

INDUSTRY RESPONSE TO ZWS CLIMATE CHANGE IMPACTS OF INCINERATION REPORT

This short paper summarises the key comments and questions raised by CIWM, WMN, SESA and the RMAS on the recently published ZWS Climate Change Impacts of Incineration report

REPORT METHOD: CONSIDERATIONS

1 Whilst system boundaries were presented for incineration, gasification and landfill, scenarios all of which included pre-sorting, it is clear that these will be very different for the individual facilities and will be dependent on other factors which are not directly related to the core technology.

2 The ZWS modelling assumes that all pre-processing and waste streams are the same, this is incorrect. Some facilities will have on-site pre-treatment and others will rely on, off-site pre-treatment and sorting as part of the supply chain. The Scottish Government are also providing local authorities with high recycling performance exemptions from the Thermal Treatment of Waste pre-treatment requirements, and as such these variations should be recognised in the modelling.

3 It states in the report that the modelling for sorting at landfill are estimated on the 2018 site returns from a representative landfill site, however the site is not named in contrast to the thermal facilities and no further detail is given on how this data was checked for accuracy and representativeness of other landfill operations. Not all landfills pre-sort MSW prior to landfill and those which do utilise a variety of approaches.

4 Several of the plants modelled will be processing commercial and industrial waste as well as municipal waste, the proportion and characteristics of which will impact on the overall data for all solutions. The CV values quoted represent MSW facilities managing largely household waste. The CV values for merchant facilities for commercial and industrial wastes are frequently higher, with consequences for assumptions on energy generation levels and efficiency comparisons.

5 Some EFW plants in Scotland already generate two sources of energy - there is direct production of electricity for the grid, but also use of the waste heat that can be used locally for district heating, and other purposes. For example, merchant plants on established eco-park and integrated resource park sites offer significant added opportunities for heat use driving higher energy use efficiencies and further decarbonisation. These help ensure a vibrant and growing resource management SME community, helping support business location and growth in advanced waste treatment and other essential sectors such as food production. To what extent was this accounted for within the modelling?

6 Operational data from the two gasification plants going through commissioning should have been excluded from the report. The report noted the majority of the fuel was being exported as SRF/RDF, and as the export and burning of this material was included in the modelling this significantly impacted on the carbon emissions of these facilities. This does not represent the long term operational basis of these plants and technology as in effect they were for the most part operating purely as mechanical treatment facilities (similar to MBT).

7 Exports of RDF to Scandinavia are typically utilised in Combined Heat and Power facilities. SRF is typically utilised as an alternative industrial fuel to directly replace fossil fuels in energy intensive processes not for electricity generation.

8 Any modelling of MBT alternatives should be based on existing plants operating to the same constraints as any facilities in Scotland. It should also include a comparison against existing Scottish MBT facilities given there have been a number developed and the report is focussed on actual operational data from EfW's. MBT operates across a wide range of different technologies with a complex range of variable factors with wide error bars on actual performance, and all technologies in recent sector history has the poorest record on operational effectiveness against expectations for managing residual waste.

The report is flawed in terms of data gaps and theoretical comparison with CHP/MBT, will there be a follow up report involving industry and COSLA? What implications does this have for LAs currently developing procurement strategies for residual waste?

9 We are not aware of any communication between the report authors and the operational facilities modelled to ensure the accuracy and reliability of the data used and any assumptions in the model.

Other Modelling Assumptions and Data Errors

1 Efficiencies

Higher efficiencies than 50% can be derived from EfW plants.

2 SRF Production

The modelling assumes SRF fuel was going to electricity-only EfW plants and used this in the calculations. However this is incorrect; for example in the EfW plant at Levensheat, SRF production is a key part of the functional design of the facility. This enables the CV and biogenic content of the fuel to be controlled to optimise the operation of the gasifier, as well as providing a more sustainable energy source to industries looking to move away from conventional fossil fuels.

