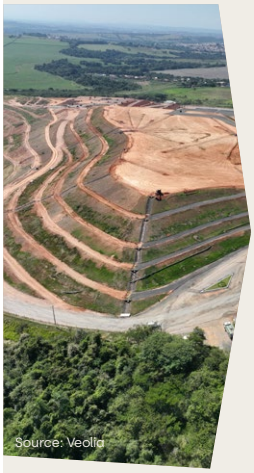
World Business Council for Sustainable Development

Climate solutions in waste landfilling: *An avoided emissions case study*

Environmental services company Veolia operates landfill waste management systems that reduce greenhouse gas emissions in the waste sector.

→ *Up to 200,000 t CO_2 eq. avoided*

in 2024 through biogas capture in a waste landfill in Brazil.



Source: Veolia

Veolia's system *captures ~ 69%* of the biogas generated from landfilled waste, compared to around 10% in conventional landfills.

Capturing avoided emissions *— assessment details*

- → **Functional unit:** 1 tonne of landfilled waste processed.
- → **Impact – emissions avoided:** 0.4 t CO_2 eq./ tonne.
- → **Time period:** Year-on-year.
- → **Scope:** Iperó site, Brazil (500 kilotonnes of waste per year).
- → **System boundaries:** Operating emissions i.e. methane emissions from anaerobic degradation of waste. All other emissions (manufacturing, installation and operation of the biogas capture systems) represent less than 1% of the total emissions and have been excluded using cut-off criteria.

Use this document to support your understanding of avoided emissions calculations and disclosure as outlined in the WBCSD Guidance on Avoided Emissions:

The reference scenario

- → A conventional landfill with no biogas capture system in place.
- → Before the installation of the solution, Iperó in Brazil was a conventional landfill. There, 10% of the biogas generated by anaerobic waste degradation was captured (oxydized by the waste itself); the rest was released to the atmosphere.
- → Biogas contains a significant amount of methane (CH_4), a greenhouse gas with around 28× the warming impact of CO_2 (IPCC AR6).

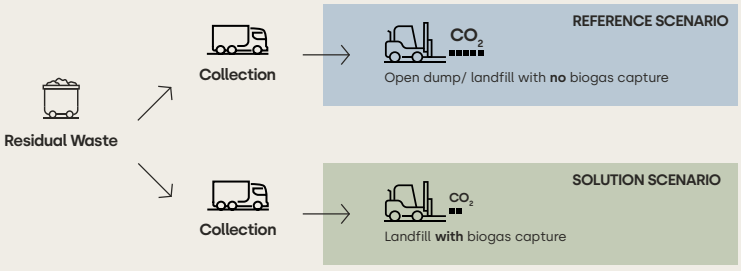
The low-carbon scenario

- → The Iperó landfill is now equipped with Veolia's biogas capture and treatment system. The system captures ~ 69% of the biogas generated and converts the methane into CO_2.
- → This conversion reduces the warming potential of methane by a factor of 28 compared with direct methane release.

Source: Veolia

How it works

System boundaries



The solution reduces Scope 1 emissions (direct methane emissions) of the facilities where the capture and treatment system is installed.

WBCSD Avoided Emissions Eligibility Gates

☑ Gate 1: Climate Action Credibility ☑ Gate 2: Climate Science Alignment ☑ Gate 3: Contribution Legitimacy

Context of the use case

Iperó is one of six landfills operated by Veolia in Brazil and one of 113 non-hazardous, non-inert waste landfills operated by Veolia worldwide.

Environmental and social side effects

None identified.

Third-party verification

KPMG verifies Veolia's application of the company's internal calculation protocol.