

# Landfills

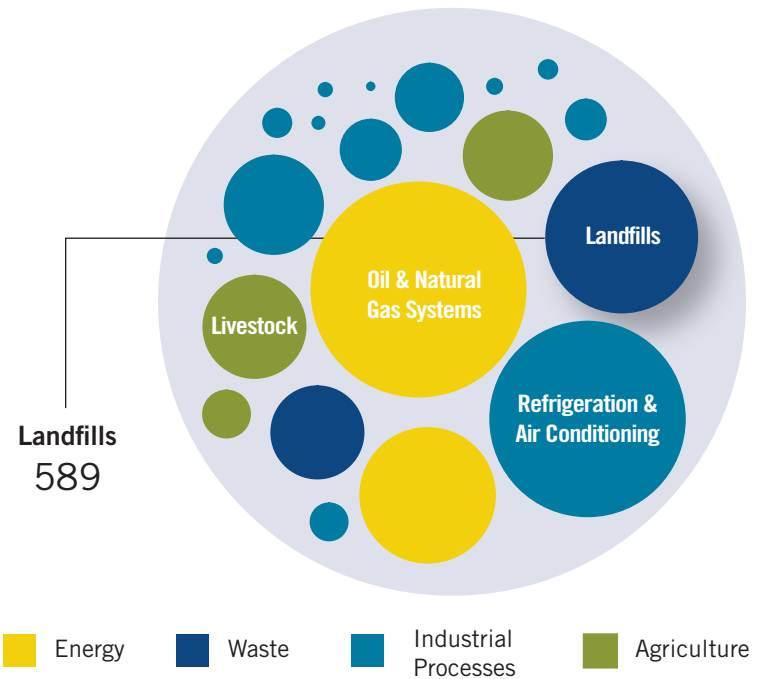
## CH<sub>4</sub> Emissions from Municipal Solid Waste (MSW) Landfills

### Sector Description

Landfills produce methane in combination with other landfill gases (LFGs) through the natural process of bacterial decomposition of organic waste under anaerobic conditions. LFG is generated over a period of several decades with gas flows usually beginning 1 to 2 years after the waste is put in place. The amount of methane generated by landfills per country is determined by a number of factors that include population size, the quantity of waste disposed of per capita, composition of the waste disposed of, and the waste management practices applied at the landfill.

### Emissions Reduction Potential

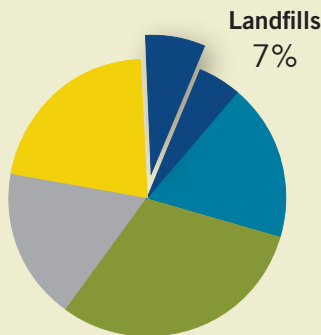
Assuming full implementation of current technology, emissions in the landfill sector could be reduced by up to 589 MtCO<sub>2e</sub> in 2030. This accounts for 13% of the 4,615 MtCO<sub>2e</sub> in global reduction potential in 2030.



### Projected Emissions in 2030

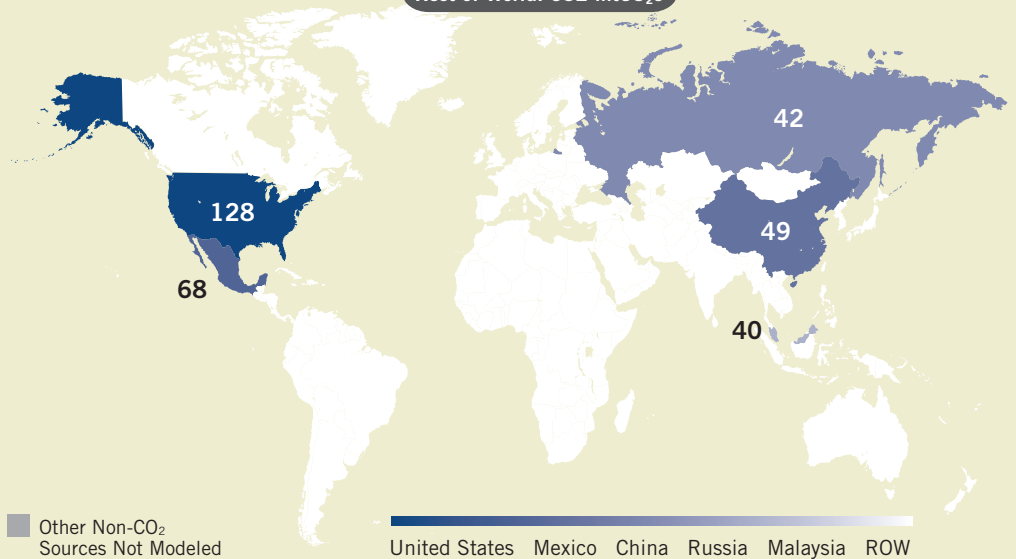
#### Global Non-CO<sub>2</sub> Emissions

Landfills sector baseline emissions are estimated to be 847 MtCO<sub>2e</sub> in 2010. In 2030, emissions from this source are projected to be 959 MtCO<sub>2e</sub> or 7% of total non-CO<sub>2</sub> emissions.



