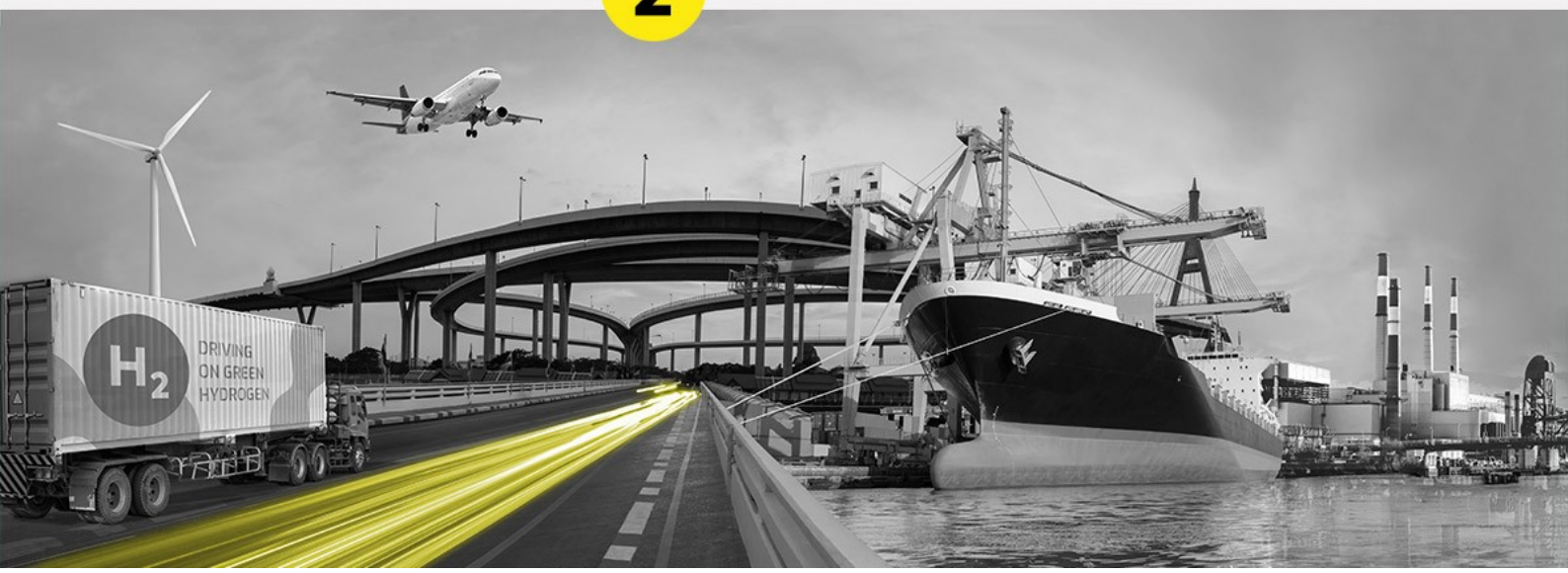


HY2MARKET · EUROPEAN HYDROGEN WEEK 2026

Waste-to-Hydrogen Session

Synthesis of participant input

Brussels · 28 October 2026 · Hy2Market stand

Key messages from participants

- **Match the route to the waste stream.** Separating waste streams and finding the best conversion route for each one gives better results than a single approach for all waste.
- **The end use sets the value.** Whether hydrogen, biomethane or another product is worth most depends on how and where the gas will be used.
- **Avoided disposal costs can carry the business case.** For materials that cannot be recycled, turning them into hydrogen removes disposal fees. Without financial incentives, waste stays in storage.
- **Purify where purity is needed.** Fuel cells need high-purity hydrogen and combustion does not. Purifying at the point of use keeps the extra cost with the users who need it.
- **A large-scale demonstrator is still missing.** No major pilot yet proves the full waste-to-hydrogen value chain in Europe.

About the session

On 28 October 2026, Hy2Market hosted a waste-to-hydrogen session at its stand during European Hydrogen Week in Brussels. Participants from an energy consultancy, the DVGW Research Center, ERIG, Gas Distributors for Sustainability, the Lower Silesian Hydrogen Valley

and the EIFHYTECH project discussed how waste streams can be turned into hydrogen and other value-added gases, and what is needed to build a regional value chain around them.

