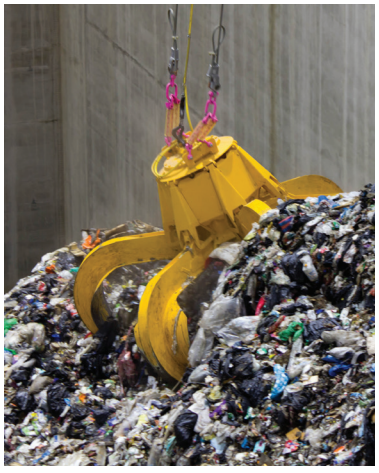
Resource Recovery UK

Resource Recovery UK's Manifesto for a Sustainable, Circular Future



Executive Summary

As the UK works towards its 2050 net zero target and builds a circular economy, it's imperative that we decarbonise quickly while making the best use of existing resources. Resource Recovery UK, the new alliance of UK energy from waste (EfW) operators, believes the sector has a critical role in making this a reality because of its unique position to recover resources from waste that is not recycled.

The UK's EfW sector can help build sustainable national infrastructure where it is needed, spread benefits to local communities, and deliver private investment in technologies and solutions which support the UK on its journey to net zero. With the right policy frameworks in place, EfW can be a significant generator of sustainable growth, jobs and investment. To fulfil this opportunity, it is vital that the UK has a policy landscape that supports domestic energy from waste in comparison to landfill and exports, whilst incentivising investment in exciting new decarbonisation technologies.

2023 is a critical year, with decisions to be taken that will impact the sector for decades. Our manifesto outlines the key steps that policymakers and industry can take to ensure the opportunity is not wasted.

The three areas most critical to making this happen are:

1. A **carefully sequenced expansion of the UK Emissions Trading Scheme (ETS)** to include waste incineration (with no energy recovery) and EfW no earlier than 2028. Crucially, this expansion must coincide with a ban on biodegradable municipal waste going to landfill, as well as measures to prevent both waste exports and landfill from becoming cheaper than EfW. Landfill taxation has worked to reduce waste sent for burial, but if it is not aligned to the UK ETS then the unintended consequence will be to incentivise landfill over recovery via EfW facilities.

2. Policies to support EfW facilities accelerating the **decarbonisation of key industries and communities**. These include the **inclusion of carbon removals in the ETS**, creating new revenue for carbon negative EfW facilities using carbon capture technology, and **support to underpin the growth of heat networks** in the UK, helping to provide reliable, cost effective, low carbon heat to more homes and buildings.

3. Steps to boost EfW's **contribution to the green economy**, including recognition of **critical social infrastructure** in the upcoming National Infrastructure Assessment and UK Green Taxonomy.

What is energy from waste?

Energy from waste (EfW) is a method of generating energy from non-recyclable waste that would otherwise be sent to landfill or exported abroad.

By utilising modern technologies, EfW plants generate electricity and heat from waste, reducing our reliance on landfill or foreign waste exports and supporting the UK's circular economy.

With these changes, and the wider measures set out in our manifesto, we are confident in the EfW sector's ability to play a significant role in delivering against the UK's shared environmental, economic and social objectives – while simultaneously continuing to provide an essential public hygiene service that recovers resources from waste that is not recycled.

Energy from Waste in the UK

The EfW sector is critical to our everyday lives. It is a simple fact that not all waste can be recycled or reused, requiring infrastructure that can provide a safe and sustainable solution to what remains – otherwise known as residual waste.

Of the millions of tonnes of waste produced by UK households each year, only around 44% is recycled – a figure that shows more must be done to increase our recycling and reuse rates. This leaves around 29 million tonnes of residual waste.

At present, around 47% is sent to landfill, generating high levels of harmful emissions and creating a legacy waste challenge for future generations.[1]

EfW offers a safer and more sustainable option. By recovering energy, heat, metals and ash from the nation's non-recyclable waste, our facilities recover resources that prevent the use of virgin materials, thereby contributing to a circular economy. Through our investment in new technologies for carbon capture and storage and heat networks, we are supporting the UK's journey to net zero carbon.

