

# MSW PROJECT OPPORTUNITY

## UBERABA SANITARY LANDFILL

### UBERABA, MINAS GERAIS, BRAZIL

#### MUNICIPALITY OF UBERABA

### OVERVIEW OF MSW PROJECT

The Uberaba Landfill began operations in 2005. It is owned by the Municipality of Uberaba and is operated by Uberaba Ambiental S.A. This landfill is a sanitary landfill with a designed waste footprint of 17 hectares (ha), a total design capacity of 2 million tonnes, and is expected to close in 2026. Currently, there are 490,000 tonnes of waste in place with an average waste depth of 20 meters.

**PROJECT TYPE:** Landfill gas (LFG) projections indicate that the Uberaba Landfill could have several LFG utilization project options. These options include electricity generation, direct use, and flaring only. Assuming start-up of a power plant in 2017, sufficient gas is assumed to be available to support a power plant of up to 1 MW from 2017 to 2031. A direct use project is possible depending on the availability of potential end-users near the landfill. A potential end-user could be the chemical complex, centered around the production of fertilizer, that is adjacent to the Landfill.

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: 0.69 MMTCO<sub>2</sub>E**

## LANDFILL LOCATION AND ASSISTANCE REQUESTS



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

- A partner or investor 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 Uberaba Landfill using the EPA and SCS models. Model input data for the preliminary assessment of the LFG capture and use project were obtained from the Municipality of Uberaba and collected during EPA site visits in February and April 2010. The assessment report is available online at the GMI website: [www.globalmethane.org](http://www.globalmethane.org).

