

CDM Projects for Municipalities: From Waste to Sustainable Environment

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*ETSAP semi-annual Workshop, Kyoto, Japan
July 4, 2005*

Agenda

- Background of project formulation
- Two projects for Metropolitan Municipality of Istanbul
- Summary indicators
- Concluding remarks

Background of project formulation: A "Synergy" project!

- **"Business Opportunities for CDM Project Development in the Mediterranean "**
- "Synergy" co-operation program managed by the Directorate General for Energy and Transport of the European Commission.
- **Participants**
 - **EU Partners:**
Greece, Portugal, Netherlands
 - **MEDA Partners:**
Algeria, Egypt, Jordan, Lebanon, Morocco, Syria, Malta, Israel and Turkey.

Two projects for Metropolitan Municipality of Istanbul

- ***"An LFG-to-energy project: Capturing the landfill gas (LFG) from municipal solid waste storage areas to generate electricity in a combined cycle gas plant"***
 - Objective: minimize the municipal solid waste (MSW) inventory while optimizing land usage for the MSW, and introducing new alternative domestic energy supply
- ***"A pyrolysis-gasification of MSW-to-electricity project: Turning wastes into energy-rich fuels by heating the waste under controlled conditions"***.

Two projects for Metropolitan Municipality of Istanbul

- All projects passed prefeasibility analysis
- Common calculation methodology for pre-feasibility assessment*
- financial feasibility
- project additionality
- project's contribution to sustainable development

*CDM-PAT (Pre-Assessment Tool); <http://cdm-pat.epu.ntua.gr>

Summary Indicators

Project emissions and implied emission reduction

	Annual baseline emissions (t CO ₂ -eq)	Annual Project Emissions (t CO ₂ -eq)	Annual Emission Reductions (t CO ₂ -eq)	Total* Emission Reductions (t CO ₂ -eq)	Annual Energy Production MW hrs
<i>Project 1</i>	7,983,430	75,720	7,907,710	79,077,100	120,000.0
<i>Project 2</i>	2,747,971.8	177,545	2,570,427	25,704,270	330,624.0

*Over 10 years of project crediting period

Summary indicators

Financing Information for the Projects

Costs			Revenues				
Fixed Cost 10 ⁶ €	Var. Cost* 10 ⁶ €	Total Cost* 10 ⁶ €	CER Price €/t CO ₂	CER Rev.* 10 ⁶ €	Service Price €cent/kWh	Service Rev.* 10 ⁶ €	Total Rev.* 10 ⁶ €
Project1 16.80	41.60	58.40	5	395.39	5.61	67.86	463.25
Project2 123.84	142.15	265.99	3	77.11	5.61	185.50	262.61

* Calculated over 10 years

Concluding Remarks

- CDM offers an opportunity for MSW management in developing countries
- Local governments and regulators are in need of reliable, scientifically based tools to find out strategies for managing MSW in a cost-effective way
- MARKAL provides a framework for representing the MSW management system to estimate the environmental impact of waste processing technologies in the context of the whole productive system.

Remarks

- The use of MARKAL for MSW management will produce numerous benefits for Turkey; e.g.
 - ✓ analysis of future waste quantities and waste composition;
 - ✓ analysis of the impact of energy and GHG policies on waste handling;

- While analyzing the cost-effectiveness of waste handling processes, MARKAL can evaluate the effects of
 - ✓ materials substitution
 - ✓ changing consumer preferences
 - ✓ changing energy prices
 - ✓ changing environmental policieson waste management