The waste-to-energy opportunities and constraints

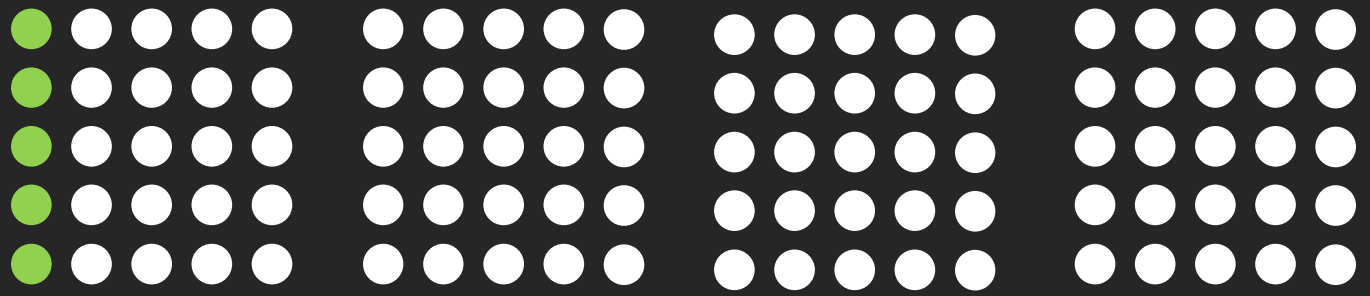
Biogas Interest Group

BIOENERGY ASSOCIATION

Waste Sector Emissions

91%
Solid
Waste

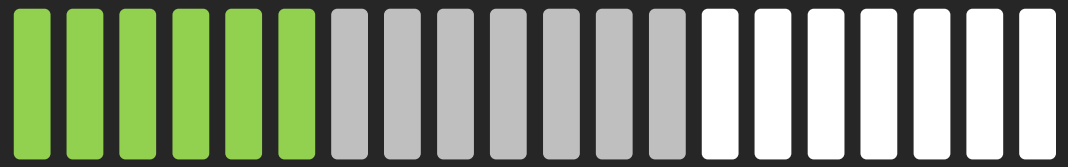
9%
Waste
Water



4.9%

Total NZ GHG emissions

Solid Waste Emissions

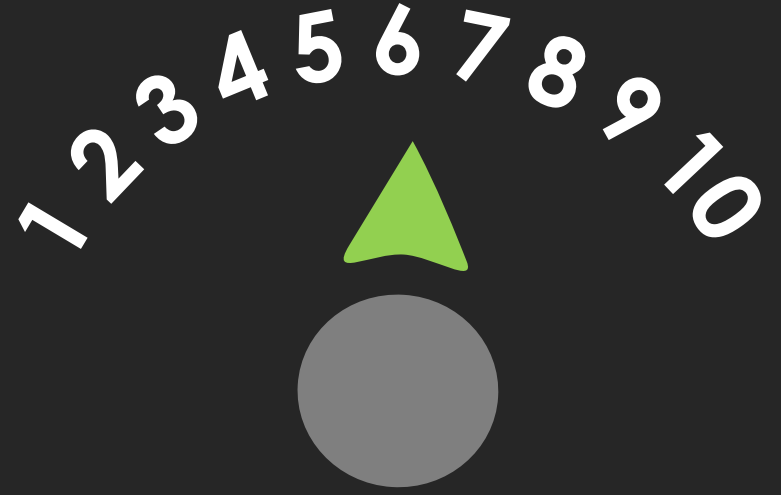


30% 35% 35%

Managed landfills

Unmanaged (non-municipal) landfills

Unmanaged (farm) landfills



60%

Gas capture efficiency from MSW

Wastewater Treatment Emissions

43%

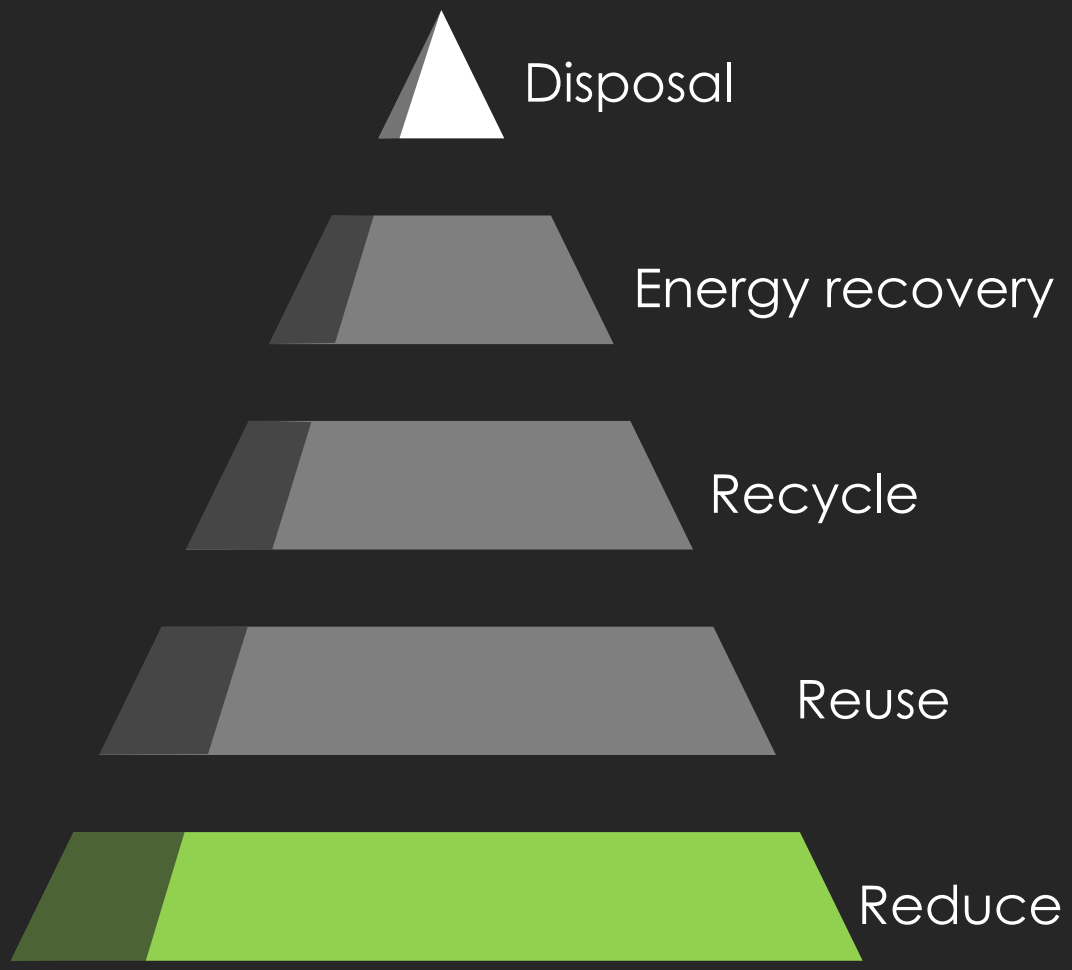
WW emissions from industrial waste treatment

4.7%

Municipal treatment plants with gas recovery

Co-digestion opportunities

Waste Hierarchy



2050 Scenarios

2050	BAU	Encouraged	Accelerated
nett GHG emissions change from 2017	**+ 40**	**- 250**	**- 515**
total biogas production	**0.50 PJ pa**	**2.3 PJ pa**	**8.9 PJ pa**
Assumption 1	No policy change	Change in procurement strategies, collaborative growth strategy	Policy driven reduction of organic waste to landfill, increasing public pressure
Assumption 2	Uses existing technologies and an extension of current trends.	Low cost improvements to existing treatment facilities	29 municipal WWTP with co-digestion facilities
Assumption 3	Improved landfill gas capture efficiency to 69 %	Improved landfill gas capture efficiency to 69 %	Improved landfill gas capture efficiency to 69 %, increase in landfill fees
Assumption 5	Minimal processing of agricultural or food production residues	Industrial and food waste digestion	All trade waste treated in co-digestion facilities
Assumption 6	Carbon and electricity price remain low	Carbon and electricity price remain low	Significant increases in carbon price, industrial heat prices

Waste disposal to waste utilisation takes a ‘mindset change’

