

Project Idea Note or PIN

Description of size and quality expected of a PIN

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

- the type and size of the project
- its location
- the anticipated total amount of Greenhouse Gas (GHG) reduction compared to the “business-as-usual” scenario (which will be elaborated in the baseline later on at Project Design Document [PDD] level)
- the suggested crediting life time
- the suggested Certified Emission Reductions (CER) price in US\$/ton CO₂eq reduced
- the financial structuring (indicating which parties are expected to provide the project’s financing)
- the project’s other socio-economic or environmental effects/benefits

While every effort should be made to provide as complete and extensive information as possible, it is recognised that full information on every item listed in the template will not be available at all times for every project.

Template for PINs

PROJECT IDEA NOTE**A. Project description, type, location and schedule****Name of Project: Puebla Municipality Landfill Gas Recovery Project.****Technical summary of the project Date submitted: 9/14/2005**

Objective of the project	<p>This project is aimed at collecting and processing the landfill gases through flaring at Chiltepeque's sanitary landfill where Puebla City's solid wastes are deposited.</p> <p>The proposed activity will reduce greenhouse gas emissions, thereby generating Certified Emission Reductions (CER's).</p>
Project description and proposed activities (including a technical description of the project)	<p>The Municipal Government of Puebla (H. Ayuntamiento de Puebla - HAP), the capital city of Puebla State, currently disposes in its own operated landfill an average of 1,600 tons/day of municipal solid wastes (MSW) generated by its 1.45 million inhabitants. The size of the landfill (53 hectares), the largest of Puebla State, and type of refuse received makes this site a good candidate for a LFG recovery system. The landfill facility will be receiving MSW until 2020.</p> <p>The HAP has disposed MSW in a 29 hectare-area and it is expected to utilize 11 out of those 29 hectares on the development of the LFG recovery system.</p> <p>The aforementioned disposal area (11 hectares) is already equipped with a leachate collection system. However, only passive venting rather than a LFG collection system has been implemented.</p> <p>The proposed GHG emission reduction project includes the following stages:</p> <ul style="list-style-type: none"> ▪ LFG extraction system, including wells, well heads, piping, condense collection and knockout, blowers and monitoring station. ▪ Flare stage in order to allow safe methane destruction and combustion.
Technology to be employed	<p>In this project, LFG will be combusted with no energy recovery. Regarding to technology that will capture and destroy the methane currently generated at Chiltepeque's municipal landfill, it is expected to employ an active LFG collection system. This technology is used in a number of landfills all over the world. In fact, a well-designed active collection system is considered the most effective means of gas collection.</p> <p>The basic operation principle is the application of vacuum to extract the gas from the waste mass. The main components of the active collection system to be installed are the gas extraction wells and collection piping, the gas moving equipment represented by mechanical blowers, the LFG treatment unit including the LFG condensate and flaring systems, and the monitoring and control system.</p> <p>Based on landfill's current conditions, it has been projected to</p>

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	<p>install an extraction well every 4,000 m². That would imply the installation of approximately 28 extraction wells within the 11 hectare-area.</p> <p>Gas extraction wells shall be connected to a master pipe that will carry the LFG to the blower facility.</p> <p>The gas transportation equipment will include pipeline header system and blowers. A pipeline header system conveys the flow of collected LFG from the well system to blower facility.</p> <p>The LFG treatment unit will consist of condensate and flare systems. A knock-out drum will be used to remove gas condensate.</p> <p>Open flare will be installed to burn the LFG in a controlled environment to destroy harmful constituents and discharging them safely to the atmosphere.</p> <p>Monitoring and control system will be used to measure actual LFG flow and composition to avoid the intrusion of ambient air into the extraction wells, thereby optimizing the gas extraction process.</p> <p>It is important to mention that the gas extraction wells and collection piping shall be installed in successive steps, beginning at the current landfill cells (3) and then as new cells are opened.</p>
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Project developer	
Name of the project developer	Not available
Organizational category	
Other function(s) of the project developer in the project	
Summary of the relevant experience of the project developer	
Address	
Contact person	
Telephone / fax	
E-mail and web address, if any	
Project sponsors	
<i>(List and provide the following information for all project sponsors)</i>	
Name of the project sponsor	H. Ayuntamiento de Puebla
Organizational category	Municipality
Address (include web address, if any)	Calle 6 B Sur 3710 –Piso 3 Esq. Blvd. Sánchez Pontón Secretaría de Planeación e Inversión / C.P. 72530. Puebla – México Contact: Ing. José Ernesto Yitani Ríos – Public Works Division. Tel.: +52(222) 271 6226 pp_yitani@hotmail.com
Main activities	Starting from 1995, MSW have been landfilled at Chiltepeque’s landfill. Nearly 48% of such waste is composed by organic disposals, generated mostly by domestic households. Currently, there are 3 closed waste cells containing more than 3,000,000 tonnes of solid wastes. The expected lifetime of the landfill is until 2020.
Summary of the financials	The total investment for the project is about US \$2.0 million, which includes LFG collection and flaring systems. Down payment covered by the Municipality will be approx. US \$ 0.28 million.

