PROJECT IDEA NOTE

Description of size and quality expected of a PIN

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

A. Project participants
B. Project description, type, size, location and schedule
C. Avoided / reduced GHG emissions
D. Financial aspects
E. Expected environmental and socio-economic benefits
F. Risks
G. Other relevant information

Name of the Project	Katani Sisal Waste Biogas Project

A. Project Participants

Project developer (proponent)	
Name of the project developer	Katani Limited
Organizational category	Private company
Other function(s) of the project developer in the project	The project developer optimizes the daily operations in all of its sisal factories until the proposed CDM project is fully implemented.
Summary of the relevant experience of the project developer	Since its establishment in 1998, Katani Limited has been engaged in the production and trading of sisal fibers produced in its nine factories located in its five sisal estates in Tanga, Tanzania. In 2006, the company diversified its business portfolio by introducing an economical use of the sisal waste through biogas production and electricity generation. Currently, the company owns a small pilot sisal biogas plant (i.e., 150 kW) located at Hale Sisal Estate. The company is aiming at scaling up this pilot plant and establishing similar activities in its other sisal factories.
Address	Katani Limited, P. O. Box 123, Muheza, Tanga, Tanzania
Contact person	Mr. Francis Nkuba
Telephone / fax	+255 784 260263
E-mail and web address, if any	nkuba@katanitanga.com; www.katanitz.com
Project sponsors	Not yet secured.
(List and provide the following information for all project sponsors)	
Name of the project sponsor	

Organizational category	
Address (include web address, if any)	
Main activities	*Not more than 5 lines*
Summary of the financials	*Summarize the financials (total assets, revenues, profit, etc.) in less than 5 lines.*

B. Project Description, Type, Size, Location and Schedule

Technical Summary of the Project	
Objective of the Project	The objective of the project is to process sisal waste for production of biogas and generation of electricity. The produced electricity will be consumed onsite and some will be exported to the grid. In this way, the project will help in avoidance of methane productions and emissions from the sisal waste disposal sites, and also will help reduce emissions of carbon dioxide from the grid resources.
Project description and proposed activities (including a technical description of the project)	The 'Katani Sisal Waste Biogas Project' is a small scale CDM project which will be implemented as a bundled CDM project activity involving five sisal factories owned by Katani Limited namely; Hale, Magoma, Magunga, Mwelya, and Ngombezi. The proposed project will be producing biogas from the sisal waste produced by these factories. It is expected that, over 1000 tons of waste produced per day in these factories will be converted into biogas. At present, the wastes produced in these factories are dumped into the nearby dumping sites or streamed down to the rivers. By producing the biogas, the methane gas will be captured and used to generate electricity. In addition, there will be production of organic fertilizer, which is left as residue in biogas production process. The fertilizer can be used to replace industrial fertilizers in farming activities. Basically, all factories involved in the project follow similar production system in terms of installed machinery, amount of sisal processed, and quantity of waste produced. Therefore, new biogas plants will be built in the abovementioned sisal factories, and a 150 kW capacity pilot plant at Hale Estate will be scaled up to a 1 MW capacity plant. In total the project will have an installed capacity of 5 MW, 1 MW for each biogas plant. It is expected that 30% of the generated electricity will be consumed onsite and the remaining 70% will be sold to the grid. In a chosen crediting period (i.e., 10 years), the project is expected to generate a total of 329,054 tCO_2 equivalent by avoiding emissions of methane from the sisal waste disposal sites, and CO_2 from the grid resources.
Technology to be employed	Basically, sisal waste accounts for over 90% of the weight of fresh sisal leaf. During the extraction/decortication process, a large amount of water is used as a medium to separate the sisal waste from the fibres. The waste is channelled down to the biogas plant located close to the factory. Each biogas plant consists of eight key components for biogas production and

