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TK

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EU-Policy

Overview of Current Developments in EU Policy

Ella Stengler and Maxime Pernal-Stoddart

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When Ursula von der Leyen was elected President of the European Commission in July 2019, she stated a clear ambition: make Europe the first carbon-neutral continent [17]. Under the umbrella of the European Green Deal, this ambition would lead to numerous legislative proposals reviewing existing directives and regulations or proposing new legislation with the aim to put the EU on the path to achieving climate neutrality.

As the Waste-to-Energy (WtE) sector is at the crossroads between multiple policies (waste, energy, finance, emissions), it falls under several pillars of the Green Deal: Fit for 55, Circular Economy, Zero Pollution and Financing the Transition (sustainable

finance). In this article, an overview of the developments which took place in these policies in the last years is given as well as a review regarding their potential impacts on Waste-to-Energy.

1. The European Green Deal

On 11th December 2019, only ten days after taking office, the European Commission presented the European Green Deal [6], a strategy which would be at the heart of the institution's work for the next five years. With the Green Deal, the Commission ambitions to put the EU on the path to sustainability and carbon neutrality by 2050, in line with the 2015 Paris Agreement.

As shown in Figure 1, this ambition relies on multiple pillars.



Figure 1: The European Green Deal

The most relevant pillars for the Waste-to-Energy sectors are:

- *increasing the EU's Climate ambitions for 2030 and 2050* – which lead to the legislative package known as *Fit for 55*,
- *mobilising industry for a clean and circular economy* – which inspired the 2020 Circular Economy Action Plan,
- *zero pollution ambition for a toxic-free environment* – which influenced the review of the Industrial Emissions Directive –, and
- *financing the transition* – which reinforces the role of the Sustainable Finance Framework (also known as *the EU taxonomy*).

Other pillars are relevant but will only have an indirect influence on the sector, and were therefore left out of this article:

- *accelerating the shift to a sustainable and smart mobility* is linked with the development of the Hydrogen strategy,
- *building and renovating in an energy and resource efficient way* is closely linked with the development of district heating, and
- *mobilising research and fostering innovation* is the overarching strategy for the research programme Horizon Europe and research partnerships with industries.

2. Climate ambition: Fit for 55

On 14th July 2021, the European Commission adopted a package of 13 legislative proposals aiming to put the EU on track for a 55 percent reduction of greenhouse gas emissions by 2030, compared to 1990 levels [11]. Many of these proposals are relevant for the Waste-to-Energy sector: the Renewable Energy Directive (RED), as the plants produce renewable energy from the biodegradable fraction of the waste; the Energy Efficiency Directive (EED), which includes provisions on highly efficient district heating; the Energy Taxation Directive (ETD); the Effort Sharing Regulation (ESR) and the EU Emission Trading System (ETS), which tackle the CO_2 footprint of the facilities. In this article, the focus is laid on the revision of the ETS.

2.1. Waste-to-Energy and the EU Emissions Trading System: in or out?

The EU Emission Trading System (ETS) is a *cap-and-trade* market, putting a limit on overall greenhouse gas (GHG) emissions which is reduced each year. Within this limit, companies can buy and sell emission allowances as needed. The EU ETS regulates approximately 45 percent of the total EU GHG emissions and its provisions apply to the activities listed in Annex I of Directive 2003/87/EC, later amended by Directive 2009/29/EC.

Conventional WtE plants are currently excluded on the EU level as stated in Annex I, which lists as an activity covered *Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)*.

2.2. Initial Commission proposal: status quo

The original Commission proposal for the review of the EU ETS [12] did not change the provisions relative to Waste-to-Energy in Annex I, keeping the exclusion.

Additionally, under a new Annex III, the proposal includes combined heat and power generation (CHP) and heat plants – categories under which falls Waste-to-Energy – as activities assimilated to the building sector (to be covered under a dedicated ETS starting from 2026). An upstream approach is adopted for these new sectors, meaning that the supplier of the combustion fuel must pay the carbon allowances.

However, this would apply only to the suppliers of fuels to CHP or heat plants that use (fossil) fuels for combustion purposes (for building and transport) as defined in the Energy Taxation Directive (Council Directive 2003/96/EC), where waste is not included as fuel type.

This means that, even under this new Annex III, the *status quo* was kept by the European Commission: they proposed that Waste-to-Energy stays out of the ETS.

