EUROPEAN SUPPLIERS OF WASTE-TO-ENERGY TECHNOLOGY

ESWET POSITION ON THE PROPOSED REVISION OF THE EU EMISSIONS TRADING SYSTEM (EU ETS) DIRECTIVE AND THE EFFORT SHARING REGULATION (ESR)

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ESWET – the European Suppliers of Waste to Energy Technology – represents companies that have built and supplied over 95% of the Waste-to-Energy plants in operation in Europe. It seeks to promote the technology which, within the frame of the waste treatment hierarchy, recovers energy from residual waste that would otherwise end up in landfills.

ESWET deems the European Commission's proposals for the revision of the EU Emissions Trading System Directive (EU ETS) (2003/87/EC) and the Effort Sharing Regulation (ESR) ((EU) 2018/842) a **thoughtful assessment**, for the following main reasons.

KEY POINTS FOR ESWET:

1) **Splitting the waste management sector** by including municipal waste incineration alone in the EU ETS while keeping the other sectors under another legislative instrument, and **without any prior impact assessment would disrupt the waste management chain** with higher costs of recycling, additional fees for municipalities, and a rise in non-recyclable waste sent to legal and illegal landfills, as these will be elaborated below.

2) On the contrary, **keeping the entire waste management sector under the same legislative mechanism** (i.e., currently under the Effort Sharing Regulation) **guarantees a level playing field among all the waste treatment methods**. At the same time, one instrument covering all methods will ensure that there is **no promotion of landfills and their associated methane emissions**, which are not adequately regulated today, unlike CO_2 and other Greenhouse Gases (GHGs).

3) Methane emissions are **neither regulated** under the Industrial Emissions Directive, **nor priced** under the EU ETS. Under any legislative instrument, it is only fair that methane emissions from landfills should have the same legislative treatment as GHG emissions from other waste management options. Including methane in the EU ETS is the first step that must be taken before the rest of the waste management sector is considered for inclusion.

4) Methane's Global Warming Potential (GWP) seems low compared to the one of CO2, but that is only because GWP is calculated over a 100-year period. However, according to the IPPC, **CH_4 can be up to 84 times more potent than CO_2 over a 20-year period**. That means that GWPs must be viewed in 20-year periods because the fight against climate change can't wait 100 year. The results must be seen soon.

5) As it will be analysed below, the first step to further reduce GHG emissions from non-recyclable waste is to **support carbon capture utilisation and storage (CCUS) implementation in Waste-to-Energy plants**. Without this financial support as a prerequisite, the Waste-to-Energy sector should not be put under a different legislative mechanism from the rest of the waste management sector.

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1) Assessment for carbon reduction potential in the waste sector should always take into account its pollution prevention mission.

Waste-to-Energy (WtE) plants are a key actor in pollution prevention since, as a complementary option to recycling, they divert non-recyclable waste from landfills and prevent related long-term risks of pollution of groundwater, soil and air. In order to achieve this environmental mission, Waste-to-Energy plants nonetheless release GHG emissions, which are inherent to waste combustion. However, the European Waste-to-Energy sector is committed to making all the necessary contributions towards a climate-neutral Europe by 2050.

When discussing the sector's climate contribution we need to highlight first and foremost that the most efficient way to reduce CO_2 emissions from waste management is to follow the waste hierarchy and boost waste prevention, reuse and recycling. In order to achieve high-quality recycling, ESWET thus advocates for efficient source separation. The waste that can be recycled – either of fossil or of biogenic origin - should be separately collected as efficiently as possible, thus reducing CO_2 emissions from Waste-to-Energy plants to what is strictly necessary.

However, the waste hierarchy does not stop in recycling since not every waste is eternally recyclable; residual waste includes non-recyclable waste following collection and sorting, or rejected waste from recycling facilities. The only viable solution as per the waste hierarchy and the circular economy is the recovery of the energy content of residual waste in **advanced Waste-to-Energy facilities with a high energy efficiency and low emissions**[1].

Waste-to-Energy is an essential part of the European waste management and contributes to the decarbonisation of the sector, as it diverts non-recyclable waste from landfills and recovers energy and secondary raw materials, thus providing reliable renewable energy and preventing greenhouse gas (GHG) emissions. **Waste-to-energy plays a role in the transition to a circular economy and can maximise the circular economy's contribution to decarbonisation provided full respect of the waste hierarchy**[2].

