MSW PROJECT OPPORTUNITY

CONTAGEM SANITARY LANDFILL
CONTAGEM, MINAS GERAIS, BRAZIL
MUNICIPALITY OF CONTAGEM

OVERVIEW OF MSW PROJECT

The Contagem Landfill began operations in 1997. It is owned by the Municipality of Contagem and is operated by Municipal Secretariat of Works and Urban Services (SEMOBS). This landfill is a sanitary landfill with a designed waste footprint of 12 hectares (ha), a total design capacity of 4.5 million tonnes, and is expected to close in 2019. Currently, there are 1.1 million tonnes of waste in place with an average waste depth of 45 meters.

PROJECT TYPE: Landfill gas (LFG) projections indicate that the Contagem Landfill could have several LFG utilization project options. These options include electricity generation, direct use, transportation fuel LFG to CNG, and flaring only. Assuming start-up of a power plant in 2014, sufficient gas is assumed to be available to support a power plant of at least 2 MW from 2014 to 2025 A direct use project is possible depending on the availability of potential end-users near the landfill. This landfill is located adjacent to several industrial centers in Contagem and in the nearby city of Betim that could be potential end-users of the LFG.

The feasibility of any of these projects would require additional information from the Landfill and surrounding area, such as exact locations of electricity distribution and transmission lines, and nearby industrial facilities' energy requirements and interest in pursuing a LFG energy project.

ESTIMATED PROJECT LIFETIME EMISSION REDUCTIONS: 1.2 MMTCO$_2$E

LANDFILL LOCATION AND ASSISTANCE REQUESTS

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The Municipality of Contagem seeks specific cooperation to advance the development of this project:

- A partner to build, own, and operate a project.
- Technical assistance.

The project owner does not have a contract to sell its carbon credits.

DISCLAIMER: The information and predictions contained within this poster are based on the data provided by the site owners and operators and site visits conducted by U.S. EPA. The Global Methane Initiative (GMI) cannot take responsibility for the accuracy of these data. It should be noted that conditions on landfills will vary with changes in waste input, management practices, engineering practices, and environmental conditions (particularly rainfall and temperature). GMI does not guarantee the quantity or quality of available landfill gas from the landfill site, which may vary from the values predicted in this report.

LANDFILL GAS AND ENERGY POTENTIAL

Under contract to the U.S. EPA, SCS Engineers estimated the amount of LFG generated by the Contagem Landfill using EPA models. Model input data for the preliminary assessment of the LFG capture and use project were obtained from the Municipality of Contagem and collected during EPA site visits in October 2011 and March 2012.

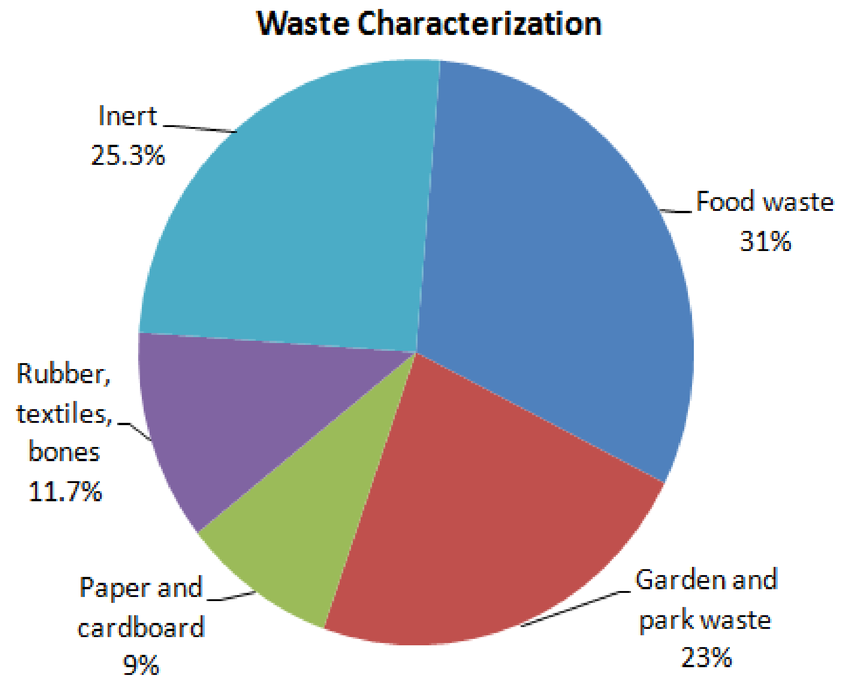
Other Landfill Physical/Operational Data

