

PROJECT IDEA NOTE (PIN)

Name of Project: Tropik Biomass Power Generation Project

Date submitted: 10 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 CO₂e 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

<p>OBJECTIVE OF THE PROJECT <i>Describe in not more than 5 lines</i></p>	<p>The purpose of the proposed project is to utilize local biomass residues (mainly wood waste) for electricity generation. The electricity generated will partially be used by Tropik Wood Industries Limited and partially be transmitted to the grid managed by Fiji Electricity Authority (FEA).</p> <p>The proposed project will accomplish greenhouse gas (GHG) mitigation by avoiding usage of diesel for electricity generation. Moreover, the proposed project will reduce CH₄ emissions as the biomass residues would otherwise be dumped or left to decay under mainly aerobic conditions in the absence of the proposed project.</p>
<p>PROJECT DESCRIPTION AND PROPOSED ACTIVITIES <i>About ½ page</i></p>	<p>Tropik Wood Industries Limited owns and operates Fiji's largest sawmill and is the country's only major processor of pine timber. The total log supply is about 425,000 tonnes per annum, which also produces a large quantity of wood waste. Due to the vast processing work, Tropik Wood Industries Limited consumes a lot of electricity. The Tropik Biomass Generation Plant commenced operation in 2008 and exported between 40 - 45 GWh of electricity to FEA. As it is the earliest big scale biomass generation project in Fiji, the project development met quite many financial and technology barriers since it started construction in 2005. However, due to lack of information regarding CDM, Tropik Wood did not know that CDM could be an option to overcome these barriers, but hoped that this project could receive some additional support from the government and the FEA.</p> <p>Since the project was developed and put into operation, Tropik Wood had not received any additional support from government or FEA. So Tropik Wood had to rely on its internal sources to give financial support to this project and tried to keep operation of the project. But as their budget is very limited to the operation and maintenance of the power generation plant, the project turbine as well as other equipments were seriously damaged in a fire due to severely lack of maintenance and had to stop operation at the end of 2009. Tropik Wood had to reconsider whether it could continue the biomass generation plant or not.</p> <p>During this stage, CDM was indentified to be an effective way to gain additional financial support for the future operation and improve the investment return of the project. Thopik Wood finally decided to repair the current equipment and continue operation of the project with CDM support. After nearly one-year interruption, in October 2010 the damaged equipments were repaired and the proposed project re-started operation and has been running since then.</p> <p>The installed capacity of the proposed project is 9.3MW. 2-3MW power output will be delivered to the Tropik Wood Industries Limited and the rest will be supplied to the grid managed by the FEA. Since the total power generated by the proposed project is 61,100MWh per year, the electricity supplied to the grid is around 42,700MWh.</p>
<p>TECHNOLOGY TO BE EMPLOYED¹ <i>Describe in not more than 5 lines</i></p>	<p>Biomass-based power generation is the technology that uses the biomass (usually, animal manure, agricultural waste, or other organic material) as a kind of fuel to generate electricity or heat using steam engine or generator. The generation process involved feeding system, combustion gate, boiler and</p>

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.

