

A response to UKWIN's Climate Change Impacts Report (published October 2018)



CEO Foreword

The latest report published by the UK Without Incineration Network (UKWIN) – ‘Evaluation of the climate change impacts of waste incineration in the United Kingdom 2018’ – is deeply flawed.

This is both frustrating and highly concerning, as it risks diverting the attention of policy-makers away from the looming crisis of how to process the millions of tonnes of waste the UK produces every year that cannot be recycled.

The issue is not whether or not burning refuse to generate electricity is more carbon intensive than solar or wind power (it clearly is) but whether creating energy from waste is better than landfill operations, with their associated issues of leachate, unconstrained corrosive gas emissions to atmosphere, and water course pollution – to name a few.

None of this is mentioned in UKWIN’s report.

We completely agree that waste must be minimised and recycled as much as possible. After that it must be disposed of as cleanly, usefully and efficiently as possible.

For UKWIN to imply that landfill is carbon negative and therefore a preferable solution to EfW is incredibly irresponsible and in direct contradiction of the Government’s own legally-established waste hierarchy.

Handling the UK’s residual, non-recyclable waste in an environmentally-responsible manner cannot be taken lightly and requires constructive unbiased policies based on objective fact.

Unfortunately, UKWIN’s report does not support this in any way. Perhaps unsurprisingly, it also does not offer a single solution to the UK’s waste capacity crisis.

The following short document responds to UKWIN’s key arguments (We flesh these points out further in the supporting evidence below). Our hope is that it provides a balanced and data-based critique for policy-makers and wider opinion-formers. Our main objections to UKWIN’s report are as follows:

- 1. Comparisons of EfW with wind, solar and conventional fossil fuels overlook the fundamental principle that none of these energy sources offer a solution on how to deal with the millions of tonnes of residual waste the UK produces each year.*
- 2. Arguments that landfill is a preferable alternative to EfW are not backed by credible data and are rightly not supported by independent academics or government policy*
 - a. Contrary to this report, landfill produces significantly more CO₂ than EfW. We stand ready to have this conversation with all policy-makers and the public alike.*
 - b. The report overlooks methane and other pollutants derived from landfill that significantly damage the environment.*
- 3. The data on CO₂ emissions arising from EfW, which underpins UKWIN’s whole report, is deeply flawed.*

This is a crucial time for waste management and at Cory Riverside Energy, we are committed to a well-informed, efficient and clean future for our island nation and its growing population.

Nicholas Pollard
Group CEO, Cory Riverside Energy

Supporting evidence

1. Comparisons of EfW with wind, solar and conventional fossil fuels overlook the fundamental principle, that none of these alternatives offer a solution on how to deal with the millions of tonnes of residual waste the UK produces each year.

Residual waste is aptly named – it is stuff that no one wants. Its composition means it has less energy within it than natural gas / biomass / coal. This implies a relative inefficiency in the conversion of waste into energy when compared to other thermal technologies – a point UKWIN has wrongly tried to exploit in their study. This overlooks the essential sanitary service EfW performs treating waste with varying compositional make up.

It is not correct to compare the performance of power stations designed using a consistent fuel – such as CCGT – whose sole purpose is the production of power, against an EfW facility which has a dual purpose: the sustainable disposal of residual waste (therefore avoiding unsustainable landfill), and the generation of energy and recycled materials from waste disposal. EfW vs CCGT is not an apples vs apples comparison.

2. Landfill is at the bottom of the waste hierarchy, and is more carbon intensive than EfW.

The 'waste management hierarchy' (Figure 1.1), which is the legal underpinning for UK waste policy, has embedded this principle for many years. EfW reduces the amount of harmful greenhouse gases, such as methane, generated from landfill sites.

