Fiji – Project Idea Notes (PINs) and Project Design Documents (PDDs) developed Under ACP MEA Project

Qaliwana Hydropower Project

Background

- Over the past 10 years significant increase in electricity demand
- Most of the new power plants use diesel for electricity generation.
- National Energy Security Report - continuation of the current energy situation in Fiji is not sustainable.

Objective

- Replace the current GHG intensive energy generation in the grid with hydropower that is technically and economically feasible by Qaliwana hydro project.

Project Description

- 18.6 MW hydropower planned on the Qaliwana river, in the Nadrau Plateau, in the highlands of Viti Levu
- Construction of a 62m high, concrete gravity dam on the Qaliwana River at its junction with the Nadala River.
- Will be connected at 33kV to the Nadarivatu switching station where it will be stepped up to join the 132kV system.
- Estimated total project cost is USD 98.4 million.
- Developed by Fiji Electricity Authority (FEA)

CDM Aspects

Baseline Scenario

- the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plants and by the addition of new diesel-based generation sources.

Additionality

- Tool for the demonstration and assessment of additionality (Version 05.2).

Ø Step1: Identification of alternatives to the project activity consistent with current laws and regulations

Ø Step2: Investment Analysis

Ø Step3: Barrier Analysis

Ø Step4: Common Practice Analysis

CDM Aspects Contd…

Additionality

- Investment barrier has been identified as the main obstacle for the project activity.
- Since the hydro power project generates income from electricity sale, benchmark analysis is selected as the relevant financial indicator for the projects financial analysis.
- As per the Guidance on the Assessment of Investment Analysis, the benchmark for the project activity is 13% (Benchmark for Group 1 Project Activities in Fiji), which is higher than the project IRR.

CDM Aspects Contd…

Applicable Methodology

ACM0002 : Consolidated baseline methodology for grid-connected electricity generation from renewable sources – version 12.2,EB 65

Estimated Emission Reductions - 19,717 tCO2 equivalent/year

Local Benefits & Socio-Economic Impacts

Local Benefits

- Will help in improving the water utilization of the Nadarivatu Renewable Energy Project
- Increase the overall energy production of the scheme by utilizing the additional 100 meters of head that is available between the proposed Qaliwana Dam site and the Korolevu river.
- Hydropower will reduce the GHG intensity of grid and also reduce the overall cost of generation.
- Will lead to increase in electricity supply which will benefit the economic activity.
- Additional, indirect, benefits that result from the reduced cost of electricity generation and increased electricity supply.

Environmental & Socio-Economic Impacts

Socio-economic

- Jobs, training and income generation during construction and operation through direct employment.
- Income generation through monetized compensation payments.
- Compensatory benefit through improved services and infrastructure and support of livelihoods programme.
- Access to electricity.
- Access to piped water.
- Income generation opportunities generated from increased human activity in the area.
- Overall poverty reduction and improvement in living standards.

Fiji Tourism Energy Efficiency Investment Project

Background

- Tourism is very prominent to Fiji's economy
- Significant benefits can be achieved from changing Fiji into a low carbon tourism destination
- Leadership and a model for other Pacific and Small Island Nations
- Energy conservation can have significant impact to Fiji's economy as it will make energy more readily available and cheaper for domestic commodity production.

Objective

- The objective of the project is to implement energy efficiency upgrades and retrofits in hotels (including resorts) in Fiji.

Project Description

- WWF South Pacific has initiated a energy efficiency programme in tourism sector in Fiji.
- Programme aims at working with the tourism sector to identify solutions to increase energy efficiency in hotels and resorts and reduce impacts on the environment.
- Inefficient technologies, such as lighting, chillers and air conditioning will be replaced with energy efficient technologies.
- At present at least 24 hotels are expected to participate in this project.

CDM Aspects

Baseline Scenario

- Without the proposed CDM project, the emissions associated with energy use from lighting, chillers and air conditioners would not decrease from the baseline scenario.

Additionality

- Justifying that the proposed project activity is ‘First of its Kind’ in the host country.
- Can be demonstrated as per “Guidelines for demonstrating additionally of Micro-scale project activities” EB 63 (version 3)”. As per the paragraph 3 of the guidelines:

CDM Aspects Contd…

Additionality

- Energy Efficiency project activities that aim to achieve energy savings at a scale of no more than 20 GWh per year are additional if any one of the conditions below is satisfied:

Ø *The geographic location of the project activity is in LDC/SID or special underdeveloped zone of the host country identified by the Government before 28 May 2010;*

Ø *The project activity is an energy efficiency activity with both conditions (i) and (ii) satisfied;*

Ø *Each of the independent subsystems/measures in the project activity achieves an estimated annual energy savings equal to or smaller than 600 MWh; and*

Ø *End users of the subsystem or measures are households /communities/ SMEs*

- According to the United Nations, Fiji is classified as Small Island Developing State (SIDS). Hence proposed project, which is having energy savings of tune of 7.5 GWh is considered to be automatically additional as per the above EB guidelines.