2) Contribution of Waste-to-Energy in GHG emissions reduction

2.1. Carbon offset

The contributions of WtE sector in GHG mitigation include the following:

- Waste to Energy fossil CO2 emissions are at least partially offset by diverting waste from landfills and avoiding methane emissions. Methane is a 84-times-more-potent GHG than CO2 over a 20-year period[3];

- It prevents the energy-intensive extraction of raw materials through material (e.g.,

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1 Paragraph 104 of the EP Resolution on the new Circular Economy Action Plan, 10 February 2021: https://www.europarl.europa.eu/doceo/document/TA-9-2021-0040_EN.html

2 Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions - The role of waste-to-energy in the circular economy - COM/2017/034 final, p. 10, available here: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52017DC0034

3 IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf

metals) recovery[4] from incineration bottom ashes;

- Depending on the energy grid, WtE substitutes fossil fuels with the energy recovered from residual waste;

With around 39 TWh of electricity and 90 TWh of heat produced in Europe annually, WtE could prevent the production of up to 50 million tons of CO_2 emissions that would otherwise be generated by fossil fuels[5]. Thus, WtE contributes in decarbonising the energy systems in Europe, in particular in the heating and transport sectors.

2.2. A source of continuous renewable energy

Waste-to-Energy produces energy that is partly renewable as it results from biogenic waste.

- WtE constitutes a trustworthy source of continuous energy, partially renewable (from biogenic waste), as a complement to intermittent renewable energy sources, relying on waste directly available in Europe. WtE contributes to the Smart Sector Integration Strategy, which aims at establishing a circular energy system to promote local energy sources and waste to energy among others, and which supports clean fuels, including renewable hydrogen and sustainable biofuels and biogas. In addition, WtE contributes to the European Green Deal objective of securing affordable renewable energy within the European Union.

2.3. Potential for a carbon negative sector

The use of carbon capture technologies in WtE applications has the potential to significantly reduce the carbon footprint of the sector or even make it carbon negative;

- **Carbon Capture for Utilisation or Storage (CCU or CCS)** has a role to play in the decarbonisation of the Waste-to-Energy sector as the plants are bound to their mission to treat non-recyclable waste and thus cannot discard it for a low-carbon fuel alternative. Moreover, using CCS in the waste-to-energy industry presents a particular opportunity for bioenergy with carbon capture and storage (BECCS); **one of the few abatement technologies that can be carbon negative**. BECCS involves the utilisation of biomass as an energy source and the capture and permanent storage of the CO_2 produced. The Intergovernmental Panel on Climate Change (IPCC) SR15 report (2018, p. 34) acknowledges that Carbon Dioxide Removal (CDR), including BECCS, is necessary to limit warming to 1.5°C[6]. **The Waste-to-Energy sector has already had successful applications of this technology, for example, in Oslo, Norway,** where CCS implementation helps meet the city's goal of 95% emissions reduction (in essence, climate-neutrality) by 2030[7].

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4 "Emissions of 2,000 kg of CO_2-equivalent are saved for each tonne of metal recycled from bottom ash in incineration plants. Yearly, at the European level, around 3.8 million tonnes of CO2 eq. emissions are saved this way": https://www.cewep.eu/wp-content/uploads/2017/09/FINAL-Bottom-Ash-factsheet.pdf

5 Waste-to-Energy's contribution to the "Long-term EU greenhouse gas emissions reductions strategy": https://eswet.eu/documents/waste-to-energy-contribution-greenhouse-gas-emissions-reductions-strategy/

6 Global CCS Institute - Waste-to-Energy with CCS: A pathway to carbon-negative power generation: https://www.globalccsinstitute.com/wp-content/uploads/2019/10/Waste-to-Energy-Perspective_October-2019-5.pdf

7 A full-scale carbon capture and storage (CCS) project initiated in Norway: https://www.fortum.com/media/2018/11/full-scale-carbon-capture-and-storage-ccs-project-initiated-norway. Sustainable waste management for a carbon neutral Europe: https://www.klimaoslo.no/2021/02/26/the-klemetsrud-carbon-capture-project/

- **However, Carbon capture implementation is a challenge that should be made economically viable on all processes that have unpreventable CO_2 emissions, including the Waste-to-Energy sector, and for which climate neutrality can hardly be achieved without CCS**. Creating a functioning legislative framework and support for investments in research, innovation, and implementation in CCS technology will definitely assist many industry sectors in their transition to a circular and carbon-neutral model. Important and early greenhouse gas reductions can be realised by a rapid use of CCS for those applications, allowing for some extra time to develop low- and zero-carbon alternatives, while ensuring the development of renewable generation capacity[8].

