MSW PROJECT OPPORTUNITY

Beiyangqiao Landfill
Wuhan, China
China Wuhan Urban Administration Bureau

OVERVIEW OF MSW PROJECT

Beiyangqiao Landfill, which began filling in 1989, is owned by China Wuhan Urban Administration Bureau. Beiyangqiao Landfill is a sanitary type of landfill with a designed area of waste placement totaling 37 hectares. Currently, there are 6.4 million tonnes of waste in place with an average waste depth of 20 meters. The designed landfill capacity is 6.6 millions tonnes and is expected to close in 2013 with an estimated 100% of municipal wastes in place.

TYPE OF PROJECT: LFG Energy Recovery

ESTIMATED AVERAGE ANNUAL EMISSION REDUCTIONS: 58,462 MTCO$_2$E

PROJECT HIGHLIGHTS

- Landfill is closing this year and is ready to integrate gas collection infrastructure with its capping and closure site work.
- Waste depths of greater than 10 meters allow for anaerobic conditions.

ENVIRONMENTAL BENEFITS

Assuming that a gas collection and flaring system is installed in 2013, this landfill capture project has the opportunity to collect and destroy an average of 3.9 million cubic meters of methane annually over the next 15 years. This is equivalent to emission reductions of more than 58,462 tonnes of CO_2 annually.

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Tonnes CO_2eq from Flaring Activities	106,734	102,121	91,484	81,954	73,418	65,770	58,919	52,782	47,284	42,358	37,946	33,993	30,452	27,280	24,439

GMI conducted a pre-feasibility study in support of this project.

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 biogas from the landfill site, which may vary from the values predicted in this report.

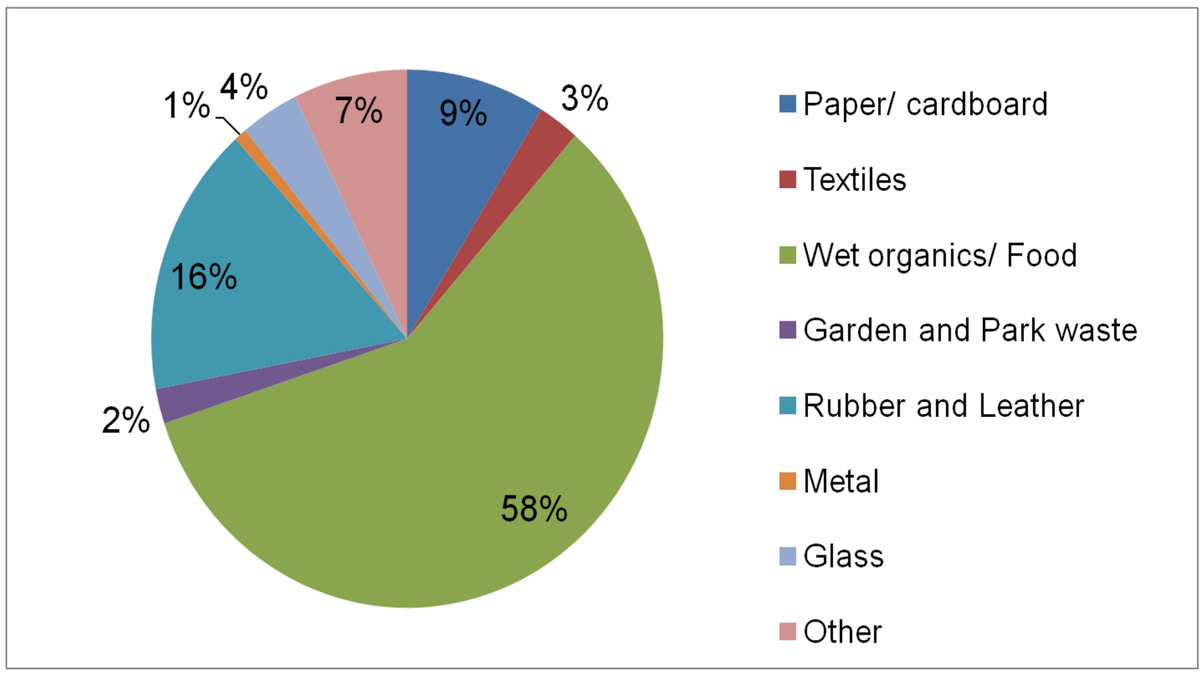
LANDFILL GAS AND ENERGY POTENTIAL

Under contract to the U.S. EPA, OWT Engineers estimated the amount of biogas generated by the Beiyangqiao Landfill using the EPA China Biogas model. Model input data for the preliminary assessment of a landfill methane capture and use project were provided by China Wuhan Urban Administration Bureau and collected during EPA site visits in January 2013.