1 Department for Environment, Food and Rural Affairs, J4: Residual waste arising by type and sector

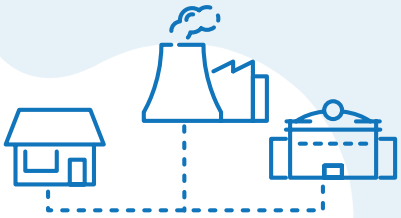
Mapping EfW's positive impact across the UK

15.32Mt

of non-recyclable waste diverted from landfill in 2022[2]

41%

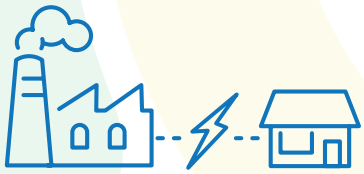
lower emissions footprint than landfill[4]



1,770GWhth[2] of heat generated in 2022, equivalent to switching

147,000

homes away from gas[3]



3 million

British homes powered by homegrown energy in 2022[3] (9,428 GWh)[2]

£15bn

invested into modern energy from waste infrastructure by 2025 (since 2010, over a 15-year period)[5]

2 Tolvik Consulting, UK Energy From Waste Statistics – 2022
3 Calculated based on Ofgem 'medium' household usage
4 Independent research carried out by ERM Consultancy
5 Tolvik market intelligence, Estimated Cumulative Investment in New Facilities

1. Creating a more sustainable, integrated waste system

Our sector is already working to improve the sustainability of waste infrastructure, with a focus on new technologies that reduce emissions from core operations. We also want to see resources used as effectively as possible. We actively support efforts to prevent waste whilst boosting recycling rates, particularly of plastics which are a major contributor to the sector's carbon emissions. Progress has been made, but now is the time for more ambitious action.

A key component of this will be the Government's proposed expansion of the UK Emissions Trading Scheme (ETS) – a 'cap and trade' system that caps the total level of greenhouse gas emissions and creates a carbon market – to cover waste incineration (with no energy recovery) and EfW. If implemented in the right way and in partnership with industry to align with a ban on biogenics to landfill, we are supportive of EfW's inclusion within the ETS. We believe it will play a critical role in accelerating the decarbonisation of the sector by incentivising operators to adapt their practices and adopt innovative technologies.

One such technology is Carbon Capture and Storage (CCS), the rollout of which is critical to decarbonising waste infrastructure – including future and existing facilities. With facilities offering a reliable base load supply of carbon dioxide supply, backed by long-term contracts, we are confident that EfW can underpin the Government's carbon capture strategy, with success contingent on matched Government support.

We are encouraged that two EfW carbon capture projects have been selected by the UK Government to move forward to commercial deployment. We are confident the sector can maximise the potential of this technology, while also kickstarting a new market for negative emissions in the UK. Every time carbon capture is carried out at an EfW plant, negative emissions are generated due to the biogenic content of the waste we receive. This puts EfW in a unique position to drive forward the negative emissions market. We are the only industry able to do so repeatedly at this scale, which is critical to achieving the UK's net zero target – as recognised by the Climate Change Committee.

Negative emissions are achieved via processes which remove more CO_2 from the atmosphere than they put into the atmosphere. There are many methods to achieving negative emissions, which fall into two main groups: technological solutions and "nature-based solutions". Carbon capture and storage is an example of a technological solution.

Member case study:
Cory Carbon Capture and Storage (CCS) project

Cory intends to apply CCS technology to the UK's largest single-site EfW operation, with the potential to create the world's largest single-site EfW decarbonisation project. The project will involve the installation of technology to capture c.90% of the emissions from Cory's existing EfW facility, and its new, adjacent EfW facility which is expected to be operational by 2026.

Cory's location on the banks of the River Thames means that captured CO_2 can be transported for undersea storage via ship – this offers a non-pipeline transport option as specified in the Government's recent update to the CCUS cluster sequencing. By 2030, the project could capture c.1.3 million tonnes of CO_2 per annum – providing a significant contribution to reducing the carbon emissions of the several million people Cory serves in London and the South East.

Member case study:
Encyclis' partnership with Biffa to produce recycled aggregate

The Newhurst Energy Recovery Facility in Leicestershire is a state-of-the-art facility receiving up to 350,000 tonnes of residual waste every year, generating an estimated 42 megawatts of electricity in the process – enough to power 80,000 homes.