2.3. European Parliament proposes the inclusion

On 24th January 2022, rapporteur Peter Liese from the European People's Party presented his draft report on the ETS proposal [15]. In this draft, he suggested to include waste incineration under the ETS from 1st January 2028. He also called for an impact assessment to take place by 31st December 2025 in order to evaluate the potential consequences of this inclusion on waste disposal and on waste shipments to third countries, and to propose legislative changes to mitigate this impact if needed. The rapporteur believed that this inclusion *would encourage recycling, reuse and repair of products, while also contributing to economy-wide decarbonisation.*

The report adopted by the Environment committee on 17th May 2022 went even further, by proposing an earlier inclusion date for the sector: 1st January 2026. The impact assessment would in this case have to be conducted by 31st December 2024. This position was carried over to the plenary session of 22nd June 2022 and was then formally adopted as the European Parliament's position in the upcoming interinstitutional negotiations [14].

The wording of these amendments does not make the impact assessment a precondition to the inclusion of Waste-to-Energy in the ETS: the sector would enter the ETS on 1st January 2026, the impact assessment's role would be to propose mitigation measures for the impact of this inclusion rather than assessing whether inclusion is the best option.

2.4. Council of the EU: a balanced approach

On 29th June 2022, the Council of the EU adopted its general approach on the ETS [5]. On waste incineration, the Council chose to request by 31st December 2026 a report *assessing the impact and feasibility of a compulsory inclusion* of waste incineration in the ETS from 2031. The report would therefore be conditional for the inclusion, and the inclusion would require a new revision of the ETS Directive.

2.5. Doing it right: a holistic approach

The waste management sector is closely interlinked. Once waste is produced, it needs an outlet. If left unchecked, imbalances lead to waste diversion to cheaper treatment methods, usually lower in the waste hierarchy. This was acknowledged by Peter Liese in his draft report [15] and must not be forgotten in the rest of the process. This is why it is necessary to conduct a thorough impact assessment before taking any decision on the inclusion of the sector in the ETS: decision-makers must ensure that all impacts are properly evaluated, and that the inclusion will be efficient without leading to harmful consequences.

3. Circular Economy

On 11th March 2020, the European Commission published its new Circular Economy Action plan [7]. Building on the first Circular Economy Action Plan adopted in 2015, this updated strategy targets the entire lifecycle of products with a strong focus on eco-design. It also guides the way for revisions of important pieces of waste legislation, such as the Waste Shipment Regulation and the Waste Framework Directive.

3.1. An ambitious new Action Plan

The new Action Plan includes ambitious actions: reduce by half the generation of residual municipal waste by 2030, set mandatory requirements on packaging and on recycled content, adopt waste reduction targets for specific streams, improve source separation. The Plan also mentions the importance of implementing existing legislation: *we need to build on, further strengthen and better implement EU waste laws.*

The last revision of key pieces of EU waste legislation took place in 2018 and implementation is indeed still lacking in some Member States. Based on partial Eurostat data for 2020, only 8 Member States achieved over 50 percent preparation for re-use/recycling of municipal waste, which was the target set in the Waste Framework Directive for that year. At the same time, 11 Member States landfill 50 percent and more of their municipal waste, which raises doubts about the achievement of the 10 percent cap on landfill set for 2035.