Dirk Koppert (New Energy Coalition) opened with the Hy2Market results to date: the Constanța waste-to-hydrogen pilot, which combines pyrolysis with separation and purification; Deliverable D2.4 on non-combustion hydrogen technologies with high GHG-reduction impact; Deliverable D2.18 on converting biodegradable waste into hydrogen through gasification, pyrolysis and other thermochemical routes, with case material from the Northern Netherlands; and Deliverable D4.7 on synthetic fuels for shipping and aviation.

Europe still lacks a large pilot that proves the full waste-to-hydrogen value chain. Hy2Market is responding by preparing a handbook (white paper) on converting waste into hydrogen and other value-added gases and molecules. The session gathered input for it around three questions: what to do with waste, which technologies are needed, and which waste streams to use. Contributions are summarised by theme and are not attributed to individuals.

Starting point

Energy recovery from waste has been in use since the 1960s. Better separate collection and advances in thermal treatment have raised its efficiency: a new waste-to-energy plant reaches around 20% electrical efficiency, and 60–80% overall when run as a combined heat and power facility. Hydrogen from waste belongs to the same energy-from-waste approach and follows two main steps: sourcing and preparing the waste, then thermochemical treatment, covering syngas generation, cleaning, reforming, separation and purification.

What to do with waste

The opening question set incineration for heat and electricity against routes that create more added value. Participants saw a role for both, depending on the waste stream and the end use.

- **Stream by stream.** Separating waste streams and finding the optimal, tailored solution for each one was the strongest shared message, echoed by several participants. This also answers the session's third question: the right waste stream depends on the conversion route and product it is matched with.
- **A staged pathway.** One participant described waste management in three phases: storage, then incineration, then pyrolysis or gasification. All organic waste can be gasified; processing routes for other waste types are less clear. Production of carbon black and other industrial carbon was named as an option.
- **The end use sets the value.** Participants asked how hydrogen and biogas will each be used and which is most useful. One participant considered biomethane the most valuable end product. For organic waste, residues from biogas processing can still be incinerated for heat, keeping value along the chain.
- **Disposal fees and the business case.** For artificial and non-recyclable materials, converting waste into hydrogen removes disposal fees, which strengthens the business case. Participants asked where recycling fits in this picture. Where financial incentives are missing, or disposal barriers are too high, materials pile up in storage.

Technology needs

Pre-treatment

- **Drying takes too long at scale.** Non-biodegradable feedstock is being tested at small scale. For solid waste the only pre-treatment is drying, which is too slow for large volumes.
- **Rapid biochar production.** A process that produces biochar from wet solid waste in two hours was presented as one way to shorten this step.

Conversion

- **Gasification for high-pressure output.** Gasification was preferred because it delivers gas at high pressure after conversion.
- **Pyrolysis for robustness.** Pyrolysis is less suited to high-pressure output, but it is robust and less dependent on the specific feedstock.
- **Anaerobic digestion for other biogases.** Anaerobic digestion is the dominant method for producing other biogases. Pyrolysis is more complete but more expensive. Digesters need a constant temperature of around 25 °C, so plants in northern regions often shut down in winter, when energy demand is highest. Systems exist to hold the temperature without extra energy input. What to do with the digestate remains an open question.

Post-treatment

- **Purity depends on the offtaker.** Fuel cells need purified hydrogen; combustion applications can accept lower purity.
- **Purity and infrastructure.** Water in pipelines can freeze at low temperatures and cause corrosion. High-quality hydrogen extends the life of hydrogen infrastructure.
- **Where to pay for purity.** Purifying centrally adds cost for every user. Purifying at the end-user step limits the extra cost to the applications that need it.
- **Heat integration.** Waste heat from the process can be used to compress hydrogen at the end of the chain.

Permitting, economics and incentives

- **Permitting.** No permitting specialists were at the table, which participants noted as a gap. Industrial sites such as refineries and fertiliser plants need integrated permitting.
- **Links with fertiliser production.** Participants asked how waste-to-hydrogen can be combined with fertiliser manufacturing to improve the economics.
- **Incentives for incineration operators.** The 2035 targets were suggested as a lever to encourage waste-incineration companies to move to gasification.

How this input feeds into the next steps

The input will shape the Hy2Market waste-to-hydrogen handbook, which will add region-specific interests and partner knowledge, give an overview of status, main bottlenecks and next steps, and use Hy2Market dissemination channels, including the policy letter, to reach the relevant target groups.

