheep delivered and now he owns five Ewes and one Ram with two (Keb) Ewe and five lamps for breeding. Moreover, he participated in poultry production with project assistance and received 5 cokes and 19 pullets. Hence, he obtained income estimated about 5,750 Birr from sale of eggs. Ato Getenet stated that his family livelihood is improved through additional income obtained by the project support through applying different technologies for production of crop and livestock adding his skill and knowledge obtained from training provided during the course of the project.

Testimonial 3: a female farmer from Enebisie Woreda, Amhara Region

Life Changing

| | |
|---|---|
| Name: | Alemitu Maaza |
| Age: | 42 |
| Marital Status: | Divorced (FHHH) |
| No. of Children: | 3 |


Alemitu has been divorced for 10 years and has been the head of her household ever since. Two of her children are male and now over 22 years old. They have already started their own life, but still support her on farming. She has an18-year-old daughter who recently completed her 10th

grade education. Prior to the project, Alemitu was using her farmland for share cropping because she could not afford seeds and fertilizers. The income from share-cropping was not enough for the needs of her household. She had to fill the gap by distilling a local alcohol called araki and preparing injera for teachers. “But now, things have changed as Alemitu explained “After the project came to our Kebele, my life is changing. Since the whole community knew my situation, they selected me as one of the beneficiaries of the project”. She was trained for three days and received improved wheat seeds and fertilizers, 25 chickens of an improved breed for egg production, and six sheep (one male & five female) for breeding.” As a result, “I am able to cultivate my farmland by myself. I got a good harvest which is about four-fold of the previous. Now I can fully cover the consumption needs of my family. I am selling my eggs for about 100birr in a week and paying 20birr per week to a local Ikub (a financial saving group). And the sheep have started giving lambs. I have sold two of them at Br 1300, which I deposited in my Kebele saving account, and I have still three lambs.” Alemitu concluded that “thus the project is life changing for me and I wish all other poor women in our Kebele get the opportunity to resolve their problems like me.” (LTS, 2016).

## VI. Contribution to Poverty Reduction and GTP

Agriculture is one of the major contributing economic sectors to the GDP and it is importance to household’s income and livelihoods. The sector makes up 41% of the country’s GDP, represent nine of the ten largest export commodities. It also employs 85% of the Ethiopian people. The AFTI was specifically designed to contribute to GTP and poverty reduction as well as CRGE. The interventions selected for the project were based on their contribution to the achievements of GTP’s objectives, particularly to enhance productivity and production of smallholder farmers and pastoralists; to reduce the number of chronically food insecure households; to meet the Millennium Development Goals.

The project specifically contributed to the following GTP outputs

- Increased production of major food crops
- Strengthened and expanded natural resource management practices
- Strengthened capacity
- Strengthened water resource management and utilization
- Increasing the productivity of crop
- Strengthened capacity as a result of the climate resilient green economy strategy
- Ensured household level food security
- Increased livestock production
- Increasing agricultural inputs utilization
- Increased supply of quality livestock feed
- Increasing the access of agriculture extension Service
- Increased crop Productivity of female headed households
- Increased productivity of vegetables, fruits and, roots

In addition to contributing to the above-indicated GTP outputs, the project also provided an excellent platform and learning opportunity on linkage between CRGE and GTP. As the MoA is moving toward integrating CRGE with GTP on program level, there has been little evidence based practical experience on the linkage between the two and where climate smart agriculture has been practiced with that specific goal. The lesson learnt from the implementation of AFTP will provide the stage for implementation of large-scale climate focused project in the agriculture sector which also address GTP.

**VII. Lesson Learnt**

As one of the first projects financed by the CRGE Facility and implemented with specific goal of address CRGE strategy, the project provides amble examples and lessons to learn for scaling up or improving implementation modality. Below is some of the lesson drawn from the project.

- Ownership and planning: The project was implemented by woreda and regional staff who are employee of the bureaus and not specifically hired for the project. While this has allowed a greater ownership of the project by the implementers and also provide a mechanism to mainstream CRGE into regular planning and implementation, it had also created a heavy workload and burden for regional and woreda experts. The integration of CRGE into GTP will allow experts to look at CRGE as part of their regular task rather than additional project and will provide sustainability and continuity.
- Capacity and community empowerment: Lack of capacity, particular at a local level, was recognized during the project design phase. Thus, capacity building was designed as a core component of the project and ongoing capacity building was provided through the Executing Entity. For example, a planning training was given to woreda and kebele experts and the experts prepared their own plan through hand-on exercise. M&E training was provided midway through the project and the DAs started to submit quarterly report though the platform they were trained on. This has allowed for smooth implementation of the project and sustainability.
- Local Context Plan: Though MoA had identified list of activities to be implemented in the project, each woreda selected locally appropriate activity from the list. This was done focusing on the needs and capacity of each perspectives woreda. This has created a greater ownership of the project by local beneficiaries.

## 2.2 Ministry of Environment, Forest and Climate Change (MEFCC)

Majority of the projects under MEFCC were involved and concerned with the restoration of degraded areas through afforestation and reforestation activities with particular focus on indigenous tree species of the projects' sites, in Ethiopia. All of the projects have contributed to the country's CRGE strategy through achieving climate change mitigation objectives by contributing to the GHG removals. Furthermore, the projects have complimented to the natural

resource management goals of Conservation Strategy and Environmental Policy of Ethiopia, Integrated Watershed Management undertaken at national level, and social development goals of the Ethiopian government. Moreover, most of the undertaken projects addressed the tree planting goals set in the GTPII plan of the forest sector of MEFCC in the country.

Generally, the various projects of the FTIs, which were undertaken by MEFCC accomplished and met their proposed or intended purposes, objectives, targets and have had the following outputs: 1. Forest cover in the projects' sites increased and hence volume of carbon sink increased, 2. Soil erosion and surface run off reduced, 4. Biomass and Biodiversity in the projects' area increased, 5. The capacity of the community in terms of integrated natural resource management and income diversification are enhanced, and 6. Household income and living standards are also increased, and thus dependency or pressure on natural resources are more or less reduced.

These various projects of MEFCC were undertaken in the different regions of Ethiopia such as Tigray, Amhara, Afar, Oromia, Southern Nations Nationalities and Peoples', Benishangul, Diredewa, Addis Ababa, Hareri, Somali and Regions. The below report will indicate the key achievements and results of 12 FTI projects of MEFCC:

**1. Project title: Climate Resilient Green Economy (CRGE) Project Proposal on Natural Resource Rehabilitation and Conservation in Selected Woredas of Southern Nations Nationalities and Peoples' Region (SNNPR).**

**Project outcomes:**

1. **Improved forest cover, productivity and rehabilitated land**
   - A total 7 new nurseries established and 11 existing ones were rehabilitated;
   - 3.7 million tree seedlings of various species produced and planted based on the agro-ecological needs of each species;

- 4746.8 ha of natural vegetation demarcated and rehabilitated within each Woreda/district.
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***New and existing established and rehabilitated nursery sites at the project site***

**2. Diversified and improved livelihoods to minimize local dependency on natural resources.**

- 117,209 improved fruit tree seedlings provided for local communities of the project site,
- Female households organized and trained on cook stove production,
- 822 improved cooking stoves disseminated, and 428 modern bee hives with accessories supplied to local communities of the project site;

***Fuel efficient stoves produced during training and distributed among communities (left); Fruit trees distributed for local communities (right) and both displayed as a means of livelihood options to minimize local dependency on natural resources.***

**3. CRGE implementation capacities enhanced**

- Training delivered on livelihood improvement options for farmers, and implementation capacity built on CRGE strategies & forest resource management for decision makers both at Woredas and regional levels.

***Training delivered and CRGE implementation capacity built for farmers, forest experts and decision makers.***

**Impacts:**

1. The establishment of Natural Resources Conservation Areas as well as rehabilitation of degraded lands have major impact to increase forest cover and productivity in terms of timber and non-timber forest products building local economy and alleviate poverty.
2. Similarly rehabilitation of wetlands: Lakes Boyo and Abaya increase productivity in terms of fish and other wetland resources, and hence alleviates food security and builds local economy.
3. The livelihood diversification program of the project site has an impact to increase income, therefore, direct dependence on natural resources and deforestation by local communities minimized, so reduced climate shocks/vulnerability.

**2. Project Title: Reducing land degradation and improving livelihoods in the highlands of the Amhara National Regional State.**

**Outcomes of the project:**

**1. Maps and Baseline data generated**

Baseline and development maps were generated for 500 ha of watersheds for each selected district.

**2. Properly managed forest protected area and rehabilitated degraded land:**

Around 4500 ha of watershed and degraded areas become more productive with less erosion as a result of Participatory Forest Management (PFM), Construction of biophysical structures with enrichment planting.

***Degraded area at Lay-Gayint (left); Pit preparation (middle); Construction of biophysical structures for the purposes of soil and water conservation on degraded highland.***

In addition to the above soil and water conservation efforts, a total of 2400ha of forest lands brought under formal Joint Forest management with areal closure and 3.5 million seedlings were planted with appropriate species for energy and timber production.

*Construction of soil erosion control biophysical structures on farm land at Lay-Gayint (left); Nursery management at Lay-Gayint (middle); and Area closure on degraded land at Enarjenawga (right).*

**3: Livelihood improved to minimize dependency on forest resources.**

Alternative livelihood strategies were designed for 3500 youths and poor women: organized and engaged in small business units: 1,096 beneficiaries in Beekeeping; 1,078 beneficiaries in improved poultry, small ruminant animal fattening, small ruminant animal breeding and improved stove production; 269 beneficiaries in forest seedling production and 908 beneficiaries in homestead fruit and vegetable production were identified and benefited from the project.

***Beekeeping in Mekidela (left); Poultry production by youths in Enebse (Middle); Cook stoves produced at Tach-Gayint (Right).***

***Female Household poultry production at enebse (left); women's involvement on sheep fattening at Enarj Enawga (right).***

**Project's Impact:**

- Livelihoods improved for **3,351 individuals** to minimize deforestation by local communities and direct dependence on the natural resources.
- Resilience to draught and climate change by local communities of the project site will be increased as a result of the improved environmental conditions such as improved soil conditions, land productivity and forest cover.

**3. Project Title: Improving income status of women to create carbon sinks through reducing deforestation rate in erer and Sofi woreda, Harari Regional State**

**<u>Outcomes of the project:</u>**

**1. Microclimate and vegetation cover of the local and surrounding areas of the project's site improved and carbon sink increased.**

The vegetation cover of the project area has been dramatically increased from the original size of 20% to 70% in two years time. Local eco-system, microclimate, vegetation cover and other environmental amenities improved as a direct intervention of the project such as:

- 15 ha of the project site were reforested with plantation of selected tree species;
- Aerial closures for15 ha of the project site were established;

- Participatory post plantation management undertaken (400 households involved) to result in improved microclimate, regeneration of species and increased vegetation cover;
- Forest protection and management skills were developed, awareness created and community members specially women trained, who engaged in the particles of exploitation of existing biomass as fuel wood that leads to forest land degradation and deforestation.

***Participatory post plantation mgt. activities in Awbar watershed project site.***

***Forest protection and mgt. skills enhanced and awareness created for women and local environmental bureaus in Harari.***

**2. Income generated for women to minimize dependency on forest resources**

livelihoods improved for local communities especially for the local women through income generating activities such as bee keeping & fodder production. This has brought in improved forest cover as a result of reduced dependency of women on the forest to sell fuel woods as income source and livelihoods, and hence biomass of fuel wood will remain intact as carbon sink and reduce GHG emissions.

A total of 580 individuals were benefited from the project such as 400HHs (House Holds) with post planting management; 30 HHs to be engaged in beehives and honey production as well as 300 goats were distributed for 150 community HHs.

***Livelihood options and income generated for local women of the project site to minimize dependency on forest resources and increase forest cover and carbon sink.***

**<u>Project's Impact:</u>**

- The life of some 180 households an average of 900 individuals improved and their livelihoods detached from being directly dependent on the forest resources.

- Ecosystems services such as water and food supply as well as sustainable timber and non-timber forest product harvests and aesthetic value of the project area increased to result in enhanced living conditions and an increase in local economy growth;

***4.*** **Project Title: Promotion of highland bamboo plantation for ecosystem restoration and livelihood improvement in the eastern escarpments of the upper rift valley areas Oromia Regional State.**

**Outcomes of the project:**

**1. Skills on bamboo management and processing improved:**

As a direct outcome of this intervention 3,597 bamboo growing farmers, 747 bamboo culms supplying farmers, 130 bamboo products processing micro and small enterprises members of the project site were organized and further built up.

**2. Bamboo vegetation cover increased and carbon sink enhanced**

As part of the project's objective to enhance carbon sink of the project's site, 10 community based bamboo stands were established and sustainably managed:

- Bamboo culms planting farmers identified and 500000 bamboos planted on 200 ha of the project site,
- Bamboo management plan prepared and implemented,
- Participatory bamboo management groups established within the 10 community bamboo stands, and
- by laws were made to operate bamboo stand protection, management and utilization.

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the above major activities the existing pressure on bamboo natural forests were reduced, and consequently bamboo forest cover increased to enhance carbon sink.

***Improved Bamboo management and plantation at Kofele and Arsinegele project's site.***

**3. Income generated and local economy improved**

Around **4,474 people (**3,597 bamboo growing farmers, 747 bamboo culms supplying farmers, 130 bamboo products processing micro and small enterprises members were benefited to generate income. Bamboo based livelihoods and business opportunities were created for youth, women and vulnerable groups: small scale enterprises organized on bamboo processing and linked with market, bamboo processing micro enterprises established and produced valuable bamboo products for markets, women, youth and disadvantaged groups engaged in bamboo micro enterprise. Obviously, the cumulative effect of the above interventions of the project have contributed for the overall economic growth and poverty reduction of the CRGE Plan.

*Green enterprises in Kofele and Arsi-Negele project's site.*

**Impact:**

- Jobs created for 4,474 people and their livelihoods improved that have an impact to detach local communities from being directly dependant on the natural resources.
- Ecosystem functions restored and improved environmental conditions for the life of the people living at the lower escarpment and catchment areas.

**5. Project Title: Afforestation/Reforestation in Karamara Hill/ Hadaw Kebele Somali Regional State.**

**<u>Outcomes of the project:</u>**

**1. Increased vegetation cover and reduced land degradation.**

During the two years intervention time of the project, the vegetation cover has been increased by 30%. Selected areas at the project site were protected and rehabilitated with aerial exclosure; through soil and water conservation activities, afforestation and greening of the pre-urban area activities have contributed to change microclimate of the area and increased the green cover. In order to achieve the above outcome, the following activities have been undertaken:

- Project familiarization and base line survey
- Established nursery site
- Around 300 ha of forest area protected with aerial exclosure.
- Afforested and greened pre-urban area
- Implementation of physical soil and water conservation measures
- Encouraged HHs to adopt improved fruit seed production
- Enhanced nursery management and seedling production skill

*Area closure in Karamara Hill: Degraded forest land under rehabilitation*

**2. Skills developed on seedling production and nursery management:** through Awareness raising workshop and trainings on environment, focusing on natural resource management & strengthening ecosystem services in the project area.

