PROJECT IDEA NOTE (PIN)

Name of Project: Qaliwana Hydropower Project

Date Finalized: May 2012

Description of size and quality expected of a PIN

Basically a PIN will consist of approximately 5-10 pages providing indicative information on:

- the type and size of the project
- its location
- the anticipated total amount of greenhouse gas (GHG) reduction compared to the "business-as-usual" scenario (which will be elaborated in the baseline later on at Project Design Document (PDD) level)
- the suggested crediting life time
- the suggested Certified Emission Reductions (CERs)/Emission Reduction Units (ERUs)/Verified Emission Reduction (VERs) price in US$ or € /ton CO_2e reduced
- the financial structuring (indicating which parties are expected to provide the project's financing)
- the project's other socio-economic or environmental effects/benefits

While every effort should be made to provide as complete and extensive information as possible, it is recognised that full information on every item listed in the template will not be available at all times for every project.

A. PROJECT DESCRIPTION, TYPE, LOCATION AND SCHEDULE

OBJECTIVE OF THE PROJECT *Describe in not more than 5 lines*	Over the past 10 years electricity demand in Fiji has seen a significant increase and most of the new power plants in Fiji use diesel as fuel for electricity generation. The objective of the proposed project is to replace the current GHG intensive energy generation in the grid with hydropower that is technically and economically feasible by building a dam on the Qaliwana River. The aim is to improve the water utilization of the Nadarivatu Renewable Energy Project and to 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 Weir.
PROJECT DESCRIPTION AND PROPOSED ACTIVITIES *About ½ page*	The scheme involves the construction of a 62m high, concrete gravity dam on the Qaliwana River at its junction with the Nadala River. A 2.3km tunnel will link the dam to point on the Nukunuku Creek approximately 250m upstream from the Korolevu Weir. Water will be conveyed across the Nukunuku Creek in a 2.25m diameter penstock supported on a bridge, which also provides access to the tunnel portal. A penstock of length 225m conveys the water to a power station located at the side of the Korolevu Reservoir. This ensures that the full available head is used at all times. The resulting scheme will have a design flow of 15 m^3/s and a design turbine rating of 18.6MW, at a net head of 137.8m. The scheme will be connected at 33kV to the Nadarivatu switching station where it will be stepped up to join the 132kV system. The project will provide a more economical and reliable power supply to meet the growing power demand as well help reduce the GHG intensity of electricity grid by avoiding new diesel plants. The project will be implemented over a period of three years inclusive of detailed design, procurement and construction activities. The project is expected to be commissioned in 3 years once the project activity is initiated. The estimated total project cost is USD 98.4 million.
TECHNOLOGY TO BE EMPLOYED[1] *Describe in not more than 5 lines*	The technical details are as below: • Dam Level (RL m) : 663 m • Live Storage (m^3/s days): 110.50 • Flow (m^3/s): 15 • Load factor(m) : 26.68% • Turbine designed rating (MW) : 18.6 • Turbine type: Francis (one set)
TYPE OF PROJECT	
Greenhouse gases targeted $CO_2/CH_4/N_2O$/HFCs/PFCs/SF_6 *(mention what is applicable)*	CO_2
Type of activities Abatement/CO_2 sequestration	Abatement

[1] Please note that support can only be provided to projects that employ commercially available technology. It would be useful to provide a few examples of where the proposed technology has been employed.