#### Emissions from Top 5 Emitting Countries (MtCO<sub>2e</sub>)

Rest of World: 632 MtCO<sub>2e</sub>



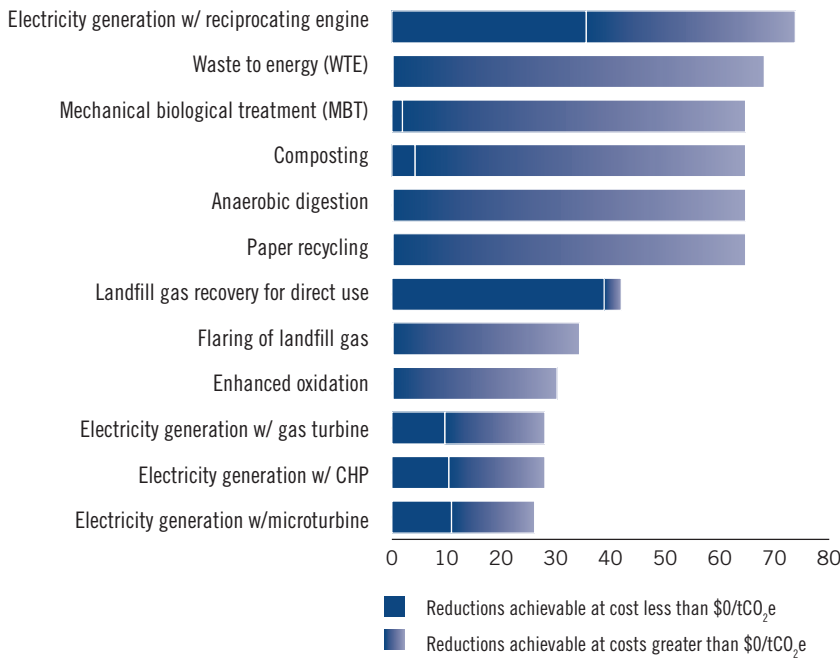


# Key Points

- Global abatement potential from landfills is 589 MtCO<sub>2</sub>e, roughly 61% of projected baseline emissions in 2030.
- Abatement measures with costs below \$20/tCO<sub>2</sub>e can achieve a 30% reduction in baseline emissions.
- Abatement measures include (1) conversion of landfill gas to energy and (2) waste diversion projects that use waste in the production of new products.

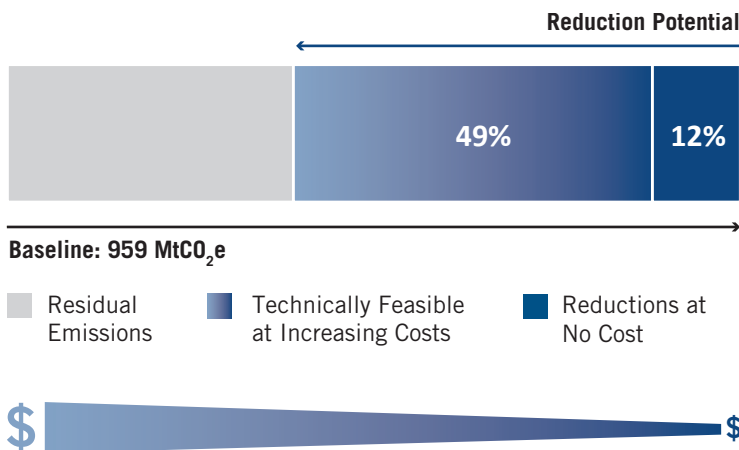
## Abatement Measures

Emissions reductions by technology in 2030 at \$0/tCO<sub>2</sub>e and at higher prices.



## Emissions Reduction Potential, 2030

It would be cost-effective to reduce emissions by 12%, compared to the baseline, in 2030. An additional 49% reduction is available using technologies with increasingly higher costs.



## Abatement Measures

Several abatement measures are available to control landfill methane emissions, and they are commonly grouped into three major categories: (1) collection and flaring, (2) LFG utilization systems (LFG capture for energy use), and (3) enhanced waste diversion practices (e.g., recycling and reuse programs). Although flaring is currently the most common abatement measure, LFG utilization options may be more cost-effective. Under favorable market conditions, recycling and reuse or composting alternatives may provide additional means for reducing emissions from landfills.

## Abatement Potential

Global abatement potential in the solid waste landfill sector is estimated to be approximately 589 MtCO<sub>2</sub>e of total annual emissions in 2030, or 61% of the baseline emissions. The marginal abatement cost curve results suggest that there are significant opportunities for CH<sub>4</sub> reductions in the landfill sector at costs below \$20 per tCO<sub>2</sub>e emissions reduced. Furthermore, approximately 70 to 80 MtCO<sub>2</sub>e of reductions are cost-effective at current energy prices.