	auxiliary system. Biomass is fed into the boiler by feeding system through the combustion gate. The thermal energy will be supplied by combustion of biomass; a boiler will utilize the heat to form high pressure and high temperature steam flow to the steam turbine and generator to generate electricity and heat at a maximum efficiency. Then, the auxiliary system such as dust removal system, fans and flue gas cleaning system operates for the above process.
TYPE OF PROJECT	
Greenhouse gases targeted CO ₂ /CH ₄ /N ₂ O/HFCs/PFCs/SF ₆ (mention what is applicable)	CH ₄ and CO ₂
Type of activities Abatement/CO ₂ sequestration	Abatement
Field of activities (mention what is applicable) See annex 1 for examples	Renewable: Biomass
LOCATION OF THE PROJECT	
Country	Fiji
City	Lautoka
Brief description of the location of the project No more than 3-5 lines	Lautoka is the second largest city of Fiji and the second largest in the South Pacific. It is in the west of the island of Viti Levu, 24 kilometers north of Nadi, and is the second port of entry in Fiji, after Suva. Lying in the heart of Fiji's sugar cane growing region, it is known as the Sugar City.
PROJECT PARTICIPANT	
Name of the Project Participant	Tropik Wood Industries Limited
Role of the Project Participant	a. Project Operator b. Owner of the site or project c. Owner of the emission reductions d. Seller of the emission reductions e. Project advisor/consultant f. Project investor g. Other, please specify: _____
Organizational category	a. Government b. Government agency c. Municipality d. Private company e. Non Governmental Organization f. Other, please specify: _____
Contact person	Mr George Vuki (Group General Manager Operations)
Address	Drasa Sawmill Complex, Vakabuli Village Road, Drasa, Private Mail Bag, Lautoka, Fiji Islands
Telephone/Fax	(679) 6661388 and (679) 9995139
E-mail and web address, if any	george.vuki@tropik.com.fj
Main activities Describe in not more than 5 lines	Tropik Wood Industries Limited (Tropik) owns and operates Fiji's largest Sawmill and is the country's only major processor of pine timber. The plant generates all of its electricity requirements from wood residues. The objectives of Tropic wood industries are as below: <ul style="list-style-type: none"> ✓ Utilization of the substantial pine plantation forests planted by Fiji Pine Limited and the Fiji Forestry Department as these forests become ready for harvesting. ✓ Provision of a reliable renewable source of sawn timber to meet the

	<p>needs of the Fijian domestic market, thereby enabling the conservation of Fiji's indigenous timber species and allowing softwood import substitution.</p> <p>✓ Use of wood residues to generate electricity for mill operations and for national grid thereby reducing fuel imports.</p>
<p>Summary of the financials <i>Summarize the financials (total assets, revenues, profit, etc.) in not more than 5 lines</i></p>	<p>Tropik Wood Industries Limited has assets of around F\$45million, is owned by Fiji Pine Limited.</p>
<p>Summary of the relevant experience of the Project Participant <i>Describe in not more than 5 lines</i></p>	<p>None</p>
<p>EXPECTED SCHEDULE</p>	
<p>Earliest project start date <i>Year in which the plant/project activity will be operational</i></p>	<p>2010 when project restart operation</p>
<p>Expected first year of CER/ERU/VERs delivery</p>	<p>2013</p>
<p>Project lifetime <i>Number of years</i></p>	<p>Estimated 20 years</p>
<p>For CDM projects: Expected Crediting Period <i>7 years twice renewable or 10 years fixed</i></p> <p>For JI projects: Period within which ERUs are to be earned (<i>up to and including 2012</i>)</p>	<p>7 years twice renewable</p>
<p>Current status or phase of the project <i>Identification and pre-selection phase/opportunity study finished/pre-feasibility study finished/feasibility study finished/negotiations phase/contracting phase etc. (mention what is applicable and indicate the documentation)</i></p>	<p>In operation</p>
<p>Current status of acceptance of the Host Country <i>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)</i></p>	<p>Yet to apply for "Letter of No Objection" from DNA.</p>
<p>The position of the Host Country</p>	<p>Has the Host Country ratified/acceded to the Kyoto Protocol?</p>

with regard to the Kyoto Protocol	<p style="text-align: center;">_____ <u>Yes, 1998</u> _____</p> <p>Has the Host Country established a CDM Designated National Authority / JI Designated Focal Point?</p> <p style="text-align: center;">_____ <u>DNA was established in 2002</u> _____</p>
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B. METHODOLOGY AND ADDITIONALITY