Field of activities *(mention what is applicable)* *See annex 1 for examples*	Renewable Energy – Hydro Power
LOCATION OF THE PROJECT	
Country	Fiji
City	Veti Levu Island
Brief description of the location of the project *No more than 3-5 lines*	The proposed project is located in the Nadrau Plateau, in the highlands of Viti Levu, the main island in Fiji. The Qaliwana dam will be constructed on Qaliwana River at its junction with the Nadala River in the upper reaches of the Sigatoka River catchment.
PROJECT PARTICIPANT	
Name of the Project Participant	Fiji Electricity Authority
Role of the Project Participant	b.Owner of the site or project
Organizational category	a. Government
Contact person	Mr. Hansmukh Patel
Address	2 Marlow Street, Suva, Fiji
Telephone/Fax	331333/3313064
E-mail and web address, if any	
Main activities *Describe in not more than 5 lines*	The Fiji Electricity Authority was established, incorporated and constituted under the provisions of the Electricity Act of 1966 and began operating from the 1st August of the same year. Its core function is to generate, transmit, transform, distribute and sell energy either in bulk or to individual customers in any part of Fiji.
Summary of the financials *Summarize the financials (total assets, revenues, profit, etc.) in not more than 5 lines*	Not Applicable as Government Entity
Summary of the relevant experience of the Project Participant *Describe in not more than 5 lines*	Not Applicable as Government Entity
EXPECTED SCHEDULE	
Earliest project start date *Year in which the plant/project activity will be operational*	2014
Expected first year of CER/ERU/VERs delivery	2015
Project lifetime *Number of years*	30 years
For CDM projects: Expected Crediting Period *7 years twice renewable or 10 years fixed*	7 years twice renewable
Current status or phase of the project *Identification and pre-selection phase/opportunity study finished/pre-feasibility study finished/feasibility study finished/negotiations*	Feasibility Study report finished and available PDD is under development

phase/contracting phase etc. (mention what is applicable and indicate the documentation)	
Current status of acceptance of the Host Country *Letter of No Objection/Endorsement is available; Letter of No Objection/Endorsement is under discussion or available; Letter of Approval is under discussion or available* *(mention what is applicable)*	Yet to apply for "Letter of No Objection" from DNA
The position of the Host Country with regard to the Kyoto Protocol	Has the Host Country ratified/acceded to the Kyoto Protocol? _____Yes, 1998_____ Has the Host Country established a CDM Designated National Authority / JI Designated Focal Point? _____Yes,2002_____

B. METHODOLOGY AND ADDITIONALITY

ESTIMATE OF GREENHOUSE GASES ABATED/ CO_2 SEQUESTERED *In metric tons of CO_2-equivalent, please attach calculations*	Annual (if varies annually, provide schedule): 19,717 tCO_2-equivalent Up to and including 2012: __0_ tCO_2-equivalent Up to a period of 10 years: _NA_ tCO_2-equivalent Up to a period of 7 years: _138,023_ tCO_2-equivalent The project is expected to generate 38,700 MWh of electricity annually.
BASELINE SCENARIO CDM/JI projects must result in GHG emissions being lower than "business-as-usual" in the Host Country. At the PIN stage questions to be answered are at least: • Which emissions are being reduced by the proposed CDM/JI project? • What would the future look like without the proposed CDM/JI project? *About ¼ - ½ page*	CO_2 is the targeted emission reductions by the project activity. Fiji, like any other country in the Pacific region, is heavily dependent on imported fuel to meet a major component of its energy demand. The baseline scenario of the proposed project activity is that 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. The baseline scenario of the proposed project is therefore the same against the scenario prior to the start of the implementation of the project activity, i.e. supply of electricity from the FEA grid and addition of diesel generation capacity to the FEA grid to meet growing demand.
ADDITIONALITY Please explain which additionality arguments apply to the project: (i) there is no regulation or incentive scheme in place covering the project (ii) the project is financially weak or not the least cost option	It is envisaged that the demonstration of additionality will be done by carrying out barrier analysis and/or investment analysis. Additionality of the proposed project activity could be demonstrated using the *Tool for the demonstration and assessment of additionality (Version 05.2*). The steps are described below:

