



Development Bank of Ethiopia

Helping Energy Access Program with Result Based Financing and Transitioning to Post 2020 World

Presented on African Carbon Forum(AFC)

June, 2016 Rwanda Kigali



Content



1. Part – I Brief Summary of Market Development for Renewable Energy & Energy Efficient Product Credit Line
2. Part – II Carbon Finance Program of Development Bank of Ethiopia

Introduction



- This presentation is prepared to share experience of the Development Bank of Ethiopia on
 - Market Development for Renewable Energy & Energy Efficient Product Credit Line &
 - Carbon Finance Administration Activity which have been supported by Carbon Initiative for Development (Ci-Dev)

Both programs will contribute to achieve scalability and replicability of energy access transition beyond 2020

Part – I: Brief Summary of MDRE&EEP Credit Line of the Bank



- *The government of Ethiopia through the Development Bank of Ethiopia (DBE) aims to develop Off-Grid Renewable Energy & Energy Efficient Program that would promote*
 - The use of off grid renewable energy (RE) and energy efficient (EE) technologies

To improve household level energy access in Ethiopia by a credit line secured from World Bank (IDA)

Program Summary



- Lender: World Bank
- Borrower: Government of Ethiopia
- Financial Intermediary: DBE
- Technical Intermediary: MoWIE
- Beneficiary of the Credit:
 - Wholesale Part Microfinance Institutions
 - Retail part Private Sector Enterprises
- Program Duration:
 - First Phase 5 years (2012 -2017)
 - Second Phase 3 years (2016 – 2019)

Cont.



- *The main objective of the credit line is to provide access to finance to the promoters of remote off-grid renewable energy programs*
- *Development Bank of Ethiopia is the Lead implementing agency for the program and work with PSE's & MFI's*
- *Ministry of Water Irrigation and Electricity is a technical intermediary for the program and supports successful implementation of the program*

Cont.



- The Credit line would be used to provide loans to:
 - *Private Sector Enterprises and*
 - *Micro Finance Institutions* that would be interested to promote Renewable Energy and Energy Efficient Products

Credit Line Beneficiaries



- *Microfinance Institutions /MFI's/*
- *Households /HH's/ - through Microfinance*
- *Private Sector Enterprise /PSE's/ and*
- *Small and Medium Enterprises /SME's/*

Cont.



- The technologies that are expected to be covered under the program includes:
 - *Solar Lanterns*
 - *Solar Home Systems*
 - *Improved Cook Stoves*
 - *Domestic Biogas Digesters and*
 - *Small Wind*

Success of the Program



- Introduction of new energy credit line in the country
- Increased awareness about Renewable energy products specially lighting global approved solar lanterns
- Increase in number of participating PSEs and MFIs
- Distribution of more than 300,000 solar lanterns in less than three years (400,000 under pipe line)
- High volume of reduction in carbon emission by introducing renewable energy technology in rural area
- Close technical assistance from the WB to mitigate challenges the Bank has faced

Challenges of program implementation(MD)



- High initial upfront cost of solar technologies
- Access road and infrastructure problem in very remote areas.
- Lack of collateral by private sector enterprises
(Currently solved by WB Risk fund)
- Lack of technology diversification (PSEs are engaged in importing mainly solar lanterns)
- Coordination and collaboration of different stakeholders

Part – II: Carbon Finance Administration



- As previously stated the Bank has got a line of credit from the WB (IDA) for Market Development for Renewable Energy & Energy Efficient Product Credit Line
- All technologies financed by the credit line are eligible for World Bank's Carbon Initiative for Development (Ci-Dev) to promote energy access in low income countries by supporting:
 - Private sector-led business models and
 - Public/private partnerships
- Taking this into consideration, DBE is assigned as a **Coordinating Managing Entity** for carbon credit administration

Cont.



- The carbon finance administration of DBE has two Program of Activities
 - PoA – I : Ethiopia Off-grid Renewable Energy Program
 - PoA – II: Ethiopia Clean Cooking Biogas Program
- Both PoAs are supported by World Bank Carbon Initiative for Development (Ci-Dev) program
- The following procedures of CDM has completed & the bank is at the final stage to sign emission reduction purchase agreement with Ci-Dev
 - Preparation of project idea note (PIN)
 - Registration of the PoAs temporarily on UNFCCC website
 - Stakeholder consultation
 - Validation of PoAs on site visit
 - Negotiation on certified emission reduction purchase agreement
- Final registration of the program by United Nation Framework Convention on Climate Change (UNFCCC) is under process

PoA–I: Ethiopia Off-grid Renewable Energy Program



Summary

- The program sector is renewable energy access for rural residents without connection to the national electricity grid
- The program seeks to promote energy access in rural areas of Ethiopia through scaling up the uptake of off-grid solar energy technologies (Solar Home System and Solar Lanterns)
- Implementation Target for the program (2015-2020)
 - Distribution of 2,800,000 solar lanterns
 - ✦ Actual as at June, 2016 – Importing & Distribution of 700,000 Solar lanterns by PSEs
 - Installation of 214,850 Solar Home Systems
 - ✦ Actual as at June 2016 – Installation of 11,375 Solar home systems through Rural Electric Service Cooperatives.

Cont.