Action by Government

- Incentivise waste reuse
- Zero organic waste to landfills by 2050
- Provide guidance to territorial authorities for optimising WWTP for beneficial treatment of trade wastes for reduction of emissions and operating costs.
- Provide guidance on the use of biomethane as a vehicle fuel.

Action by BANZ

- Demonstration projects
- Technical guides– use of biomethane as energy source
- Validation of the use of anaerobic digestion digestate as a fertiliser

Lack of integration of waste supplies, waste processing and production of useful products.

Action by Government

- Alignment of policies and standards across relevant sectors to harmonise supply and value chains
- Provide guidance and assistance to territorial authorities for the planning, assessment and implementation of multi-stream treatment of food and organic waste to produce energy.

Action by BANZ

- Targeted tours
- Case studies/LCA
  - use of biogas for industrial heat
  - regional digestion plant

Procurement policies and structures. These are different for waste to energy projects.

Action by Government

Incentivise funding and investment for the circular economy

Action by BANZ

- Develop an investment advisory and provide workshops to councils and appropriate manufacturers

Lack of knowledge and capability.

Action by Government

- Aligning skills and capability for the new circular economy with education and training organisations
- R&D into the high value uses of biogas such as a feedstock for the manufacture of bio-based materials

Action by BANZ

- Training programmes
- Skills and capability strategy

Discussion

The actions and path forward to assist achieve net-zero emission targets from waste via Waste to Energy

BIOENERGY ASSOCIATION