(iii) country risk, new technology for country, other barriers (iv) other	Step1: Identification of alternatives to the project activity consistent with current laws and regulations Step2: Investment Analysis Step3: Barrier Analysis Step4: Common Practice Analysis Investment barrier has been identified as the main obstacle for the project activity. According to Non-binding best practice examples to demonstrate additionality for SSC project activities: "*Best practice examples include but are not limited to, the application of investment comparison analysis using a relevant financial indicator, application of a benchmark analysis or a simple cost analysis (where CDM is the only revenue stream such as end-use energy efficiency)*". Since the hydro power project generates income from electricity sale, benchmark analysis is selected as the relevant financial indicator for the projects financial analysis. The Project Internal Rate of Return (IRR) is selected as the financial indicator. 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. A detailed assessment of the above steps including appropriate supporting documentation and evidences will be carried out during PDD development.
SECTOR BACKGROUND Please describe the laws, regulations, policies and strategies of the Host Country that are of central relevance to the proposed project, as well as any other major trends in the relevant sector. Please in particular explain if the project is running under a public incentive scheme (e.g. preferential tariffs, grants, Official Development Assistance) or is required by law. If the project is already in operation, please describe if CDM/JI revenues were considered in project planning.	Fiji, like any other country in the region, is heavily dependent on imported fuel to meet a major component of its energy demand. As such, it is vulnerable to the continuous fluctuations of world crude oil prices. For the past few years, Petroleum products demand in Fiji has increased from around $400 million in 2004 to $1.3 billion in 2010. With respect to electricity production about 60% of the country's needs is met from renewable energy, the remainder is met from fossil fuels specifically utilizing Heavy Fuel Oil for electricity generation. Very briefly recently the country has set itself a target that by 2016, ninety percent (90%) of electricity produced in the country is met from renewable energy. There is no specific roadmap for the current targets but a strategy has been put in place identifying specific investments on various forms of locally available renewable energy sources that can be developed to achieve the target that has been set. The proposed project activity is not envisaged to run under a public incentive scheme or is required by law.
METHODOLOGY Please choose from the following options: For CDM projects: (i) project is covered by an existing Approved CDM	Applicable methodology ACM0002 : Consolidated baseline methodology for grid- connected electricity generation from renewable sources – version 12.2,EB 65 Sectoral Scope : 01

Methodology or Approved CDM Small-Scale Methodology (iii) projects needs modification of existing Approved CDM Methodology	

C. FINANCE

TOTAL CAPITAL COST ESTIMATE (PRE-OPERATIONAL)			
Total project costs		Description	Costs
		Preliminary & General	US$ 9,665,000
		Camp	US$ 1,937,100
		Dam	US$ 41,302,100
		Conveyance System	US$ 14,900,200
		Powerhouse	US$ 4,515,400
		Mechanical & Electrical	US$ 5,811,500
		Total Contract Works	US$ 78,131,200
		Markup (4%)	US$ 3,125,200
		Professional Fees & Investigations	US$ 8,243,400
		Total Cost	US$ 89,4999,800
		10% Contingency	US$ 8,949,980
		Overall Cost	US$ 98,449,780
SOURCES OF FINANCE TO BE SOUGHT OR ALREADY IDENTIFIED			
Equity Name of the organizations, status of financing agreements and finance (in US$ million)	Fiji Electricity Authority (FEA)		
Debt – Long-term Name of the organizations, status of financing agreements and finance (in US$ million)	To be decided		
SOURCES OF CARBON FINANCE Name of carbon financiers that you are contacting (if any)	NA		
INDICATIVE CER/ERU/VER PRICE PER tCO_2e *Price is subject to negotiation. Please indicate VER or CER preference if known.*	US$ 8 – 10 (Indicative price range only. To be decided upon selection of IPP)		
TOTAL EMISSION REDUCTION PURCHASE AGREEMENT (ERPA) VALUE			
A period until 2012 (end of the first commitment period)	NA		
A period of 7 years	US$ 1,10,4188 – 1,380,230(Indicative values only)		

D. EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS

LOCAL BENEFITS E.g. impacts on local air, water and other pollution.	Different effects on the environment could occur during construction and operation phases of the project. Construction related effects are primarily erosion, and sediment and other contaminant-laden discharges to the water ways, affecting water quality. During operation, the primary effects are around

	the changes in the flow regime in the river, that potentially impact on river habitat, sediment transport, water quality and riparian groundwater levels. These effects will be identified in the Environmental Impact Report (EIA) which will be carried out for this project. Appropriate mitigation measures is planned to be developed through the EIA and the Environmental Management Plan (EMP).
SOCIO-ECONOMIC ASPECTS	
What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project? Indicate the communities and the number of people that will benefit from this project. *About ¼ page*	The project will help in improving the water utilization of the Nadarivatu Renewable Energy Project and 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. The project will lead to increase in electricity supply which will benefit the economic activity. There may be additional, indirect, benefits that result from the reduced cost of electricity generation and increased electricity supply.
What are the possible direct effects (e.g. employment creation, provision of capital required, foreign exchange effects)? *About ¼ page*	• Jobs, training and income generation during construction and operation through direct employment. • Income generation through monetised compensation payments. • Compensatory benefit through improved services and infrastructure and support of livelihoods programmes. Benefit sharing schemes may provide the best opportunity to provide a positive impact to the entire community including vulnerable groups. • 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.
ENVIRONMENTAL STRATEGY/ PRIORITIES OF THE HOST COUNTRY A brief description of the project's consistency with the environmental strategy and priorities of the Host Country *About ¼ page*	The Fijian Government in 2005 passed the Environment Management Act. The Department of Environment, within the Ministry of Tourism, Labour and the Environment, is responsible for implementing the Act and the Environmental Approvals process. Environmental Approval is required from the Department for any development proposal that meets criteria under Schedule 2, Part 1 of the Act. The Qaliwana hydropower plant development proposal requires an Environmental Approval under *1(g) a proposal for construction of a dam, artificial lake, hydro-electric scheme or irrigation project.* An Environmental Impact Assessment (EIA) must be prepared by the developer and lodged with the Department for Approval. A Terms of Reference (TOR) that outlines the scope of the works for the EIA is first prepared and lodged with the Department. Once the TOR is approved, the EIA report must be prepared in accordance with the TOR. The Department can insist on public notification of the EIA for 21 working days, and the public can make submissions on the EIA which then must be taken into account when processing the Approval. In 2005, a very similar scheme received environmental approval, subject to conditions. The residual flow was limited to 0.1 m^3/s at the Qaliwana and 0.2 m^3/s at Korolevu Weir and this is the basis of the energy modelling. The new scheme avoids the problem of the archaeological site 500m upstream, which made it impossible to proceed with the original scheme devised in 2005. It is

	therefore expect to be straightforward to renew these approvals without further consultation being required. A detailed EIA for the project activity will be carried out in accordance with the national regulations.Different effects on the environment could occur during construction and operation phases of the project. Construction related effects are primarily erosion, and sediment and other contaminant-laden discharges to the water ways, affecting water quality. During operation project activity may have some impact on river habitat, sediment transport, water quality and riparian groundwater levels. These effects will be studied in the EIA to be carried out for this project but no serious negative impacts are envisaged in the project activity.

ANNEX I - Technologies

1. Renewables
   1a Biomass
   1b. Biogas
   1c. Bagasse
   1d. Wind
   1e. Hydro
   1f. Geothermal
   1g. Photovoltaic
   1h. Solar Thermal
2. Fossil Fuel Switch
3. Energy Efficiency
   3a. Cement Efficiency Improvement
   3b. Construction material
   3c. District heating
   3d. Steel Gas Recovery
   3e. Other Energy Efficiency
4. Waste Management
   4a. Landfill Gas recovery/utilization
   4b. Composting
   4c. Recycling
   4d. Biodigestor
   4e. Wastewater Management
5. Coalmine/Coalbed Methane
6. Oil and Gas Sector
   6a. Flared Gas Reduction
   6b. Reduction of technical losses in distribution system
7. N_2O removal
8. HFC23 Destruction
9. SF6 Recovery
10. Transportation
    9a. Fuel switch
    9b. Modal switch
11. Others