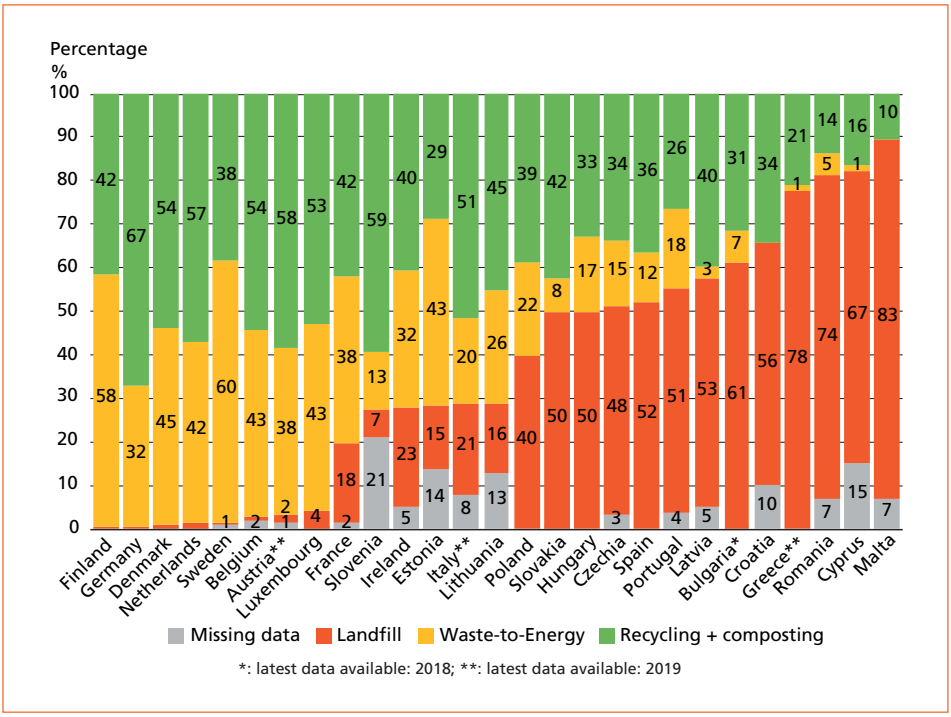


Figure 2: Municipal waste treatment in the EU in 2020. Source: Eurostat

3.2. The potential of the European waste sector to reduce CO_2 emissions via implementation and future waste legislation

On 24th January 2022, four European waste management associations published a study undertaken by CE Delft and Prognos [2], analysing the current greenhouse gas impact of the sector, highlighting the benefits that could be achieved through proper implementation of existing legislation, and suggesting realistic legislative changes (low-hanging fruits) which could lead to significant impacts.

The study focused on nine waste streams plus residual waste, representing 505 million tonnes of waste (19 % of waste arisings in EU 27 + UK). The main findings are reported below.

Baseline: very small greenhouse gas impact

Taking into account the emission savings in the manufacturing sector due to recycling and in the energy sector due to the substitution of fossil fuels by Waste-to-Energy, the waste industry emitted 13 million tonnes of $CO_{2\text{-eq}}$ in 2018 for the treatment of the selected waste streams.

Applying current legislation

A first projection showed that implementing current waste legislation (reaching the 2035 targets) and extending municipal waste targets to commercial and industrial waste would lead to greenhouse gas savings of 150 million tonnes $CO_{2\text{-eq}}$ each year compared to the current situation.

The potential of landfill diversion

A second projection looked at the potential savings reachable through diverting all the recyclable or recoverable waste to recycling or energy recovery. This would lead to a mitigation potential of 283 million tonnes of $CO_{2\text{-eq}}$ yearly. The study highlights the substantial gains achievable by reducing landfilling of organic materials such as paper, cardboard and biowastes, which alone could lead to saving 120 million tonnes $CO_{2\text{-eq}}$ emissions yearly.

While addressing waste prevention is essential, this study demonstrates that policy adjustments at the lower end of the waste hierarchy can still reap significant benefits.

The potential of the Waste-to-Energy sector to climate mitigation

A recent roadmap [3] shows that the Waste-to-Energy sector is already carbon neutral, as it offsets its fossil CO_2 emissions by substituting fossil fuels and by recovering metals from bottom ash. If taking into account emissions avoided due to landfill diversion, the sector is even carbon negative. The application of carbon capture and use or storage of the captured CO_2 would even allow the WtE sector to remove carbon from the air and become carbon negative.

This needs some enabling legislative activity:

- **to enable CCUS**: CO_2 transport and storage infrastructure, technology support, market mechanism and certification system for negative emissions, CO_2 market development;
- **to enable sustainable waste management:** minimise methane emissions from landfills, restricting landfills to waste not suitable for material and energy recovery, recognition of the role of WtE (e.g. in taxonomy).

4. Zero pollution

On 12th May 2021, the European Commission unveiled its Zero Pollution Action Plan [9]. This plan complements the Commission's actions on climate-neutrality and circular economy, with the aim to reduce the health and environmental impacts of human activity in the EU to the level where pollution levels are *no longer considered harmful* and *respect the boundaries our planet can cope with, thus creating a toxic-free environment*.

4.1. Review of the Industrial Emissions Directive

One year earlier (in March 2020), the Commission had started the review process of the Industrial Emissions Directive (IED - Directive 2010/75/EU). As this Directive regulates pollutant emissions from over 50,000 industrial installations, its review is a timely opportunity to start implementing the Zero Pollution Action Plan in the legislation.

