

Zero Waste Solutions for Local Governments

What is residual waste? Everything that is left over after all compostable, re-usable and recyclable materials have been removed and separated from the Municipal, Commercial, Industrial, Construction and Demolition waste streams. In addition, residual waste is generated from public place and events - general waste bins, Material Recovery Facilities and other facilities that handle or reprocess waste. In general, residual waste is created whenever waste is co-mingled (ie mixed waste recycling collection) poorly separated or when source separation is not afforded to residents, businesses and industry.

Do waste to energy incinerators solve the residual waste problem? No. Waste to energy incinerators turn our residual waste into highly toxic ash requiring dedicated hazardous waste landfills or treatment, while also emitting dangerous air pollution. For every four tonnes of residual waste burned, one tonne of toxic ash is created. Waste to energy incinerators merely reduce the volume of residual waste society generates, transforming it into a more problematic hazardous waste legacy for future generations. Waste to energy incinerators require large volumes of waste feedstocks which entrench the generation of residual waste, making very little, if any, energy while locking local governments into risky financial contracts.

Solutions for residual waste.

1. Investment in Zero Waste Policies. Zero Waste Systems are the backbone of a Circular Economy. They generate clean waste resources for reuse, composting and safe recycling, returning these materials back into the economy, replacing raw and often extracted finite resources. Effective collection and source separation systems are key to reducing residual waste volumes. This means ensuring our citizens have access to separate waste collection services at home and in public for organics (composting) and recyclables (metals, plastics, paper, cardboard, glass). Investing in better collection services (ie separate material collection, not mixed waste dump trucks) and source separation (ie dedicated material recovery facilities) creates more jobs, generates cleaner and more valuable waste streams while vastly reducing the volumes of residual waste generated and needing disposal.

2. Mechanical Recovery Biological Treatment (MRBT) is a non-combustion residual waste treatment technology that is proven, effective and does not generate toxic ash or air pollution. MRBT neutralises residual waste so that methane and bacteria are eliminated, and the volume of waste is vastly reduced. Our recent study – *Greenhouse Gas and Air Quality Impacts of Incineration and Landfill in Australia* - confirmed that landfill with full pre-treatment (ie zero waste policy and MRBT) was the best outcome for our climate, health and air quality.

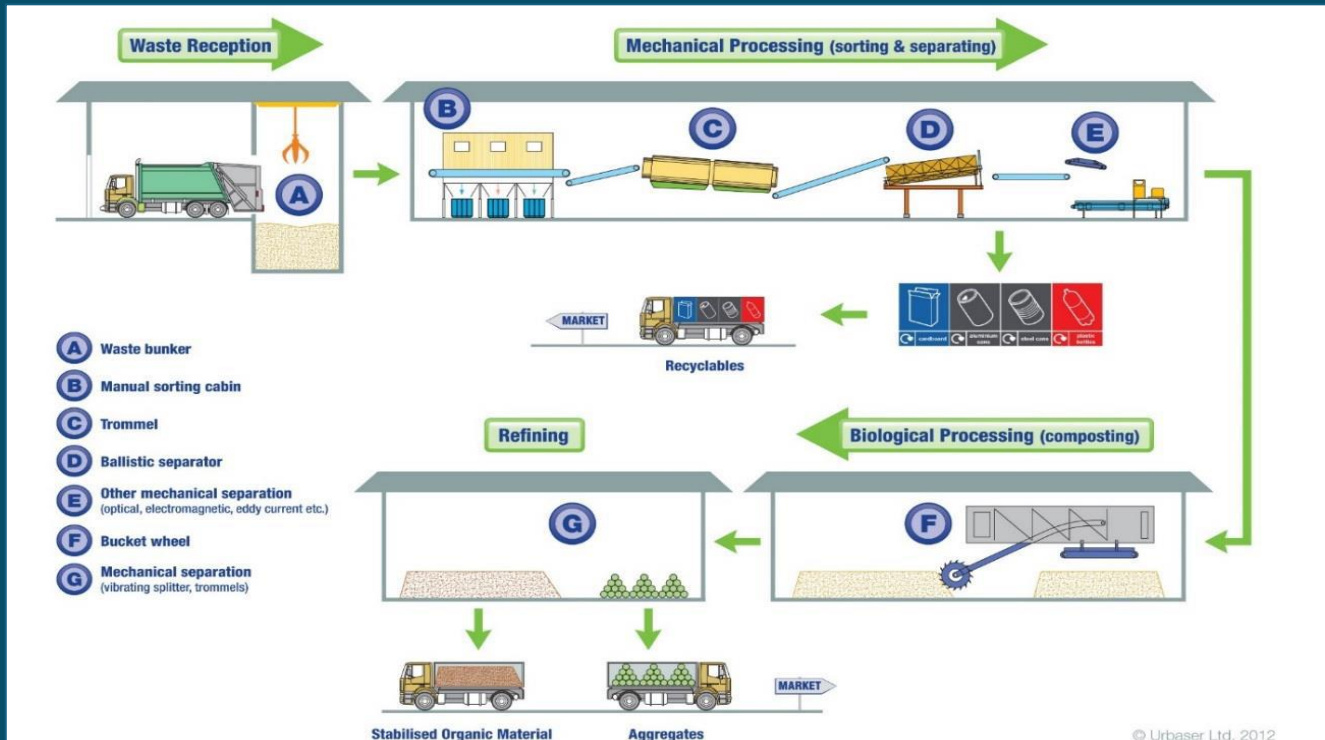
3. Non-Combustion Technologies. Gas Phase Chemical Reduction (GPCR) and Super Critical Water Oxidisation (SCWO) have the potential to not only manage our residual waste but also hazardous waste (the fastest growing waste stream), without the associated dangerous pollution impacts that waste (and hazardous waste) incineration causes.

