

## 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

<b>Name of the Project</b>	Kigogo Landfill Gas Capture Project
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### A. Project Participants

<b>Project developer (proponent)</b>	
Name of the project developer	Ecosystems East Africa Limited.
Organizational category	Private company.
Other function(s) of the project developer in the project	-----
Summary of the relevant experience of the project developer	Since 2008 Ecosystems East Africa Limited has been carrying out a pre-feasibility study on the possibility of implementing a CDM project using organic waste management at Kigogo dumpsite in Kigogo area, Kinondoni Municipal, Dar es Salaam. Ecosystems East Africa Limited has extensive experience in natural resource and environmental management as well as in promotion of sustainable energy technologies and policies in Tanzania. The organization has been working closely with various international and local organizations for years in the field of environment and natural resource management. Through this, the company has built extensive experience in environment program/project implementation, research and training, and project's monitoring and evaluation. The Ecosystems East Africa Limited is currently engaged in developing afforestation/reforestation pilot projects in the country for carbon financing under CDM and voluntary markets.
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<b>Project sponsors</b>	

<i>(List and provide the following information for all project sponsors)</i>	
Name of the project sponsor	
Organizational category	
Address (include web address, if any)	Address, PO Box, City, Country
Main activities	<i>Not more than 5 lines</i>
Summary of the financials	<i>Summarize the financials (total assets, revenues, profit, etc.) in less than 5 lines.</i>

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

<b>Technical Summary of the Project</b>	
<b>Objective of the Project</b>	The objective of the project is to capture methane gas from Kigogo dumpsite for generation of electricity to be exported to the national grid and flaring the excess.
<b>Project description and proposed activities</b>	
<p>The project will be implemented at Kigogo dumpsite in Dar es Salaam. This unplanned dumpsite was originated as a result of continuous massive soil erosion on the Msimbazi river banks, which caused a huge hole on the sides of the river. Therefore, the Kinondoni municipality authority decided to convert this hole into a dumpsite in order to reduce the high force of water to the banks. The dumpsite has about 700m length, 300m wide and 30m depth making an area of 210,000m<sup>2</sup>. The site was opened in February 2007 and it may operate beyond 2009 (up to 2010) before closing. Currently, the dumpsite collects about 1500 tons of solid waste (i.e., domestic and some industrial) per day from Kinondoni, Ilala and Temeke Districts in Dar es Salaam. These wastes include metals, paper, glass, plastic, and organic wastes and covers about 60% of the dumpsite. Mainly, collection and management of waste is contracted to private companies.</p> <p>As the dumpsite was unplanned, thus sorting and recycling of wastes are still informal. Currently, sorting is done at the dumpsite while recycling is done away from the site, mainly in plastic manufacturing industries, metal industries, glass manufacturing industries, etc The recycled wastes include metals, plastics, glass and paper leaving out organic wastes at the site. These organic wastes undergo decomposition leading to emissions of methane gas to the atmosphere. The project will capture this gas and use it for electricity generation and flaring part of it. The project will involve designing and construction of a landfill gas recovery system and installation of the electricity generation equipments at the dumpsite area. The amount of electricity to be generated has not been established yet but will be available in December 2008 when the technology provider finishes the pre-feasibility study. Project developer will claim CERs from the Methane to be captured and used for either flaring or electricity generation. No CERs from grid replacement will be claimed because the nation Grid Emission Factor (GEF) has not been issued officially by relevant authority.</p>	
<b>Technology to be employed</b>	
<p>The project will involve installation of a landfill gas capture system, flaring and electricity generation equipments at the site using a proven technology. The technology to be employed will involve installation of vertical gas wells (drilled holes with perforated pipeline and an air tight gas head), The gas from pipes will be connected to the collection boxes regulated valves. The biogas capture section will be a network of wells and connected pipes that will create a suction pressure for biogas extraction. The collection boxes will be connected to the main collector. Part of exploited biogas will be flared in high efficiency/high temperature and the rest will be coupled to biogas generator for electricity</p>	

generation to be connected to the grid. The plant will be equipped with a monitoring system for CH <sub>4</sub> , O <sub>2</sub> , flow, pressure and temperature.	
<b>Type of Project</b>	
Greenhouse gases targeted	Methane (CH <sub>4</sub> ) and Carbon dioxide (CO <sub>2</sub> )
Type of activities	
<b>Field of activities</b>	
a. Energy supply	Renewable energy generation and supply
b. Energy demand	N/A
c. Transport	N/A
d. industrial processes	N/A
e. waste management	Management of landfill waste
<b>Location of the Project</b>	
Governorate	United Republic of Tanzania.
City	Dar es Salaam
Brief description of the location of the plant	The Kigogo landfill is situated in Kigogo area in Kinondoni Municipality, Dar es Salaam. The Dar es Salaam city is located at 6°48' South, 39°17' East, stretching approximately 100 km along the Indian ocean coastline in the East.
<b>Expected schedule</b>	
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	10 years
Current status or phase of the project	Pre-feasibility study.
Current status of the acceptance of the Host Country	Letter of No Objection (LoNO) is under discussion
<b>The position of the Host Country with regard to the Kyoto Protocol</b>	Tanzania has signed and ratified the Kyoto Protocol.
<b>Project Size</b>	
<b>Is the project a small-scale project?</b>	No.

