

## Mini - Project Idea Note

Generic Name of Project: *Pig Farms Manure Biogas Project (PFMBP#1)*

Date submitted: *May 2007*

Technical summary of the project	
Greenhouse gases targeted	<input checked="" type="checkbox"/> CO <sub>2</sub> / <input checked="" type="checkbox"/> CH <sub>4</sub> / <input type="checkbox"/> N <sub>2</sub> O / <input type="checkbox"/> HFCs / <input type="checkbox"/> PFCs / <input type="checkbox"/> SF <sub>6</sub>
Field of activities	<input checked="" type="checkbox"/> a. Energy supply <input type="checkbox"/> b. Energy demand <input type="checkbox"/> c. Transport <input checked="" type="checkbox"/> d. Waste management <input type="checkbox"/> d. Manufacturing industries <input type="checkbox"/> e. Chemical industries <input type="checkbox"/> f. Mining/mineral industries <input type="checkbox"/> g. Fugitive emissions from fuels (solid, oil, gas) <input type="checkbox"/> h. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride <input type="checkbox"/> i. Solvent use <input type="checkbox"/> j. Agriculture and livestock
Objective of the project	To treat pig farms' flushing wastewater instead of using existing anaerobic-open lagoon systems. The release of methane (CH <sub>4</sub> ) gas emission to the atmosphere shall be avoided, and shall be captured to be used for on-site heat and power generation.
Project description and proposed activities	<p>The <i>Pig Farms Manure Biogas Project (PFMBP#1)</i> is the bundling of four pig farms which shall install anaerobic digestion system for their wastewaters, namely:</p> <ul style="list-style-type: none"> <li>• <i>Farm 1: farm size 3,300 LSU</i></li> <li>• <i>Farm 2: farm size 6,840 LSU</i></li> <li>• <i>Farm 3: farm size 1,260 LSU</i></li> <li>• <i>Farm 4: farm size 4,288 LSU</i></li> </ul> <p><u>Note:</u> 1 Live stock unit (LSU) is equivalent to a group of fattened pigs of total weight 500kg</p> <p>To mitigate the methane (CH<sub>4</sub>) gas generation from organic digestion in anaerobic condition of existing open ponds system, each farm will install a anaerobic wastewater treatment reactor, namely, <i>High suspended solids Up-flow Anaerobic Sludge Blanket (H-UASB)</i> system, which is a modification of the UASB concept. The total biogas produced from these H-UASB systems, which is of approximately <i>9,774 m<sup>3</sup>/day (@ 65% CH<sub>4</sub>)</i>, shall be used to produce electric power to be used for on-site operations.</p> <p>This amount of biogas produced will be fed to the internal combustion engines coupled with generators which will be installed at each site to generate electricity to substitute</p>

	<p>the grid. A total power of <i>0.51 MW-net</i> or <i>4,039 MWh per year</i> will be produced in each farm to substitute their own grid electricity use. The gas engine-generator capacities which will be installed for each site is as follows:</p> <ul style="list-style-type: none"> <li>• <i>Farm 1: 102 kW x 1 unit</i></li> <li>• <i>Farm 2: 102 kW x 1 unit</i></li> <li>• <i>Farm 3: 102 kW x 1 unit</i></li> <li>• <i>Farm 4: 102 kW x 2 units</i></li> </ul>
<p>Technology to be employed</p>	<p>The anaerobic wastewater treatment reactors used in the project are based on the <b>High suspended solids Up-flow Anaerobic Sludge Blanket (H-UASB)</b> system, which is a modification of the UASB concept. Biogas from the H-UASB treatment reactor is captured and stored under a polyethylene sheet. Biogas shall be drawn through a pipe to the biogas electricity generation set in each farm. A total power generation of <i>510 kW</i> (approximately <i>102 kW-gas engine generator set x 5 sets</i>) shall produce electricity for the four farms' activities, such as, water pumping, power for fans and water spraying of barn evaporative cooling, lighting, etc.</p>
<p><b>Location of the project</b></p>	
<p>Brief description of the location of the project (Region and Country where the project will be implemented)</p>	<p>Ratchaburi Province, Thailand</p>
<p><b>Expected environmental and social benefits</b></p>	
<p>Estimate of Greenhouse Gases abated (in metric tons of CO<sub>2</sub>-equivalent)</p>	<p>The potential GHG-emission reduction is approximately <i>33,947 tCO<sub>2</sub>-equivalent/years</i>, or <i>678,943 tCO<sub>2</sub>-equivalent of project duration</i> (estimated 20 years).</p>
<p>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?</p>	<p>The project activity will contribute to the sustainable development of Thailand in the following ways:</p> <ul style="list-style-type: none"> <li>• Enhance Thailand economic sustainability by reducing the country's dependence on the use fossil fuel in power generation, which now is dominated by natural gas, lignite and imported fuel oil;</li> <li>• Support the government policy in promoting the use of renewable energy for power generation;</li> <li>• Promote the concept of distributed generation which shall cause less transmission and distribution power losses for Thailand, and also shall improve stability and quality of electricity supply in the local area;</li> <li>• The utilised biogas will reduce methane emission and thus decrease the impact on global warming;</li> <li>• The problem of bad odors and insects caused by the wastewater treatment system will be reduced;</li> <li>• Dried sludge from digester shall be used for fertilizing agriculture fields, which shall displace the using of chemical fertilizer;</li> <li>• Improve natural water resources through better</li> </ul>

	<p>treated wastewater qualities in existing ponds; and</p> <ul style="list-style-type: none"> <li>• Increase local employment during project's construction phase, and project's operation phase.</li> </ul>
<b>PIN/PDD Developer-Intermediary</b>	
Name of the PIN/PDD Developer	<p>Dr. Thierry LEFEVRE, Managing Director Energy Economy Environment Consultants Co. Ltd. SLD Building (7B), 13 Soi Saladaeng 1, Rama IV Road, Silom Sub-district, Bangrak, angkok 10500, Thailand Tel: (662) 235-5817, (662).629.0912 Fax: (66 2) 236-9574</p>
E-mail and web address, if any	<p><a href="mailto:t.lefevre@eeec.co.th">t.lefevre@eeec.co.th</a> or <a href="mailto:t.lefevre@ceerd.net">t.lefevre@ceerd.net</a></p>
<b>Expected schedule</b>	
Earliest project start date	<i>By 2007</i>
Expected first year of CER delivery	<i>2008</i>
Project lifetime	<i>20 years</i>
Current status or phase of the project	<p> <input type="checkbox"/> Identification and pre-selection phase  <input type="checkbox"/> Opportunity study finished  <input type="checkbox"/> Pre-feasibility study finished  <input checked="" type="checkbox"/> <b>Feasibility study finished</b>  <input type="checkbox"/> Negotiations phase  <input type="checkbox"/> Contracting phase (mention what contracts)  <input type="checkbox"/> etc.                 </p>