



EUROPEAN SUPPLIERS
OF WASTE-TO-ENERGY
TECHNOLOGY

WASTE-TO-HYDROGEN:

**AN INTRODUCTION FOR THE
EU POLICY-MAKERS**

..IN A NUTSHELL!

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Under the European Green Deal, the European Union has set ambitious climate goals for 2030 and plans to become climate-neutral by 2050. This will require employing all possible and necessary means.

As part of the decarbonisation effort, the Waste-to-Energy sector is now working on integrating new technologies such as carbon capture and storage (CCS), and hydrogen production.

Renewable and low-carbon hydrogen are considered key to the climate objectives, especially in energy-intensive industries and transport. Hydrogen can be produced from various sources, with one of them being renewable energy sources, including from bio-based feedstocks. This is called “green” hydrogen.

Only green and blue hydrogen (i.e., “grey” hydrogen produced from fossil fuels together with CCS technologies) can contribute towards the reduction of CO₂ emissions and the transition to climate neutrality.

The primary challenge for the uptake of hydrogen in the sector with the higher demand, the industry, will be the production of adequate quantities of renewable and low-carbon hydrogen at competitive prices.

In order to cover the high demand for hydrogen, Europe might turn to imports from third countries with better conditions for the production of renewable hydrogen. The EU should, however, be self-sufficiency and depend on the local production of renewable and low-carbon hydrogen first.

Waste-to-Energy covers a wide range of different technologies with proven advantages to the European energy mix, but it also has potential with regards to hydrogen production.

The combustion of municipal solid waste, half of which is estimated to be of biogenic origin, thus a renewable source of energy, can provide some or all of the energy required for the generation of hydrogen through electrolysis or certain types of gasification.

This **low-carbon hydrogen** represents a significant alternative to fossil fuels in powering fuel cell buses in cities, or refuse trucks collecting municipal waste.

Waste-to-Energy plants are not just treating the residual non-recyclable waste and providing “low-carbon” energy, they are also deploying new technologies to become “carbon negative” (i.e., by removing CO₂ from the atmosphere).

Bioenergy with carbon capture and storage (BECCS) in the Waste-to-Energy sector is one of the few abatement technologies that can be **carbon negative**¹. The Waste-to-Energy sector has already had successful applications of this technology, for example, in Oslo, Norway².

Several hundreds of refurbished or new plants treating municipal waste throughout Europe would thus have potential to become as many local sources of green (provided there are CCS technologies in place) or low-carbon hydrogen.

Already, promising pilot demonstrations and projects at various stages of development are now taking off in Europe. For example, in Wuppertal (Germany), the electricity from the thermal treatment of residual waste is used to produce hydrogen, supplying the city buses with zero-carbon fuel.

Any forthcoming national or EU-wide climate measures for the Waste-to-Energy sector should take into account the **offsets** of CO₂ emissions in WtE through Life Cycle Analyses, not just the direct emissions, as well as the potential of the sector in the **hydrogen supply**.

Such measures should also 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 with the rest of the waste management sector) is carefully evaluated.

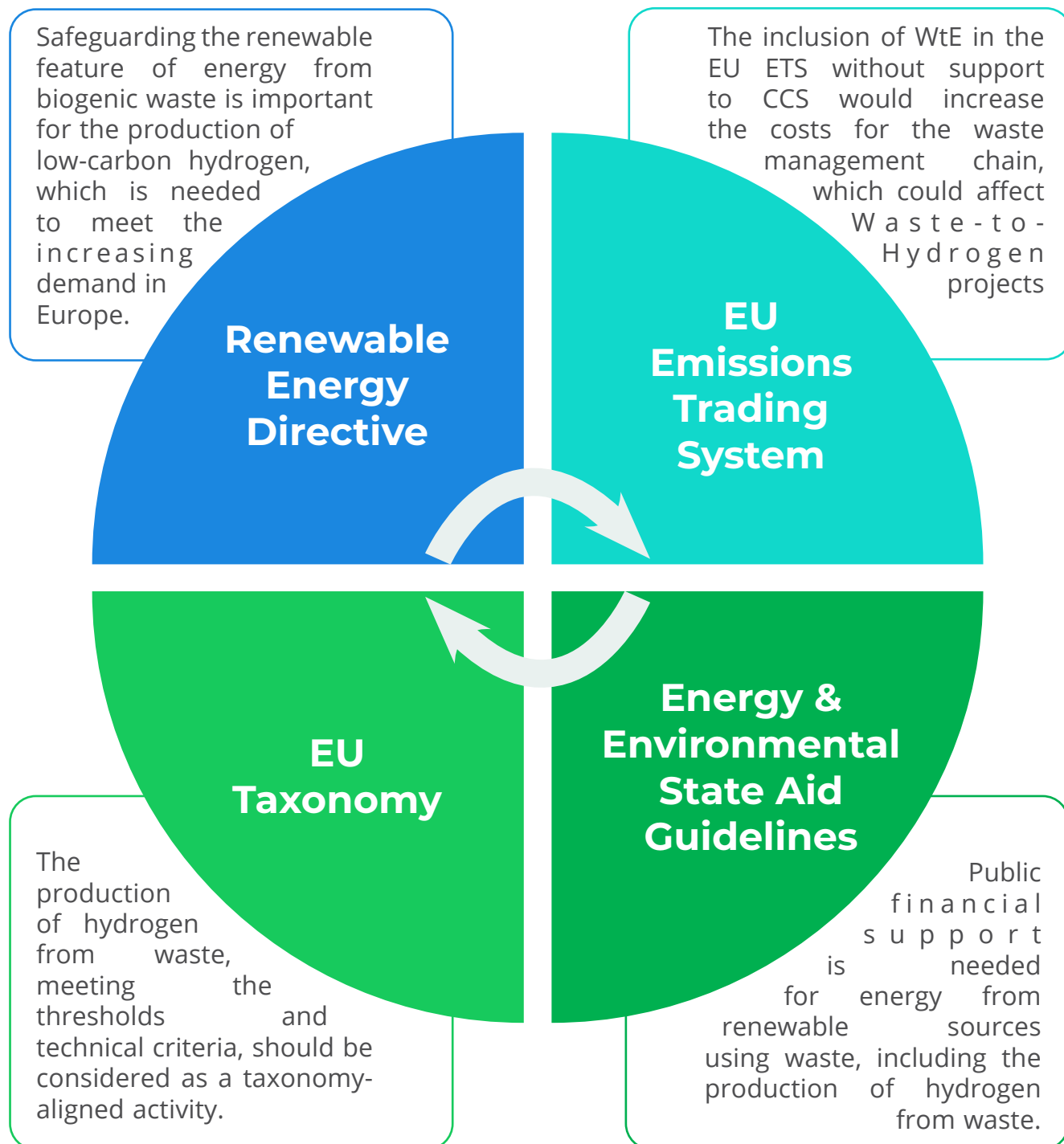
In any case, the polluter-pays principle should be strengthened to make those responsible for waste generation (and not waste treatment) pay for its environmental and climate impacts.

The Waste-to-Energy sector is committed to making all the necessary contributions towards the EU goals of 55% greenhouse gas emissions’ reduction by 2030 and climate neutrality by 2050.

¹ 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

² Presentation of the Fortum Oslo Varme CCS project (part of the Longship project): <https://www.fortum.com/media/2018/11/full-scale-carbon-capture-and-storage-ccs-project-initiated-norway>

MAJOR EU POLICIES RELATED TO WASTE-TO-HYDROGEN



CREDITS

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