On 5th April 2022, the European Commission adopted a proposal for the revision of the IED [13]. The main changes proposed include:

- the requirement to use tighter emission limit values (lower range of the Best Available Technique Associated Emission Levels – BAT-AELs),
- Best Available Technique Associated Environmental Performance Levels (BAT-AEPL – e.g. energy efficiency) would become mandatory,
- regulating measurement uncertainty through an implementing act,
- Mandatory Environmental Management Systems and transformation plans,
- online publication of permits and permit updates,
- extending the BAT process to landfills, and
- switch of the burden of proof in case of breach leading to damages to human health (the facility must demonstrate that the damage does not come from the breach)

4.2. Key aspects of the review relevant for WtE

While the general principles of the review such as reducing pollution, increasing transparency, reducing the administrative burden are positive and welcome, some elements proposed by the Commission will have to be improved by the co-legislators in order to achieve good results without counterproductive effects.

Lower range of BAT-AELs and mandatory BAT-AEPLs: end of the integrated approach?

One of the key principles of the IED is the integrated approach: when drafting a permit, the competent authority must look at the overall performance of the plant in order to achieve the best environmental performance possible taking into account all emissions (air, water, soil) as well as resource use, waste generation, energy efficiency, etc. This approach is required as it allows to take into account cross-media effects which arise from the use of certain abatement techniques (achieving a lower emission value on a pollutant can mean using more reagent, more energy, and/or can hamper the possibility to achieve a lower emission value on a different pollutant).

The proposed revision of Art. 15 (3) of the IED requires competent authorities to *set the strictest possible emission limit values that are consistent with the lowest emissions achievable by applying BAT in the installation,* i.e. making the lower range of BAT-AELs the default value for permits. At the same time, the proposed Art. 15 (3a) requires that *[environmental] performance limits values do not exceed the environmental performance levels associated with BATs*, i.e. making BAT-AEPLs mandatory.

Read together, these provisions circumvent the integrated approach: they require to pick the strictest emission limit values for all pollutants while upholding specific environmental performance levels. An integrated approach, as currently applied, would require finding the best balance between all these parameters in order to ensure the lowest overall environmental impact.

For WtE plants, these new requirements could mean having to comply with emission levels at the lower end of the BAT-AEL ranges on all monitored pollutants at the same time, while maintaining very high energy efficiency and low raw material consumption (including, for example, reagents for flue gas cleaning). This ignores the cross-media effects which result from pollutant abatement.

Art. 15 (3) allows the operator to assess the feasibility of meeting the strictest end of BAT-AELs and to demonstrate the best performance achievable by the installation. In practice, this assessment will become mandatory as cross-media effects make it virtually impossible to achieve all strictest BAT-AELs at the same time.

Compliance assessment and measurement uncertainty: technical, or political?

Measurement uncertainty is a parameter associated with a measurement result. It is influenced by various sources (human factor, material, equipment, method, environment). This uncertainty is not a value that can be set by political decisions, as it stems from measurement techniques, the instruments themselves and the laws of physics. As no measurement can be 100 percent exact, operators need a robust legal framework to account for this uncertainty. This allows them to ensure the compliance of their emission levels with the emission limits set in their permits.

The topic is of particular interest for the Waste-to-Energy sector, as waste incineration plants follow some of the strictest emission limits in EU legislation and it is a fact that lower emission levels lead to higher uncertainty (as noted in BREF WI Chapter 7).

Under the current IED, compliance with emission limit values for waste incineration is ensured by Annex VI Part 6 (Monitoring of emissions) together with Annex VI Part 8 (Assessment of compliance with emission limit values). Part 6 Paragraph 1.3 sets maximum confidence intervals for individual pollutants as percentage of the limit values, to subtract from half-hourly average values and ten-minute averages as set in Part 8 paragraph 1.2. While these provisions have led in some cases to different implementations in Member States – particularly for Part 6 1.3 – they provide nevertheless the only legal framework to operators and competent authorities.

The new Art. 15a proposed in the IED revision would empower the Commission to adopt an implementing act *establishing the measuring method for assessing compliance with emission limit values set out in the permit*. While developing a common method would improve coherence in the implementation of IED compliance rules, it must be ensured that it is based on data and science-based evidence, not on political considerations. This could be achieved for instance by handling the process in a dedicated expert group, such as a Technical Working Group to review the Reference Report on Monitoring (IED Art. 13 process).