**3. Livelihood improved and income generated:**

Jobs created for some community members such as 60 community members (labor) hired on nursery establishment, bed preparation and shade construction; 45women hired during sand, clay and manure sieving, pot filling and pot arrangement; 45community members (labor) hired during implementation of soil and water conservation activities; Improved fruits were provided for 150 communities HHs.

**Project's Impact:**

- Jobs created for some 150 community members and livelihoods improved for an additional of 150 households that have an impact to minimize deforestation by local communities and being directly dependent on the natural resources.

**6. Project Title: Creating Climate Change Resilient Communities via innovative way of bamboo forest management in Selga 22 and MenageSelga Kebeles, Benishangul Gumuz Regional State.**

**<u>Outcomes of the project:</u>**

**1. Local initiation for bamboo production and attitude towards to bamboo management (conservation and utilization) increased.**

Awareness created and training provided for 200 households of local communities in Bamboo forest management and propagation. As a result of this local perception increased on the economic value of Bamboo, as well as knowledge and skill enhanced on bamboo management and processing. These tasks have basically improved local initiation for community based bamboo management.



***Training of beneficiaries in the two Kebeles of the project site***

**2. Improved bamboo management and conservation on degraded areas.**

Two Nursery sites were established and seedlings were transplanted. As an outcome of this task two community based enterprises in the two kebeles were established to produce 78703 seedlings of Bamboo, *Acacia saligna* & Moringa species. In line to this, 99 ha of land was planted with lowland bamboo to increase bamboo forest cover and enhanced carbon sequestration as well as improved


***New nursery sites established at Menageselga 22 kebele in Benishangul Gumuz Region.***

***Nursery site management at Menage selga 22 kebele in Benishangul Gumuz Region.***

**3. Livelihoods improved and vulnerability of local communities to extreme climatic conditions reduced.**

Communities organized and benefited from the jobs created by the project such as 40 unemployed women, 30 unemployed youth, 30 environmental club members and 200 HHs in two kebele communities were trained and supported to improve their livelihoods.

The two micro enterprises organized & engaged in nursery management have produced seedlings with support from the project. The project bought seedlings from the organized enterprises to encourage and initiate plantation thus local communities have earned income from seedling sales & saved the money in the bank. Considering the major outcome of this project, one of the enterprises bought grinding mill as communities used to go long distance for grinding mill, and the enterprise is now serving the community with little cost and creating their own business at the same time the livelihood of the target communities has been also improved.

**Impacts:**

- Temporary jobs created for some 70 women and youth in form of livelihood strategy and minimize direct dependence on natural resources.
- The efforts that have been made on livelihood improvements such as establishments of community based cooperatives or enterprises have increased business options. This has consequently reduced vulnerability of local communities to extreme weather events exacerbated by climate change.

**7. Project Title: Participatory Forest Management in Awale, Adada and Belewa Rural kebeles of the Dire Dawa Administration (DDA).**

**<u>Outcome of the project:</u>**

**1. Restored and conserved bio-carbon stocks in selected forest areas.**

The following outputs were made in order to achieve the above outcome:

- 1000 ha forest land restored and conserved for bio-carbon stocks through reforestation and natural regeneration,
- More than 560 ha were reforested and protected through community based participation, Indigenous and grass species were able to regenerate naturally through areal closure**,**
- Four nursery sites organized and established.
- Forest by laws developed,
- Around 660 thousand tree seedlings produced and distributed for plantation in agro-forestry at homestead farmland, and road side.

***Conservation and rehabilitation of degraded lands at Belewa and Adada project site.***

**2. Local capacity built and training provided**

In this regard, the following major efforts have been done:

- Training provided for key stakeholders of the project;
- Institutional implementation capacity built for CBOs.
- Awareness increased for local people in sustainable forest management.

**3. Income generated and livelihood improved**

Income generated and increased for 32000 households. Community involvement has been assured by engaging them to participate on different income generating activities. In line to this improved vegetable and fodder seeds were distributed for 3200 households and capacity of 4 CBO is strengthened to sustainably manage their forest resources.

**Project's Impact:**

- The life of 32,000 households improved and their livelihoods are detached from being directly dependent on forest and biodiversity resources, therefore the project has a major impact to minimize deforestation and land degradation by local communities.

**8. Project Title: Application of Prosopis Juliflora Cement Bonded Particleboard for Low-cost House Construction in Afar Regional State.**

**<u>Outcomes of the project:</u>**

**1.** Potential *Prosopis* sites were selected and beneficiaries were identified from the selected sites.

**2**. Twenty (20) cubic meter Prosopis logs converted to small chips,

**3.** Sample boards manufactured and tested in Malaysian Forest Research Institute,

**4**. Specifications and bid document prepared for processing equipment,

**5.** Production unit for cement boards established,

**6.** Model houses constructed for demonstration,

**7.** Implementation capacity for CRGE project improved at Regional level.

***One of the potential sites for harvesting Prosopis in the Afar Regional State.***

**Impacts:**

It was only possible to set up the cement particleboards manufacturing installation, and it was only possible to display some products within the time frame of project, therefore, it was not possible to see impacts due to the reason that the Bamboo processing machine is not yet delivered by the selected supplier or company.

**9. Project Title: Enhancing Highland Bamboo Management and Improving Livelihood of the Community in Oromia Region.**

**Outcomes of the project:**

**1. Skills improved on bamboo management and processing:**

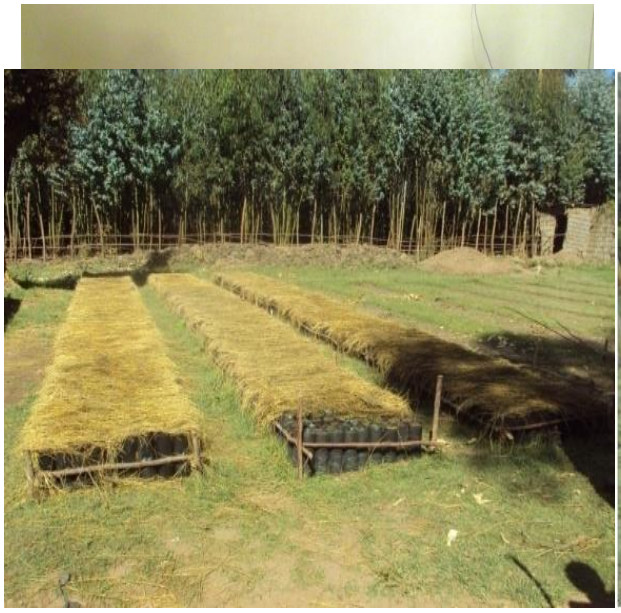
Around 1000 individuals of the community members obtained intensive training on biological, social, environmental and economic aspects of bamboo. More skill enhancement trainings were also offered to trainees on nursery activities, cultivation techniques and bamboo management. Moreover, awareness creations made for two Woredas and experience sharing visits and capacity building activities have been undertaken.

***Skill enhancement trainings on bamboo management in Oromia Region.***

**2. Improved bamboo forest management, cover and carbon sink increased**

In order to come up with this outcome, various efforts have been undertaken such as:

- Bamboo integrated in agroforestry systems on 900 bamboo lots,
- Ten community bamboo stands established,
- Two seedling multiplication centers established,
- Bamboo based Carbon Finance initiated,
- Bamboo management plan for 500 ha of bamboo stands prepared and implemented,
- Participatory Bamboo Management groups established and made operational



***Community based bamboo stands established and sustainably managed.***

**3. Bamboo based livelihoods and business opportunities were created for youth, women and vulnerable groups:**

The following members of the community were directly benefited from the project: 80 youth members were organized in bamboo processing enterprises in Goba Woreda and D/Inchini Woreda of which 20 were female; 2900 individuals were also organized as bamboo growers of which 50% were women, 20% were youth and 5% were disabled.

Bamboo-based potential livelihood enhancing opportunities identified and 10 small scale enterprises on bamboo processing organized and linked with market. Two domestic private sector linkages created between processors, traders and urban consumers. Bamboo processing micro enterprises produced valuable bamboo products for markets. Women, youth and disadvantaged groups engaged in bamboo micro enterprise.

***Community based bamboo processing micro enterprises established and income generated out of selling of bamboo products in Goba and Tikurinchin sites.***

**Impact:**

- Resilience to draught and climate change by local communities of the project site will be increased as a result of the improved bamboo management and introduced community based bamboo enterprises.
- About 3000 community members were engaged in bamboo enterprise businesses, which have an impact to increase local economy growth and minimize poverty.

**10. Project Title: Combating Forest and Land Degradation Induced by Charcoal Production and firewood**

**Outputs of the project**

**1. Increased vegetation cover and rehabilitated degraded land.**

Vegetation cover has increased by 20% during the project's life time, i.e. within two years time. Selected areas were protected and rehabilitated through soil and water conservation activities, afforestation and reforestation activities have also improved land productivity and microclimate of the area and the green cover increased through natural regeneration of the protected areas. The following various tasks were accomplished to bring the above outcome:

- Major actors and beneficiaries identified and committed;
- Biophysical and socioeconomic baseline data collected,
- Two community-based nurseries established,
- Sufficient number of indigenous seedlings for afforestation/reforestation of 150 ha areas were produced,
- Soil and water conservation measures were undertaken on 100 ha of degraded areas (i.e., 6 km of soil bund, 100 $m^3$ of gabion, 300 micro-basin, 2km hill side terracing and 4000 pits were constructed);

***Soil and water conservation activities as well as rehabilitation of degraded areas in Garbi and Gila Kebele site (Keberi Bayah Woreda)***

**2. Livelihoods of the community improved and skills were developed on land restoration and management:**

CBO was formed for seedling production and plantation, as well as improved stoves were disseminated among local communities to decrease pressure on the remnant natural forests of the project site. The following provisions were considered to be major actions taken to bring changes and improvements in livelihoods:

- ✓ 5000 fruits and 95000 fodder seedlings were planted on soil conservation structures;
- ✓ Stove production center constructed and one CBO established;
- ✓ Project implementation capacity built for development agents and local communities;
- ✓ 1500 improved stoves were distributed for 1500 community HHs.
- ✓ 66 community HHs, of which 33 formed as CBO for stove production and 33 HHs for plantation.

**3. Jobs created for some individuals among the community.**

Around 70 individuals among the community of which 35 laborers in Gila site and 35 in Garbi site were employed as a short term employment during implementation of soil and water conservation activities.

**Impacts:**

- Jobs created for some 70 individuals of the community members.
- Improved environmental conditions such as improved soil conditions, land productivity and forest cover.

***Community Based stove production center in Kebri Bayah Somali Region***

**11. Project title : Integrated Forest Development and Management Project in Selected Weredas of Tigray Regional State.**

**<u>Outcome of the project:</u>**

**1. Productivity of degraded lands improved and increased:**

Based upon the project's intervention plan, different soil and water conservation structures constructed such as 58.8 km soil bund, 6.4 km gabion check dam, 500000 micro basins, 41.7 km terracing & 785,000 pit prepared & planted with different species of seedlings. In addition to the biophysical measures, 5000 ha of degraded area exclosure made to exclude free grazing and human encroachment. As a result of this intervention and with the help of participatory involvement of target communities degraded areas of the project site become more productive (observed from the increase i

t

ation cover).

***Degraded lands rehabilitated and productivity improved as a result of biophysical measures on soil and water conservation.***

In addition to the above mentioned biophysical intervention measures, nurseries were established and 985,500 different tree seedlings species were produced and planted within the catchment areas of the project site.

Then post planting management activities like mulching, manure application, cultivating & watering improved tree survival, therefore the project has met its objective to

rehabilitate some of the degraded areas of the Tigray region as part and parcel of the integrated plan to increase resilience for climate change and vulnerability.

***Plantation of seedlings and post plantation management practices***

**2. Adaptive capacity of local communities to climate change enhanced**

✓ As part of the integrated efforts to decrease vulnerability of local communities to climate change, various livelihood options and diversifications for local communities introduced during the project's intervention. Youth groups and poor women such as 10,250 community HHs organized to practice agroforestry (home garden, woodlot, and fodder lots) and 9091 community HHs (Youth and women) engaged in Poultry production and bee keeping.

***Poultry production and dissemination at Hawzen (left); Beekeeping practices at H/Wajirat (middle & right).***

**3. Institutional capacity for implementing CRGE strategies improved**

Stakeholders and experts trained on integrated watershed development & on implementation strategies of CRGE, with particular emphasis on national climate change adaptation and mitigation plans as well as mainstreaming CRGE strategies with local and regional plans.

***CRGE implementation capacities built among farmers and local experts***

**Impact:**

- The integrated forest development and management strategies have impacts to increase forest productivity in terms of timber production and other commercial values of the forest , consequently build local economy and alleviates poverty.
- As a result of the improved environmental conditions such as improved soil conditions, land productivity and forest cover the project contributes for climate change mitigation and adaptation by both human and natural ecosystems,

- The livelihood diversification program of the project site has an impact to increase income for about 20,000 HHs, therefore, direct dependence on natural resources and deforestation by local communities minimized.

**12. Project title : Mount Jemo Wechecha Ecosystem Rehabilitation in Addis Ababa**

**<u>Outcomes of the project:</u>**

**1. Baseline map produced**

For 30 ha of Mt. Jemo Wechacha.

2.Thirty (30) ha of degraded mountainous area are rehabilitated and healthy ecosystem is established;

**3. Site vegetation cover increased**

As a result of enrichment planting of 30765 seedlings from various tree species on Mt. Jemo wochecha site vegetation cover increased by 20% during the two years of the project's life time.

***g***

***etation cover increased (right) on the degraded forest mountain (left) at Mt. Jemo wochecha through a consolidated effort of forest rehabilitation program.***

**4. Improved water flow in streams and rivers**

Soil and water conservation physical structures such as different water harvesting structures, trenches and stone bundles constructed to minimize the soil erosion and runoffs on the downstream catchment area, and hence improved rainwater infiltration capacity of the soil as well as improved water flow in streams & rivers.



***Improved water flow in rivers and streams as a result of enhanced soil and water conservation structures on Mt. Jemo wechecha***

**Impacts:**

- Jobs created and income generated for 10 individuals of the local community is considered to be an impact originated from the project's intervention.
- Ecosystem functions and continuity of mount Jemo Wechacha restored and assured impacting a better and healthy environment for living. Therefore, investments that are meant to curve environmental problems could be used or directed instead to build local economy growth and for the development of a green economy at large.

