

**Electricity generation with methane gas
Landfill Methane Recovery Demonstration Project Located in Las Rosas,**

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The Uruguayan Ministry of Housing, Territorial Regulation and Environment, executed a demonstration project of electricity generation by capturing methane gas from the urban landfill of “Las Rosas” in the Department of Maldonado. Its objective is to demonstrate and disseminate knowledge that, using available technology, it is possible to avoid methane emissions from landfill to the atmosphere achieving environmental, economic and social benefits. It is expected to avoid methane emissions of 19,000 tons based on conservative and technologically feasible assumptions and achieve a power generation of 60,000 MWh during 15-year period.

The participants of the project are the following agents: the Ministry of Environment (coordinates, executes, promotes and co-finances the project); Local Government of Maldonado (owner of the landfill, operates the recollection and disposal system of the urban solid waste, co-finances the project, is in charge of the operational and maintenance costs of the system and sells the electricity generated); GEF (contributed with one million dollar grant); the World Bank (implementing agency); UNDP (administrative agent); ABORGAMA-DUCELIT S.A. (private operator of the landfill, the methane recovery system and the electricity generation); and UTE (the electricity state company, purchases the electricity generated, under an agreement subscribed with the Local Government of Maldonado).

The plant was inaugurated on December of 2004 after an international competitive bidding process. Nowadays it is being successfully operated.

The average volume of municipal solid waste received is of 145 tons/day (during tourism peak season increasing up to 300 ton/day and the rest of the year 100 ton/day). The installed capacity is 1,000 Nm³/h of biogas and 1 MW of power generation. The production efficiency of biogas is around 60 – 75%. It is estimated that the sanitary landfill will be operated until 2012 but methane capture and electricity generation will operate for 15 years.

The project has demonstrated the following benefits:

- Abatement of national greenhouse gas emissions;
- Utilization of an available source of energy;
- Substitution of fossil fuel by a renewable source of energy;
- Improvement in the operation conditions of sanitary landfill;
- Reduction of biogas migration with subsequent reduction of odor and explosion risks;
- Improvement of the municipal solid waste management, both in the country and in the region;
- Provision of a model replicable throughout the country and in the Latin America region, with multiple benefits;
- Landfill management is socially recognized with economic valuation of municipal solid waste

Despite the positive social impact of the project, evidenced by the substantial visits and consult of other municipalities, press and educational institutes, the replication possibilities of this project inside Uruguay is limited. The main reason – with the exception of the capital city Montevideo and its metropolitan area– is the low population of cities and towns and accordingly the low amount of urban solid wastes generated. Another difficulty is that some municipalities still do not have landfills so the disposal of urban wastes is made in open dumps. Due to the above mentioned, a feasibility study should be carry on in order to evaluate the possibility of develop regional landfills located in strategic sites where the departments would transfer the wastes.

Nowadays, with the support of the World Bank, the Municipality of Montevideo is developing a CDM project for the methane gas recovery of its landfill. The bidding process for the proper operation of the waste disposal, the methane capture and power generation was recently launched. An Emission Reduction Purchase Agreement (ERPA) between the Municipality and the World Bank was signed last December.