





Waste-to-energy plants, or incinerators with energy recovery, treat black-bin/residual municipal waste (household, commercial and similar wastes) that cannot be reused or recycled. It uses the non-recycled material as an energy source which in turn allows Europe to be more self-sufficient in energy production.









ENERGY RECOVERY



MATERIAL RECOVERY & RECYCLING



RENEWABLE ENERGY



LOW CARBON

Landfill is widely considered to be the least preferable option for waste management and should be limited to the necessary minimum. International standards and obligations have focused on moving waste up the hierarchy. Diverting waste from landfills reduces GHG emissions from waste treatment by avoiding methane emissions (methane is 28 times more potent than CO2).<sup>1</sup>

Waste-to-energy is a well-established technology but relatively new in the Irish context. The EU considers it a key technology in realising the objectives of the circular economy and Energy Union. The banning of recyclable waste from landfill and the introduction of landfill levies have effectively assisted in driving residual waste up the waste hierarchy. Against the backdrop of an increased (and growing) population, the decline in available landfill capacity is outpacing the development of alternative waste treatment infrastructure.

 $<sup>^1</sup>$  Intergovernmental Panel on Climate Change, Climate Change 2013: The Physical Science Basis. Contribution of Working I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.



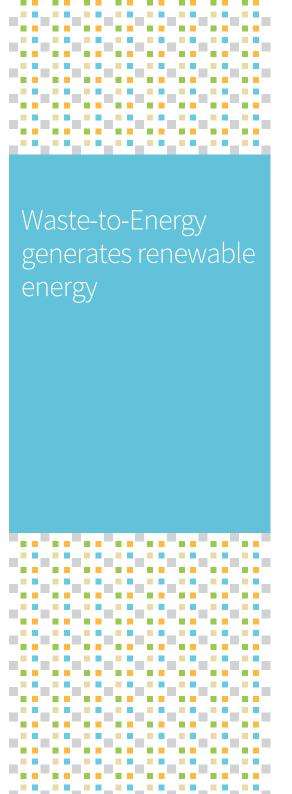
The goal of the Energy Union is to give EU consumers - households and businesses secure, sustainable, competitive and affordable energy.

## The waste hierarchy

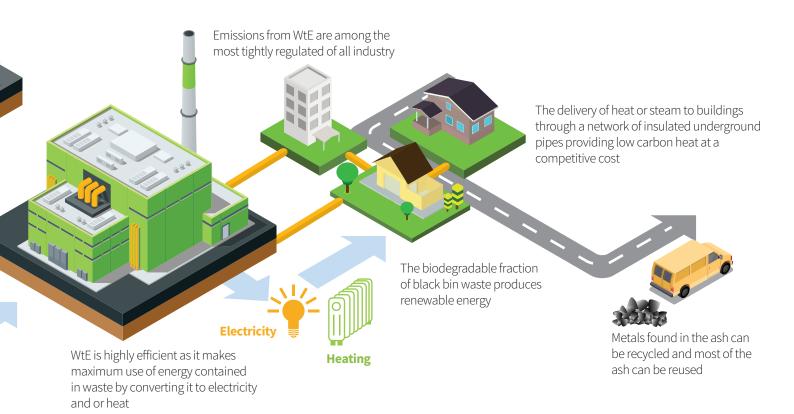


A circular economy
is an alternative to a traditional
linear economy (make, use, dispose)
where the aim is to keep resources
in use for as long as possible,
extract the maximum value from them
whilst in use, then recover and
regenerate products and materials.















**ENERGY RECOVERY** 



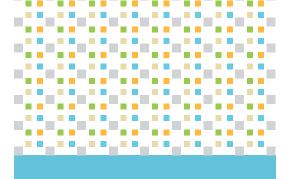
MATERIAL RECOVERY & RECYCLING



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LOW CARBON



Innovative low carbon heating and transport solutions

# Low carbon district heating

District heating systems deliver heat for both space heating and water heating needs to homes and industry through a network of insulated underground pipelines. Typically a heating network has three main components: one or more energy centres, a network of pipes and connections to customers. It allows heat to be used from sources that would not normally be possible within individual dwellings or buildings.