The developers of the facility, Encyclis and Biffa, have partnered with global carbon capture specialist O.C.O Technology, to apply its Accelerated Carbonation Technology (ACT) to recycle Air Pollution Control residues (ACPr) produced by the waste treatment process.

The ACT process transforms the residues into an artificial aggregate – known as Manufactured LimeStone (M-LS). With more CO_2 permanently captured than used in the manufacturing process, M-LS has been recognised as the world's first carbon negative aggregate.

As a result, the Newhurst ERF enables production of highly sought-after carbon negative aggregate, which is used in the manufacture of concrete blocks.

What the EfW sector is already doing:

- Bringing forward plans to invest billions of pounds in CCS across multiple facilities in the UK, with two projects (Viridor's Runcorn and Encyclis' Protos facilities) on the Government's Cluster Sequencing Track-1 Phase-2 negotiation list and other projects set to be entered into the upcoming Track-1 extension and Track-2 allocation rounds.
- Supporting the development of regulatory and economic support systems for CCS by participating in the Greenhouse Gas Reduction Business Model, Waste Industrial Carbon Capture Business Model and Industrial Carbon Capture Expert Groups, run by the Department for Energy Security and Net Zero.
- Diverting over 15Mt of waste from landfill per year, reducing methane emissions and preventing the production of leachate.[1]

The practical steps we want to see:

1. Bring EfW into the UK ETS no earlier than 2028. Crucially, to deliver on the Government's objectives, this expansion should:
   a. Coincide with a ban on biodegradable municipal waste going to landfill – currently scheduled for 2028.
   b. Be supported by measures to prevent landfill from becoming cheaper than EfW, ensuring that the cost of landfill rises with inflation and the cost of emissions trading.
   c. Include measures to reduce our reliance on landfill and foreign waste exports;
   d. Be swiftly followed by bringing carbon removals into the UK ETS from 2030.
2. Timely delivery of upstream interventions to reduce the amount of plastic reaching EfW plants including:
   a. Introduction of Extended Producer Responsibility and consistent kerbside collections at the earliest opportunity.
   b. An escalator in the Plastic Packaging Tax timetable to drive the value of recycling and reprocessing plastic.

1 Tolvik Consulting, UK Energy From Waste Statistics – 2022

2. Catalysing decarbonisation of key industries and communities

EfW operators can play a significant role in decarbonising other sectors and communities, contributing to the delivery of national, regional and local net zero strategies.

Heating homes and offices represents a third of the UK's overall emissions.[1] Our sector has the potential to make a big contribution towards decarbonising these buildings. Not only are many of our facilities located close to urban areas, but we produce large volumes of stable, reliable heat produced from the EfW process.

The UK Government has started to recognise the role heat networks can play in providing local sources of low carbon heat, which would otherwise go to waste. This heat can also be used to decarbonise critical industrial infrastructure as well as residential infrastructure which includes schools and hospitals. However, the UK is not currently harnessing the EfW sector's transformative potential in this area and is lagging behind other European countries, such as Denmark, where every EfW is required by statute to put its waste heat into a nationwide scheme. As a result, district heating currently supplies around 64% of Danish homes.[2]

A long-term vision and clear roadmap – one that recognises EfW heat sources as both critical infrastructure and as a utility that can support the decarbonisation of other sectors – is needed to fully realise the sector's contribution to this challenge.

The power generated by EfW plants today can also be used to power electrolysers, producing low carbon hydrogen to industrial users near our facilities. The hydrogen could also be used in the transport sector, such as waste delivery vehicles or public coaches. This could kickstart the commercial hydrogen economy in the UK and complement hydrogen production from other sources such as wind and solar.

1 Climate Change Committee report on buildings, 2022
2 Danish Energy Agency statistics

Member case study: **enfinium and DS Smith heat offtake partnership**

DS Smith is a leading global provider of sustainable packaging solutions, paper products and recycling services. Since July 2020, enfinium's Kemsley facility has provided steam generation at the DS Smith Kemsley Mill, the largest UK mill for recycled paper. This has reduced the mill's reliance on fossil fuel and supported the company's renewable energy requirements.

