

SOUTH AFRICA WASTE MANAGEMENT DECISION-MAKING TOOL

In 2011, South Africa generated 59 million metric tons of general waste, of which 13 percent was organic, biodegradable waste, and only 10 percent of all general was recycled¹.

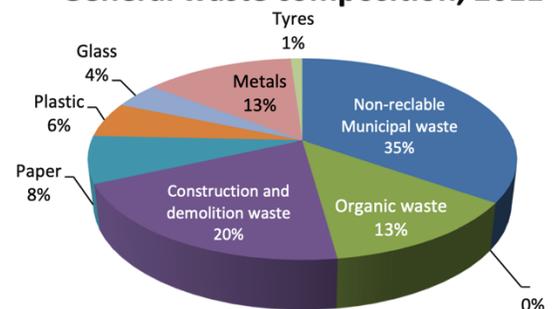
Over the years, increasing industrialization and urban development has led to rapid growth in the amount of solid waste generated and a shortage of landfill space for disposal. Most cities and local municipalities across South Africa have little space left in existing landfills and the process of securing new landfill sites is long, expensive, and complex.

Municipalities must begin exploring new and innovative solutions in solving the waste problem and finding alternative waste management options. This position is reinforced by the fact that landfills, where 65 percent of organic waste is disposed², contribute significantly to the increased emission of greenhouse gases (GHGs).

Organic waste, when managed correctly, has the potential to be transformed into fertilizer or renewable energy to be used directly by a municipality or sold for a profit, thus creating a new revenue stream for municipalities.

Most municipalities, however, simply do not have the data or resources to evaluate or change their waste management processes to take advantage of this valuable resource.

General waste composition, 2011



Source: South Africa Department of Environmental Affairs (2012), National Waste Information Baseline Report.



Typical scenario at a dump site in South Africa. Photo: Jason Schäffler

¹ South Africa Department of Environmental Affairs (2012), National Waste Information Baseline Report. Department of Environmental Affairs. Pretoria, South Africa.

² Ibid.



A NEW DECISION-MAKING TOOL

To help the Government of South Africa reduce its waste footprint in a sustainable way that aligns with the green economy vision in its [National Development Plan 2030](#), the USAID South Africa Low Emissions Development (SA-LED) program developed the [South Africa Waste Management Decision-Making Tool](#) to help municipality-level decision-makers estimate impacts and benefits of adopting alternatives to landfilling of organic waste.

The tool is the outcome of a waste characterization study for the Garden Route District Municipality (see poster linked [here](#)). It is a basic model that integrates waste stream metrics with corresponding renewable energy opportunities to use that waste for LED applications. SA-LED aimed to provide the municipality with a dynamic, real-time decision-support tool to enable the municipality to run basic scenarios for a particular waste stream and its potential renewable energy utilization.

Alternative waste management practices include:

- Recycling
- Waste-to-energy
- Composting
- Anaerobic digestion

For each alternative practice, the tool calculates:

- Avoided landfill waste
- GHG emissions reductions
- Energy use
- Jobs supported



USING THE DECISION-MAKING TOOL

The comprehensive tool allows for both a high-level and fully detailed assessment of the different evaluation criteria and notes data sources and assumptions used to improve transparency.

The user simply enters the amount of waste inputs in the **Waste Inputs** tab (see **Figure 1**) according to material type and management practice, and the tool automatically applies material-specific factors to calculate the results.

The user can construct various scenarios by entering alternate values assigned to materials or management practice.

Figure 1: Waste Inputs tab of the Waste Decision Support Tool

Waste Inputs
Use this worksheet to describe the waste stream that you want to compare. The blue shaded areas indicate where you can enter information.