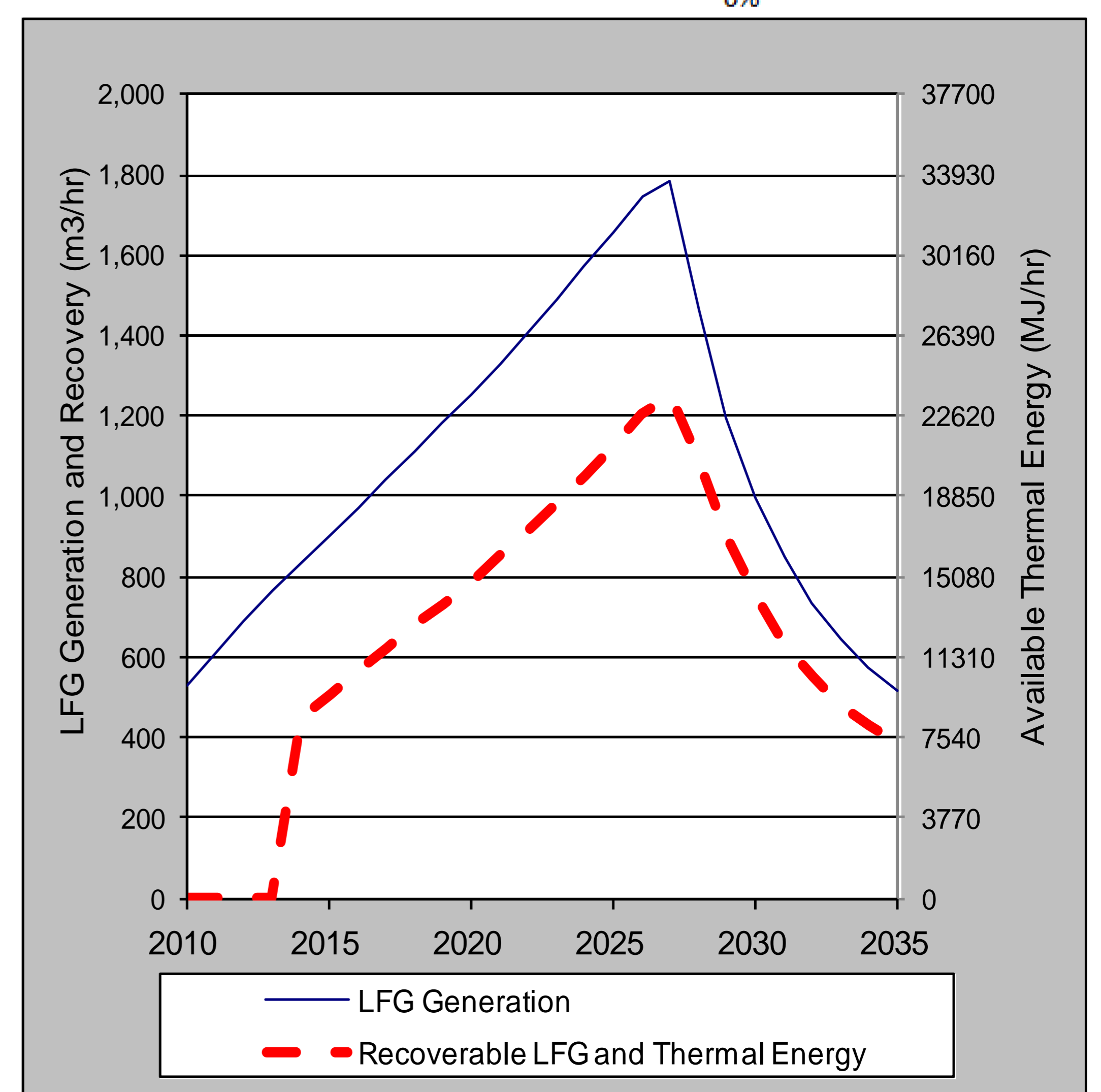
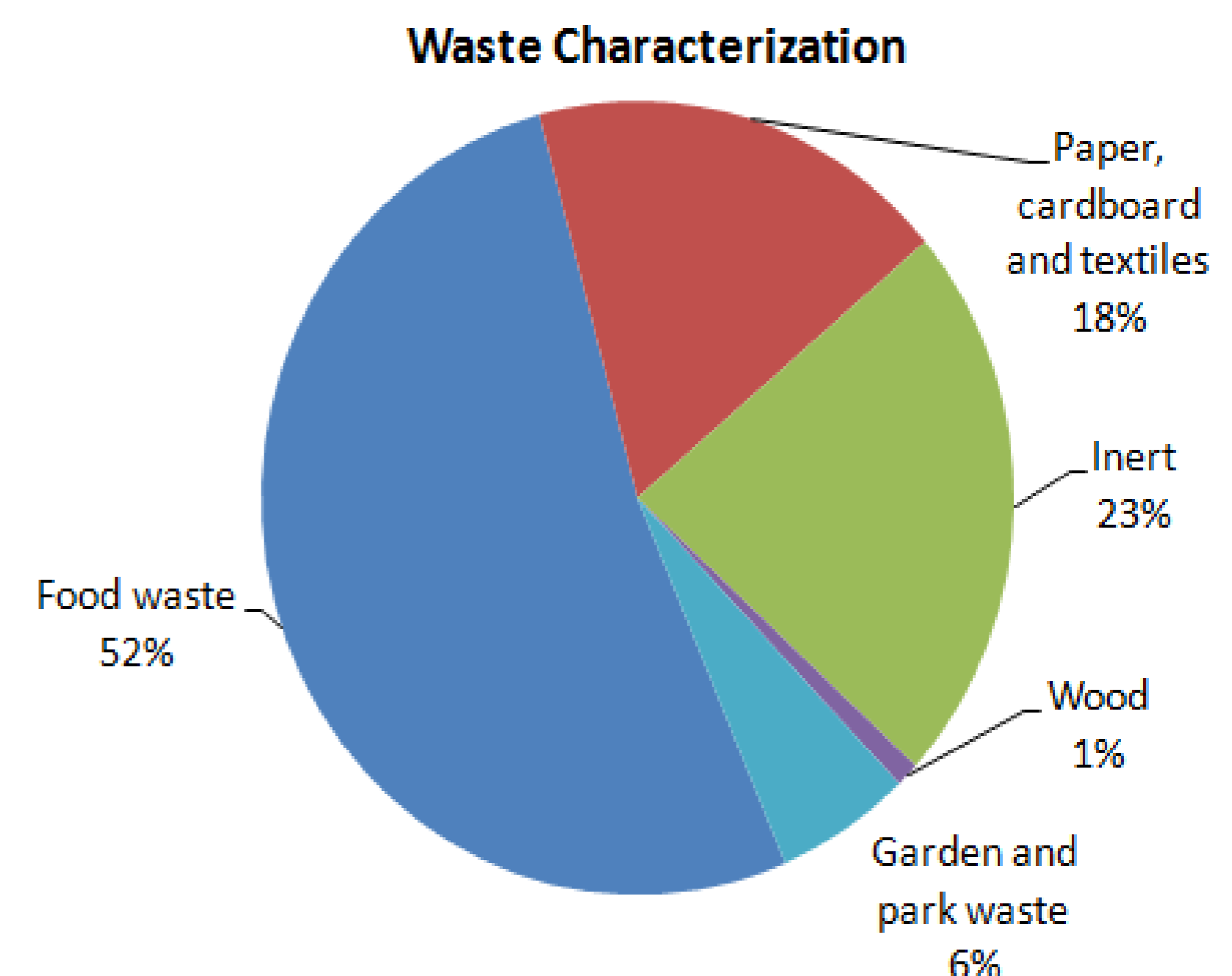
## Other Landfill Physical/Operational Data

- Estimated annual MSW acceptance rates for 2006 to 2026: ranges from 60,000 to 131,000 tonnes/yr
- Landfill is lined with a clay and asphalt
- Waste compaction is performed.
- Leachate management: accumulating in standing pools
- LFG collection and control system: passive venting wells installed.

## Landfill Gas Modeling Inputs:

- CH<sub>4</sub> generation potential (Lo): 84 m<sup>3</sup>/Mg
- CH<sub>4</sub> generation rate constant (k):  
0.36 for fast-decay organic waste (e.g., food)  
0.072 for medium-decay organic waste (e.g., paper)  
0.018 for slow-decay organic waste (e.g., rubber)
- Percent methane: 50%

Values for these modeling variables have been developed based on the waste composition data and average annual precipitation at Uberaba 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 74% Gas Collection Efficiency = 67%**

## 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 3.5 million cubic meters of methane annually over the next 13 years. This is equivalent to emission reductions of more than 693,300 tonnes of CO<sub>2</sub>eq over the project lifetime.

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Tonnes CO <sub>2</sub> eq from Flaring Activities	29,705	33,342	37,149	41,152	44,645	48,288	52,100	56,097	60,296	64,713	69,363	74,263	82,244

## FOR MORE INFORMATION

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