5. Financing the transition

As highlighted in both the Green Deal and the European Commission's Strategy for Financing the Transition to a Sustainable Economy [10], the scale of investments needed to reach the EU's climate objectives is such that both public and private financial flows must be harnessed. This led to the creation of the EU framework for sustainable finance, also known as EU taxonomy (Regulation EU 2020/852). With this framework, the Commission aims to provide investors with a common classification system to assess the sustainability of an activity, based on three principles:

1. significant contribution (SC) to at least one of six environmental objectives listed in Art. 9 of the Regulation; these include climate change mitigation, transition to a circular economy and pollution prevention and control,
2. doing no significant harm (DNSH) to any of the other environmental objectives; the basis to check for significant harm are set in Art. 17 of the Regulation, and
3. complying with minimum safeguards listed in Art. 18 of the Regulation (e.g. human rights).

Additionally, the activity must comply with technical screening criteria. These criteria are developed and drafted by an expert group – the Platform on Sustainable Finance – and transcribed and adopted in a delegated act by the European Commission.

5.1. Waste-to-Energy in the taxonomy

According to Art. 17 (1)(d)(ii) of the Regulation, an activity does significant harm to the circular economy if *that activity leads to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste*.

The notion of *significant increase* is unclear and has led so far to counter-productive, very narrow interpretations.

The most influential of these interpretations comes from the Technical Guidance on the Application of DNSH under the Resilience and Recovery Facility [8], which illustrates non-compliance with DNSH with the example of the construction of two Waste-to-Energy plants: *The construction of new waste incinerators to increase the existing incineration capacity in the country leads to a significant increase in the incineration of waste*.

However, the example lacks information on the waste management context around the project. Such a project indeed never exists in a vacuum: a WtE plant is built only if there is residual waste to be treated. This is assessed through checking existing capacity (locally, regionally, nationally and cross-border), waste management plans, current and projected waste arisings (including recycling and landfilling targets set in EU legislation).

5.2. Consequences for the WtE sector

The DNSH principle extends far beyond the taxonomy and the Resilience and Recovery Facility (RRF): it has become a guiding principle for multiple investment frameworks. As the RRF technical guidance is the only official document providing insight on DNSH assessment for activities not (yet) covered under a Taxonomy delegated act, this strict interpretation, if not adjusted, can have cascading effects on downstream activities such as the development of district heating and the recovery of metals and aggregates from bottom ash.

- **District heating:** WtE plants supply heat to the district heating networks of many European cities. While connecting a WtE plant to a district heating network does not *lead to a significant increase in the incineration of waste* (as the quantity of waste incinerated does not change), there is a risk that the very strict interpretation of Art. 17 adopted so far by the European Commission leads to the suspension of new connections to district heating and other projects of district heating developments as cities and Member States are worried of a *significant harm* assessment.

- **Bottom ash recovery:** bottom ash is the material which is left over after combustion. It is mainly composed of minerals and contains around 10 percent of metals. Metals can be recovered and recycled, saving precious resources, and avoiding CO_2 emissions. The recycling of metals from bottom ash is recognised as contributing to the recycling targets from municipal waste. The mineral part can be recovered as aggregates e.g. in road construction, replacing primary materials like gravel and sand [1].

Despite these achievements, the activity was not considered by the Platform on Sustainable Finance for the Taxo 4 report [16] because of the connection with waste incineration. This activity is however situated downstream: it does not lead to an increase in incineration, it simply recovers materials from an existing waste stream.

5.3. A proper guidance is needed

The legal uncertainty created by this limited interpretation can only be corrected by clear guidance on the meaning of *significant increase* in incineration. It should include information on the reference level to check against (local, regional, national, European). It should also provide reassurance for projects where a WtE plant replaces a landfill or is a new solution for lacking waste treatment infrastructure. In such cases, a WtE plant is indeed an investment in higher steps in the waste hierarchy and therefore cannot be considered harmful to the circular economy.

The next logical step would be to open discussions on the inclusion of residual waste treatment under the taxonomy framework. This could be done with the participation of the WtE sector to the Platform on Sustainable Finance, where strict criteria for the inclusion of the sector could be discussed. As highlighted in a common statement of four European waste management associations, *Ignoring WtE will lead to incomplete waste management systems, and to environmental risks, where high-quality recycling cannot be achieved due to a lack of outlet for rejects leading to treatments lower in the hierarchy, or to waste exports in regions with lower environmental and social standards.* [4].

The opportunity to set a clear framework for the sustainable treatment of non-recyclable residual waste should not be missed, also because many countries outside of the EU, with a lack of waste treatment infrastructure and high dependence on landfills or even dumps, are looking at Europe when creating their own taxonomy.

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