District heating systems improve energy efficiency, reduce carbon and reduce running costs. It makes sense from an efficiency point of view to have one large centralised heat source supplying all of the buildings and properties in a scheme, rather than each having a separate small boiler.





LANDFILL DIVERSION



**ENERGY RECOVERY** 



MATERIAL RECOVERY

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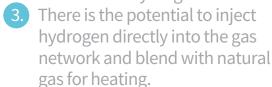
LOW CARBON

# Potential of power to gas

Hydrogen produced from a waste-to-energy plant has the potential to decarbonise the gas grid and provide low carbon fuel for cars, bus & truck fleets and trains.



2. During these times, the excess electricity can be diverted from the grid to electrolysers which convert it to hydrogen.



 Alternatively it can be used as a fuel for hydrogen vehicles resulting in zero tailpipe emissions.







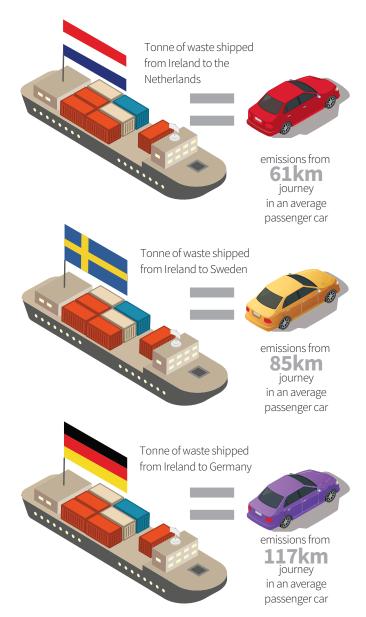
## Material recovery and recycling

Waste-to-energy makes use of materials that have already been discarded.

Incinerator bottom ash (IBA) is a by-product of the waste-to-energy process. Following combustion the ash typically has a small amount of metals contained within it. After metals are removed for recycling, when processed the ash can be used as an aggregate, for example, in pavement concrete or in lightweight blocks.

## An alternative to export

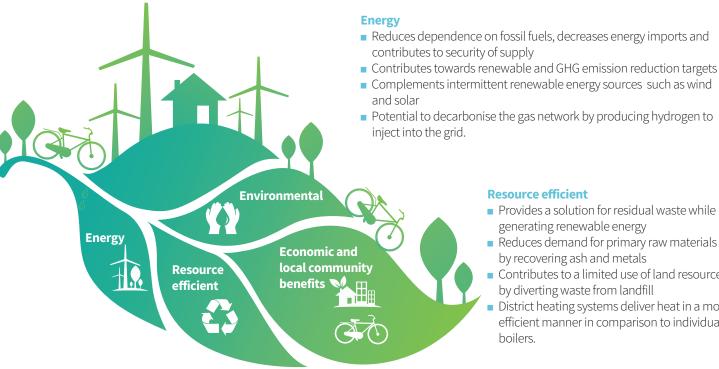
Having enough waste-to-energy capacity ensures self-sufficiency and the clean, safe treatment of waste without the need to rely on other countries to treat our waste.





### **Environmental**

- Diverts waste from landfill reducing GHG emissions
- Avoids emissions which would be produced from biodegradable waste if it was landfilled.



- Provides a solution for residual waste while generating renewable energy
- Reduces demand for primary raw materials by recovering ash and metals
- Contributes to a limited use of land resources by diverting waste from landfill
- District heating systems deliver heat in a more efficient manner in comparison to individual boilers.

### **Economic and local community benefits**

- Provides cost effective waste treatment solutions for households and business
- WtE facilities make financial contributions to organisations in their local communities. Funding has been made available to schools, drama & sports clubs, environmental & heritage organisations, substance abuse rehabilitation schemes, festivals and art installations.