- These technologies will need further investments to provide effective cost abatement at a wider scale. This will be further explored in the next years and has to come along with the development of a market and legislation for the removal and use of captured CO2. However, until this becomes commercially viable, the WtE sector, local, national and European authorities, along with its citizens, need to work together to finance this necessary technological development to secure climate-neutral treatment of the residual waste produced by society.

In addition, the WtE sector provides a hygienic service to the society by treating the residual waste streams and their pollutants, making sure they do not contaminate the material cycle. In particular, it prevents long-term environmental risks resulting from landfilling (groundwater, soil, and air pollution).

3) Detrimental impacts on waste management should be carefully avoided

3.1. Risk of disruption in residual waste management

Any forthcoming regulatory measures for WtE, such as Emissions Trading or taxes, should be assessed in the context of wider residual waste management, i.e. detrimental developments including increased landfilling or dumping of waste and shipments to countries with lower environmental and social standards should be avoided[9].

Landfills produce methane, a very potent GHG as already said (with 84 times more powerful than CO_2 over a 20-year period), and both landfills and waste exports outside the EU contribute to marine litter as the wind blows plastics and microplastics, from (not sufficiently controlled) landfills to water bodies. Additionally, as recently reported by Europol (p.93)[10], making legal waste management services more expensive is fuelling the growth of illicit waste management activities harming human health and the environment.

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8 Study requested by the European Parliament's ITRE Committee: Sander de BRUYN, Chris JONGSMA, Bettina KAMPMAN, Benjamin GÖRLACH and Jan-Erik THIE. (July 2020). Energy-intensive industries: Challenges and opportunities in energy transition. Policy Department for Economic, Scientific and Quality of Life Policies Directorate-General for Internal Policies. p. 30-21, available here: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652717/IPOL_STU(2020)652717_EN.pdf

9 Regarding the impact of waste management cost on waste export and related waste crime, see Interpol's 2020 report on plastic waste crime (page 6 - https://www.interpol.int/en/News-and-Events/News/2020/INTERPOL-report-alerts-to-sharp-rise-in-plastic-waste-crime): "Export countries have experienced both a significant increase in waste disposal in illegal landfills as well as irregular waste fire in order to cheaply deal with the large volumes of untreated domestic waste that would have previously been exported to China."

10 Europol (2021), European Union serious and organised crime threat assessment, A corrupting influence: the infiltration and undermining of Europe's economy and society by organised crime, Publications Office of the European Union, Luxembourg. https://www.europol.europa.eu/activities-services/main-reports/european-union-serious-and-organised-crime-threat-assessment

3.2. Additional fees for municipalities

In addition, ESWET is concerned that splitting the waste management sector and including solely municipal waste incineration in the ETS would be counter-productive, as it would result in additional fees passed on to the consumers and municipalities, it would disrupt the waste management chain, with an increase in the cost of recycling[11], while it would lead to no obvious reductions in GHG emissions[12]. In the end, WtE would bear the cost of being under the ETS, but without being able to achieve the precise goal of the legislation.

3.3. Application of the polluter-pays principle

The treatment of non-recyclable waste produces CO2 emissions. However, Waste-to-Energy plants are not the producers of this residual waste. On the contrary, Waste-to-Energy plants are actually given the mission to prevent pollution from non-recyclable waste and to recover its energy. Emissions Trading on Waste-to-Energy would thus be applied too far from the source of fossil CO_2, which results from plastic products and packaging that reach WtE plants as unrecyclable waste.

Differently from other sectors/industries, WtE plants do not have a choice on the characteristics or carbon footprint of the input to their plants. They are bound to treat the residual waste they receive after separate collection and sorting. In this context, it seems counter to the polluter-pays principle to make the waste treatment plant bear the burden for the CO2 emitted because of a necessary public service mission, i.e. the prevention of pollution from waste that was produced by someone else.

4) ESWET's recommendations towards not affecting waste management systems:

4.1. Ensure a level-playing field between waste management options

In order to avoid the creation of disruptive effects on EU waste management systems, first it should be assessed how landfills would not be rendered artificially the most economically attractive option for residual waste treatment. This requires to see methane emissions from landfills have the same legislative treatment as GHG emissions from other waste management options ("everyone in or everyone out").