**III. Project's contribution for economic growth and poverty reduction:**

- The various project's intervention areas particularly on livelihood improvement options have great contributions in terms of building local economy and reducing poverty from incomes generated out of sales of cooking stoves, fruit trees and honey. Moreover, nutrition improved and food shortage will also be reduced. Livelihood strategies diversified and enhanced, resulting in an increase in household income,

therefore, the project has some contribution to local economy growth and poverty reduction. Successful implementation of livelihood improvement options by the project focusing on poor women & jobless youth make an asset by themselves for household consumption.

- The project has established a system on small scale bamboo enterprises by local community, this could bring major changes and improvements in local economy growth and generates income to combat poverty.
- Ecosystems services such as water and food supply as well as sustainable timber and non-timber forest product harvests and aesthetic value of the project area will be increased to result in enhanced living conditions and an increase in local economy growth.

**IV. Lessons learned**

- Provision of vehicle for project management work is also critically important.
- A sort of new procurement approach need to be designed in purchasing of nursery inputs. Provision of training and regular follow up and assistance is very necessary for financial and technical staff of the executing and implementing entity.
- Creating responsibility and sense of ownership among community members through formal & informal meeting, provision of training & awareness creation program is crucial to realize all conservation activities as well as to ensure sustainability.
- Physical soil and water conservation structures not only reduce runoff speed but also protect areas by restricting movement of domestic animals.
- Further awareness creation among key personnel of finance and administration, key stakeholders including Local Kebele Administration staff in the Region is also crucial to improve the participation of stakeholder on the project and achieve the goal/objective of the project.
- Encouraging and involving the local community members, especially women groups on any integrated natural resource conservation & developments activities are one of the key strategies that helps to ensure active participation and empowerment of the women.
- Participatory community based projects need to be encouraged with some follow up by GO's, since it would have a great role in ensuring not only forest resource management

but also the natural resources through effective integration of NRM and livelihood activities.

- Active participation of project beneficiaries on the overall project success and achievements.
- Strong commitment of key stakeholders at all levels to successfully implement of the project.
- Awareness creation, exposure tour & field visit can possibly upgrade the knowledge of all stakeholders about climate change, its cause & effect.
- In Plantation time the community organized and planted in development groups and good integration with different stakeholders.
- Best and innovative practices of the various projects are documented and published to scale up and replicate to other regions.
- For some the projects market linkages have been created for the different enterprises, thus could be taken as good lesson for projects of similar nature.
- In one of the project's site to engage some members of the local communities in honey production was not yet realized. This is just because the bees have left their hives due to scarcity of food or flowers in the vicinity. We learn from this problem that it is necessary to arrange and examine all the necessary preconditions for the set up and functioning of the honey production before setting the beehives and the compound for the intended plan of honey production.
- Similarly in another intervention area to encourage communities in adopting and planting improved fruit seeds around the project's area was not fully successful because some of these selected fruit seeds were planted in areas where neither the water supply nor the rainfall were reliable. Therefore, lessons are learned to consider first the local weather conditions and not to plant perennial plants in areas, where water resources are scarce.
- In few cases it was difficult to implement some of the intended activities of the project within short period of time, therefore, it has been learned that adequate time should be allocated for projects of the same nature.

**V. Challenges:**

- Transportation associated vehicle constraint is found to be the main challenge leading to limited supervision as well as delay on field work activities, labor payment, purchasing and project input or supply distribution work.
- Lack of local supplier in delivering the proposed tree seeds is found to be the main challenge causing delay on seeds purchasing and supply over the project life time.
- The global EL NINO phenomenon that disrupt both national and regional weather also can be mentioned as part of the main problem causing irregularity and shortage of the rain between the second and fourth quarter implementation periods of the project.
- Because of the absence of land certification system in the administration, no afforested and protected area that is developed by the project has been either registered or certificated to secure the property right of the community.
- Government procurement bureaucracy is also found to be the main challenge that has been causing delay on subsequent project activities over the project life time.
- Particularly at the beginning of the project, Lack of clarity on payment modality and financial administration did cause delay on the expenditure of the project finance.

**VI. Project Beneficiaries**

| Intervention Types | Total | Male | Female |
|---|---|---|---|
| **Amhara** | | | |
| Nursery management | 270 | 152 | 118 |
| Fruit & vegetable | 996 | 562 | 434 |
| Poultry production | 567 | 368 | 199 |
| Sheep fattening | 180 | 117 | 63 |
| Sheep & goat for breeding | 335 | 256 | 79 |
| Improved stove | 242 | 0 | 242 |
| Bee keeping | 1096 | 876 | 220 |
| JFM | 3145 | 2736 | 409 |
| capacity building | 567 | 430 | 137 |
| | 7398 | 5497 | 1901 |
| **Benishangul Gumuz** | | | |
| Bamboo seedling management and utilization | 70 | 30 | 40 |
| Environmental club | 30 | 20 | 10 |
| capacity building | 80 | 70 | 10 |
| | 180 | 120 | 60 |
| **Tigray** | | | |
| Beekeeping | 141 | 128 | 13 |
| Agroforestry | 2050 | 1742 | 308 |
| Poultry production | 1790 | 626 | 1164 |
| capacity building training for stakeholder | 677 | 440 | 237 |
| | 4658 | 2936 | 1722 |
| **SNNPRs** | | | |
| Agroforestry | 121 | 109 | 12 |
| Bee keeping | 428 | 415 | 13 |
| Improved cook stove | 822 | 0 | 822 |
| capacity building | 2846 | 2134 | 712 |
| | 4217 | 2658 | 1559 |
| **Addis Ababa** | | | |

| | | | |
|---|---|---|---|
| Guards | 10 | 10 | 0 |
| Daily laborers | 257 | 135 | 122 |
| capacity building | 100 | 65 | 35 |
| | 367 | 210 | 157 |
| **Afar** | | | |
| harvesting logs of prosopis | 150 | 150 | 0 |
| Small scale enterprise | 150 | 150 | 0 |

**Beneficiaries continued**

| **REGIONS** | **Types** | **No of direct benefices** | **F** | **M** | **Total** |
|---|---|---|---|---|---|
| **Oromia** | 3 Micro enterprises | 130 | 3945 | 85 | **Total** 4613 |
| | Training | 146 | 36 | 110 | |
| | farmers who supply bamboo culms | 747 | 150 | 597 | |
| | farmers who plant bamboo culms | 3590 | 1655 | 1935 | |
| **Somali** | Trained on improved fruit and forage production and management | 150 | 85 | 65 | 450 |
| | Improved fruit seed and start to produce | 150 | 85 | 65 | |
| | Nursery worker | 105 | 35 | 70 | |
| | soil and water conservation activities | 45 | | 45 | |
| **Dire Dewa** | management of the | 72 | 50 | 12 | |

| | | | | | |
|---|---|---|---|---|---|
| **Dire Dawa** | nursery work | | | | 4806 |
| | Produce compost | 1350 | 1150 | 200 | |
| | Distributed high value improved vegetable seedling | 3200 | 1000 | 2200 | |
| | sensitization training | 184 | 24 | 160 | |
| **Hareri** | Provision of beehives and goat distribution | 220 | 220 | | 970 |
| | Post plant management activities | 600 | 220 | 380 | |
| | Training | 150 | 35 | 115 | |
| **Oromia new** | farmers who plant bamboo culms | 900 | 350 | 550 | 1999 |
| | farmers who supply bamboo culms | 600 | 155 | 445 | |
| | Training on bamboo cultivation, propagation and management | 419 | 12 | 407 | |
| | Micro enterprise | 80 | 18 | 62 | |
| **Somali new** | Nursery guard | 2 | | 2 | 1672 |
| | Improved stove dissemination | 1500 | 1350 | 150 | |
| | Training on capacity building | 170 | 45 | 125 | |

## 2.3 Ministry of Urban Development and Housing

### Introduction

The Ministry of urban development and housing sector FTI projects mainly focused on two areas: Solid waste management and urban greenery development which have been implemented in 13 cities/towns. Waste management sub project has been implemented in Addis Ababa, Bishoftu, Butajira, Dessie, Gambella, Hawasa, Harar, Jigjiga and Semera-Logia. While the urban greenery sub-project has been implemented in Adama, Asossa, Butajira, Dire Dawa, Hawassa and Shire-Endasilassie cities/towns. This report captures the key achievements in solid waste management and urban greenery development of the FTI projects in nine regions and two city administrations for the period of July 2014 to December 2016.

### Aggregate results and achievements

### Project One: Solid Waste Management

The waste management project has been implemented in ten cities/towns namely Addis Ababa, Bishoftu, Butajira, Dessie, Gambella, Hawasa, Harar, Jigjiga and Semera-Logia. The overall project performance of each projects according to memorandum of understanding (MOU) and project plan is stated as follows:

### A. Addis Ababa City:

There are two Fast Track Investment Projects that have been implementing in Addis Ababa.

#### 1. Cleansing Management Agency:

The project is entitled as “Solid Waste Segregation in Two Condominium Houses Sites of Addis Ababa (Mikiland and Gofa Sites)”. The allocated budget for the project was USD $ 100,221.69. According to the project proposal and MOU, the expected outputs of this project were improved stakeholders’ awareness and participation in the city’s waste management; trained professionals and community representatives on solid waste management and segregation; and Procurement of small size color coded containers and dustbin to both condominium sites.

The project has provided Project 446 suitable waste collecting containers or dust bins for condominium houses dwellers in the two condominium sites. Provision of these waste containers has brought about changes in the solid waste collection and removal practice in the community. The agency has supported more than Birr 300,000 for the project accomplishment. The direct project beneficiaries are 20 of which 7 are male and 13 are female. The numbers of indirect beneficiaries are 10,380. The project impacts have created livable and sustainable city and neighborhoods, attitudinal and behavioral change of the community and production of sufficient organic urban agricultural products are also the benefits of the project.


The sustainability of the project will be ensured through creation of strong sense of local ownership and genuine participation in design, implementation and monitoring and evaluation of condominium households, improving community participation and awareness on cost sharing, working towards cost recovery on waste management by segregation, drawing political attention to follow up political leaders through aggressive advocacy and public participation and ensuring song support and collaboration from the city administration.

**2. Solid Waste Recycling and Disposal Projects Office:**

Similarly, the second FTI project implemented in Addis Ababa is entitled as “Organic waste composting in Addis Ababa City Administration”. The allocated budget for the project was USD $ 100,221.69. Based on the project proposal and MOU, the expected outputs of this project were capacitated stake holders, purchased equipments and tools, constructed

compost site, and effective monitoring and evaluation conducted during the life time of the project.

At the end of the implementation and execution of this project, the beneficiaries were two small micro enterprises and certified for preparation of compost from biodegradable organic solid waste; training has also been provided for the two small micro enterprises. The training has added value to stakeholder's knowledge as a relevant practical means of reducing waste from landfill, reduced transfer station cost, increased income and environmental benefits;

The direct project beneficiaries are 20 of which 19 are female and one male. The numbers of indirect beneficiaries are 10,000.

**B. Bishoftu Town:**

The Bishoftu City Municipality has also participated in executing the Fast Track Investment project entitled as "Municipal Solid Waste Management to build clean and green city in Bishoftu" with an allocated budget USD $ 143,822.6.

Due to insufficient budget much of the planned activities of this project have been reviewed. As a result, two transfer stations have been constructed; two three-wheeled push carts were purchased; awareness creation workshop organized for 499 community representatives and 137 technical staffs. Training has been provided for 105 MSE members and employment opportunity was also created. As the result of the workshop and training the compost preparation process has been improved thereby improving the solid waste management system. In addition, three Bajaj's for solid waste transportation service had been procured and assisting the enhancement of the solid waste management system of the town.

The overall outcome of the project is Improved solid waste management system in Bishoftu City Administration through awareness creation, Increased employment opportunity with their income to the MSE and reduced shortage of transportation to collect wastes from house to house.

Beneficiaries: Direct beneficiaries of the project are poor women and youth groups and the ultimate beneficiaries of the Project are the citizens who live in and use city, particularly the urban poor, who will receive better-managed services and more accountable, participatory, and transparent management as a result of the Project.

Indirect beneficiaries: The inhabitant of the city, adjacent rural districts, and family of project direct beneficiaries are considered as indirect beneficiaries of the project.


bajaj


Transfer station

**C. Dessie Town:**

In Dessie Town the FTI Project entitled “Improving Solid Waste Collection Coverage and Composting in Dessie Town” has been executing like other FTI project with an allocated budget of USD$ 182,515.66.

At the end of the implementation and execution of this project, a purchase of thirteen tractors (which is 325% of the plan) for solid waste transportation has been made with support from the city administration which shows the high commitment and sustainability of the project whereby ten more tractors had been bought by the city administration while the plan was to procure three tractors ; one compost shed and one transfer station constructed which had improved the solid waste management system; 27 dust bins are locally produced while the plan was 14; and training on solid waste management and compost production has been given for 600 professionals, MSE members, other stakeholders as well as community representatives. The solid waste collection rate has improved after the training. The income of the MSE's members has increased to 800 Birr per month from the previous 250-500 Birr per month. Safety materials like glove, plastic shoes and mouth cover had been bought for the safety of the MSE's.

The number of direct beneficiaries is 190 male and 410 female totally 600. The indirect beneficiaries from the project are 97,853 males, 105,242 females and totally 203,095.

The project outcomes are: institutional capacity of the municipality improved, Dessie city's waste collection increased and this resulted increased income of the MSE's.


Dustbins

Tractors

**D. Harar Town:**

The project entitled "Promoting Solid Waste Compost Utilization to reduce Methane emission in Harar City" has been executing with a budget of USD $ 66,417.53.

The executing entities in Harar has provided capacity building training supported with practical activities for 53 beneficiaries and staff coordinating bodies where by this resulted in improvement of the solid waste management; employed 40 unemployed youth for waste collecting, segregating, transporting and disposal of waste as well as production of compost; procured basic hand tools and materials (sacks, wheel barrows, shovels, rake safety cloths, etc) had been procured; construction of 27 compost pits as wells as one compost shade has its role in improvement of the solid waste management system.

The direct beneficiaries are 40 while the indirect beneficiaries are 114,300.

**E. Semera-Logia Town:**

The FTI project executed in Semera-Logia entitled "Solid Waste Management in Logia Municipality". The budget allocated for this project was USD $ 73, 915.40.

At the end of the implementation and execution of this project, awareness creation interventions benefited 500 community members and stakeholders; 10 MSEs (6 in Logia and 4 in Semera) have been organized and job has been created for these MSE's; Training has been provided for all members of the MSEs and this resulted in improved solid waste management system; 4 Bajajs were bought and started collecting waste registered and plates offered but some complaint about the noise pollution is being raised; 100 small and plastic containers purchased and distributed for camps; For the health and safety of the workers Personal Protective Equipment such as Gloves, Mask, Googles, are were bought and temporary waste collecting and storing place prepared with provision of 4 containers with the help of region's budget.

