

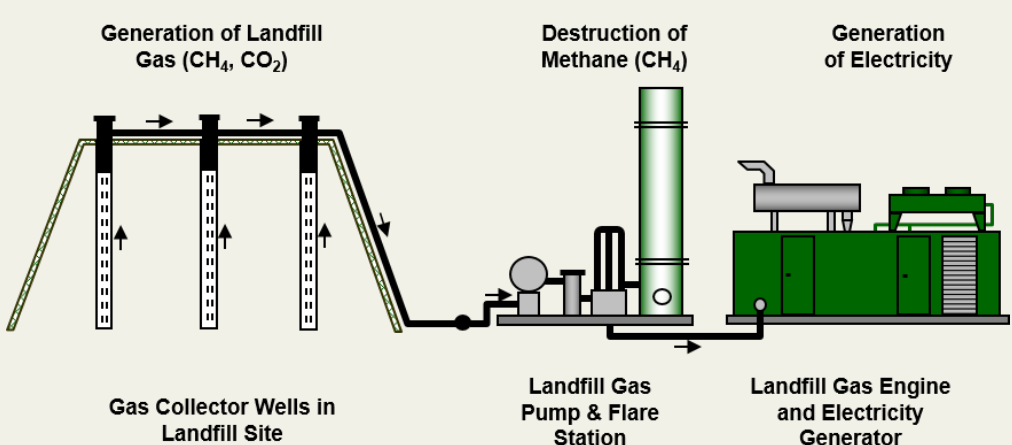
ICP-AGIR Best Practice for CAPE TOWN (South Africa) / HAMBURG (Germany)

Landfill Gas Extraction	
	City of Cape Town (South Africa)
Departments / Institutions involved	<p>Urban Waste Management</p> <p>Dr Shaazia BHAIHLALL, Head, Research and Development, Solid Waste Management, City of Cape Town shaazia.bhailall@capetown.gov.za</p> <p>Ms Margot LADOUCE, Manager, Disposable Waste, City of Cape Town margot.ladouce@capetown.gov.za</p>
ICP AGIR City Coordinator and contact data	<p>Mr Faith KOLALA, Manager, Growth Coalitions, Enterprise and Investment Department, City of Cape Town faithchilufya.kolala@capetown.gov.za</p>
ICP AGIR Pairing Manager	<p>Mr Andreas SIEREN andreas.sieren@icp-agir.eu</p>
Description of the best practice	<p>The City of Cape Town has a registered Programme of Activities (PoA) under the Clean Development Mechanism (CDM) for the Landfill gas (LFG) extraction and utilisation at three landfill sites. The project focusses on greenhouse gas reduction and energy production. Landfill gas is flared and/or used for energy production. As a registered CDM project, carbon credits are also achieved. These credits will be used towards the City's carbon tax liabilities as well as made available for selling. The project is active and was commissioned in 2018 at the Bellville landfill site and the Coastal Park landfill site. The gas extraction system has been installed at the Vissershok landfill site and is due to be in operation in 2023.</p>
Theme and sub-theme if appropriate	Renewable Energy

Description of Best practice	
Challenge Addressed	<p>The migration of LFG and leachate away from landfill boundaries and their release into the surrounding environment can result in serious pollution, mostly regarding air and water quality. It can also lead to various other hazards such as fire and explosion and health risks. Emissions due to waste decomposition contribute to air pollution and create nuisance problems due to odours. The most significant environmental problem associated with LFG</p>

	emissions is its contribution to the increase of global greenhouse gases in the atmosphere.
Solution Implemented	<p>Each Project Component Activity (CPA) under the PoA comprises of controlled extraction and collection of LFG from new or existing Solid Waste Disposal Sites (SWDS), which will subsequently be combusted via a combination of flaring and use for either electricity generation or as a source of generating heat. The PoA falls into Sectoral Scope 13, Waste Handling and Disposal as well as Sectoral Scope 1 Energy Industries (renewable - / non-renewable sources).</p> <p>The technology employed is landfill gas collection and combustion by flaring with energy recovery. These systems are proven in South Africa and widely used in Europe, North America, and other parts of the world.</p> <p>The measures employed by each CPA to collect and combust the LFG will include the following items of equipment:</p> <ul style="list-style-type: none"> • A network of vertical and/or horizontal landfill gas collection wells installed within the waste; • Landfill gas collection pipework connected to the wells, which will draw the collected gas back to a single location (gas extraction compound); • Blowers to apply suction to the pipework, allowing the landfill gas to be extracted; • Condensate management systems to remove excess liquid from the gas collection pipework; and • An enclosed compound area which will provide the focal point for gas collection and house associated monitoring instrumentation and data recording systems as required to monitor the CPA. <p>Once the landfill gas has been captured, it is combusted within the project boundary in a flare and/or engines to produce electricity which will be exported to the electrical grid supply network (offsetting the consumption of power which would otherwise have been predominantly generated by fossil fuel sources).</p> <p>Currently there is 2MW of engines installed at Coastal Park. The design for 7-9MW of energy capacity for the Vissershok landfill site is underway.</p>
Partnerships	200 Characters
Lessons Learned	As a first registered PoA in South Africa, many lessons have been learned in this project. These cut across the administration as well as the technical side of the project. The main challenge has been overcoming hurdles with the Municipal Management Finance Act (MFMA) and tender processes within the municipality for the sale of carbon credits.
Main Milestones	Two successful issuances, for CERs up to 31 December 2020: 126 274 and 115 237 issued for the Coastal Park landfill site.

--	--

Materials for promotion	
Quote from city representative	<p>“The teams who are working on landfill gas flaring activities and electricity generation at landfill sites should be thoroughly commended for the good work they are doing. Although the expected contribution of waste-to-energy activities is relatively minor (i.e., not sufficient to reduce load shedding on their own), the reduction in emissions is significant and will be achieved effectively at no additional cost to the ratepayer”, says Alderman Grant Twigg, Mayoral Committee Member for Urban Waste Management, City of Cape Town.</p>
Graphic Material	 <p>The diagram illustrates the process of landfill gas management in three stages:</p> <ul style="list-style-type: none"> Generation of Landfill Gas (CH₄, CO₂): Shows a cross-section of a landfill with three vertical wells. Arrows indicate gas rising from the waste and being collected in the wells. Destruction of Methane (CH₄): Shows a pump and flare station where gas is processed. A tall flare stack is visible, indicating the combustion of methane. Generation of Electricity: Shows a landfill gas engine and electricity generator where the gas is used to produce power. <p>Labels in the diagram include: Gas Collector Wells in Landfill Site, Landfill Gas Pump & Flare Station, and Landfill Gas Engine and Electricity Generator.</p>
Online links	<p>https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/DE6NVSPRWHCJ178ZMBYL39FKIU40AX/view</p>