	electricity generation including: Waste collection tank, Hydrolysis tank, Digester tank, After storage tank, Gas storage tank, Desulphurization tower, Safety flare, and Gas engine coupled to a Generator. Normally, biogas is produced by a controlled anaerobic digestion of sisal waste using various reactor technologies. The proposed biogas plants will use a Continuous Stirred Tank Reactor (CSTR) technology since it has been proved to be suitable for digestion of sisal waste. Using this technology, the process follow the steps below: 1. Hydrolysis 2. Acidogenesis 3. Acetogenesis 4. Methanogenesis Step number one takes place in the Hydrolysis tank, where large molecules of biodegradable materials in the sisal waste (i.e., polymers) are broken down into small biodegradable molecules (i.e., monomers) with the help of microorganisms. In this stage, the pH is constantly maintained (i.e., 6.8 – 7.5). Steps number two, three, and four take place in the Digester tank whereby the small biodegradable molecules are broken down to produce fatty acids (step-2), acetic acid, CO_2, and hydrogen (step-3), and biogas (step-4). In these steps, the temperature is kept at around 25^oC – 37^0C (i.e., mesophilic temperature) range. The produced biogas contains 60% - 65% methane, 25% - 30% CO_2, and very small amount of H_2S, O_2, and N_2. From the Digester the gas passes through the Disulphuric tower where H_2S is removed, then into a Gas storage tank where the gas is stored or fed into the Generator for electricity production. The excess gas is flared using a Safety flare. The residues left from the process are stored in the After storage tank and later piped outside to the pond to be used as organic fertilizer.
Type of Project	
Greenhouse gases targeted	Methane and Carbon dioxide
Type of activities	Greenhouse gases abatement
Field of activities	
a. Energy supply	Electricity supply
b. Energy demand	N/A
c. Transport	N/A
d. industrial processes	N/A
e. waste management	Sisal waste management
Location of the Project	
Governorate	United Republic of Tanzania
City	Tanga
Brief description of the location	All five sisal factories involved in the proposed CDM project

of the plant	activity are located in Korogwe District, Tanga region, north-eastern Tanzania. The estimated distances for each factory from Tanga town are as shown below: - Ngombezi factory – 100 km from Tanga town, - Magunga factory – 122 km from Tanga town, - Hale factory – 70 km from Tanga town, - Magoma factory – 142 km from Tanga town, and - Mwelya factory – 60 km from Tanga town.
Expected schedule	
Earliest project start date	January 2010
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: 3 months Time required for legal matters: 3 months Time required for negotiations: 3 months Time required for construction: 6 months
Expected first year of CER delivery	January 2011
Project lifetime	20 years
Current status or phase of the project	Pre-feasibility study
Current status of the acceptance of the Host Country	Letter of Approval is under discussion.
The position of the Host Country with regard to the Kyoto Protocol	Tanzania has signed and ratified the Kyoto Protocol
Project Size	
Is the project a small-scale project?	Yes

C. Avoided/ Reduced GHG Emissions

Selected Crediting Period	10 years.
Estimated Avoidance/Reduction of emissions in accordance with the Kyoto Protocol	
□ Carbon Dioxide(CO_2)	15,330 tCO2 equivalent per year
□ Methane (CH_4)	17,575 tCO_2 equivalent per year
□ Nitrous Oxide (N_2O)	N/A
□ Hydrofluorocarbons (HFCs)	N/A
□ Perfluorocarbons (PFCs)	N/A
□ Sulphur Hexafluoride SF_6	N/A
Reference Scenario or Baseline	

Description of the reference level

Baseline Methodology to be used

Under CDM Small Scale Methodologies, the baseline methodology **Type III F, version 06 (Avoidance of methane emissions through controlled biological treatment of biomass)** is used. This methodology is used following the recommendation by the Small Scale Working Group in its 17th meeting that took place on 30/06 – 02/07/2008. The Working Group was responding to the request from the project developers to the Meth-Panel on the applicability of the old version of the baseline methodology III D to the proposed CDM project activity. The Working Group ruled out that the III D is inapplicable to the proposed project; instead, a revised version of the III F would be a suitable baseline methodology. Basically, the baseline methodology III F is applicable to project activities that avoid the emission of methane to the atmosphere from biomass or other organic matter that would have otherwise been left to decay anaerobically in a solid waste disposal site. In order to calculate the emissions from the solid waste disposal site, the methodological tool 'Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site' (version 03) is applied.

What modifications the project would induce?

The project will reduce the amount of CH_4 emitted to the atmosphere from the sisal waste disposal sites by treating sisal waste anaerobically to produce biogas used as fuel in generating electricity. The electricity generated will be used onsite and the excess will be exported to the grid thereby replacing electricity generation from fossil fuels, which contribute to emissions of CO_2 to the atmosphere. The project will also reduce the accumulation of large amount of untreated waste produced daily from the sisal factories, and therefore help in sustainable management of sisal waste. Generally, the proposed CDM project activity will promote environment sustainability and dissemination of renewable energy technologies in the country.

What would be the situation in the absence of the project activity?