The project outcomes are: the solid waste collection system, the sanitation level and institutional capacity of the town improved. The direct beneficiaries are 20 while the indirect beneficiaries are 21,000.


bajajs

**F. Jigjiga Town:**

The FTI Project in Jigjiga Town is titled as "Improving Solid Waste Collection System of Jigjiga City". The budget allocated to this project was USD $ 95,225.00.

Awareness creation workshops were organized, once in a month awareness creation programs through the region's local media has been transmitted; from out of six documentaries, two were prepared and transmitted, and ten zero waste festivals have been made in ten kebeles of the town of Jigjiga. All these assisted for better awareness on solid waste management and resulted improvement in the solid waste management system. 10 communal containers and 180 dust bins were purchased but the purchase of one solid waste transporting tractor is cancelled due to insufficient budget allocation. Training for 60 officials and employees and one organized MSE members has been made. In the project process 26 jobs had been created. Experience sharing of 6 individuals (2 from MSEs, 2 from Jigjia beautification agency, 1 from mayor office & 1 from the bureau) was conducted resulting a best experience knowledge sharing.

The project outcomes are: the solid waste rate of collection, the sanitation level and institutional capacity of the city improved.

The direct beneficiaries are 26 while the indirect beneficiaries are 49,038.

**G. Gambella Town:**

The FTI Project in Gambella Town is titled as "Improving Solid Waste Collection in Gambella Town". The budget allocated to this project was USD $ 67,135.37**.**

Awareness creation workshop and trainings were organized and resulted in a better understanding on solid waste management. The project has purchased 33 containers, 50 wheelbarrows, 50 rakes, 100 spades, 100 work dress (Tuta), 50 work shoes (boots), 100 dust prevention masks, 60 sacks have been bought and handover to Gambella Town municipality to be distributed to MSE. These resulted in improvement of the solid waste management system. It has also procured one solid waste collecting, transporting and dumping tractor from METEC (Adama Agricultural Machinery Industry) with Birr 371 thousand and the budget allocated for office equipment has been used for this tractor purchase.

The project outcomes are: the solid waste collection rate, the sanitation level and institutional capacity of the municipality of the city improved. The direct beneficiaries are 20 while the indirect beneficiaries are 57,000.

**H. Hawassa City (Solid Waste Management):**

In Hawassa City the FTI Project entitled "Solid Waste Composting in Hawassa City Administration" has been executing like other FTI project with an allocated budget of USD$ 47,727.86.

Different awareness creation workshops and trainings were conducted which resulted in improvement of the solid waste management system. The project has also constructed compost-shed with its components (compost production shade, warehouse, store & office and guard house). And quarterly monitoring and evaluation has been carried out.

Project Outcome: the solid waste management system of the city improved, the sanitation level of the city had improved and institutional capacity of the city improved, improved economic & social conditions of the MSE and community, improved skill in sorting & proper management of the solid waste at the house level.

The direct beneficiaries are 62 male and 131 females totally 193 while the indirect beneficiaries are 101,521.

The development of greenery or the outcome of the project are creating job opportunity and means of income generation, clean, green and healthy environment & increase of vegetable and fruit and agricultural production & income of the, vegetable growers and farmer in the surrounding urban areas. A clean and healthy environment will be created; Improved Economic & social conditions of the MSE and community, improve the skill in sorting & proper management of the solid waste at the house level.

Compost product

**I. Butajira Town (Solid Waste Management):**

Similar to Hawassa City, the solid waste FTI project in Butajira Town is entitled as "Solid Waste Composting in Butajira City Administration in Kebele 02 around Tefetiro Shelko". It has been executing like Hawassa City Composting Project with an allocated budget of USD $ 47,729.08.

Awareness creation workshop and trainings were organized. The workshop and training has raised their awareness and this resulted improvement in solid waste management system. The project has also constructed compost-shed with its components (compost production shade, warehouse, store & office and guard house).

The project outcomes are: the solid waste management system of the city improved, the sanitation level of the city had improved and institutional capacity of the city improved.

The direct beneficiaries are 96 male and 41 females totally 137 while the indirect beneficiaries are 15,254.


Butajira compost site

**Project Two: Urban Greenery Development**

**A. Dire Dawa**

**Project Title: Public Park Greenery Development**

Four MSE's has been selected for the public park greenery work, training conducted for 60 MSE members (women and youth,) after the training they are capacitated and Planting and management of 4513 species and covering 7500 $m^2$ with Kukuyu grass and has increased the greenery coverage of the city thereby enhancing the carbon sequestration,

The project outcomes are: the urban greenery coverage of the city and institutional capacity of the city improved. The direct beneficiaries are 60 while the indirect beneficiaries are 192,000 people.

**B. Adama**

**Project Title: Adama municipality with its FTI Project entitled developing "Recreational Park Development for Adama City in kebele 01".**

Project Output: Launching workshop for 207 (158 males and 49 females) (103%) major actors and beneficiaries have been made; training for 218 (148 males & 70 females) (109%) stakeholders and they contributed to the urban greenery development of the city, 7 hectares of land has been greened and beautified; 1390 m (100%) periphery of 7 hectare of park area fenced; design for the park has been prepared; stretching water supply for the project area has been made with additional support from the city administration; construction of landscaping elements have been made according to the Urban Greenery Standard prepared by the Ministry ; 1483 seedlings of 10 species such as Arucaria, Ficus C. Pyramidalis, Duranta spp, etc were purchased and planted, 7251 seedling holes prepared and planted with seedlings; All 7251 planted seedlings are being properly managed.

The project outcomes are: the urban greenery coverage of the city improved and institutional capacity of the city improved. The outcomes of this project indirectly also include increase mitigation & adaptation potential to climate change; reduce air pollution and consumption of natural resources.

The city adminstration allocated 7 million birr inorder to finalize and assure the sustainability of the project.

**C. Hawassa City (Greenery)**

**Project Title: The Hawassa City Urban Open Space Greening FTI Project**

Awareness creation workshop and trainings were organized workshop and training were organized , 15,609 $m^2$ green area is cleared, back filled with fertile (loam )soil and leveled, 4,000 m curve stone constructed and leveled by red ash, 1.5 hectare of land which was formerly solid waste damping site, is greened into urban park with design and has increased the city's greenery coverage thereby enhancing carbon sequestration; 8,500 $m^2$ areas covered with turf grass, walkways are constructed with terrazzo tiles according to the design, planting of ornamental trees and shrubs, turf as well as proper fencing is completed, quarterly

evaluation and feedback has also performed in the implementation process of the project, jobs for 123 male and 262 female totally 385 jobs were created, hence the direct beneficiaries are 385 people whereas the indirect beneficiaries are 101,521 people.

The outcome of the project is creation of job opportunity and increasing the income level, clean, green and healthy environment & increased of vegetable and fruit and agricultural production & income of the, vegetable growers and farmer in the surrounding urban areas. A clean and healthy environment created; Improved Economic & social conditions of the MSE and community.

**Project at the completion stage**

**D. Butajira Town (Greenery):**

**Project Title: Butajira's open space greening FTI Project**

Awareness creation workshop and tranings were organized and this resulted their involvement in greenery development, land prepared for planting shade and ornamental trees, shrubs, turfs and flowers; the size of land increased from 420$m^2$ to 7011 $m^2$ . Job opportunity created for male= 28, female=14, total= 42 and the direct beneficiaries are 42. The indirect beneficiaries are 15,254 people.

The project outcomes are: the urban greenery development of the city improved, the carbon sequestration capacity of the city had improved and institutional capacity of the city improved. The outcomes of this project also include increase mitigation & adaptation potential to climate change; reduce air pollution and consumption of natural resources.

**E. Asossa Town**

**Project Title: Upper and Lower Streams forest development FTI project**

The expected outputs of the project were:

Awareness creation workshop and trainings were organized and this resulted in their increased involvement in greenery development; job created for 116 Micro and Small Scale Enterprise members. (29 male, 87 female) where their income level has increased. The direct beneficiaries are 116 people. Climate resilient communities and more than 20,000 indirect beneficiaries are established

The project outcomes are: the urban greenery development of the city improved, the carbon sequestration capacity of the city had improved and institutional capacity of the city improved. The outcomes of this project also include increase mitigation & adaptation potential to climate change; reduce air pollution and consumption of natural resources.

**F. Shire Enasilasie Town**

**Project Title: The FTI Project of sustainable greenery development in Shire Endasilasie**

Awareness creation workshop and trainings were organized and this resulted in their increased involvement in greenery development, 51,800 seedling planted increasing the city's greenery coverage and enhanced carbon sequestration; 820 $m^2$ walkway have been constructed with cobblestone according to the Urban Greenery Standard prepared by the Ministry; 698.7m wire mesh fence constructed in two separate green areas; seven protecting shades have been constructed; quarterly evaluation and feedback has also performed in the implementation process of the project; job created for 97 people. Hence the direct beneficiaries are 97 people. The indirect beneficiaries are 23,642 people.

The project outcomes are: the urban greenery development of the city improved, the carbon sequestration capacity of the city had improved and institutional capacity of the city improved. The outcomes of this project also include increase mitigation & adaptation potential to climate change; reduce air pollution and consumption of natural resources.

**Challenges Encountered**

As a piloting project, the CRGE FTI project implementation has been encountered many problems. Some of the major challenges faced during the implementation of FTI Projects include:

- Delayed disbursement of fund for the second and third quarters fund (late June.2015);
- Inadequate /lack of permanent staff and structure for CRGE works & FTI Projects at all levels;
- Lack of permanent focal person in some cities/towns or change of due to various reasons;
- Lack of appropriate on time trainings (how to use the CRGE Operational Manual, overall financial management for financial experts at federal and regional implementing entities, etc);
- Skill gap in financial management and reporting;
  - Inadequate man power at all levels;
  - Lack of appropriate training and clarity to apply IBEX software system for financial performance registration and reporting;
  - Lack of trained financial experts at city and/or project level; and

**Transparency**

The information on Urban CRGE FTI Project both on urban solid waste and urban greenery components was shared to the community through the Ethiopian Broadcasting Cooperation (EBC) and was transmitted nationally.

**Wider influence on mainstream plans and programs**

The Ministry of Urban Development and Housing has prepared and is being implementing the Urban Policy, Strategy, Standards and Manuals. They were formulated during GTP I and GTP II phases. Policy, Strategy, Standards and Manuals were formulated from the national ones. The Climate Resilient Urban Solid Waste Management Strategies, Standards and Manuals are derived from the national Climate Resilient Green Economy Strategy. Similarly, the Climate Resilient Greenery Development Strategies, Standards and Manuals followed similar paths. Hence, due attention is given to gender and climate change and green economy.

**Environmental and Social Safeguard Assessment**

The Ministry of Urban Development and Housing, has made its own remedial intervention with regard to environmental and community protection/safeguard endeavours in the project executing cities and towns. The measures that have been taken in this regard include:

1. Technical and professional support has been given to regional and city/town FTI Projects implementing and executing entities during the onset of project proposal preparation;
2. Most of the projects executing entities such as Dessie, Gambella, Hawassa, Harar, etc have incorporated the purchase of Personal Protective Equipments (PPE) in their project for urban solid waste management sub-sector. Follow up activities has been carried out by the ministry;
3. The problem in relation to odor is inevitable in the case of solid waste management (SWM) but still there are some safety measures usually applicable and mentioned in the SWM standards and also use of personal protective equipments for those regularly expose to it;
4. Solid Waste Management and Urban Greenery Development Standards prepared by the Ministry has been provided to all urban centers as a result of regular activities to keep the health and security of workers engaged in urban solid waste management and greenery development. The project has provided safety materials including safety cloth, hand glove and mouth covered materials
5. Capacity development activities which is the regular activities of the ministry has been carried out not only to FTI projects proponents but also all stakeholders who are get involved in urban solid waste management as well as urban greenery development;

6. The monitoring and evaluation activities on the implementation of Mitigation Measure have been made regularly during field visits;

7. The ministry has also managed the social impact of solid waste management project in Butajira town. The project has taken about 4000 m2 of land from local farmers for the construction of Compost Shed near to the dumping site of solid waste. However, the farmers were not subject to involuntary settlement. Instead they were given sufficient compensation to their land and also given alternative equivalent land in another place. Safeguard visit was organized to the project together with the CRGE Facility and DfID team, during the visit the ministry has confirmed that the environment and social safeguards issue is well managed by the municipality of the Butajira Town and the people living in that area are content with the measures taken.

## 2.4 Ministry of Water, Irrigation and Electricity

**Observed and Anticipated Impacts**

As the project is under implementation and expected to be completed within two months, the impact of the project could not be assessed. Indeed the project impact should be assessed after certain years to quantify the impact observed due to the implementation of the project. However, from the nature of the project, the following impacts have been anticipated:

- It has created additional income for supplier of the project equipment and professional enrolled on the installation of the solar systems by taking sub-contract from the supplier.
- It has significant contribution in climate change mitigation measure due to reducing of greenhouse gases emission through replacing of fossil fuel powered pumping system by solar powered water pumping systems.
- It has significant contribution in the improvement of the user community health due to availability of adequate water supply in their vicinity at lower financial, economic, environmental and social costs than fossil fuel powered pumping system.
- Increased productive time due to reduction of time to collect water and improved sustainability of water supply.

- Reduction in local air pollution.

- The community could have reliable water supply with less cost in comparison to the previous existing systems (diesel driven water pumping system). From the pilot project implemented prior to this project, it has been observed that the user community could able to save more than Birr 10, 000 per year by avoiding the running cost of diesel generator mainly from diesel fuel purchasing which could help them to upgrade their system in the future.

- The project has also very strong gender-differentiated impacts in favor of women and girls under the age of 15 years (and children). This is because, the availability of reliable and affordable water supply systems is obviously reduce the workload of women and children who are the most responsible for water fetching in Ethiopian. It enables children to attain their education properly and women to enroll on other activities that improve their livelihood which in turn improve the socioeconomic development of the country.

**Project one: Solar power for water supply and irrigation**

The general objective of this project was to replace 42 diesel powered water pumping systems with solar powered water pumping systems in four learning regional states (Oromia, Amhara , SNNP and Tigray). Accordingly, the 42 solar water pumping systems have been installed by replacing diesel driven water pumping systems in 42 with the following distribution in regional wise.

**Table 2.9 : Number of sites per regional state**

| Region | Oromia | Amhara | SNNP | Tigray | Total |
|---|---|---|---|---|---|
| No. Project woredas | 16 | 12 | 10 | 4 | 42 |
| No. Installed solar pumping systems | 16 | 12 | 10 | 4 | 42 |

During selection sites, attempts have been made to distribute as wide as possible in different parts of the country as indicated in the following figure so that the installed sites will be used as demonstration for nearby woredas or zones to serve as base for wide scaling up of the project. Most of the selected sites are the area where the pilot project has not covered which has been implemented in the country as pilot project with the fund support obtained from African Water Facility through African Development Bank.