Evaluation studies from both a Green Investment Bank Report in 2014¹, and a Carbon Trust peer-reviewed report by Cory Riverside Energy² show that each tonne of waste diverted from landfill to high efficiency EfW, saves around 200kg of CO₂e. The exact carbon saving will vary from time to time, as it is influenced by several factors, including the efficiency of the EfW plant, waste composition and, the effectiveness of source segregated materials recycling, but the detailed life-cycle studies done to date arrive at the same conclusion: on the whole energy recovery in high efficiency EfW is preferable to landfill on a carbon basis³.

Typically, over 50% of the material processed in EfWs is biogenic and produces renewable energy⁴. Defra's definitions are clear on this point, which is completely overlooked in the UKWIN study. EfW is identified by government as an accepted and proven form of low carbon power generation⁵, with the Government's National Policy Statement for energy recognising EfW as a future large-scale energy generation source⁶.

¹ Green Investment Bank – Residual Waste Market 2014. See [here](#) (Page 9)

² <https://www.coryenergy.com/carbon-efficiency/less-carbon/>

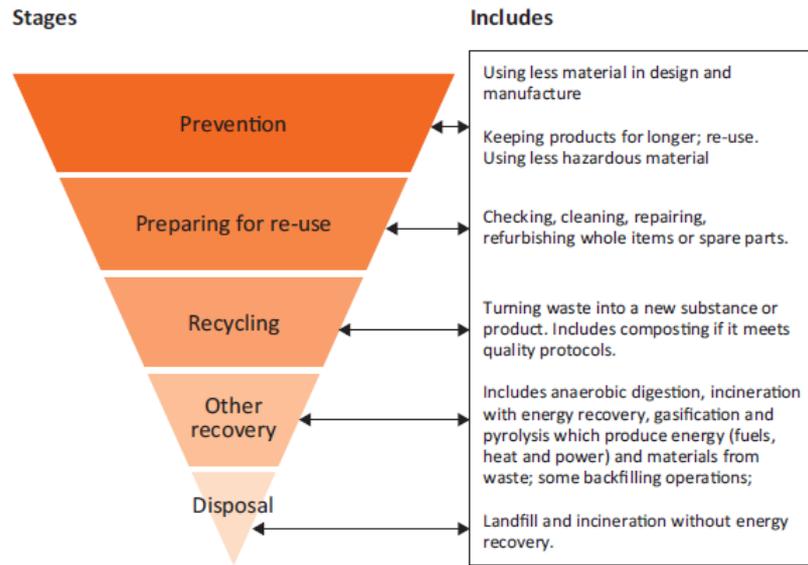
³ Policy Exchange. Going Round in Circles. See [here](#) (Page 64);

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/284612/pb14130-energy-waste-201402.pdf

⁵ CIWM. See [here](#)

⁶ BEIS. National Policy Statement for Energy. See [here](#)

Figure 1.1: Waste Management Hierarchy⁵



Source: Policy Exchange - see [here](#)

3. The report overlooks methane and other pollutants derived from landfill that significantly damage the environment.

There are potentially serious environmental problems with the degradation of plastics in landfill which are not well understood, and UKWIN is irresponsibly promoting sending more plastic waste to landfill. This is completely irrational and contrary to more than two decades of government policy, which says that landfill “should be the last resort for waste” ^{7,8}.

Incorrectly managed landfills will lead to the escape of plastic waste or the escape of landfill gas including methane which is damaging to the ozone layer, as well as leachate containing chemicals associated with plastic and other materials. UKWIN’s report takes no account of these wider environmental damage factors, which serves to illustrate UKWIN’s ingrained prejudice against incineration and energy recovery at any cost to society.

4. Cory does not want to process plastic at the Riverside EfW plant and supports all efforts to remove plastic from the waste stream.

If plastic waste is properly tackled and removed from the residual waste stream, thereby not ending up in EfWs, the carbon case for EfW over landfill will strengthen further still. We believe efforts should be focussed on making producers of products more responsible so that all plastic material can be recycled, and supporting end markets to make recycling economically viable. That way we can pull plastic material up the waste hierarchy.

