Project Idea Note

DANAYMA

Methane extraction from Palm industry project

This PIN has been developed by the project developer, with the support of the CDM Promotion Office – CORDELIM.

A. Basic Project description

Name of Project and date submitted	DANAYMA – Methane recuperation from Palm Oil industry. November 2005
Technical Project summary *Maximum 1 page*	
Project objective	To recover and destroy the methane generated in the effluent treatment pools from the DANAYMA palm oil industry.
Technical description of the project and the proposed activities	The waste water from the palm oil industry is very nutritious and DANAYMA is currently producing 48000 m3 waste water a year. In the current scenario the waste water is lead to a 8541 m3 open pool for an anaerobic destruction. After an average of 2 month, the effluent is lead to a 2nd pool of 7680 m3 where the anaerobic destruction continues and from here it is lead to a 3rd pool of 8064 m3 for a supposed aerobic destruction, but also here there are evidence of an anaerobic destruction.. After an average of 6 months the wastewater is pumped to the nearby Palm plantation where it is used to water the plantation. The treatment system has 7 pools with a total capacity of 38000 m3, but only the first 3 pools are being used. The project proposal is to improve the treatment system by using all of the 7 treatment pools, to both treat the effluent in anaerobic and aerobic pools, and to capture and flare the methane produced in the anaerobic pools. **Water analysis before treatment** BOD= 25000 a 30000 mg/l COD = 45000 a 55000 mg/l Suspended material = 45000 a 50000 mg/l pH= 4.3 **Water analysis after current treatment** BOD = 2800 mg/l COD = 4500 mg/l
Technology to be employed	The anaerobic destruction is planned in two of the biggest and deepest pools, which will be closed with an impermeable bottom and an impermeable cover to recover the Methane produced in the pools. The Methane will hereafter be burned by controlled flaring
Project developer *If the owner and the project developer NOT are the same, please fill in both names and addresses separately.*	
Name	DANAYMA S.A.
Organizational category	Private Company
Other function(s) of the project developer in the project	Owner
Summary of the relevant experience of the project developer	
Address	Kilómetros 54 de la Via Santo Domingo – Esmeralda
Contact Person	Ing. Nilson Oliveira or Ing. Renan Ceron
Telephone / fax	+593 2 2534824

E-mail / webpage	noliveira@puntonet.ec or rceron@danayma.com
Project Sponsors	*Please fill in the details separately for each one*
Name	Quininde Municipio
Organizational category	Municipality
Main activity	
Address	
Contact Person	Ing. Carlos Barcia (Mayor)
Telephone / fax	+593 6 2737706
E-mail / webpage	
Name	Directiva de la Parroquia Rural La Unión
Organizational category	Community
Main activity	
Address	
Contact Person	Fredy Ramirez – President
Telephone / fax	+593 93148307
E-mail / webpage	

Type of project	
Green House Gas (GHG) targeted	CH4
CDM Sectoral scope	
[_] Energy production	[_] Renewable energy, except for biomass projects [_] Biomass [ ] Cogeneration [_] Energy efficiency by the replacing of technology/existing equipment [_] Energy efficiency, by reengineering / process optimizing [_] Energy efficiency by fuel switch
[_] Energy demand	[_] Replacement of existing “household equipment” [_] Improvement of energy efficiency of existing production equipment
[_] Transport	[_] Engine efficiency [_] Modal shift [_] Fuel switch
[_] Emissions from the hydrocarbon industry	[_] Optimizing the extraction, transport and processing of oil and natural gas
[x] Waste management	[_] Capture of landfill methane emissions [X] Utilization of waste and wastewater emissions
[_] Others	*Please describe*
Project location	
Region	
Country	Ecuador

Region / Province	Esmeralda
City	Quininde
Brief description of location	The Factory is localised 20 km from Quininde and 3 km from "la parroquia la Unión". The dominating Climate is tropical with an average temperature of 24 degrees and the average rainfall is 3100 mm a year.
Expected schedule	
Earliest project start date	*Marzo/2006*
Estimate of time required before becoming operational after approval of the PIN	Time needed for financial commitments: _____ months Legal matters: _1____ months Negotiations: __2___ months Construction: __2__ months
Project life span	*21 Years*
Expected first year of Certified Emission Reduction (CER)	*1 Year*
Current status or phase of the project	Preliminary studies
UNFCCC / Kyoto Protocol	Ecuador ratified the "UN Framework Convention on Climate Change" on the 7th of November 1994 (R.O.#562). Ecuador ratified the Kyoto protocol the 20th of December 1999 (R.O.#1588).