**Site distribution of installed solar water pumping systems**

## 1. Achievements toward The Project Outcomes and Outputs

The project has been designed with two major outcomes and three outputs. Their levels of performed assessments are briefly described as follow.

<table>
<tr><th>Planned</th><th>Achievement</th></tr>
<tr><td>Outcome1:- 147 thousand People supplied sustainable potable water along with a total abatement potential of 1,233t $CO_2e$ of greenhouse gasses per year.</td><td>The numbers of planned beneficiaries the actual number of beneficiaries can be benefitted from the project are indicated in table below.<br><br>
<table>
<tr><td>Region</td><td>Oromia</td><td>Amhara</td><td>SNNP</td><td>Tigray</td><td>Total</td></tr>
<tr><td>Planned</td><td>49,000</td><td>45,500</td><td>42,000</td><td>10,500</td><td>147,000</td></tr>
<tr><td>Actual</td><td>53,675</td><td>59,634</td><td>39,744</td><td>4, 618</td><td>157,671</td></tr>
</table>
<br>The number of actual beneficiaries in Tigray Region is much lower than the planned due to the fact that the capacity sites from the available study and design documents lower smaller sites in comparison to the average sites capacity taken into consideration during the design of the project. However, in total, the actual number of beneficiaries has been increased by 10,671 persons which is about 107% in achievement. From the total number of beneficiaries, 50% are women.<br><br>With regard to GHG emission reduction, during the project design it was estimated that 1,233tones of $CO_2e$ can be reduced due to the replacement of diesel generators. During the sites (study and design works), the installed generators capacity of every site has been collected and GHG could beemitted has been analysed based on their daily diesel fuel consumption. It has been found that 3,589.6 tons of $CO_2e$ can be reduced which is about 291% of the estimated value.</td></tr>
<tr><td>Out put1: Implementers and main stakeholders committed</td><td>Launching of the project was conducted on annual water sector performance review forum in July 2015 with the</td></tr>
</table>

| | |
|---|---|
| for the realization of the project. | presence of Regional Bureau Higher Officials, Governmental and Non-Governmental Organization including the federal government parliament members, international organizations delegators, etc. It has created a big opportunity for the project in popularizing to different stakeholders and created necessary commitment among regional bureau higher officials in providing necessary support during implementation. This is evidenced that during design review the regional bureaus have provided all necessary data for the supplier in the required time, material inspections have been carried out by the committee established with the regional bureau professionals, existing pumps have been removed the wells by bureaus enrolling cranes or rigs with necessary man powers, conducted close supervision by enrolling experienced professionals during the installation of equipment. |
| **Output2:**42 solar water pumping units installed in four regional states by replacing non-functional and unaffordable diesel-powered water pumping systems. | During site selection attention has been given to non-functional and unaffordable diesel-powered water pumping systems. As stated in table1, 42 sites in 42 woredas have been equipped with solar pumping systems to meet the national standard of 25 liters per capita per day within 1 km distance. In all sites diesel generators were replaced. However, due to inadequate performance of the contractor (and his abroad supplier) the project has been delayed for long period of time. |
| Outcome 2: Skills and knowledge of implementing woredas and community technicians enhanced for | Staff training is an important part providing sustainability of the system installed. It allows the beneficiaries to operate efficiently and safely the system installed. It allows them to identify existence of abnormal situations; |

| | |
|---|---|
| implementation, operation and management of solar water pumping systems. | correct simple malfunctions or call for maintenance intervention and prevent further damage.<br><br>The staff training has been incorporated in the contract agreement with duty responsibility described as follow. "The Company will provide the training of at least two people per site and one person from the administrative Woreda on which this pump is located. The training will cover all the operations which have to be carried out as part of normal use and routine maintenance by the recipient, including the concepts which are necessary to detect the existence of a problem which should be pointed out to the maintenance company. Training will be done before the provisional acceptance; it will include hands on training during installation of the pumping systems". |
| Out Put 3: 126 technicians at woreda and community levels trained on operation & management of the project. | As per the contract agreement, the supplier is providing training for community technicians and woreda professionals. In every site, a minimum of 3 persons have been taking training. In most cases two or more than woreda professional have been taking the training to operate and manage the installed system as owner of the water supply scheme. |

**Lessons Learned**

Main points of lesson learned in the process of this project implementation are:

- **Conducting Performance assessment of suppliers and contractors:** -The project suffered from extreme delays during its implementation period. In the contract agreement, it was foreseen to be implemented during a period of 8 months after letter of credit opening. However, it took more than 18 months of implementation and yet the installation and testing activities are not fully completed. The delays made due to the failure of the supplier and its

abroad supplier. During the bid evaluation, it was only the technical and financial proposals have been considered and performance efficiency of the company was not assessed. Indeed in water sector, annual performance assessment is not yet in placed. In the process of project implementation, it has been understood that the supplier has caused similar problems in other projects subsequently. Thus, the Ministry should conduct performance assessment of suppliers and contractors every year and announce to all stakeholders.

- **Assuring Quality of Data:-** Data available at all levels from Region to woreda in related to the well characteristics such as water yields, depth, pump position, casing diameter, etc. and water quality are unreliable in most cases. This has caused several changing and created unnecessary dialogue with the supplier. Thus, it is necessary to provide the necessary funding for undertaking tests prior to the design of the schemes.
- **Staff Turn Over**: - Prior to the implementation of this project, different capacity building activities (training) have been given for Federal, Regional, Zonal and Woreda experts both in abroad and locally. However, staff at regional, zonal and woreda level is subject to frequent turn over. This makes it necessary to assure a continuous offer of training related to solar schemes for water pumping.
- **Capacitating Private Sector**: From the bid evaluation of the project, it has been observed that there is a high capacity gap in private sector in relation to solar water pumping technology. Out of 14 bidders submitted their technical bid document, only the winner supplier was responsive. Thus, private sector participation in the solar and wind sector can be achieved only if more involvement of national technicians and engineers is assured and information is widespread with a big audience. This can mainly be achieved by establishing cooperation with national universities and technical institutions. Developing special funds for private companies to be engaged in supply and manufacturing of the technologies is also the area needs.
- **Bigger Schemes are more economically viable**: - from prices given of schemes of the project attempts have been made to analyse financial viability of each and every schemes by comparing the price of every system per the price of one watt peak (Wp). It has been found that bigger systems are much chipper than smaller systems.
- **Good interest from stockholders**:- Taking as base the pilot project implemented prior to this project and the initiation of this this project, Governmental and non-governmental organizations are becoming highly interested in to the use of solar technologies not only for

community water supply but also for irrigation developments. In the last two years, more than 200 units of solar water pumping have been developed by different stakeholders. Thus, scaling up the project is paramount important to engage more stakeholders including financers for wide use of the technology in the country.

**Beneficiary Testimonies**

The systems are highly appreciated by the communities. They are providing improved access to water, are operating in a more reliable way and with lower costs than diesel pumps. The increased reliability of the schemes improves especially the work of the rural women and girls, who are the main actors in charge of water fetching. Although not specifically monitored the permanent access to improved water sources should have positive effects on the health situation of the population.

Communities have taken over responsibility for the management of the schemes. Guards which also assume the responsibility for the regular security are paid by communities. Most communities are interested to increase their water fees in order to be able to assure extra-ordinary maintenance in future. Water Committees are established, functioning on a regular basis, almost all communities have their own bank accounts for the water committees.

**Environmental and Social Safeguards**

The project is promoting the use of renewable energy; as it is environmentally friendly. By replacing the diesel generators, it displaces about 3,589.6 tons of CO2e GHG from the atmosphere. However in future it should be monitored: (1) the quality of the water pumped; unless it should incorporate other components such as defloration, desalination, etc. where the water sources have such kind of problems.

As it is described the previous sections of the report , the project is highly accepted by communities. However, in some cases there are conflicts with right off for land take by installation of solar array. Such kind of issues should be properly handled and resolved by kebele administrations and user community by replacing the land taken from individuals from communal land or by providing necessary compensation.

**Fixed Asset Reporting With Picture**

The major components of the project include electromechanical systems (solar pumping systems) and up grading of pressure lines (Pipe line from source to reservoir) and reservoirs. The project fund covers only the solar pumping systems including riser pipes. Upgrading of Pressure lines and reservoirs are taken over by regional states by covering the needed costs from their own budget. The installed solar pumping systems have different capacities from 1KWp for one village of small community (about 600 people) to 45KWp for multi-villages that can serve about 13,000 people. The major component of the solar pumping systems consists of solar array (interconnected solar modules), controller, pump and accessories.

Solar array


Controlling System


Installed system In Tigray Region, Tajura Site

**Project two: Accelerating Biogas programme**

**Expected Project Outcome**: The outcome and key result of this project: 40 bio-digester plants installed for 40 households that will benefit 240 family members.

**Project Impact:**

The ultimate impact of the project will be about 180 ha of forest resource will be protected and GHG emission reduced by 2,400 [$tco_2$ eq]. Moreover, about 768KW power will be generated and 2,760MWh energy produced. Work load and indoor pollution due to consumption of biomass will also be reduced that enhance socio-economic benefit of women and children.

***Beneficiary in Benshangul-Gumuz Region Using Biogas for cooking & lighting***

**Outcome of the Project**

Up on completion of the trainings by involving the newly trained experts & masons, seven (7) additional biogas digesters of 6m3 were constructed in four (4) woredas of Benishangul Gumuz Region. In Gambella region also four (4) additional biogas digesters of 6m3 were constructed in two (2) woredas.

Ten (10) biogas digesters were constructed in five woredas of Benishangul Gumuz region from December 31, 2015 to March 14, 2016. Seven (7) biogas digesters were constructed in two woredas of Gambella Region from December 24, 2015 to February 19, 2016 which means a total of seventeen (17) biogas digesters were constructed in both regions during the training & construction period. As a result, seven biogas digesters constructed has generate energy for cooking and lighting for the households, decrease indoor air pollution due to smoke from firewood etc. As a result, about 35 ha of forest resource is protected and GHG emission reduced by 420[tco2 eq]. Moreover, about 135KW power generated and 483MWh energy produced.

Women often travel long distance to collect firewood – occupying a significant amount of productive time that could be spent on other domestic and economic activities. Therefore, the biogas digester constructed during this project has benefit for women to reduce time to collect firewood. As a result, young girls and boys have a chance to go to school and clean light to read for their education quality. Female households can use this saved time for their social and economic activities.

**Environmental and Social Safeguards**

The social and economic benefits of constructed biogas for those rural household are enormous and diverse. These benefits are to be found in improved health and sanitation, workload reduction, increased agricultural production, reduced use of non-renewable fuels and improved lightning situation. For women households it reduces hard work on women who have to walk long distances to fetch firewood. And with depleting forests cove

**Fixed Asset Reporting**

During the implementation of this project except construction materials and other small accessories there is no fixed asset purchased.

**Project three: Strengthening the Monitoring Capacity of Petroleum Downstream Operations Regulatory Directorate**

The petroleum downstream sector is facing malpractices including adulteration. The adulteration of petroleum products including gasoline and diesel with kerosene and product theft in the supply chain.

The consequences of adulteration, in addition to the above-mentioned ones, include health problems, deforestation and indoor air pollution, fire hazards, corruption, organized crimes, hindrance to the biofuel utilization for transport as well as deprivation of quality products to the end-user.

Thus, ensuring the reliable distribution of quality petroleum products in the supply chain is of prime importance. For this to happen there is a need to enhance the monitoring capacity of the Petroleum Downstream Operations Regulatory Directorate and relevant institutions of regions which includes strengthening PDORD with mobile and stationery petroleum products testing laboratories, and training of trainers abroad.

Therefore, it was very important to mitigate climate change caused by petroleum products' quality deterioration due to adulteration and other reasons, improving the air quality and Lower the social, economic and environmental costs through minimization of petroleum products' adulteration.

**Aim of the Project**

The aim of the project is to achieve the following.

- Mitigation of climate change caused by petroleum fuel products, quality deterioration due to adulteration and other reasons.
- Improving the air quality
- Lower the social, economic and environmental costs through minimization of petroleum products' adulteration.

**Project Scope**

The Table below shows project scope that were planned against actual performance

| Initial Scope | Actual Scope | Description of Change |
|---|---|---|
| Procurement of Stationary and Mobile Fuel Laboratory Equipment | Procurement of Stationary and Mobile Fuel Laboratory Equipment achieved | No Scope Change was made |
| Human capacity building for 4 staff expert trainers' abroad | Human capacity building for 4 staff expert trainers' in India | No Scope Change was made |
| Human capacity building for 11regions experts' local trainees' | Human capacity building for4 regions experts' local trainees was conducted in Adama Town, May, 2016 | **Training for 7 regions experts' local trainees' remaining** |

**Project Budget**

| Baseline Project Budget (key expenditures) | Actual Project Budget (key expenditures) | Description & Explanation of Variances |
|---|---|---|
| Total project budget was 635,000 USD | • 384,960.20 Euro spent for procurement of equipment<br>• 42,000 USD spent for cost of training for trainers in India<br>• 25,000 USD spent for cost of local training | The returned budget 4,890,000 ETB was allocated for procurement of goods and local training for the remaining training in April, 2017 |

**Fixed Assets of the project**

## Mobile fuel laboratory

## Miniscan IRXpert & Miniflash FLP touch

## Aquamax KF coulometric & Viscometer stabinger


## Training of trainers in India (for 4 professionals)

**Project Results**

Project Goals, Objectives, Deliverables

| **Initial Project Goals, Objectives, Deliverables** | **Actual Goals, Objectives, Deliverables Achieved** | **Description & Explanation of Variances** |
|---|---|---|
| Procurement of Stationary and Mobile Fuel Laboratory Equipment | Procurement of Stationary and Mobile Fuel Laboratory Equipment | Laboratory Equipment were acquired as per the plan |
| Human capacity building for 4 staff trainers' abroad | Human capacity building for 4 staff trainers' in India | Training was accomplished as per the plan |
| Human capacity building for 11regions experts, local trainees' | Human capacity building conducted only for 4regions experts, local trainees' | Inland training for the remaining 7 region experts is not yet performed, Scheduled for April, 2017 |

**project Performance Measures**

| **Baseline Project Performance Measures** | **Actual Project Performance Measures** | **Description & Explanation of Variances** |
|---|---|---|
| Procurement of Stationary and Mobile Fuel Laboratory Equipment | Procurement of Stationary and Mobile Fuel Laboratory Equipment | Laboratory Equipment were acquired as per the plan |
| Human capacity building for 4 staff trainers' abroad | Human capacity building for 4 staff trainers' in India | Training was accomplished as per the plan |

| | | |
|---|---|---|
| Human capacity building for 11 regions experts, local trainees' | Human capacity building conducted only for 4 regions experts, local trainees' | Inland training for the remaining 7 region experts is not yet performed, Scheduled for April, 2017 |

Project Successes & Challenges

| **Project Successes** | **Project Challenges/Difficulties** |
|---|---|
| Procurement of Stationary and Mobile Fuel Laboratory Equipment | Late approval of project proposal, delay in bid process, acquired equipment is new for experts |
| Human capacity building for 4 staff trainers' in India | Some additional experts could have been trained for specific equipment operation |
| Human capacity building for4 regions experts, local trainees' | Human capacity building for local training were note conducted for 7 regions, will result drawback |
| | Lack of expertise in procurement and contract administration caused delay |
| | Lack of knowledge about new types of fuel laboratory equipment |
| | Laboratory equipment spare-parts were not purchased for some technical reasons |
| | Sustainability of the such project will be insured if only running budget is allocated |

**Lessons Learned**

- Procurement of new technology is needs specialists advise and support
- Knowledge about new types Late approval of project proposal can be cause for delay in bid process of fuel laboratory equipment is important before acquiring it
- Lack of expertise in procurement and contract administration caused delay
- Spare parts for Laboratory equipment is very essential
- Sustainability of the such project will be insured if only running budget is allocated

**Project four: Improving the Livelihoods and Lifestyles of Rural Community of the Emerging Regional States through the Dissemination of Solar Energy Technologies General Information about the project**

This project is implemented in the four emerging regions namely: Gambella, Ethio-Somali, BenishangulGumuz and Afar regional states. The project was implemented in the remote areas of where the grid will not reach in the next five years.

