



**WORLD BANK AND
LFG PROJECTS IN DEVELOPING
COUNTRIES**

***WITH REFERENCE TO CLEAN
DEVELOPMENT MECHANISM***

**Methane to Markets Conference new
Delhi**

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Key lessons learnt

- Landfills and global warming
- Project preparation
- Project implementation
- Clean development mechanism (CDM) projects

Landfills/methane and global warming



- Methane – 15% of Green house gases
- Landfills
 - GHG emissions 730 million tCO₂e / year
 - 12%+ global anthropogenic methane emissions

Carbon Finance

LFG Projects



- Bank supporting preparation and implementation of 21 carbon finance LFG projects
- Bank supporting a number of composting projects which avoid methane production – CDM eligible
- Globally about 63 CDM projects under validation and 44 registered
- CDM LFG projects require destruction of methane but not generation of electricity to earn carbon credits



Project Preparation

- LFG supply often over-estimated by 50% plus
 - be conservative in modeling LFG potential
 - base estimates on the actual landfill site characteristics and waste stream - consultants should visit the site !
 - sink wells and test LFG potential – Example Delhi Landfill closure
- Preparation of LFG Projects are often delayed - everyone is too busy/ complex issues to resolve
 - Put a good project manager onto the job



Safeguard issues and due diligence

- Ensure that surrounding communities are not opposed to the project - this avoids delays in implementation
- Accommodate waste pickers in landfill site upgrading



Flaring versus use of gas

- Check options for LFG use - electricity for industrial or domestic supply etc
- Check the economic viability of generating electricity versus flaring
- Will the generated power from LFG be cheaper than grid power?
- Power sales contracts – who sets the price and are there incentives for green power ?
- Is there a power purchase agreement /regulatory framework for selling power into the electricity grid?



Flaring versus use of gas

- Will electricity sales be taxed - check tax right offs/ depreciation rates
- Define responsibilities for gas collection and supply – are there penalties for non-delivery of gas ?



Managing a LFG field

- An institution must manage the gas field - consider the best institutional options, especially where landfill use continues
- LFG production must be maintained and maximized where it is flared for CDM/used
- Consider private companies to do the LFG field investment, manage the gas field and sell the gas
- Experienced gas field designers, contractors and managers, is essential

Where carbon credits are part of the project



- Decide who owns the carbon credits – consider all financial data to decide this
- For verification of emission reductions: ensure that proper monitoring of the gas destruction and electricity generation takes place
- If the field does not deliver anticipated gas volumes check the reasons – over-estimates, field design, technology failure, poor management

Thank you



- Thanks to Chuck Petersen, Zarina Azinova, Sanjay Strivastava

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Useful References (1)

General Websites on CDM and JI:

- CFU website on CDM methodologies: Carbon Finance at the World Bank: Methodology (www.carbonfinance.org)
- Website of the UNFCCC: CDM: CDM-Home (<http://cdm.unfccc.int/> and <http://ji.unfccc.int/>)
- Website on CDM (and JI) procedures (Ministry of the Environment Japan, Institute for Global Environmental Strategies): <http://www.iges.or.jp/en/cdm/report01.html>
- Website (UNEP, Risø Centre): CDM (and JI) pipeline overview
<http://cd4cdm.org/index.htm>



Useful References (2)

Websites useful for country information and data:

- National Communications (for Annex I and non-Annex I Countries) and National Emissions Inventories (Annex I countries): http://unfccc.int/national_reports/items/1408.php
- IPCC Methodology reports (e.g. National Guidelines for National GHG Inventories) :
<http://www.ipcc.ch/pub/guide.htm>
- Website for energy statistics (International Energy Agency):
<http://www.iea.org/Textbase/stats/index.asp>
- Website on Climate Analysis Indicators Tool (World Resources Institute): <http://cait.wri.org/>
- Website on emissions from oil and gas industry (US EPA Gasstar): <http://www.epa.gov/gasstar/index.htm>