B. Expected environmental and social benefits

Estimated Greenhouse Gases abated / CO_2 Sequestered (in metric tons of $C0_2$ equivalent)	According to the approved baseline methodology AM0013, the CH_4 emissions can be calculated using this formula: CH_4 Emissions/year = Total COD/year x B_0 x MCF Where the recommended B_0 to be used is 0,21 and the MCF in Latin America is 0,738 Total COD for 48.000m^3 with a COD on 50.000 ppm is 2400 t/year which results in a yearly emission on 372 t CH_4 = 7812 t CO_2eq/year This calculation is very conservative, because the MCF in this specific project probably will be higher, due to the fact that the weather conditions are perfect with an average temperature of 24 degrees Celsius all year. The current treatment is not subtracting all available methane from the wastewater, so the actual methane emissions that the project will reduce will be 7812 t CO_2eq/year minus the amount of methane still available in the wastewater after the current treatment which is (48000 * 0.0045 * 0.21 * 0.738 * 21) 703 t CO_2eq/year. Hence the project will reduce 7009 t CO_2eq/year Units in metric tones of CO2-equivalente a year [tonCO2eq/year] Per year (average) in the 10 Year: 7009 ton CO2eq/year Accumulated in lifespan: 147189 ton CO2eq/year Accumulated in 10 years: 70090 ton CO2eq/year Accumulated until year 2012: 42054 ton CO2eq/year
Baseline scenario (before the project)	The baseline Scenario is as follows: The wastewater from the process is led to the three biggest dams, with a total capacity of 24000 m^3. With an annual amount on wastewater of 48000 m^3 the average time in the dam is 6 month. Hereafter the effluent is used to water the nearest palm trees. The COD of the untreated wastewater is 50.000 mg/l and the COD after the treatment is 4.500 mg/l. The Baseline scenario is therefore emitting 91 % of the methane available in the waste water. Which equals to 334 t CH_4 a year. The main project barrier is the financial part. To capture the methane and to destroy it using a controlled burning, is expensive hence without the possibility to sell the emission reductions, the factory would maintain their current wastewater system.
Specific global and local environmental benefits	*Maximum ½ page in total*
Global benefits	Contribute to mitigate the global climate change.
Local benefits	The open lagoon treatment system is causing a very strong smell in the local community, a smell which will be minimised once the lagoons will be covered. Furthermore will a more efficient treatment system reduce the nutritious contamination in the small rivers close to the Palm trees where the effluent is used for watering.
Environmental impact study	The project will benefit the environmental and community and no environmental impacts are expected.
Which guidelines will be applied?	
Socioeconomic benefits from the project	*Maximum ½ page in total*
Benefits on the national / sub regional level	First of all the project will get new technologies to the region, which will serve as example for other agro industries in the region. Furthermore the project will generate local employment for the construction and the maintenance of the new treatment system.
Benefits in local level	The project is helping out in a local pilot project, on how to handle solid waste in the local community – La Union.

	This Project is realised through a national tax scheme where the factory can pay 25 % of their taxes to a local environmental project Furthermore the project will generate local employment for the construction and the maintenance of the new treatment system – as well as the current smell from the treatment plant will be minimised.
Social impact study	During the meetings with the local communities there have only been positive responses about the new treatment system, so the project will not have any negative social impact on the local communities.
Which guidelines will be applied?	The project will comply with rules and requirements regarding to social impacts and community participation. These issues will be taken into account during the preparation of the EIA study.
Environmental strategy / priorities of the Host country	The project will improve the treatment of the waste water, so that the COD will comply with the environmental standard on a maximum of 300 ppm as proposed by national law. *maximum ¼ page*

C. Finance

Total project cost estimate				
Development costs	US$ 50000			
Construction / installation costs	US$ 100000			
Other costs	US$			
Total project costs	US$ 150000			
Sources of finance to be sought or already identified				
Equity	US$ US$	organization organization	[%] [%]	committed ☐ / negotiation ☐ committed ☐ / negotiation ☐
Debt – Long term	US$ US$	organization organization	[%] [%]	committed ☐ / negotiation ☐ committed ☐ / negotiation ☐
Debt – Short term	US$ US$	organization organization	[%] [%]	committed ☐ / negotiation ☐ committed ☐ / negotiation ☐
Non identified	None			

CDM contribution (complimentary earnings on the sale of CERs)			
Indicative price on one "CER"	**€ 6 / ton CO_2**	**€ 9 / ton CO_2**	**€ 12 / ton CO_2**
Average reduction a year	7009 ton CO_2eq		
Sale of CERs until 2012	€ 252.000	€ 378.000	€ 505.000
CDM contribution if certified 7 years	€ 294.000	€ 442.000	€ 589.000
CDM contribution if certified 10 years	€ 421.000	€ 631.000	€ 841.000
CERs sold in advance	Yes, the project will need to sell the CERs in advance, to help with registration and implementation of the project.		

Basic estimation on profitability			
Internal return rate (FRR)	*If the CDM project are financed, please state the financial return rate with and without the sale of the CERs*		
IRR without CERs	[XXX] %		
IRR with CERs, until 2012	[xxx] %	[xxx] %	[xxx] %
IRR with CERs, 7 years period	[xxx] %	[xxx] %	[xxx] %
IRR with CERs, 10 years period	[xxx] %	[xxx] %	[xxx] %