The object of this project is mainly to improve the livelihoods and life styles of rural communities of the emerging regions through the dissemination of solar technologies. This can be achieved by the dissemination of solar lanterns, solar home systems and institutional systems. In this project it was intended to distribute 4004 solar home systems, 8000 solar lanterns and 24 institutional systems.

The developmental impact of the project in general include:

- Improves quality of life through access to electricity;
- Provides access to electricity to about 60,020 people and benefits 92,500 people with institutional PV systems which will in general generate 1MW of power or about 134MWh/year of energy.
- The project will contribute in reduction of 636.3tone of $CO_2$ every year
- Creates additional income generating activities in the rural areas;
- Benefits students through extended hour of studies;
- Promotes local entrepreneurs;

- Creates jobs in rural areas for both skilled and unskilled people;
- Promotes domestic industries:

• Batteries

• Solar lamp

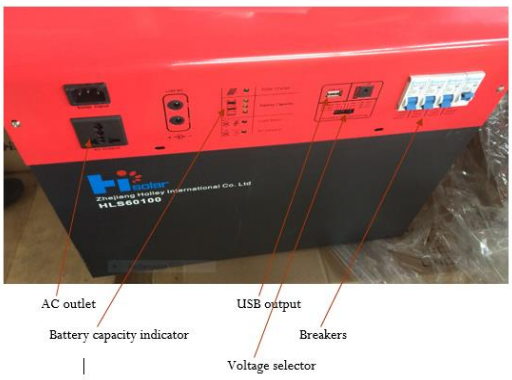
• Charge controller etc.

***In general the successful completion of this project will benefit 60,020 people with clean light and 92,500 people with services at the institutions. At the same time this will increase the generation capacity by 1MW from renewable energy. Out of the 60,020 people, 47,045 are already benefited.***

**Solar Home Systems**

So far out of the **4004** solar home systems, **3273** systems are distributed for the end users and **3194** systems are installed and the beneficiaries have started using the solar home systems. The rest of the systems (810) distribution and installation are in progress.

There are 5 different types of solar home systems ranging from 8Wp to 60Wp. The first three types (8Wp, 10Wp and 20Wp) are used for lighting, mobile charging and small radio while the last two (40Wp and 60Wp) can be used for TV and CD player in addition to lighting and mobile charging.




**Institutional Systems**

There are 24 institutional systems out of which only 4 are installed. The rest are not installed because of the challenge with the company and the ministry has identified risk management strategy and is resolving the problem. The following pictures shows one of the institutional systems installed in Afar Regional state.

There are three different institutional PV systems (Primary school, Veterinary post and health post). All the systems can be used for lighting, mobile charging and TV. In addition to this the systems for health post and veterinary post can be used for refrigerator. Note that the TV and refrigerators are provided with the systems.

There are 24 LED TV, 13 deep freezers for the health posts and veterinary posts.

Control box LED TV Refrigerator for V.P Refrigerator for H.P

**Solar Lanterns**

Out of the **8000** solar lanterns **6593** are distributed for selected poor women of the four emerging regions. The rest of the systems are not distributed due as the companies could not do the distribution after winning the bid. However, the ministry has put in place corrective measure and will undertake the distribution for the remaining solar lanterns.

The solar lanterns are used for single point lighting and mobile charging.

Table 2.10. Summary of the project status

| NO | Region | Solar Home systems | | | Solar Lanterns | | | Institutional Solar systems | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | Installed | Not installed | Total | Distributed | Not Distributed | Total | Installed | Not installed |
| 1 | Afar | 1193 | 1193 | 0 | 2000 | 1650 | 350 | 6 | 3 | 3 |
| 2 | Benishangula | 1080 | 1001 | 79 | 2000 | 1650 | 350 | 6 | 1 | 5 |
| 3 | Somali | 1000 | 1000 | 0 | 2000 | 1643 | 357 | 6 | 0 | 6 |
| 4 | Gambella | 731 | 0 | 731 | 2000 | 1650 | 350 | 6 | 0 | 6 |
| **Total** | | **4004** | **3194** | **810** | **8000** | **6593** | **1407** | **24** | **4** | **20** |

**Impact**

The ultimate impact of the project inlcude: Improved quality of life through access to electricity; Created additional income generating activities in the rural areas; Improved the health and education conditions of the rural community due to burning biomass and kerosene; Improved productivity by having more time works with better lights; Minimized human burdens especially women and their children. The rural institutions are providing better overall services; Reduces emissions of $CO_2$ due to burning of kerosene. There is wide opportunity for gaining education and time for useful/productive activities. Reduces $CO_2$ emissions by 636.3t$CO_2$/year. A significant number of pastoralist populations are free from the exposure of health risks caused by using traditional and carbon intensive fuels for lighting. Also it has conservation role of the biomass resource of the regions; the social, cultural and economic advantages are enormous. This project increased the amount of power generation by renewable energy by 1MW.

This project will benefit both male and female and most importantly women's since they will use this renewable energy technology instead of kerosene, whose smoke could affect children's and women's mostly because they remain close more time using kerosene then men. Moreover, the 6593 solar lanterns were freely given to selected poor women in the regions.

**Sustainability of the project**

This project can be scaled-up and can further electrify as many households as possible in the future. To accomplish this, a revolving fund account is opened in each of the emerging region which will be administered by the regional energy bureau. The long-term impact will continue beyond the life time of the project as loan repayment will then be used to assist further households to install solar home systems. Moreover, there will be a "good life" and "well-being" for all beneficiaries, now and in the future; sustaining the earth's ecosystem; reducing poverty and related health and education issues; a sustainable agriculture and food system, and employment.

**Challenges**

In the implementation of this project, some of the challenges include:

- Delay in procurement process due to prolonged L/C opening process.
- After importing the Equipment delay at Mojo dry port and Customs to clear out.
- Delay at Regions in providing Beneficiary cooperative list on time.
- Subcontractors reluctance to install the systems at once in all the four regions
- Company's impotent after winning the bid for the supply and distribution of 8000 solar lanterns.

**2.5.2 Lesson learned**

- Successful bidder capacity especial previous experience has to be checked prior to award
- Any custom clearance issue and all necessary requirement for custom clearance has to be made avail and ready before arrival of the equipment to the port.
- All the beneficiaries' data must be collected, complied and be ready while the procurement is in process.
- Very detailed implementation schedule with possibly penalties must be included in the agreement document.
- Capacity of the bidder must be checked prior to award and availability of the equipment in its warehouse

**Beneficiaries**

| NO | Region | Institution | | |
|---|---|---|---|---|
| | | | Number | Number of beneficiary |
| 1 | Afar National Regional state | Primary school | 4 | 10.000 |
| | | Health post | 2 | 10,000 |
| | | Veterinary post | 0 | 0 |
| 2 | BenishangulGumuz Regional state | Primary school | 0 | 0 |
| | | Health post | 1 | 5000 |
| | | Veterinary post | 5 | 25000 |
| 3 | Gambella National Regional state | Primary school | 6 | 15,000 |
| | | Health post | 0 | 5000 |
| | | Veterinary post | 0 | 25000 |
| 4 | Ethio-somali National regional state | Primary school | 1 | 2500 |
| | | Health post | 5 | 5000 |
| | | Veterinary post | 0 | 0 |
| | Total | | 24 | 92,500 |
| The calculation base: 1 health post and Veterinary post for 5000 beneficiaries each, and 1 Primary school for 2500 beneficiaries. | | | | |

**Solar Home systems and solar lanterns**

There are 3194 solar home systems, 6593 solar lanterns and 4 institutional systems distributed and installed under this project until this report is written from which 48,935 are directly benefited and 17,500 are benefited indirectly. After the successful distribution and installation of these solar products, a minimum of 52,985 people will be benefited directly and 92,500 indirectly from the institutional systems.

The direct beneficiaries are the off-grid rural population residing in the four emerging regions. These are:

- **52,985** people benefit from modern and clean energy for lighting by disseminating the solar systems (**4004**solar home systems and lanterns).
- **92,500** people will benefit from the **24** Institutional systems.

The main benefit will be felt by women who will have more time for productive activities and better health from improved indoor air quality. Moreover, extensive network of the executing agencies is harnessed to reach the grass-roots; training, marketing and promotional activities are undertaken on ongoing basis to increase awareness among potential customers.

**Socio Economic and Environmental Benefits**

This project will have social, economic and environmental benefits by improving lighting services, reducing costs, improving health, education and safety for off-grid rural households while reducing GHG emissions. The project seeks to replace inefficient, increasingly expensive and dangerous kerosene lighting with other clean alternatives which can help Ethiopia rapidly achieve development and energy access goals. More than 85% of households not connected to the grid in Ethiopia rely on kerosene for lighting which hampers learning and productivity given kerosene's low quality and adverse impacts it has on people's health. Recent developments in the off-grid clean lighting industry offer an affordable, clean and modern lighting solution to the households. Moreover, the project will accelerate the development of a sustainable use of the technology which will contribute to economic development through Capital Buy-down Grant reduces system price; Systems are also sold on credit to households to ensure affordability which mainly lowers the high initial cost of solar equipment.

Furthermore, off-grid solar technology products under this project will replace traditional sources of lighting predominantly kerosene and contribute to approximately **636.3t$CO_2$** of GHG emissions avoided. Indoor air quality will reduce the risk for respiratory diseases especially for children that are more exposed when using kerosene in close proximity for studying.

To add to the major socio-ecological disruptions taking place, such as deforestation, desertification, overuse of land and natural resources, a rural settlement which is very scattered and a high level of poverty. In this case, sensitivity represents the degree at which

the present ecological, socio and economic systems are affected by the climate stimuli, of varied intensities and frequencies.

Providing clean, sustainable modern energy services would address multiple social, economic and environmental problems.

**Beneficiaries Testimonies**

One old lady said “I didn’t expect to see electric light in this remote area. It is miracle.”

“We moved from the dark regime to the light regime”

“Our lives are changed”

“Being in this remote area we live as someone living in a city. “Testimony from those who have TV

“We bought mobiles and communicating for our business.”

“We can charge our mobile as we like at home no need to walk hours to the town”

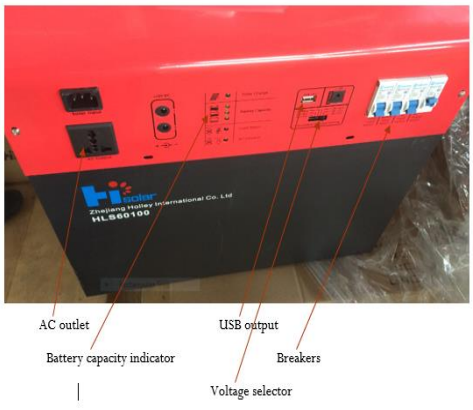
“We are relieved from buying batteries for our hand torchlight and kerosene and we are saving money and time.

“Children from the neighbor come to my house to do their home works.”

**Fixed asset reporting with pictures**

This project is concerned with the supply, distribution and installation of solar technologies. There are 4004 solar home systems, 6593 solar lanterns and 24 institutional systems procured. The pictures of each technology are shown below.