What participants raised	Proposed input to the handbook and next steps
Stream-specific routes	Structure the handbook by waste stream, with a recommended pre-treatment and conversion route for each.
Choice of end product	Compare hydrogen, biomethane and other products (e-methane, e-fuels, industrial carbon) by end use, offtaker and value.
Business case and incentives	Include avoided disposal fees, incentives for incineration operators to move to gasification, and links with fertiliser production.
Technology needs	Cover pre-treatment (drying, rapid biochar production), conversion (gasification, pyrolysis, anaerobic digestion, including cold-climate operation) and use of digestate.
Purity and infrastructure	Set out purity requirements by offtaker, the trade-off between central and end-user purification, and the effect of water content on pipelines.
Heat integration	Show how process waste heat can be used, for example to compress hydrogen.
Permitting	Bring in permitting expertise, with attention to integrated permitting for industrial sites such as refineries and fertiliser plants.
Missing demonstrator	Make the case for a large-scale pilot that proves the full value chain, building on the Constanța pilot.
Policy	Carry the points on certification of waste-derived hydrogen and incentives for operators into the Hy2Market policy letter.

Next steps and contact

Hy2Market thanks everyone who joined the session. The input will be taken into the waste-to-hydrogen handbook, which will be shared with participants once finalised.

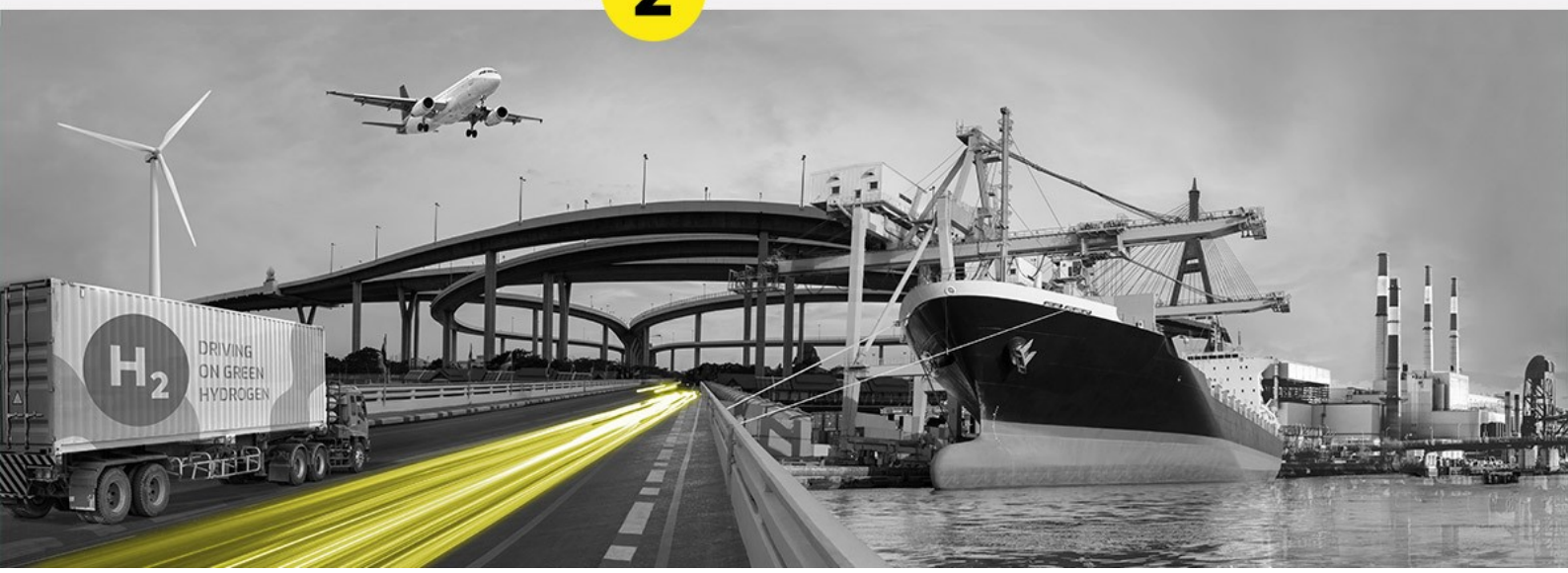
Further comments are welcome. Please contact Daniëlle Jacobson, New Energy Coalition, at **d.jacobson@newenergycoalition.org**.

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