3 Power Generated per Tonne of Waste Landfilled

Potential error in the calculations for the power generated per tonne of waste landfilled (equation 3, page 20). This does not appear to take into account the efficiency of the landfill gas engine, which is around 36%. The current benefit stated in the report for energy displacement from landfill gas electricity is therefore overstated by nearly 3 times.

4 ESA/Fitchner Report

The Fitchner report focusses on the following key areas: 1) Pre-treatment data for the conventional EfW plants highlighting that EOP1 and EOP3 rely on off-site pre-treatment. 2) Impact that metals recovery from bottom ash has on the overall value of pre-treatment. 3) Energy recovery from landfill gas calculation. 4) Carbon intensity calculation should include a credit for the displacement of landfill. Please refer to commissioned report.

5 BMW Content of Residual Waste

What is the assumed BMW content of the residual waste reaching the EfW facility and the allocation of CO₂ tonnage to road and ferry transport for waste being produced in an island location? With a more marginal benefit from some EfW technology, each of these factors will reduce the benefits of EfW even further and make the financial burden of compliance more difficult to justify – especially if food and garden waste collection and utilisation of landfill gas is added to the calculation. Has this level of detailed benefit analysis been carried out on behalf of Scottish Government?

6 Waste Compositional Data

Will the data from the forthcoming ZWS waste analysis be used to update this modelling further? The report mentions the potential for plastic content to fluctuate but what are the implications of future policy interventions. Both DRS, and the shift to all plastic collections offered by Project Beacon in Tayside, will result in changes to residual waste composition and will these scenarios be modelled?

7 Planning

Does this report have any implications for infrastructure currently in the planning process? The report references that CHP is a planning requirement but plants in the report have not converted to full CHP models so how is that influenced through the planning system or otherwise?

8 Energy Recovery

The report seems to be saying that energy recovery becomes less attractive because other sources of energy have become cleaner - but that is a relative difference. If coal is replaced by wind, that doesn't make energy recovery dirtier (or cleaner) than it was before? And there is presumably a strategic national need for a baseload (e.g. if the wind doesn't blow) which energy recovery can help to provide.

IMMEDIATE POLICY CONSIDERATIONS

- 1 Will this report impact on Scottish Government policy in respect of EfW playing an essential role in Scottish Municipal Waste Management?
- 2 Is this going to be used to re-consider current zero waste policy and how does this impact climate change policies and strategies?
- 3 How will the SG ensure that current EfW projects developed in response to the SG's policies are not adversely affected in political or public perception terms by this report?
- 4 How does this fit with the Thermal Treatment derogation?
- 5 The report highlights the positive impact that the utilisation of heat has on the carbon intensity of thermal plants - a real opportunity to support the development of heat networks and associated applications.

FUTURE POLICY DEVELOPMENT

- 1 Will a national cross sectoral technical and innovation oversight group be set up to act as a sounding board on early policy development and as a conduit for system and technological innovation? Any future modelling should be carried out in conjunction with plant operators to allow a detailed understanding of the operational practices in place, and improve data access.
- 2 How will the SG help the sector to decarbonise EfW whether via incentivising heat use or commercialising Carbon Capture Storage (CCS) and embed these plants into a wider circular economy strategy?
- 3 A system wide carbon audit and model of the Scottish resource management system is required to support a carbon mitigation plan for the sector which includes the management and reduction of residual waste.
- 4 An identification of the relative benefits and dis-benefits of current treatment systems (or the lack of) in Scotland is required.
- 5 A review of strategic delivery of an integrated resource system in Scotland is needed. This should include recommendations for planning improvements to ensure key resource management infrastructure is integrated, suitably located, and in reference to EfW, enabled to provide high efficiency CHP solutions. Is the intention to have investment for CHP compliance?
- 6 Embedding plants in a wider circular economy strategy. Full benefits of this should be identified and quantified: for example; merchant plants on established eco-park and integrated resource park sites offer significant added opportunities for heat use driving higher energy use efficiencies and further decarbonisation. These help ensure a vibrant and growing resource management SME community, helping support business location and growth in advanced waste treatment and other essential sectors such as food production.