Other Landfill Physical/Operational Data

- Quantity of waste accepted annually: 160,000 to 438,000 tonnnes
- Landfill site is capped with soil
- Landfill is unlined
- Waste is not compacted
- Landfill gas collection and control system: Passive vents installed
- Number of vertical wells: 30
- Average depth of wells: 15 meters
- Leachate management: Collected to storage ponds only

Waste Characteristics

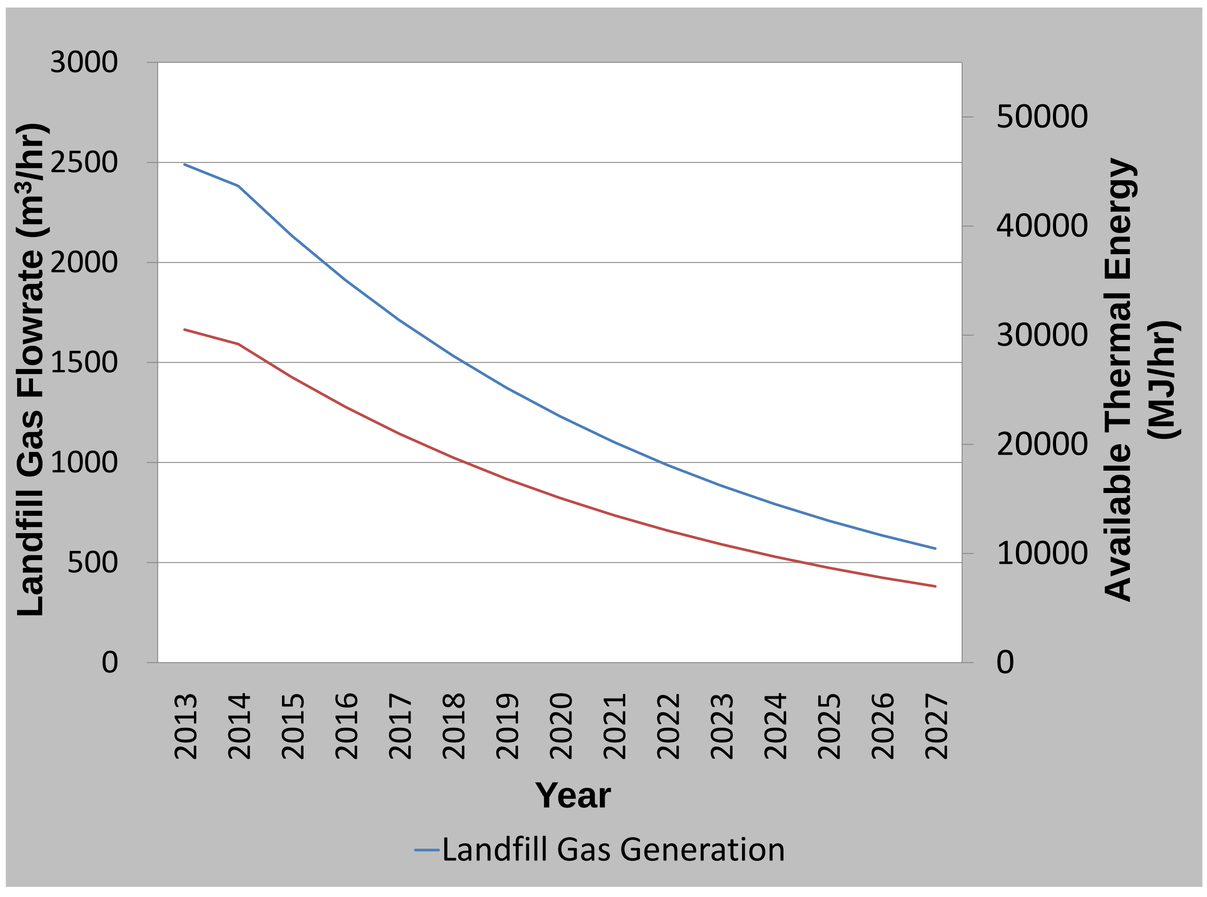


Biogas Modeling Inputs:

- **CH_4 generation potential (Lo): 56 m^3/Mg**
- **CH_4 generation rate constant (k): 0.11**
- **Percent methane: 50%**
- **Gas availability factor: 33%**

Values for these modeling variables have been developed based on the waste composition data, average annual precipitation at Beiyangqiao. 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 biogas was estimated by applying a gas availability factor to the results of the biogas generation model.

Estimated Landfill Gas Recovery and Thermal Energy



Recoverable Biogas = 50% Landfill Area Available for Gas Collection x 65% Gas Collection Efficiency = 33%

FOR MORE INFORMATION

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