<p>ESTIMATE OF GREENHOUSE GASES ABATED/ CO₂ SEQUESTERED <i>In metric tons of CO₂-equivalent, please attach calculations</i></p>	<p>Annual (if varies annually, provide schedule): <u> 21,000 </u> tCO₂-equivalent Up to and including 2012: <u> 0 </u> tCO₂-equivalent Up to a period of 10 years: <u> 0 </u> tCO₂-equivalent Up to a period of 7 years: <u> 147,000 </u> tCO₂-equivalent</p> <p>This assumes a load factor of 75% for the proposed project and the operation hours is 6,570 h per year. The emission factor is assumed as 0.5tCO₂e/MWh. The annual emission reduction will be 21,000tCO₂e</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Emission reduction (tCO₂e)</th> </tr> </thead> <tbody> <tr><td>2013</td><td>21,000</td></tr> <tr><td>2014</td><td>21,000</td></tr> <tr><td>2015</td><td>21,000</td></tr> <tr><td>2016</td><td>21,000</td></tr> <tr><td>2017</td><td>21,000</td></tr> <tr><td>2018</td><td>21,000</td></tr> <tr><td>2019</td><td>21,000</td></tr> <tr><td>Total</td><td>147,000</td></tr> </tbody> </table>	Year	Emission reduction (tCO ₂ e)	2013	21,000	2014	21,000	2015	21,000	2016	21,000	2017	21,000	2018	21,000	2019	21,000	Total	147,000
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<p>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:</p> <ul style="list-style-type: none"> • Which emissions are being reduced by the proposed CDM/JI project? • What would the future look like without the proposed CDM/JI project? <p><i>About ¼ - ½ page</i></p>	<p>CH₄ and CO₂ are the targeted emission reductions by the project activity.</p> <p>Fiji, like any other country in the Pacific region, is heavily dependent on imported fossil 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 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.</p> <p>Tropik logging operations, which provides the raw material resource for the sawmill, harvests more logs than the sum of the rest of Fiji’s timber industry. The majority of the total log supply of some 425,000 tonnes per annum is of Pinus caribaea with a small proportion of Pinus elliottii. The trees are grown on land leased by Fiji Pine Limited or on private woodlots. There will be a lot of wood waste be dumped or left to decay under mainly aerobic conditions.</p>																		
<p>ADDITIONALITY Please explain which additionality arguments apply to the project: (i) there is no regulation or</p>	<p>It is envisaged that the demonstration of additionality will be done by carrying out barrier analysis.</p>																		

<p>incentive scheme in place covering the project (ii) the project is financially weak or not the least cost option (iii) country risk, new technology for country, other barriers (iv) other</p>	<p>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.</p> <p>As it is the first big biomass-based electricity generation project in Fiji, the project development met many financial barriers and technology barriers. The project turbine as well as other equipments was seriously damaged and has to stop operation at the end of 2009.</p>
<p>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.</p> <p>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.</p>	<p>With respect to electricity production, about 60% of the country's need is met from renewable energy, the remainder is met from fossil fuels, specifically heavy fuel oil. 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. However, there is no clear roadmap for achieving 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 address the target that has been set.</p> <p>Biomass based power generation is carbon neutral because the CO₂ emitted by biomass burning for electricity generation is equal to the CO₂ absorbed during the lifetime of the biomass. This technology is very promising in Fiji due to the importance of agriculture and huge yield of biomass in this country. The proposed project will promote the execution of the renewable energy part of the National Energy Policy (2006) and Rural Electrification Policy in Fiji.</p> <p>No public funding has been indicated for the proposed project yet.</p>
<p>METHODOLOGY Please choose from the following options:</p> <p>For CDM projects:</p> <p>(i) project is covered by an existing Approved CDM Methodology or Approved CDM Small-Scale Methodology</p> <p>(iii) projects needs modification of existing Approved CDM Methodology</p>	<p>The project is covered under the following approved CDM methodology :</p> <p>AMS-I. D : Grid connected renewable electricity generation --- Version 17.0</p>