- From the mentioned EE products
- Expected emission reduction
 - 1,105,075 tons of CO₂
- Proposed duration of emission reduction by the program
 - From 2015 - 2024

Major Intervention Areas



- PoA – I: Ethiopia Off-grid Renewable Energy Program of activity has three major intervention areas:
 - Partial Battery replacement for solar home system
 - Demonstration of a real-time web-based warranty tracking system and enforcement mechanism for solar products (mainly for solar lantern)
 - Maintenance Incentive for Solar Home System Business

How the revenue from carbon supports the major intervention areas in PoA - I



- **Partial Battery Replacement for Solar Home System**
 - In order to keep the sustainability and functionality of SHS, the battery needs to be replaced on average on 5 years interval.
 - Rural households, they do not have the capacity to pay for 100% of the battery replacement cost at the end of 5th year.
 - The revenue from carbon will cover 40% of battery replacement cost
 - In addition to covering 40% of battery replacement cost, this program supports batter collection from end users at central level

Cont.



- Demonstration of a real-time web-based warranty tracking system and enforcement mechanism for solar products (mainly for solar lantern)
 - The carbon revenue will support to collect all information of end users by SMS and also the web-based warranty tracking system enforces the private companies/dealers to replace defective systems during the warranty period
 - The SMS message from end users to the national and regional data base is free of charge and cost associated with this will be covered by carbon revenue

Cont.



- **Maintenance Incentive for Solar Home System**
 - In order to address consumer affordability and to strengthen program operational performance, maintenance incentive package is designed for solar technicians. Based on their performance the incentive payment will be effected from the revenue generated from carbon

PoA – I Cont.



- **Program benefits beyond Green House gas reduction**
 - Improved living standards, reliable lightning, mobile charging
 - Reducing HH expenses.
 - Reduction of indoor air pollution
 - Job creation in the rural community
 - Strengthening private sector involvement
- **Program beneficiaries**
 - Off grid rural HH
 - Private solar technology suppliers and distributors
 - Technicians and after sales service providers residing in remote areas

PoA – II: Ethiopia Clean Cooking Biogas Program



Summary

- The clean cooking energy program includes distribution of three different technologies which are currently being implemented under the national scheme: household biogas digester, ethanol cook stoves and improved cook stoves
- However this program would seek an agreement where Ci-Dev would buy the carbon credit that results from activates under the national biogas program of Ethiopia
- Implementation target for the program (2015 -2020)
 - Construction of 39,178 biogas digesters of on average 10m³ size each
- Expected emission reduction
 - 803,167 tons of CO₂
- Proposed duration of emission reduction by the program
 - From 2015 - 2024

Major Intervention Areas



- PoA – II: Ethiopia Clean Cooking Biogas Program has two major interventional areas
 - Replenishment of the subsidy fund to cover 30% of upfront investment cost
 - Performance based maintenance incentive for Biogas Construction Enterprises (BCE)

How the revenue from carbon supports the major intervention areas in PoA - II



- Replenishment of the subsidy fund to cover 30% of upfront investment cost
 - Currently there is investment subsidy of maximum of 30% of the total cost of biogas digester from the government of Ethiopia. This investment subsidy expired in 2017 . After 2017, this investment subsidy of the government will be replaced by carbon revenue
- Performance based maintenance incentive for Biogas Construction Enterprises (BCE)
 - Biogas construction enterprises and masons will get maintenance incentive of USD 10 per annum per biogas digester through carbon finance to improve operational performance of biogas digester

PoA – II Cont.



- **Program benefits beyond Green House Gas Reduction**
 - The technologies included under this program will reduce use of fuel wood for cooking, through lowering fuel wood collection time
 - The biogas stoves that are being promoted under this program is one of the best technologies in the clean cooking sector
 - The program will reduce indoor air pollution & its associated health impacts by reducing sickness and premature death related to household air pollution
 - The program brings financial savings in cost of fuels to the households
 - The program reduces hardship and generates welfare improvement of women and children who are largely engaged in fuel wood collection
 - The program reduces pressure on Ethiopia's diminishing forest resources

Cont.



- **Program beneficiaries**
 - Individual rural households who benefit from biogas digester
 - Biogas construction enterprises and individual masons
 - Microfinance institutions



THANK YOU

Summary of Result Based Financing Arrangement by Carbon Finance program



- **PoA – I Ethiopia Off-grid Renewable Energy Program**
 - Example 1 Solar home system
 - Implementation target from 2015 – 2020, 214,850 SHS
 - ✦ Annual implementation target
 - Year – 1 5,000 SHS
 - Year – 2 31,150 SHS
 - Year – 3 36,300 SHS
 - Year – 4, 5 & 6 Total 214,,850 SHS
 - ✦ The battery needs to be replaced after 5 years (2020 – 2024) & we can claim carbon revenue for 40% battery replacement on annual basis as follow s
 - Year – 2020 40% battery replacement cost for 5,000 SHS
 - Year – 2021 40% battery replacement cost for 31,150 SHS
 - Year – 2022 40% battery replacement cost for 36,300 SHS
 - Year – 2023, 2024 ----
- **PoA – II Ethiopia Clean Cooking Biogas Program**
 - The same approach is used for 30% incentive for biogas digester and the amount to be claimed from carbon revenue would be based on the number of biogas digester constructed per annum.