

Feasibility Studies with the Aim of Developing
a Joint Crediting Mechanism FY2013

Studies for Project Exploration and Planning

**Feasibility Study on Rural Electrification
Project for Communities by
Micro Hydro Power in Ethiopia and Kenya**

New Energy and Industrial Technology Development Organization (NEDO)
NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.

“Feasibility Study on Rural Electrification Project for Communities by Micro Hydro Power in Ethiopia and Kenya” (Study for Project Exploration and Planning)

Proposed by : NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, INC.

The aim of the F/S is to introduce “micro hydro power systems” which can generate electricity at ultra low head in off grid community. We also develop the MRV under JCM scheme and estimate GHG reduction by introducing the systems in off-grid communities in Ethiopia and Kenya.

Survey in Summary

We will conduct the technical and business surveys to introduce the world's most competitive “Ultra-Low-Head micro hydro power system” in off-grid communities. By implementing the systems in both countries, the amount of GHG will be reduced.

Survey Items

- ① Basic survey (Policies, Market etc)
- ② Evaluation of CO2 reduction by the systems
- ③ Planning for business and evaluation of feasibility
- ④ Financing for the business
- ⑤ Development of business models and proposals

Partner / Site

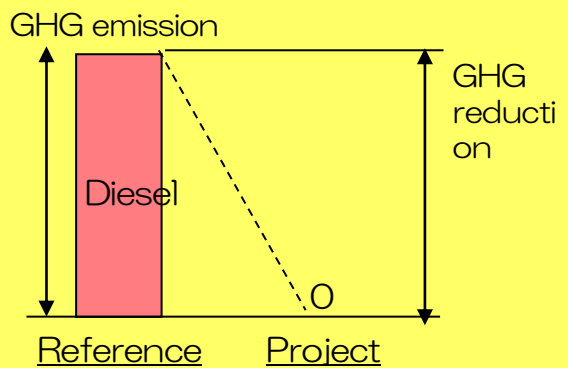
- Federal Democratic Republic of Ethiopia 
- Republic of Kenya 

Estimated Reduction amount

Reduction amount ; Ethiopia 21,000t-CO2/y
Kenya 63,000t/y ※After horizontal development

Reference scenario

- Reference scenario is “electricity is provided by diesel generators”.
- Reference emission is calculated as “Electricity generated by micro hydro power replaces fissile fuel”.



Emission reductions by project

- After the implementation, all the electricity will be provided by hydro power and GHG won't be emitted.
- Reference emission will be calculated by *electricity generated by micro hydro power system x CO2 emission factor for diesel power generators*. And Reference emission is equal to GHG reduction.

Summary of Introduced Technology

Ultra-Low-Head micro hydro power system



- In this F/S, we will introduce “Ultra-Low-Head micro hydro power system” by Seabell international. The system can generate at low head around 3m and small canals. This system can enhance the possibility of hydro power.
- This technology, or generating electricity at low head around 3m is unique and world's most competitive.
- The capacity of the system is 15kW per a system. In case the potential of hydro power is estimated more than 15kW, two or more systems will be installed to scale up the electricity. Installing some well-engineered 15kW systems (cluster installation) is more efficient and cost effective than installing one system engineered in accordance with water current and head of the canals at each sites.

Model for Community development



- We will develop "business model for community development" to introduce and implement the micro hydro power systems.
- For example, "Pumped storage system" will be considered. The system utilize the surplus power and pump the water in the canal upto the pond for agriculture and fishery.
- Community can sell the vegetables and fishes and gain cash for initial and running cost.