CDM Aspects Contd…

Additionality

- Further could be demonstrated by investment analysis / barrier analysis.
- Number of well-documented barriers to the uptake of energy efficient equipment, including: high initial price compared to existing less efficient technologies; lack of consumer information

- **Methodology**
- Type: II. Energy Efficiency Category: II.C – Demand - Side Energy Efficiency Activities for specific Technologies.(Version 13, EB 48) Scope Number: 03
- **Estimated Emission Reductions** - 4,847tCO2-equivalent/year

Local Benefits & Socio-Economic Impacts

Local Benefits

- Abatement of greenhouse gases and other airborne pollutants from fossil fuel power generation through avoided electricity usage.
- “flagship” project showcasing the potential use of Carbon revenues in Fiji and the Pacific, thereby stimulating development of similar programs.

Socio-economic

- Hotel owners / users will save money on their electricity bills through reduced use of electricity.
- Significantly reduce national electricity demand and stress on energy infrastructure, thereby delaying expenditure in future generation capacity, reducing blackouts and immediately “freeing up” electricity for other uses.

Environmental & Socio-Economic Impacts

Socio-economic

- The tourism and related sectors will benefit through the move towards ecotourism and related marketing benefits.
- The project will result in a significant transfer of technology.
- There will be direct employment created in-country in the distribution and installation phase of the project.
- Training and education programs to raise awareness of the benefits of energy efficiency.

Methane Capture and Flaring at Naboro Landfill, Fiji

Background

- Solid waste disposal facilities are currently very poor in Fiji with about 7 out of the 11 sites being located in mangroves
- Very poorly managed dumps which are polluting the water bodies.
- Naboro landfill site is a project of Fiji Government supported by EU and began its operation in 2005.
- At present, waste is being deposited in the landfill and left to decompose anaerobically and because of its high organic content it is becoming an important source of methane emission to the atmosphere.

Objective

Installation of landfill gas (LFG) recovery and flaring system at the Naboro Landfill.

Project Description

- The landfill site is operated by HG Leach (Fiji) Limited, as wholly owned subsidiary of H.G. Leach & Co. Ltd, New Zealand and are expected to also expected to install the LFG recovery and flaring system.
- Since 2005 landfill has been receiving on an average 50,000 tonnes of waste annually.
- expected that once around 400,000 to 500,000 tonnes of waste is collected at the site, it will be technically feasible to start collecting gas.
- The installation of a gas collection system and gas flare is estimated to cost around US$1.5m.

CDM Aspects

Baseline Scenario

- In the absence of the project activity the methane emissions due to decay of waste (from human activities including municipal, industrial, and other solid wastes containing biodegradable organic matter) dumped at the landfill will be emitted in the atmosphere as is being followed currently.

Additionality

- Justifying that the proposed project activity is ‘First of its Kind’ in the host country.
- As per the ‘Guidelines for Demonstrating Additionality of Microscale project activities’ all renewable energy projects upto 5MW and emission reduction of less than 20,000 tCO2e in SIDs/LDC countries are considered additional.

CDM Aspects Contd…

Additionality

- According to the United Nations, Fiji is classified as Small Island Developing State (SIDS). Hence proposed project activity with average annual emission reductions 15, 486 tCO2e is considered to be automatically additional as per the guidelines
- In addition, potential barrier analysis in terms of technological barriers (availability of skilled labour, capacity for O&M etc) and barriers due to prevailing practice can also be explored.

CDM Aspects Contd…

- **Methodology**

The project is covered by an existing Approved CDM Small-Scale Methodology

Type III

AMS III.G. Landfill Methane Recovery – version 07,EB 63

Sectoral Scope : 13

- **Average Estimated Emission Reductions**
- 15,486 tCO2-equivalent/year

Local Benefits & Socio-Economic Impacts

Local Bebefits

- contribute to the establishment of a better practice for municipal solid waste management and landfill gas recovery.
- improve air quality in the area and health conditions for the local inhabitants and its neighboring areas
- “Environmental and sanitary impacts associated with the emissions of methane and other organic compounds will also be prevented.

Socio-economic

- Reduction in the greenhouse gas emissions that are currently occurring through uncontrolled release of landfill gas to the atmosphere;
- Introduction of new landfill gas management technology in the country and region;
- Training of local staff to become experts in the monitoring and control of landfill gas emission;

Environmental & Socio-Economic Impacts

Socio-economic

- Provision of a number of employment opportunities relating to the operation and maintenance of equipment.
- Capture and flaring of the landfill gas will reduce explosion and fire risks.
- Benefit through improved services and infrastructure and support of livelihoods programmes.
- Reduced health diseases
- Overall poverty reduction and improvement in living standards

Thank You!