C. FINANCE

<p>TOTAL CAPITAL COST ESTIMATE (PRE-OPERATIONAL)</p>	
<p>Total project costs</p>	<p>The original cost of the biomass based power plant (excluding the retrofitting fee): FJ\$ 25 million (equivalent to US\$ 13.4 million)</p>
<p>SOURCES OF FINANCE TO BE SOUGHT OR ALREADY IDENTIFIED</p>	
<p>Asset Name of the organizations, status of financing agreements and finance (in US\$ million)</p>	<p>Tropik Wood Industries Limited Asset: US\$ 13.4 million</p>
<p>Debt – Long-term</p>	<p>TBD</p>

Name of the organizations, status of financing agreements and finance (in US\$ million)	
Debt – Short term Name of the organizations, status of financing agreements and finance (in US\$ million)	TBD
Carbon finance advance payments sought from the buyer. (US\$ million and a brief clarification, not more than 5 lines)	TBD
SOURCES OF CARBON FINANCE Name of carbon financiers that you are contacting (if any)	TBD
INDICATIVE CER/ERU/VER PRICE PER tCO_{2e} <i>Price is subject to negotiation. Please indicate VER or CER preference if known.</i>	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 10 years	
A period of 7 years	The total emission reduction value is estimated to be US\$ 1,176,000 -1,470,000

D. EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS

SOCIO-ECONOMIC ASPECTS	
<p>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. <i>About ¼ page</i></p>	<p>The social and economic benefits can be significant as following:</p> <ul style="list-style-type: none"> ✓ The project will use agricultural waste for the generation of electricity.. The sustainable development will link the local agricultural waste and electricity generation. ✓ It will promote the energy independence from fossil fuel import and increase the energy usage patterns in the rural areas. ✓ Energy prices mostly ignore the social and environmental costs and risks (including health expenditure and pollution) associated with fossil fuels, and the various benefits of renewable energies. Hence, the utilization of biomass also achieves those benefits in public health and pollutants reduction. ✓ The proposed project will utilize agricultural waste for energy purpose in high efficiency, which will reduce CH₄ emissions because the biomass residues is dumped or left to decay under mainly aerobic conditions in the absent of the proposed project. Directly, the ambient air quality will be improved. <p>By the end of biomass process, the residues can be feed back to agriculture as fertilizer.</p> <ul style="list-style-type: none"> ✓ Improves the quality of people’s daily life with environmental friendly

	<p>biomass energy.</p>
<p>What are the possible direct effects (e.g. employment creation, provision of capital required, foreign exchange effects)? <i>About ¼ page</i></p>	<p>The proposed project will provide business opportunities for local construction, logistics and mechanical sector as following:</p> <ul style="list-style-type: none"> ✓ Create a nich market between the energy consumption and agriculture production process in the local communities, which means that the logistics system, project construction and the electricity supply system are able to creat more jobs ✓ The proposed project will accomplish greenhouse gas (GHG) mitigation by replacing the petrol, diesel and LPG. ✓ Energy cost in the rural areas will be reduced by using biomass technology. ✓ Local air quality will be directly improved. ✓ New energy usage pattern will be formed and energy independence from fossil fuel import. ✓ Women can engage themselves in other household economic activities, since they will not need to walk to long distance for firewood gathering. <p>The project will also provide employment opportunities for local technicians. The power supplied by this project will mitigate local power shortage and transform the local energy structure. On the other hand, based on the Fijian Government Department of Energy website, biomass will contribute to energy and food security, waste management, reduction in deforestation and more importantly improve the health of women in rural areas.</p>
<p>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 <i>About ¼ page</i></p>	<p>The proposed project will avoid uncontrolled burning or dumping and decay of biomass residues in the region and thus potential environmental pollution caused by decay or burning of biomass, which is in accord with the “long-term sustainability” principle of the National Climate Change Policy of Fiji. Furthermore, the proposed project will reduce fossil fuel consumption and emissions of carbon dioxide, sulphur dioxide and dust brought about by fossil fuel combustion to meet the “mitigation” objective in the National Climate Change Policy.</p>

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. N₂O removal
8. HFC23 Destruction
9. SF₆ Recovery
10. Transportation
 - 9a. Fuel switch
 - 9b. Modal switch
11. Others