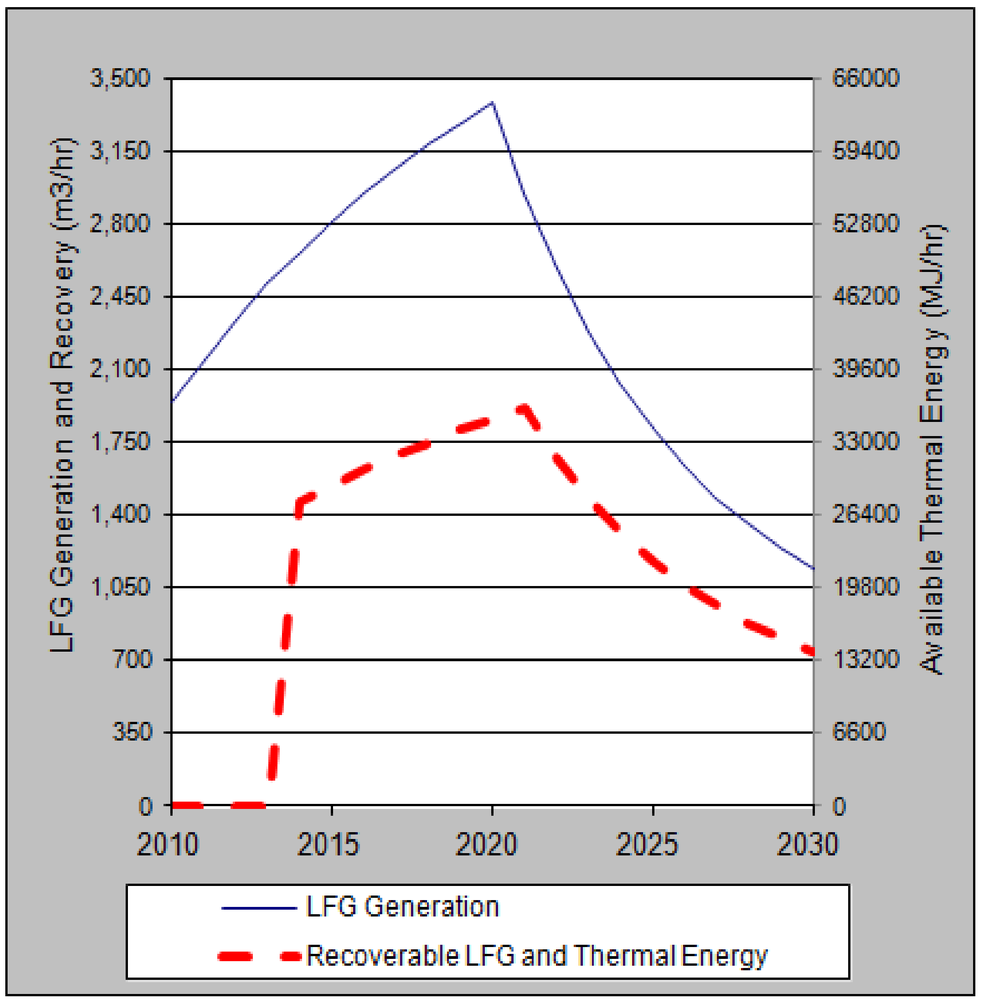
- Estimated annual MSW acceptance rates for 1997 to 2019: ranges from 126,000 to 282,000 tonnes/yr
- Landfill is lined with a HDPE geomembrane and clay
- Waste compaction is performed.
- Leachate management: sent to sewage treatment plant
- LFG collection and control system: passive venting well installed.

Landfill Gas Modeling Inputs:

- **CH_4 generation potential (Lo):**
  70 m^3/Mg for very fast-decay organic waste
  103 m^3/Mg for moderately-fast decay organic waste
  169 m^3/Mg for moderately-slow decay organic waste
  200 m^3/Mg for slow-decay organic waste
- **CH_4 generation rate constant (k):**
  0.26 for fast-decay organic waste
  0.060 for medium-fast decay organic waste
  0.048 for medium-slow decay organic waste
  0.024 for slow-decay organic waste
- **Percent methane: 50%**

Values for these modeling variables have been developed based on the waste composition data and average annual precipitation at Contagem Landfill. It is not feasible to collect all the gas generated at the site for flaring or energy recovery, given site conditions and collection system limitations. Therefore, the amount of recoverable LFG was estimated by applying a gas availability factor to the results of the LFG generation model.





Recoverable LFG = 90% Landfill Area Available for Gas Collection x 67% Gas Collection Efficiency = 60%

ENVIRONMENTAL BENEFITS

Assuming that an active gas collection and flaring system is installed in 2014, this LFG capture project has the opportunity to collect and destroy an average of 8.4 million cubic meters of methane annually over the next 12 years. This is equivalent to emission reductions of more than 1.2 million tonnes of CO_2eq over the project lifetime.

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Tonnes CO_2eq from Flaring Activities	96,633	101,810	106,574	110,995	115,129	119,022	122,712	126,062	110,458	97,532	86,750	77,692

FOR MORE INFORMATION

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