⁷ Defra: Energy from Waste – A Guide to the debate see [here](#)

⁸ Defra The Economics of Waste and Waste Policy. See [here](#) (Page 12)

5. The data underpinning UKWIN's entire report is deeply flawed.

We refute UKWIN's key findings, because their analysis is based on flawed assumptions. We have identified a litany of technical inaccuracies within the report:

- I. The report grossly underestimates methane emissions that escape from landfill over its full life-cycle⁹. UKWIN models landfill gas capture very favourably at 75%, implying only 25% escapes to the atmosphere. It is widely accepted that a 75% landfill gas capture rate is not being delivered in practice at UK landfills¹⁰ - reasonable estimates from the EA suggest that an active, open landfill site might capture as little as 40% of the methane being generated by the landfill, with the rest being released into that atmosphere.
- II. For the report to have any semblance of credibility, UKWIN should reduce the capture of landfill gas from 75% to a maximum of 60%, in line with the central assumptions used in modelling work undertaken by Defra¹¹. This reduces further to 40% over the course of a landfill's active lifespan, making the closure of landfill even more vital to protect our environment. Reducing the amount of landfill gas capture significantly impacts the key findings of this study.
- III. UKWIN asymmetrically models carbon emissions from incineration and landfill to produce deliberately misleading results, favouring landfill. For instance, UKWIN's claim that 'incinerators release an average of around 1 tonne of CO₂ for every tonne of waste' wrongly includes biogenic emissions. Biogenic CO₂ emissions occur from the treatment of organic materials such as food waste and paper (which is recognised by Defra as renewable energy). These are assumed (in carbon inventory accounting) to be cancelled out because of recent plant growth which sequesters carbon from the atmosphere. It is therefore incorrect to assign these emissions to EfW, inflating the overall carbon impact. Conversely, where it suits their argument, UKWIN assumes that all biogenic carbon which is assumed to be 'sequestered' in landfill is attributed a 'carbon credit'. This deliberate bias demonstrates UKWIN's aptitude to distort data when it suits them.
- IV. The report states that landfill has 'net negative carbon emissions'. Were this true, this would mean that landfill has a carbon benefit to our climate and ecology. This is clearly nonsensical, and a gross distortion of fact.
- V. The report underestimates methane emissions from landfill by using an incorrect emissions factor which does not reflect the latest UN science, where the global warming potential of methane is now recognised as 28, not 25¹²;
- VI. UKWIN's study focuses on the argument for EfW vs landfill over a 30-year time period. The IPCC's Fifth Assessment Report 2014¹³ estimates emitting methane over a shorter time horizon (such as 20 years) is 84 times more damaging than emitting one tonne of CO₂ over the same period. UKWIN has failed to recognise that methane released today – from their recommendation to landfill waste over EfW – is much worse for the environment over the short term than CO₂.
- VII. UKWIN ignores all the unsociable and undesirable facets of landfill, the carbon and fumes from its management compaction and construction; issues such as radon, methane and odour; scarring of the countryside and sterilisation of land; the cost to the nation of landfill tip management for up to 100 years in its closed state whilst the rubbish rots/ stews down into residue.

⁹ http://randd.defra.gov.uk/Document.aspx?Document=12439_WR1908ReviewofMethaneEmissionsModelling.pdf

¹⁰ https://www.london.gov.uk/sites/default/files/gla_eps_update_2017_final.pdf

¹¹ Defra – A Carbon Based Modelling Approach. See [here](#)

¹² Global Warming Potential of Methane. See [here](#)

¹³ IPCC AR5 Report. See [here](#)

Conclusion

We abhor the fact that UKWIN has published yet another report based on bias rather than fact, which recommends a harmful method of waste disposal and serves to potentially distort waste management policy. Cory remains committed minimising waste, recycling as much waste as possible, and processing residual waste to recover as much energy, metals, and aggregates as possible, thereby creating an effective end to waste.