Between 2021 and 2022, the partnership resulted in an increase of over 92,000 MWh heat exports, and an increase of over 26,000 tCO_2e in emissions savings.

The two companies share an ambition to reuse resources wherever possible. Enabling enfinium's waste thermal energy to power DS Smith's operations has been welcomed as a synergistic opportunity by both businesses.

Member case study:
Veolia's South East London Combined Heat & Power (SELCHP) facility

Veolia's South East London Combined Heat & Power (SELCHP) energy recovery facility (ERF) takes collected waste from the surrounding boroughs of London and converts it into electricity and heat through a series of processes.

The facility is capable of handling 440,000 tonnes of waste a year, powering approximately 60,600 homes through the grid, and supplies 2,500 Southwark properties with low carbon heat and hot water using a 5km district heating network.

What the EfW sector is already doing:

- In 2021, 12 EfWs in the UK exported heat for beneficial use alongside power with an estimated total export of 1,845GWhth.[1]
- Providing low carbon heat to energy-intensive industries as an alternative to fossil fuels.
- Working with local authorities and housing providers to deliver district heat networks.

1 Tolvik Consulting, UK Energy from Waste Statistics – 2021

The practical steps we want to see:

1. Identify dedicated heat zones around well-situated EfW facilities that support critical infrastructure as well as residential areas.
2. Provide taxation alignment on domestic heating and heat networks to ensure a level playing field.
3. Bring heat waste within the remit of Ofgem to ensure consumers get a fair deal.
4. Support the production of low carbon electrolytic hydrogen from EfW facilities through the Government's Net Zero Hydrogen Fund.

3. Our sector's value to the UK

Through investment in upgrading and building new infrastructure, employment and skills, the EfW sector is already making a significant contribution to growing the UK's green economy.

By leveraging new technologies like CCS and hydrogen and facilitating emerging carbon utilisation technologies, the EfW sector has the potential to make an even greater impact and contribution – attracting private domestic and foreign investment, driving sustainable growth and creating jobs.

To ensure this opportunity is not lost, the sector needs to be supported by public investment and the right policy and regulatory landscape.

What the EfW sector is already doing:

- £15bn invested into modern energy from waste infrastructure by 2025 (since 2010, over a 15-year period).[1]

The practical steps we want to see:

1. Recognise the strategic role of low carbon waste infrastructure in the upcoming National Infrastructure Assessment; and designate waste and recycling as critical infrastructure.
2. Ensure that residual waste management aligned to net zero is included within the UK's Green Taxonomy.
3. Ensure recognition for Scope 4 emissions – otherwise known as 'avoided emissions' – in all statutory emissions reporting and consider ways in which it could be recognised within the UK ETS.

1 Tolvik market intelligence, Estimated Cumulative Investment in New Facilities

Member case study: **Viridor's Runcorn CCS project**

Viridor's Carbon Capture Plant at Runcorn is the largest opportunity to accelerate deployment of CCS to decarbonise the waste sector.

The UK Government announced in March 2023 that Runcorn Energy Recovery Facility's CCS Project has been shortlisted for the final stage in the Government's industrial carbon capture (ICC) sequencing process. The proposed plant will be one of the first carbon capture projects on an EfW facility in the world.

Developing CCS at Runcorn will kickstart a world leading carbon capture industry in the UK. The project alone will capture c.900,000 tonnes of CO_2 each year. Half of the captured CO_2 will be from biogenic sources, effectively removing 450,000 tonnes from the atmosphere annually and driving the development of a critical source of negative carbon emissions.

The project will provide stable baseload supply to the HyNet industrial carbon capture cluster in the North West and create net additional impact to the UK economy of 1,300 person-years of employment in design and construction, and c.60 high permanent jobs in operation and maintenance.

Carbon capture and storage is the foundation of Viridor's decarbonisation ambition to achieve net zero emissions by 2040, and to be the first net negative emissions waste and recycling company in the UK by 2045.

ENCYCLIS VEOLIA CORY Viridor enfinium

For further information please contact:
resourcerecoveryuk@headlandconsultancy.com

Resource Recovery UK