### C. Avoided/ Reduced GHG Emissions

<b>Selected Crediting Period</b>	
10 years	
<b>Estimated Avoidance/Reduction of emissions in accordance with the Kyoto Protocol</b>	
<input type="checkbox"/> Carbon Dioxide(CO <sub>2</sub> )	20,000tCO <sub>2</sub> equivalent
<input type="checkbox"/> Methane (CH <sub>4</sub> )	35,000tCO <sub>2</sub> equivalent
<input type="checkbox"/> Nitrous Oxide (N <sub>2</sub> O)	N/A

<input type="checkbox"/> Hydrofluorocarbons (HFCs)	N/A
<input type="checkbox"/> Perfluorocarbons (PFCs)	N/A
<input type="checkbox"/> Sulphur Hexafluoride SF <sub>6</sub>	N/A
<b>Reference Scenario or Baseline :</b>	
<b>Description of the reference level:</b>	
<p><b>Baseline Methodology to be used</b> The approved consolidated baseline methodology ACM 0001 (Version 09), “<i>Consolidated baseline and monitoring methodology for landfill gas project activities</i>” will be used. This methodology is applicable to project activities that capture landfill gas for flaring or for energy (thermal or power) generation.</p> <p><b>What modifications the project would induce?</b> The project will reduce emissions of GHGs to the atmosphere by capturing methane gas from the landfill site and use it for electricity generation. This electricity will be exported to the grid replacing electricity that would have been generated using non-renewable resources. Through this, the project will help in improving sustainable management of landfill waste in Tanzania and also in mitigating the problems of global warming.</p> <p><b>What would be the situation in the absence of the project activity?</b> Absence of the project activity would mean continuation of emissions of methane from the landfill due to decay of organic wastes and emissions of carbon dioxide caused by non-renewable power plants feeding the grid ‘business as usual’. Also, absence of the project would lead to unsustainable management of waste in the landfill with associated environmental and health impacts to surrounding communities.</p>	
<b>Expected Emission Reductions During the Crediting Period</b>	
<p>Total Certified Emission Reductions (CERs) per year: 45,000tCO<sub>2</sub> equivalent</p> <p>Total emission reduction for the Crediting period 450,000tCO<sub>2</sub>equivalent for 10 years</p>	

#### D. Financial Aspects

<b>Total Estimated Costs(*)</b>	
Development Costs	US\$ 0.5M
Installation Costs	US\$ 5.0M
Other Costs	US\$ 1.0M
Total Cost of Project	US\$ 6.5M
(*) Please add any additional relevant information in this table if needed.	
<b>Sources of Identified Financing</b>	
Cash	Organizations participating in financing and amount in US\$

Long Term Loan	
Short Term Loan	
<b>Expected Revenues from <u>CERs transfer</u>:</b>	
Projected Price of the CERs	15 US \$/tCO <sub>2</sub> equivalent
Estimated total CDM Revenues	US\$ 0.7M for 1 year.
Details of the expected Revenues during the accountability period	US\$ 6.7M for a period of 10 years.
Amount and Modalities for the transfer of the CDM Contribution	
Advanced allocation.....	.....In \$ US
Yearly transfers.....	.....In \$ US
<b>Additional Financing</b>	
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**

<b>Specific global &amp; local environmental benefits</b>	<i>(In total about ¼ page)</i>
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	- Enhancing landfill management practices and therefore reduce the impacts of local environmental pollutions like local air pollution. - Contributing environmental protection through reduction of non-renewable sources of energy.
Global benefits	Mitigating the problems of global warming by preventing emissions methane from the landfill and carbon dioxide from the grid resources.
<b>Socio-economic aspects</b> What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project?	- Encourage environmental friendly technology transfer and development of local manufacture. - Creation of new job opportunities. - Preventing potentially explosive situations associated with the subsurface gas migration.

Explain the relationship between the project and the benefiting community/ies.	
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)?	<ul style="list-style-type: none"> <li>- Creating new job opportunities during the construction phase</li> <li>- Promoting technology transfer to Tanzania</li> <li>- Increase the national income and foreign exchange through sell of CERs.</li> </ul>
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	<ul style="list-style-type: none"> <li>- Upgrading skills of professionals through training on new processes associated with project implementation.</li> <li>- Contribute in increase in production of local industries nearby the plant.</li> <li>- The technology will be replicated to other landfills in the country.</li> </ul>
<b>Environmental strategy/ priorities of the Host Country</b>	

#### F. Risks

<b>Risks in the Project</b>	
<b>Estimate the Degree of Risk</b>	
Technical risk	<input type="checkbox"/> Low since the technology to be employed will be proven with reasonable track record and has been employed in a large scale CDM project in Tanzania called Mtoni landfill gas project.
Timing risk	<input type="checkbox"/> High since the potential investor is not yet secured and CDM legal procedures are yet to be completed
Budget risk	<input type="checkbox"/> High as the implementation cost is considerably high

#### G. Other Relevant Information

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