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	The projected NPV (9.76% discount rate) is US \$ 1.8 million (up to 2012) with an Internal Rate of Return of 63%. The marginal cost of this project reaches US \$5 per ton of equivalent CO ₂ .
Type of the project	
Greenhouse gases targeted	CH ₄
Type of activities	Abatement
Field of activities	
a. Energy supply	
b. Energy demand	
c. Transport	
d. Waste management	Capture of landfill methane emissions
e. Land Use Change and Forestry	
Location of the project	
Region	Central America
Country	Mexico
City	Puebla
Brief description of the location of the plant	The plant will be in the Landfill area.
Expected schedule	
Earliest project start date	Year in which the plant will be operational: end 2006 (estimated)
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: 06 months Time required for legal matters: 06 months Time required for negotiations: 06 months Time required for construction: 06 months
Expected first year of CER delivery	2007
Project lifetime	Number of years: 15
Current status or phase of the project	Preparing the pre-feasibility study. Available documents: LFG capture projections attained by the application of the US EPA E-PLUS (Energy Project Landfill Gas Utilization Software) as well as financial projections.
Current status of the acceptance of the Host Country	Not available
The position of the Host Country with regard to the Kyoto Protocol	Mexico has already signed the Kyoto Protocol

B. Expected environmental and social benefits

Estimate of Greenhouse Gases abated / CO₂ Sequestered (in metric tons of CO₂-equivalent)	Up to and including 2012: 1.3 million tCO ₂ -equivalent Up to a period of 10 years: 1.8 million tCO ₂ -equivalent Total emission reduction: 3.7 million tCO ₂ -equivalent Please see Annex 1
Baseline scenario	US EPA's Landfill Gas Emissions Model software was useful in estimating methane emissions from solid wastes, for both baseline and project conditions. Main assumptions for the input data were the following: MSW composition: domestic solid wastes (DSW) composition based on "Organismo Operador del Sistema de Limpia" (OOSL) current data (2005).

	<p>MSW quantity: Projections on MSW based on OOSL’s current data (2005) as well as Mexico’s “Instituto de Estadística, Geografía e Informática” (INEGI) information (General Population Census (2000). See annex 2</p> <p>First order decay model parameters: methane generation rate constant based on estimates and results from OOSL. Up to the moment, there are no field tests performed at HAP’s landfill nor pumping trials. As mentioned previously, personnel from OOSL provided some information on MSW composition as well as the quantity of MSW deposited at municipal landfill.</p> <p>LFG composition: A 50% composition of CH₄ was assumed. Data from the HAP landfill support the estimations.</p> <p>It is important to mention that HAP is fully committed towards the successful accomplishment of this project. Moreover, HAP is enabled with the legal and technical capabilities to carry out the project.</p>
<p>Specific global & local environmental benefits</p>	<p>The project will contribute to the global effort in GHG reductions. This will be achieved through an estimated average reduction of 190,000 tCO₂e per year until 2012. Aside from the specific methane mitigation benefit, the project will also lay the foundation for future replication in other cities within Mexico.</p>
<p>Which guidelines will be applied?</p>	<p>Local and World Bank Environmental safeguards will apply.</p>
<p>Local benefits</p>	<p>The project will have a positive local environmental impact through the control of flammable gas migration and other emissions, which can cause other local and global environmental effects such as odor nuisances, stratospheric ozone layer depletion, and ground-level ozone creation.</p>
<p>Global benefits</p>	<p>An important benefit that this project will carry is the reduction of CO₂ through methane combustion thereby contributing to reduce GHG emissions.</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 will benefit the local population by eliminating the risk of explosions, reducing odor, and controlling emissions of volatile organic compounds that are found in LFG. On the other hand, the construction and operation of this project will provide some employment opportunities. It is important to mention that project revenues would be applied in enhancing public infrastructure in marginalized urban concentrations, thereby multiplying the municipality’s resources.</p>
<p>Which guidelines will be applied?</p>	<p>It is expected some job creation, should private investors participate in this project. Additional revenues for HAP that would be applied in developing public infrastructure.</p>
<p>What are the possible direct effects (e.g., employment creation, capital required, foreign exchange effects)?</p>	<p>Local staff will be trained on various fields to guarantee proper operation of the system.</p>
<p>What are the possible other effects? For example:</p> <ul style="list-style-type: none"> • training/education associated with the introduction of new processes, technologies and products and/or • the effects of a project on 	

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other industries	
Environmental strategy/ priorities of the Host Country	The “Plan Municipal de Desarrollo 2005-2008” sets out the objectives and strategies for environmental protection as well as sustainable development within the municipality.

C. Finance

Total project cost estimate	
Development costs	0.5 US\$ million
Installed costs	2 US\$ million
Other costs	
Total project costs	2.5 US\$ million
Sources of finance to be sought or already identified	
Equity	
Debt – Long-term	
Debt - Short term	
Not identified	
CDM contribution sought	5.86 US\$ million (90% of expected CERs until 2012)
CDM contribution in advance payments. (The quantum of upfront payment will depend on the assessed risk of the project by the World Bank, and will not exceed 25% of the total ER value purchased by the World Bank for the project. Any upfront payment will be discounted by a factor considered appropriate by the World Bank for the project.)	The project sponsor is requesting an upfront payment of 20%. This will allow the HAP to cover the investment costs and develop the project almost entirely by the municipality, thus speeding up project implementation.
Sources of carbon finance	
Indicative CER Price (subject to negotiation and financial due diligence)	5 US\$ tCO2 equivalent
Total Emission Reduction Purchase Agreement (ERPA) Value	
A period until 2012 (end of the first budget period)	5.86 US\$ million
A period of 10 years	9.6 US\$ million
A period of 7 years	6.72 US\$ million
A period of 14 years (2 * 7 years)	13.44 US\$ million
If financial analysis is available for the proposed CDM activity, provide the forecast financial internal rate of return for the project with and without the CER	Under analysis

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<p>revenues. Provide the financial rate of return at the expected CER price above and US\$3/ tCO₂e. DO NOT assume any up-front payment from the PCF in the financial analysis that includes PCF revenue stream.</p> <p>Please provide a spreadsheet to support these calculations.</p>	
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