**Solar lanterns**




**Solar home systems**

Control box LED TV Refrigerator for V.P Refrigerator for H.P

**TV and refrigerator for institutional systems**

**Table 2.11. Distribution of Solar home systems per region**

| REGION | WEREDA | KEBELE | COOPERATIVE | TOTAL | DISTRIBUTED | INSTALLED |
|---|---|---|---|---|---|---|
| AFAR | BERAHLIE | SERAE | SERLEGUBI | 86 | 86 | 86 |
| AFAR | BERAHLIE | LIELAELA | SERLEGUBI | 145 | 145 | 145 |
| AFAR | BERAHLIE | GUBEN | SERLEGUBI | 78 | 78 | 78 |
| AFAR | BERAHLIE | KORA | DABA KORA | 91 | 91 | 91 |
| AFAR | BERAHLIE | SA/DEMALIE | DABA KORA | 109 | 109 | 109 |
| AFAR | BERAHLIE | BERAHILIE 01 | DABA KORA | 143 | 143 | 143 |
| AFAR | BERAHLIE | DA'AR | ABEDA SOLAR | 106 | 106 | 106 |
| AFAR | BERAHLIE | ALA | ABEDA SOLAR | 157 | 157 | 157 |
| AFAR | BERAHLIE | BURIE | ABEDA SOLAR | 91 | 91 | 91 |
| AFAR | BERAHLIE | KORA | DABA KORA | 187 | 187 | 187 |
| BENISHANGUL | ASSOSSA | ASSOSSA | MELANU | 15 | 15 | 15 |
| BENISHANGUL | ASSOSSA | ASSOSSA | ABANDE | 29 | 29 | 29 |
| BENISHANGUL | ASSOSSA | ASSOSSA | REHAMA | 30 | 30 | 30 |
| BENISHANGUL | ASSOSSA | ODA BILDIGILU | SIGI | 51 | 51 | 51 |
| BENISHANGUL | ASSOSSA | BANBASI | DUR SALAM | 41 | 41 | 41 |
| BENISHANGUL | ASSOSSA | BANBASI | MASH ALLAH | 32 | 32 | 32 |
| BENISHANGUL | ASSOSSA | BANBASI | NIGAT | 29 | 29 | 29 |
| BENISHANGUL | ASSOSSA | BANBASI | ANWAR | 31 | 31 | 31 |

| | | | | | | |
|---|---|---|---|---|---|---|
| BENISHANGUL | ASSOSSA | BANBASI | ALBURAQ | 25 | 25 | 25 |
| BENISHANGUL | ASSOSSA | BANBASI | YE QESHE DUSKE | 13 | 13 | 13 |
| BENISHANGUL | ASSOSSA | BANBASI | CHORA | 37 | 37 | 37 |
| BENISHANGUL | ASSOSSA | MENGHE | TSEHAY | 31 | 0 | 0 |
| BENISHANGUL | ASSOSSA | MENGHE | HAYA SEHUR | 48 | 0 | 0 |
| BENISHANGUL | MAOKOMO | MAOKOMO | BUNDERA | 140 | 140 | 140 |
| BENISHANGUL | MAOKOMO | MAOKOMO | GURSHAW | 111 | 111 | 111 |
| BENISHANGUL | MAOKOMO | MAOKOMO | MENZI | 21 | 21 | 21 |
| BENISHANGUL | MAOKOMO | MAOKOMO | KUNDE | 19 | 19 | 19 |
| BENISHANGUL | MAOKOMO | MAOKOMO | AL MESER | 18 | 18 | 18 |
| BENISHANGUL | KAMASH | BELOJIGANFO | JIHA | 40 | 40 | 40 |
| BENISHANGUL | KAMASH | AGALOMETI | GACHAI | 31 | 31 | 31 |
| BENISHANGUL | KAMASH | AGALOMETI | MIZHGUA | 21 | 21 | 21 |
| BENISHANGUL | KAMASH | AGALOMETI | CHANGISH | 10 | 10 | 10 |
| BENISHANGUL | KAMASH | KAMASH | URJI | 15 | 15 | 15 |
| BENISHANGUL | KAMASH | KAMASH | MIYAZHGUA | 17 | 17 | 17 |
| BENISHANGUL | KAMASH | BELOJIGANFO | MIHIZHIGUAHA | 14 | 14 | 14 |
| BENISHANGUL | KAMASH | BELOJIGANFO | BEWAHA | 10 | 10 | 10 |
| BENISHANGUL | METEKEL | GUBA | MANGURGUR | 13 | 13 | 13 |
| BENISHANGUL | METEKEL | MANDURA | ANBESA | 21 | 21 | 21 |
| BENISHANGUL | METEKEL | MANDURA | GINBAR KEDEM | 16 | 16 | 16 |
| BENISHANGUL | METEKEL | MANDURA | WETANQ | 11 | 11 | 11 |
| BENISHANGUL | METEKEL | MANDURA | KIDUS | 16 | 16 | 16 |

| | | | | | | |
|---|---|---|---|---|---|---|
| BENISHANGUL | METEKEL | DANGUR | GUNTIK | 28 | 28 | 28 |
| BENISHANGUL | METEKEL | WEMBERA | ADDIS ALEM | 54 | 54 | 14 |
| BENISHANGUL | METEKEL | WEMBERA | MINIZHQUA | 14 | 14 | 14 |
| BENISHANGUL | METEKEL | WEMBERA | IYASU | 28 | 28 | 28 |
| SOMALI | FAFAN | GURSUM | HALAHAGO ELECTRIFICATION | 70 | 70 | 70 |
| SOMALI | FAFAN | GURSUM | GOLJANO ELECTRIFICATION | 70 | 70 | 70 |
| SOMALI | FAFAN | GURSUM | SHEIK ABDI SALAM ELECTRIFICATION | 70 | 70 | 70 |
| SOMALI | FAFAN | GURSUM | BUDHUMAN | 30 | 30 | 30 |
| SOMALI | FAFAN | GURSUM | GARBAHA ELECTRIFICATION | 30 | 30 | 30 |
| SOMALI | FAFAN | BABILE | MIDNIMO ELECTRIFICATION | 70 | 70 | 70 |
| SOMALI | FAFAN | AWBARRE | GOGTI - 2 ELECTRIFICATION | 70 | 70 | 70 |
| SOMALI | FAFAN | TULI GULED | HELA 2 ELECTRIFICATION | 70 | 70 | 70 |
| SOMALI | FAFAN | KEBRIBEYAH | HARO-KALIFO ELECTRIFICATION | 130 | 130 | 130 |
| SOMALI | FAFAN | KEBRIBEYAH | DURWALE - 2 | 220 | 220 | 220 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | ELECTRIFICATION | | | |
| SOMALI | DOLO | WARDER | LIBAN-2 ELECTRIFICATION | 30 | 30 | 30 |
| SOMALI | DOLO | WARDER | WABERI -2 ELECTRIFICATION | 80 | 80 | 80 |
| SOMALI | SHEBLELE | KELAFO | NIR-NIR ELECTRIFICATION | 60 | 60 | 60 |
| | | | **TOTAL** | **3273** | **3194** | **3194** |

**Table 2.12 . System type with the Respective Number of Users**

**Solar home system for Household**

| **System Type** | **System size** | LOT 1 Benishangul | LOT 2 Afar | LOT 3 Somali | LOT 4 Gambela | Total |
|---|---|---|---|---|---|---|
| **1** | 8Wp | 186 | 620 | 0 | 214 | **1,020** |
| **2** | 10Wp | 185 | 267 | 0 | 203 | **655** |
| **3** | 20Wp | 177 | 136 | 460 | 99 | **871** |
| **4** | 40Wp | 340 | 152 | 461 | 107 | **1,060** |
| **5** | 60Wp | 192 | 18 | 79 | 108 | **397** |
| | **Total** | **1,080** | **1,193** | **1,000** | **731** | **4,004** |

**Table2.13. Institutional PV**

| **s/n** | **Institution** | **System Size[wp]** | **LOT 1 Benishangul** | **LOT 2 Afar** | **LOT 3 Somali** | **LOT 4 Gambela** | **Total** |
|---|---|---|---|---|---|---|---|
| 1 | Health post | 400 | 1 | 2 | 5 | | **8** |
| 2 | Primary school | 300 | | 4 | 1 | 6 | **11** |
| 3 | Veterinary post | 200 | 5 | | | | **5** |
| | TOTAL | | **6** | **6** | **6** | **6** | **24** |

**Project Five: Strategic support upgrading climate and Hydrological information systems in Ethiopia**

The objective of this project is to improve data generation, monitoring, processing and analysis in the areas of water quantity and quality of both surface and groundwater resources that will support the development and management of water resources and reduction of extreme events.

Major achievements of the project include:

- The Ministry's Hydrological Telemetries Data Transmissions capability connection was upgraded by 15 MB (from 20MB to 35MB)

- Observer & stakeholders training on hydrologic information was conducted
- Development of strategic program for upgrading data systems based on an assessment of current system and end user needs was completed.
- 25 automated water level & water quality recorder Telemetry devices received & ready for installation and Suitability Site assessment for installation of Telemetry devices have been made on selected sites at Takeze, Awash basins and Koka and Kesem Dams
- Factory level training was delivered on telemetry equipment installation and data base system management

## 2.5. Ministry of Industry

**MOI Fast Track Investment (FTI) Projects include:**

1. Development of GHG baseline data and MRV System for industry sector.
   1.1. Purchasing of GHG measuring Equipment.
2. Implementation of Pilot Energy Efficiency for GHG Reduction in industry sector.

**General Information about the MOI FTI Projects**

**Industry sector Baseline data**

The CRGE strategy document indicates an estimated baseline of 4 $MtCO_2e$ of GHG emissions from the industrial sector that is projected to reach 70 $MtCO_2e$ in 2030 in a BAU scenario. The strategy document also indicates the plan to reduce 22 $MtCO_2e$ from the sector to realize the green development target. To engage in the emissions reduction mechanisms outlined in the CRGE strategy, it is first mandatory to have reliable baseline information that is based on internationally recognized MRV standards and protocols. This will assist the overall sectoral emission reduction by identifying emission reduction targets of specific manufacturing industries. Accordingly, to have this globally acceptable baseline data, a GHG inventory of fifty-two industries from different manufacturing sectors was conducted in the MoI FTI implementation and is currently being verified by a certified verifying organization.

**Industry sector MRV system**

In addition to having accurate baseline, having an acceptable and accurate system for measuring and reporting GHG emissions is necessary to effectively monitor the industry sector's progress in realizing the set CRGE goals. Since currently there is no available mechanism to measure, report and verify GHG emissions from the industries in Ethiopia, the design and implementation of an MRV system was conducted in the FTI.

**Energy Efficiency for GHG Reduction in industry sector**

The CRGE Industry sector strategy aims to promote green growth through a number of initiatives ranging from changes in technologies in key manufacturing sectors. This green

manufacturing path includes the adoption of energy efficient systems and technologies, alternative fuels sources and alternative production processes. Energy efficient production systems provides the capability to reduce GHG emissions very significantly by allowing higher levels of production for the same amounts of energy use. Hence, **MoI** has been implementing **Energy Efficiency for GHG Reduction in Industry** in its FTI project . The project was targeted at five selected industries from five manufacturing sectors. The project was proposed to be conducted in three components:

a. Conduct energy audits of the selected manufacturing industries. This includes the audit of the manufacturing industries to identify their energy systems, use and efficiency.

b. Propose energy efficiency measures which identifies processes and systems and

c. Implement the proposed energy efficiency measures. This may include changing of production processes, repair of systems or implement efficient technologies.

The energy efficiency project investigated the opportunities for energy efficient production in five manufacturing sub-sectors (Cement, Textile, and Leather, steel &metal and food and pharmaceutical). The energy efficiency gap assessment has been conducted and identified inefficient systems within the manufacturing industries and proposed systems and technologies that will reduce the GHG emissions from the industries.

However, the proposed energy efficiency projects were not implemented as the project has indicated the need for acquiring implementing frameworks (regulations directions, financing mechanisms and additional technical inputs) to measure the reduced GHG from the energy efficiency actions.

**Table 2. 14 Summary of achievement of the MoI FTI projects :**

| | Project Title | Status | Remark |
|---|---|---|---|
| 1. | Development of GHG baseline data and MRV System for industry sector | -Baseline data of GHG emissions from 52 industries calculated and documented<br>-Industry sector specific MRV system developed | -Verification process ongoing<br>-System setup & implementation remaining |
| | Purchase of GHG measuring equipment | Equipment purchased | |
| 2. . | Implementation *of Pilot Energy Efficiency for GHG Reduction in industry sector* | -Energy audits of five manufacturing industries conducted<br>-Energy Efficiency project proposals prepared for the five industries | -Installation of energy efficient and GHG reduction from the selected industries remaining |

**Table 2. 15 MOI FTI Projects Outputs, Outcomes and Impact**

| **Project Title** | **Output** | **Outcome** | **Impact** |
|---|---|---|---|
| Development of GHG baseline data and MRV System for industry sector | - Baseline of 52manufacturing industries conducted and documented.<br>- Industry sector specific MRV system developed | - Internationally accepted sector GHG baseline established/ After the verification is completed the conducted study will be published and used as national baseline by interested bodies<br>- MOI institutional setup | - Enhance Sector readiness for climate change actions. |

| | | | |
|---|---|---|---|
| | | and capacity to conduct green house gas monitoring, reporting and verification (MRV) for climate change actions increased. | |
| Implementation of Pilot Energy Efficiency for GHG Reduction in industry sector. | - Energy Audit of five industries conducted<br>- Energy efficiency project proposals for five industries from different manufacturing sector developed. | - MOI capability to design, implement and monitor energy efficiency projects in the manufacturing sector increased.<br>- Reduced GHG emission from the industry sector. | - Establish green manufacturing in the industrial sector. |

**Sustainability:**

The project owner (Ministry of Industry) was actively involved throughout the project and personnel from MOI and regulating institutes were actively engaged in monitoring and evaluating the FTI projects. Thus there is now considerable knowledge at MOI that will enable the ministry and regulating institutes to implement the CRGE strategy.

The FTI has also helped to test and establish the required institutional setup for CRGE implementation between MoI, MEFCC and MoFEC. This will ascertain the effective partnership of the organizations in different climate change systems and projects design.

**Lesson learned from FTI**

The FTI served as an opportunity for 'learning by doing.' Experts from MOI and institutions were participating in the implementation of the projects through monitoring and evaluating the project implementing consultant's work. Lessons learned include:

- Increased Knowledge on industrial GHG survey and verification process
- Enhanced the skill of MoI technical staff on climate change project management capability
- The need to engage pertinent technical experts in the preparation of terms of reference for identifying consultants.

**Challenges**

The challenges faced during the FTI process can be categorized into procurement and project management challenges.

**Procurement Challenge**

- Delay in selection of consultants and finalizing the bidding process
- Gaps in the preparation of terms of reference for consultants

**Project Management Challenge**

- Lack of coordination among manufacturing industries.
- Lack of CRGE specific financial expert at MOI.
- Lack of GHG baseline verifying entity in the country.

**Value for Money**

**Economy**

- A local private consultant was selected to implement the FTI projects through public bids that were floated in relevant media. As Climate change activities were relatively new to MOI, sourcing a local consultant with relevant knowledge in the subject matter was financially beneficial.

**Efficiency**

- The outputs of the projects are as planned during the project design. A baseline document, an MRV system and energy efficiency project proposals have been delivered. The remaining task of implementing energy efficient systems in the selected industries requires further finance as indicated in the prepared energy efficiency proposal document.

**Effectiveness**

- The outcomes of the projects conducted can be categorized in terms of institutional efficiency and capability to conduct and monitor climate change activities in the sector. Thus it can be stated that the projects were effective in employing the inputs for the intended outcomes.

**Fixed asset**


*GHG emission measurement Equipment /Rapidox*

## 2.6. Industrial Parks Development Corporation

The bole lemi industrial park a greenery project has taken 18 months to accomplish the project implementation. The project has achieved around 97% of targeted or planed milestones that leads to accomplish aggregate results and was effectively utilized 99.97 % of the allocated budget. In the initial project document expected outcomes and outcome indicators have not been clearly articulated. In addition, the planted higher plants are not in a position to provide expected aggregate results at this early stage. However, area around 32.9 ha of the park covered with higher plants, grasses, shrubs and flowering plants have started

to deliver different ecological services. Hence, aggregate result generated by the project are described as follow.

- The livelihoods of the 20 jobless youths and Project Affected People (PAPs), 1 cordinator and their 47 families have been improved as a result of job created on permanent basis due FTI project.
- The local microclimate modified and agumented carbon sequestration.
- Reduced flooding problem and Enhanced ground water recharging.
- Improved aesthetic value of the area.