- Select your waste stream:
 - Mixed Organics

For descriptions of the available waste streams, refer to the Waste Streams tab. Source: EPA (2018).
- Enter the amount, in tonnes, of waste you want to divert from the landfill:
 - 100 tonnes
- Select the alternative management scenarios you would like to compare:
 - Recycling
 - Waste-to-Energy
 - Composting
 - Anaerobic Digestion

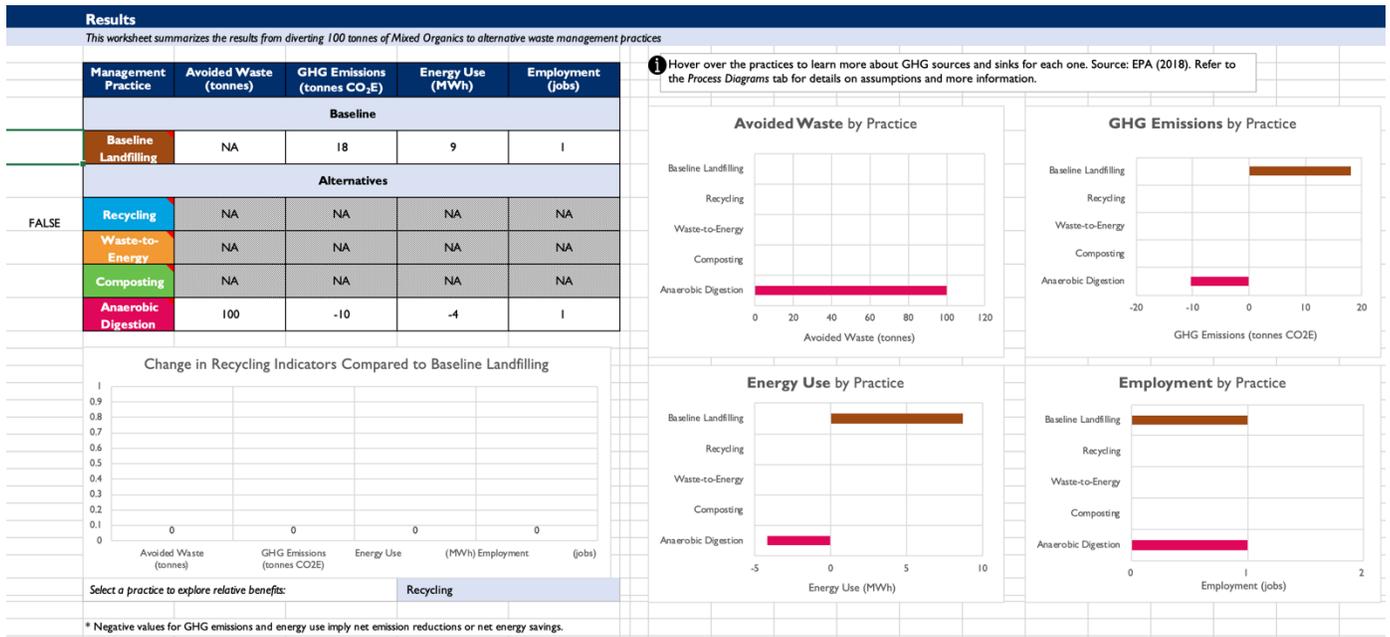
Note: not all alternatives are available for every waste stream. Alternatives not available will appear greyed out.

Refer to the Process Diagrams tab to learn more about GHG sources and sinks for each scenario and for details on assumptions and more information. Source: EPA (2018).

Introduction | User's Guide | Process Diagrams | Data Sources | Glossary | Waste Streams | Waste Input

The tool then automatically updates the results on the **Summary Results** tab (see **Figure 2** below).

Figure 2: Summary Results of the Waste Decision Support Tool



WHO SHOULD USE THE DECISION SUPPORT TOOL?

The [South Africa Waste Management Decision-Making Tool](#) is a valuable resource for waste managers and decision-makers at local, regional, and national government levels alike for understanding how the impacts and benefits associated with waste disposal go beyond the landfill and can help put the nation on the path towards a green economy.



Quickly and easily estimate a number of benefits of alternative waste management practices.



Compare different waste management practices to determine which would be most beneficial.



Inform waste management decision-making for different alternatives.