As there are no activities with similar objectives to the proposed CDM project activity in Tanzania, in the absence of the project, the sisal waste would be left to decay at the disposal sites anaerobically emitting methane to the atmosphere. This process would continue due to the fact that the proposed project requires a huge investment which is difficult to raise if the project is not implemented as a CDM project activity. As far as electricity generation is concerned, the absence of the project activity would mean a continuation of using fossil fuels in generating electricity for the grid and increase in emissions of CO_2 to the atmosphere *'business-as-usual scenario'*.

Expected Emission Reductions during the Crediting Period

Total Certified Emission Reductions (CERs) per year

32,905.4 tCO_2 equivalent per year.

Total emission reduction for the crediting period:

329,054 tCO_2 equivalent for 10 years

D. Financial Aspects

Total Estimated Costs(*)	
Development Costs	US$ 104,472
Installation Costs	US$ 1,034,328

Other Costs	US$ 61,200
Total Cost of Project	US$ 1,200,000
(*) Please add any additional relevant information in this table if needed.	
Sources of Identified Financing	
Cash	Organizations participating in financing and amount in US$
Long Term Loan	
Short Term Loan	
Expected Revenues from CERs transfer:	
Projected Price of the CERs	US$ 15/tCO_2 equivalent
Estimated total CDM Revenues	US$ 493,581per year
Details of the expected Revenues during the accountability period	US$ 4,935,810 for 10 years period
Amount and Modalities for the transfer of the CDM Contribution Advanced allocation………… Yearly transfers………………	 …….In $ US …….In $ US
Additional Financing	
Will the project receive co-financing under ODA (Overseas Development Aids) or from any other sources like GEF? Please mention the amount(s)	No

E. Expected Environmental and Socio-economic Benefits

Specific global & local environmental benefits	*(In total about ¼ page)*
Which guidelines will be applied?	Tanzania environmental and social guidelines for sustainable development as identified in the CDM national investor's Guide of 2004
Local benefits	- Creation of local employments, especially during the construction and operation of the biogas plants, - Supply of organic fertilizer produced by the biogas plants at affordable cost. This will positively impact agricultural production and ensure food security as well. - By reducing the accumulation of sisal waste at the disposal sites and avoid its mixing with local water resources, the project will protect the environment and reduce hazardous impact of sisal waste to local people.
Global benefits	- Globally, the project will contribute in preventing the

	anthropogenic GHG emissions by reducing emissions of CH_4 from the sisal waste disposal sites, and reducing CO_2 emissions from fossil fuels in the grid system.
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? Explain the relationship between the project and the benefiting community.	- Accessibility of new biogas production technology, which in the absence of the CDM project activity would not have been possible to access at a comparable scale. - In the longer term, local sisal growers will benefit as the sisal market will be guaranteed as a result of the project which will create additional economic incentives. This will improve per capital income and help in poverty alleviation in the country. - Creation of new jobs, both temporary and permanent jobs.
Which guidelines will be applied?	Tanzania environmental and social guidelines for sustainable development as identified in the CDM national investor's Guide of 2004
What are the possible direct effects (e.g., employment creation, capital required, foreign exchange effects)?	- Increase income distribution due to job creation. - Increase in overall income of the company through trading CERs, sale of electricity to the grid, and avoid import of electricity from the grid. This will lead to increase in employee's salaries and other fringe benefits.
What are the possible other effects? For example: - training/education associated with the introduction of new processes, technologies and products and/or - the effects of a project on other industries	- The project will necessitate operators and managers to acquire relevant skills, especially in biogas technology. These skills would not have been acquired in the absence of the CDM project activity. - Adoption of similar technologies and processes by other sisal estates in the country.
Environmental strategy/ priorities of the Host Country	Tanzania prioritizes environmental protection and its well-being. The sustainable use of sisal waste to produce biogas will lead to a sustainable environmental and eventually help in achieving the sustainable development in Tanzania

F. Risks

Risks in the Project	Please describe the factors that may cause delays in, or prevent implementation of the project
Estimate the Degree of Risk	
Technical risk	Low technical risk since the technology to be employed has been tested at a small scale pilot case at Hale Estate. In addition, any technological modifications to be introduced will be proven accordingly before being implemented.
Timing risk	High timing risk since project implementation depends very much on the finalization of the CDM legal processes and also the availability of fund. All of which have not happened yet.
Budget risk	High budget risk as the project implementation costs may be underestimated.

G. Other Relevant Information

Please mention any additional information or precisions to justify the project under CDM - NIL