**BENFICIARY NUMBERS**

| ***Direct Beneficiaries*** | **A. Household Approach** | | **B. Individual Approach** | |
|---|---|---|---|---|
| *Complete either A or B or BOTH depending on the data you have.* | Male Headed Households (# of unique households) | Female Headed Households (# of unique households) | Male individuals targeted | Female individuals targeted (could be wives or FHH) |
| Direct beneficiaries | | | **290** | **450** |
| Description of how you calculated this / any assumptions applied | Data on number of beneficiaries was obtained from the contractor payroll. The contractor kept gender based record of employee who participated in greenery work. **20 jobless youths (all are male)** of project affected people and 1 coordinator have got permanent job opportunity. | | | |

| **Indirect Beneficiaries** | | | | |
|---|---|---|---|---|
| ***Complete either A or B and C*** | **Population based estimate** | | **A. Male Headed Households (# of unique households)** | **B. Female Headed Households (# of unique households)** |
| | **M** | **F** | | |
| Indirect beneficiaries | ***2,400*** | ***5,600*** | | |
| Description of how you calculated this / any assumptions applied | Aesthesis value for 8,000 ***(2,400male and 5,600 female)*** worker who are employed in the bole Lemi park industries, investors and customers. | | | |

**Value For Money**

**Economy:** The extent of value for money and its multiple effect are solely depend on the nature and the size of the project that was implemented. As it is known the Bole lemi greenery project has been implemented with a budget of 508,000US $ by a single local contractor. Form the very nature of the project, it is very difficult to pronounce specific aggregate results achieved by project because it is too early to count targeted achievements. However, the livelihood of ***20 jobless youths (all are male)***, one coordinator and their 47 families have been improved a result of permanent job opportunity created by the implementation FTI funded project. Each the 20 youths earn 1,600 birr per month, while their coordinator earn 6,000 birr per month. In addition, every three month the greenery works get a certain income from selling of hay or fodder of grass and support their livelihoods.

Besides the Industrial park development corporation has on the process to hire additional 20 more jobless youth for managing the established green area. Though it is difficult to quantify the planted trees carbon sequestration capacity and other ecological services, an indirect effect of planted trees has been observed in regulating the local microclimate and enhancing aesthetic value of the park. The implemented project has brought significant results in reducing flooding problem and upgrading ground water recharging capacity of the area. As

compared with the amount of allocated budget, the project has exhibited a lot of aggregated results.

**Leverage:** Industrial Parks Development Corporation (IPDC) was established in 2014 and the project was started by ministry of industry. After the establishment of the corporation, higher level decision has been made that the ministry of industry to handover the project. In brief there was no contributed co-financing from the IPDC that served as leverage rather there was a lot of in kind contribution in a different phases of the project implementation.

| Region/ Woreda | Results Achieved | Financial Resource Used | Cost per unit |
|---|---|---|---|
| **Bole lemi industrial park Addis Ababa** | Covering around 32.9 ha of the park with deferent kind of vegetation | 65 percent of the total budget was used which means 330,330 US$ (65%* 508,000) or 6,936,930 ETH birr. | Difficult to calculate because the plantation includes grasses, higher plant seedling, shrubs and ornamental plants. |

**Efficiency:** In the Bole Lemi greenery project 32.9 ha green space has been created. To perform the above task 65 % of the total allocated budget was utilized towards expected aggregate results.

**Effectiveness:** The industrial park development corporation has zero experience climate related project and was new in implementing such kind of project and. But, as result of dedicated efforts, all targeted milestone has been achieved using all available resource effectively.

**Beneficiary Testimony**

Beneficiary stories are available in audio which indicate the reflection of beneficiaries regarding improvement in their livelihood

**Environment and Social Safeguard:**

The greenery project was established within develop industrial park compound. Hence, there were no people affected and no involuntary resettlement caused. However, there are different environment and social benefits generated as a result of the project.

**Key challenge**

- The project long term outcomes and outcomes indicators have not been clearly articulated and difficulty to indicate achieved aggregate results as clearly as possible within this short period of time.

**Lesson Learned**

- Setting unambiguous long-term outcomes and outcomes indicator as clearly as possible that are relevant during the design phase of the project and reasonable time should be owed to get expected the aggregate result.

## 2.6. Ministry of Transport

In order to help reduce emissions from transport, Ministry of Transport implemented two projects in Addis Ababa, one focused on improving traffic flows to reduce emissions from congestion- an off-street parking system –smart parking and another focused on promoting non-motorised transport-share the road project. The FTI project is implemented by Addis Ababa bureau of transport. Share the road project has been completed and started operation while smart parking project is near to completion.

**Project one: Share the road: Walking and Cycling Facilities for Urban Transportation**

Outcome1: Awareness of the public is improved on the benefits of using non-motorized transport

Awareness creation workshop and trainings were organized to improve public awareness on the benefits of using bicycle taxi.

a) Children on training

b) Female on training

Outcome2: Employment opportunity is created for 321 unemployed youths in the area.

At it has been reported in the previous quarterly report , 210 electric cycles are purchased ; cycle lane is constructed in three sites;10,000 seedlings are planted and taken care of to enhance the walking ability of pedestrian by providing shade service; business plan is prepared and three Small and Micro Enterprises . Ten members from each of the SMSs are organized for providing bicycle taxi service permanently. As a result, the project has created employment opportunity for 321 persons are directly benefitted from the project of which 291 are temporary and 30 are permanent opportunity

**Contribution to Growth and Poverty Reduction**

The project is providing an employment opportunity to the poor people particularly to the semi-skilled labour, which increase their income level and purchasing power. There is a 6 million ETB co financing from the government which testimony the commitment of the government to the climate change adaptation and mitigation actions.

**Value for Money**

Share the road project is implemented in three woredas of Addis Ababa city administration namely- Bole woreda 3 and 12 as well as Yeka woreda 13. The total amount of budget allocated for this project is USD 715,000. The implementation of project includes procurement of electric cycles, construction of bike lane and shade, installation of city benches and cycle racks, Small and Micro-enterprises organization, None Motorized Transportation Design Manual and business plan preparation; and seedling procurement and plantation. Procurement of electric cycles shared the biggest cost of the project that accounts 45.7%(7,087,669.65) of the total cost. The cost for construction of cycle lane is estimated to 23.9 birr including cost of machineries and professionals. But the cost paid from CRGE budget is only 4.5 million birr (29%) and additional 6 million birr is from Addis Ababa Road Authority. Budget allocated from CRGE for this project is totally used and 100% settled.

Three hundred twenty-one (321) persons are directly benefitted from the project of which 291 are temporary and 30 are permanent. The total cost per beneficiary is estimated to 236,255.65 birr.

**Challenges encountered during implementation**

- Right of way problems-Telecommunication, electricity, water lines and private greenery areas are not relocated on time and they are key reasons for the delay of the project.
- The construction of bike lane and provision of cycle transport service is the first in the country and it was a challenge for success of the project.
- Lack of commitment for collaboration is a challenge from different governmental stakeholder offices.
- Demolishing the installed infrastructures, stealing cycles and competing for bike lane instead of using pedestrian way are the challenges face us from the public.
- Lack of CRGE project department in Addis Ababa Road and Transport Bureau
- Long chain of money transfer from MoFEC to Addis Ababa Road and Transport Bureau
- Lack of dedicated vehicle for the project

**Lessons learned**

- It helped us to know how bikeways can be retrofitted to the existing and new roads.
- It provides us how to procure electric cycles and to know how we can import it within an intended time.
- Management of the cycle taxi enterprises
- Preparation of manual based on international best practices
- Project management in the implementation of the project

**Environmental and Social Safeguard Issues**

The provision of bikeways may result in additional risk to pedestrians and bike users. This is particularly likely to be the case where cycle lanes are not readily distinguishable from pedestrian areas and vehicle ways, e.g. due to the choice of surfacing or lane markers, or if the layout is confusing, or if the pedestrians' area is inadequate for the numbers of people

using the space. Pedestrians may easily stray into the cycle lanes without realizing they have done so.

Potential hazards arise where the cycle lane is bidirectional on the wrong side of the road, in which case the pedestrian crossing the cycle lane may look in the wrong direction and at crossings where traffic lights apply to vehicles on the carriageway but not to the cycle lane.

So, to mitigate these potential risks, installation of physical barrier and signage is taken as a solution to distinguish pedestrian and bikeways as well as bikeways and vehicle ways.

**Measures Taken to Mitigate Potential Risks**

| No. | Project | Potential environmental/social /Risks | Mitigation Measures Taken |
|---|---|---|---|
| 1. | Share the Road | Increased road accidents due to the interference of vehicles to bike lanes | Bike lanes are separated from vehicle ways by physical barrier to improve safety of bicycle users. |
| | | Collision at intersections | Signage at intersections installed |
| | | Pedestrians stray into cycle lanes and this may cause an accident | Signage is installed to distinguish pedestrian and bikeways. |

**Fixed Asset**

**a): Tricycle**

**b): Bicycle**

**C). Installed City Bench**

**D) Installed Cycle shad**

**Project two : Improvement of traffic flow Project (Smart parking)**

The capital city Addis Ababa is the hub and gateway of Ethiopian economy; the city has faced multitude of problems associated with traffic volume increase, congestion, air pollution and growing traffic accidents. In this regard, this project is designed to improve the above-cited multi- pronged problems and particularly the heavy traffic congestion, which is being caused by street-side parking. Travel volume is a key consideration for measuring up the total emission impacts caused by congestion and furthermore, it is provided the input to explore the available mitigation mechanisms to effectively address the challenge. When travel speed increases, it is expected the vehicle efficiency to burn fuel will also increase. When the street is clear from roadside parking, the vehicle travel volume will increase while as reducing the total Vehicle Miles Travelled (VMT).

Hence, the overall goal of this project is geared toward bringing a significant travel-time reduction, in addition to enhancing fuel usage efficiency as well as reduction of GHG emission caused by congestion.

To meet the goal of this project by bringing a significant travel-time reduction, enhancing fuel usage efficiency as well as reducing emission of GHGs caused due to congestion, the installation of steel structure and electro-mechanical system units is completed.

The construction of the smart parking is aligned with surface parking system, which will be constructed with government budget. Installation of steel structure and electro-mechanical systems is completed and the activity of covering the smart parking tower is underway; and 94% of its total construction is completed. By the end of March, the installation of the tower will be fully completed. The smart parking has three independent units (lift systems) and 15 floors that will have the capacity of parking 90 cars.

The project will have a direct impact on city's dwellers in saving their time wastage that could contribute for their economic productivity, Enhance the quality of life of residents by keeping them away from noise, air pollution and encourage physical exercise and window shopping's etc.; and bring a paradigm shift on the trend of vehicle usage. Vehicle owners will be

discouraged, if they are prohibited from street side parking or obliged to park only on designated parking lots.

The project will have the following outcomes at the end of its completion.

- Improving public and private willingness to invest on off street parking- To achieve this outcome, public private partnership (PPP) guideline is under preparation by Addis Ababa University and discussed on its final draft. After its approval, it will be provided for discussion with public and private partners.
- Reduce the congestion problem seen around Megenagna by providing a total parking capacity of 90 to serve an estimated 720 car owners a day, assuming each car will stay for an hour.
- Reduce the CO2 emission by up to 20% caused by congestion at the peak hour- According to the assessment done in 2012 year, only about 0.07 Metric tone of CO2 is being emitted as a result of congestion problems - over slowing movement of vehicles. Therefore, due the implementation of the project, smooth traffic flow in the main artery roads of the city will be created and as the result, emission of CO2 will be reduced. MRV will be done to know the amount of CO2 reduced due to the intervention.
- The implementation of the project will create employment opportunity for more than 20persons including parking operators and other supporting staffs such as cashier, janitors, guard, etc. At the present, 5 females and 51 males participated on smart parking construction and benefitted temporary from the project.

*Installed steal structure of the smart parking (Current Status of the Project)*

**Contribution of the project in supporting growth**

The project intends to contribute to the realization of the CRGE vision to become climate resilience and contributes its own part in saving portion of the GDP to achieve GTP's goal of becoming a middle-income country, particularly from foreign currency saving that would use to import fossil fuel. With this regard, the project supports growth of the country by mainstreaming the objective of the project into government plan. For example, Addis Ababa Transport Programs Management Office has co-financed 18.20 million birr to this pilot project. Moreover, the project initiates the government to build additional smart and surface parking in different areas of Addis Ababa City Administration. Additional smart parking, which have three and four units and the capacity to contain 60 and 80 cars, are under installation around Churchill Street and Merkato area respectively. Surface parking areas are also under construction around Megenagna or Zefmesh (can serve 53 cars), WeloSefer (42 cars), Merkato (105 cars) and Churchill (50 cars). This trend will have a key role in poverty reduction by creating a huge job opportunity to citizens.

**b. Value for money**

The smart parking tower is constructed in Addis Ababa city administration around Megenagna. The total budget allocated for this project (for one unit) from CRGE is about USD 780,000. However, the total cost amount of the project is about 30,700,000 birr and for its implementation, 12,500,000birr (41%) is used from the allocated CRGE budget and about 18,200,000 birr is co-financed from government side. This all amount of budget is used for smart parking tower steel structure and electro-mechanical unit procurement and for its installation.

**Challenges encountered during implementation**

- The construction of smart parking tower is the first in the county (a new technology) and it was difficult to get professionals for its installation.
- The shipment of the smart marking tower from aboard
- Lack of CRGE project department in Addis Ababa Road and Transport Bureau

- Long chain of money transfer from MoFEC to Addis Ababa Road and Transport Bureau
- Lack of dedicated vehicle for the project
- Poor planning was one of the challenges, which was resulted for insufficient budget allocation and made the implementation of the project delayed.

**Lessons learned**

- It provides us how to procure smart parking steel structures and electro-mechanical system units from international market; and to know how can import it within an intended time.
- How to install smart parking using indigenous experts (technology transfer)
- We have also learnt how to challenge problems encountered during project implementation and due to mistakes created during project planning.

## III. Environmental and Social Safeguard Issues

There is no social and environmental risk exists in the area of smart parking construction as the site was an open space allocated for parking area.

## Section III. Financial Report

### Disbursement & Settlement by Sectors (Source UKAID)

| Sectors | Total Disbursement | Settlement to date | Unsettled Balance to date | %age Settlement |
|---|---|---|---|---|
| MOANR | 129,244,790 | 128,986,579 | 258,211 | 99.8% |
| MOUHD | 35,217,032 | 35,140,663 | 76,368 | 99.8% |
| MEFCC | 77,514,649 | 77,098,298 | 416,351 | 99.5% |
| MOI | 12,288,052 | 12,288,052 | 0 | 100.0% |
| IPDC | 10,175,950 | 10,175,950 | 0 | 100.0% |
| MWIE | 111,426,151 | 105,605,473 | 5,820,678 | 94.8% |
| MOT | 30,257,260 | 30,114,419 | 142,841 | 99.5% |