Project Idea Note (PIN)

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	CAMARTEC Sanitary Biogas Project

A - Project Participants

Project developer (proponent)	
Name of the project developer	Centre for Agricultural Mechanization and Rural Technology (CAMARTEC)
Organizational category	Government organisation
Other function(s) of the project developer in the project	CAMARTEC introduced sanitary biogas technology in Tanzania in 1987 in an effort to solve the energy shortage by making biogas available to schools, institutions, and other communities. It has been constructing biogas fixed domes in several institutions including Arumeru District Hospital, Precious Blood Sisters, Oljoro Military National Service Camp and Rulenge Secondary School.
Summary of the relevant experience of the project developer	CAMARTEC has over twenty years experience in biolactrine and biogas production in Tanzania. Currently, it's the only Centre conducting the Biolatrine popularization at national level. It has also been doing researches on biogas technologies in Tanzania from household to institution level. .
Address	CAMARTEC, P.O Box 764, Arusha, Tanzania
Contact person	Mr. Harold Ngowi
Telephone / fax	+255 27 2553214.
E-mail and web address, if any	camartec@yahoo.com
Project sponsors	
(List and provide the following information for all project sponsors)	
Name of the project sponsor	Centre for Agricultural Mechanization and Rural Technology (CAMARTEC)
Organizational category	
Address (include web address, if any)	CAMARTEC, P.O Box 764, Arusha, Tanzania
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 recover methane gas through anaerobic treatment of human fecal wastes in the biodigesters to produce biogas. The recovered gas will be used in generating thermal energy to be consumed in selected prisons in Tanzania which are currently using unsustainable firewood.
Project description and proposed activities (including a technical description of the project) The proposed project will involve bundling of two prisons to replace the currently used firewood in energy production in Arusha prison in Arusha and Karanga prison in Kilimanjaro with the biogas produced from fecal waste. Basically, the project will involve construction of Biolatrine plants in each of the aforementioned prisons for biogas production using waste produced onsite as feedstock. The feedstock for each prison per day will be 800 kg of feaces and 2000 liters of urine The project will produce about 44,968 m^3 /year for all prisons. This is equivalent to 249,822 kg of firewood per year. The reduced emissions of NOx as a result of production and of use bio-slurry in prisons farming	

fields will not be claimed by the project owners. The project will involve construction of CAMARTEC fixed dome digesters which will create conducive conditions for activating methane bacteria and gas collection/storage tanks which will then be connected to the kitchen for cooking purposes.

Technology to be employed

A CAMARTEC proven sanitary biogas unit (i.e. CAMARTEC fixed dome) technology will be used in this project. This bio-digestion system consists of a feeding inlet, digester, compensation chamber, overflow point and a post treatment tank. These arrangements facilitate a self-operating set up such that the raw material is fed into the digester, anaerobic fermentation takes place resulting into biogas production and then the digested slurry gets out automatically through hydraulic movement in the digester. The digesters to be constructed using locally available materials will of $300m^3$ which are designed for 1602 - 2500 people. The fixed dome digester creates conducive conditions for activating methane bacteria so that after several stages of biological processes they enable the substrate to decompose into biogas (60% Methane, 40% Carbon dioxide) and slurry. Unlike other technologies, the fixed dome does not require water for their operation something which is extremely important due to shortage of water. The retention time for human excreta is 100 days, but the fixed dome will be designed in such a way that to include an additional safety factor on an average of 120 days retention time to accommodate for unpredictable feed additions.