Addressing methane emissions from landfills would also facilitate Member States (MS) to move away from landfilling as per the new Circular Economy Action Plan (EP Resolution, 10.02.2021), and meet the EU targets of maximum 10% landfilling of MSW by 2035, which now seems impossible for many Member States to reach (with some landfilling rates of municipal waste going beyond 70%). In line with the waste hierarchy[13], landfilling should be the last-resort option in waste treatment, only for the ultimate fraction of waste that cannot either be recycled or fully treated in Waste-to-Energy plants.

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11 The recycling industry relies on Waste-to-Energy as an alternative to landfills for the treatment of non-recyclable waste rejected by recycling facilities. An increase in the cost of incineration would be passed on to recycling as well. On the relation between recycling and WtE, see for instance this statement of the European recycling industry: https://www.euric-aisbl.eu/position-papers/item/300-statement-on-issues-stemming-from-the-lack-of-capacity-for-ultimate-residual-waste

12 Though it could be measured in two Member States where municipal waste incineration is already covered under ETS (Sweden, Denmark), the Commission has carried no impact assessment in case of full coverage of the sector, including side-effects on waste management EU-wide. Unlike other industries, the incineration sector cannot switch its fuel for a low-carbon alternative, and it is bound to treat the waste it receives for safe treatment, which it did not produce in the first place. The only option to significantly reduce GHG emissions from incineration plants is to implement Carbon Capture technologies, which can be a challenge for small plants. The implementation of CCS in incineration plants would also require public support in order to ensure economic viability.

13 See Article 4 of the revised Waste Framework Directive (2008/98/EC).

Landfill diversion relies on integrated waste management and cannot be achieved without a holistic approach which involves efficient separate collection, waste prevention, reuse, recycling and, when waste cannot be recycled, energy recovery in advanced Waste-to-Energy facilities with a high energy efficiency and low emissions.

Regarding decarbonisation, all waste treatment options should therefore be covered under the same legislative instrument and only after a careful impact assessment following a holistic approach. It is also advised to take into account the risks of "double-sanctions" with regards to unnecessary overlapping measures at EU and national levels.

4.2. Apply the polluter-pays principle

Third, the polluter-pays principle should be empowered to make those responsible for waste generation pay for its environmental and climate impacts[14]. Setting up measures for the Waste-to-Energy exclusively, and not considering the responsibilities of waste producers or previous waste holders raises concerns about the lawful application of the polluter-pays principle.

4.3. Respect of fair competition and transition periods

At the same time, treating the waste management sector as a whole (either under the ESR or the EU ETS) would allow to avoid issues of unfairness and competition.
Moreover, transition periods for any measures to be taken are crucial for the sector's visibility and viability.

4.4. Taking into account the offsets of CO2 emissions in WtE, not just the direct emissions

Last but not least, any measure for the reduction of GHG (in particular CO_2) emissions from the WtE sector should take into account not just the direct emissions, but also the offsets of CO_2 emissions in WtE. In particular, it should:

1) recognise the CO_2 advantage of processing waste in energy recovery plants instead of disposing of waste into landfills and consider this factor for GHG emissions calculations;

2) take into account carbon emissions offset through material recovery in WtE plants as it prevents energy-consumptive extraction of virgin materials and consider this factor for GHG emissions calculations;

3) take into account carbon emissions offset through energy recovery in Waste-to-Energy plants as it substitutes for fossil fuels as a source of continuous energy, and consider this factor for GHG emissions calculations;

4) consider the negative emissions of energy recovery combined with carbon capture and storage for GHG emissions calculations.

14 European Court of Auditors (ECA) - The Polluter Pays Principle: https://www.eca.europa.eu/Lists/ECADocuments/SR21_12/SR_polluter_pays_principle_EN.pdf

CONCLUSIONS

In conclusion, **any additional national or EU-wide climate measures for the Waste-to-Energy sector should consider the complexities above and should ensure that the impact on the environment and human health**, in terms of effective GHG emissions' reduction and pollution prevention and control, as well as on competition (level-playing field) are carefully evaluated.

The Waste-to-Energy sector calls for the minimum: **an impact assessment should be carried out prior to imposing any adverse measures for the waste sector which must include also other waste treatment options.**

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ESWET is a European association representing the European suppliers of Waste-to-Energy technologies, committed to foster the development and dissemination of Waste-to-Energy at the European level. ESWET also seeks to raise the awareness of the positive implications of the technology in terms of better waste management, energy and for the environment.