Local Government investment in these three residual waste management options is safer, cheaper and more effective than waste to energy incineration. MRBT and Non-Combustion Technologies also generate energy.

For more information: www.zerowasteaustralia.org www.toxicsfreeaustralia.org.au www.noburn.org
www.ipen.org www.zerowastecities.eu www.zerowasteurope.eu

Schematic for Mechanical Recovery Biological Treatment plant for residual waste

Reference: Urbasa Ltd.



NON-COMBUSTION TECHNOLOGY FOR POPs WASTE DESTRUCTION

REPLACING INCINERATION WITH CLEAN TECHNOLOGY

April 2021

Sweden
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ZERO WASTE TO ZERO EMISSIONS

How reducing waste is a climate gamechanger

70% The materials we make use, and those we are recycling, are changing. As much as 70% of global GHG emissions are associated with materials recovery for extraction (mining), production (refining), distribution, transportation, etc.)

3.3% Methane is a powerful greenhouse gas. Despite U.S. bans on much food as CO₂ over a 20-year lifespan

84% Implementing zero waste strategies can reduce overall GHG emissions from waste by an average of 84% (ranging from 50% to 95%)

Climate MITIGATION

- Plastics in landfills and plastic in waste incinerators are the two biggest sources of GHG emissions in the waste sector.
- The zero waste model can transform the waste sector into a net negative source of GHG emissions.

Climate ADAPTATION

- Single-use plastic bans and the food recovery and effectively can slow GHG emissions, prevent flooding, and reduce the risk of breeding disease vectors.
- Composting benefits the soil quality by increasing moisture storage capacity, biochemical parameters, crop production, and water retention.
- Soil quality is degraded and less resilient to extreme weather events, resulting in low crop yields.
- Composting also prevents floods, mudslides, and loss of food crops.

Additional BENEFITS

- Commercial and community composting can be healthier to preventing pollution, food, water, and energy security also improve.
- ZW creates jobs and innovative businesses in the reuse arena, and helps cities save money by reducing the waste management costs.
- Zero waste systems integrate waste policies and help the community build a stronger democracy through collective planning and implementation.

HOW COMPOSTING COMBATS THE CLIMATE CRISIS

1 AVOIDS WASTE OUTCOMES WITH HIGH EMISSIONS

Landfilling food scraps produces **20x** the CO₂e emissions (on equivalent as composting)

Landfills are the **third-largest** source of human-related greenhouse gas emissions in the U.S.

2 ENHANCES SOIL QUALITY

Compost increases:

- Nutrients in soil** - Grows healthier, more resilient plants & food. Reduces use of synthetic nitrogen & fast-acting fertilizers. Synthetic nitrogen accounts for 80% of human-caused climate change emissions.
- Water holding capacity** - Increases soil resiliency to extreme heat & flooding.
- Soil aggregation** - Prevents erosion & runoff, thus protecting & restoring waterways.

Normally it takes **1,000 years** to build 6 inches of topsoil with compost, it takes only **6 months**.

3 SEQUESTERS CARBON

World's soil holds **1.5 trillion** tons of carbon in the form of organic matter.

What's the use of the best way to build soil organic matter? **Compost**.

75% of a car's annual emissions are from the tires.

Compost also increases crop yields in agriculture, thus acting as a powerful carbon sequestration.

4 BUILDS COMMUNITY RESILIENCY

Healthy soil =

- Food security
- Profitable farms
- Enhanced habitat & biodiversity
- Resilient ecosystems

Community composting =

- Local jobs
- Environmental education
- Community bonds & safety
- Physical activity & healthy diets
- Social inclusion & empowerment

HSR

illr.org/compost-climate

For more information visit www.zerowasteaustralia.org