Type of Project	
Greenhouse gases targeted	Methane (CH_4) and Carbon dioxide (CO_2)
Type of activities	
Field of activities	
a. Energy supply	Generation of energy from biogas
b. Energy demand	N/A
c. Transport	N/A
d. industrial processes	N/A
e. waste management	Sustainable management of latrine wastes
Location of the Project	
Governorate	United Republic of Tanzania
City	Arusha and Kilimanjaro
Brief description of the location of the plant	Arusha ($3^o22'S$, $36^o41'E$) and Kilimanjaro (3^o21S, $37^o19'E$) are located in the northern part of Tanzania. In Arusha the project will be implemented at Arusha regional prisons while at Kilimanjaro the prison will be Karanga regional prison. Both of them ate located at the city centre. The two regions are about 80 km apart.
Expected schedule	
Earliest project start date	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	2011
Project lifetime	20 years
Current status or phase of the project	Completed 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	
7 years	
Estimated Avoidance/Reduction of emissions in accordance with the Kyoto Protocol	
□ Carbon Dioxide(CO_2)	3,728 tCO_2 equivalent/year
□ Methane (CH_4)	N/A
□ 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
The Project will use two SSC baseline methodologies AMS III H **"Methane recovery in wastewater treatment"** and AMS I E **"Switch from Non-renewable biomass for thermal applications by the user".** The first methodology is applicable to project activities that recover methane from biogenic matter in wastewaters that also includes the introduction of methane recovery system to an existing anaerobic wastewater treatment facility such as anaerobic reactor, lagoon, septic tank, latrines, and onsite industrial plants. The second methodology is applied to projects that use the recovered methane gas for generation of thermal energy displacing the fuel wood (i.e., non-renewable biomass)

What modifications the project would induce?
The project will reduce emissions of carbon dioxide and methane gases to the atmosphere through use of latrine waste to produce biogas to be used in heat generation displacing the currently used fuel wood. This will improve the environment by reducing deforestation and improving management of sanitary waste in prisons.

What would be the situation in the absence of the project activity?
In the absence of project activity, there would be continuous emissions of carbon dioxide and methane to the atmosphere from fuel wood and latrine waste respectively 'business as usual'

Expected Emission Reductions During the Crediting Period

Total Certified Emission Reductions (CERs) per year: 3,728 tCO_2 equivalent

Total emission reduction for the crediting period: 26,096 tCO_2 equivalent for 7 years

D - Financial Aspects

Total Estimated Costs(*)	
Development Costs	.US$ 13,000.00
Installation Costs	The development costs includes also installation costs
Other Costs	US$ 5,000.00
Total Cost of Project	US$ 18,000.00
(*) Please add any additional relevant information in this table if needed.	
Sources of Identified Financing	
Cash	
Long Term Loan	
Short Term Loan	
Expected Revenues from <u>CERs transfer</u>:	
Projected Price of the CERs	US$ 15/tCO_2 equivalent
Estimated total CDM Revenues	US$ 55,920 per year
Details of the expected Revenues during the accountability period	US$ 391,440 for 7 years.
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	- Reduced bad smell and occurrences of diseases such as cholera caused by improperly managed latrine wastes in prisons. - Avoidance of deforestation as fuel wood consumptions will be reduced.

Global benefits	Help in tackling the problems of global warming by reducing the emissions of carbon dioxide and methane gas to the atmosphere.
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/ies.	- Create new job opportunities during the construction and operation phases - Contribution in environmental conservation through reduction of using wood fuels and charcoal hence avoid deforestation. - Contribution to safe and healthier environment
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)?	- Create new job opportunities and decrease unemployment.
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	-Upgrading skills of professionals through training on new processes associated with project implementation. - The technology can be replicated to other prisons in Tanzania.
Environmental strategy/ priorities of the Host Country	The National Environmental Priorities and Strategies call for decreased pollution and greenhouse gases emissions, also it supports the use of renewable source of energy for achieving the sustainable development in the country

F - Risks

Risks in the Project	
Estimate the Degree of Risk	
Technical risk	☐ Low as the technology to be employed has been employed in Rwanda prisons by CARMATEC.
Timing risk	☐ High since project implementation depends on the availability of funds and completion of CDM legal processes, which may take longer time.
Budget risk	☐ High since investment fund is not secured yet

G - Other Relevant Information

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