



Impulse to discussion “Do we need targets to decarbonise gas by 2030?”

Eurogas Online Event „Let’s Meet!“

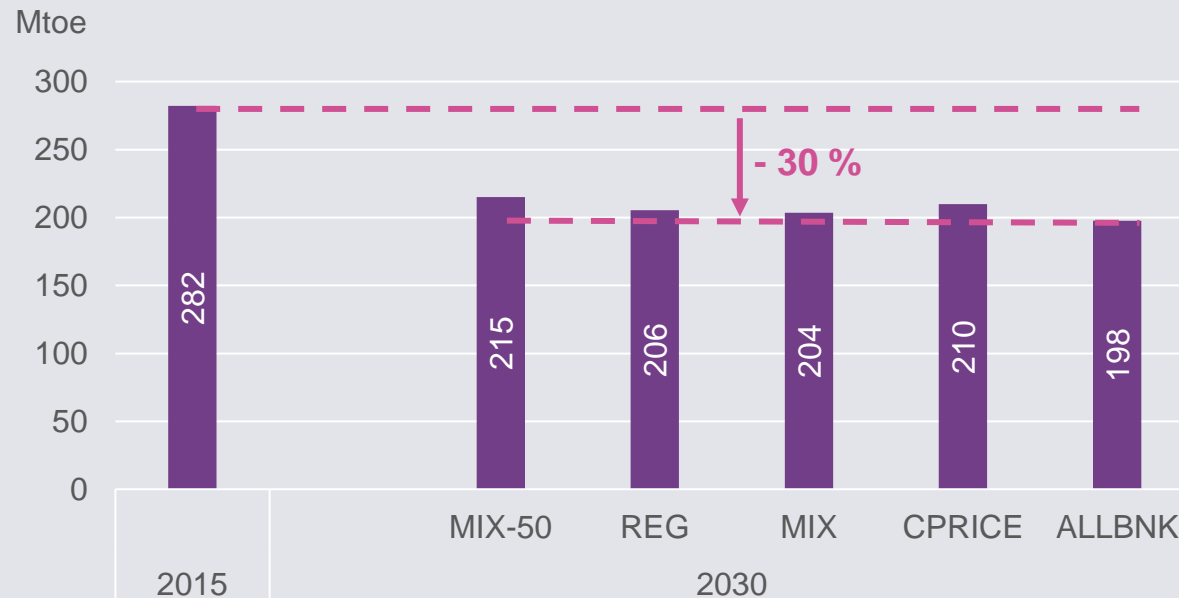
Matthias Buck

BRUSSELS/BERLIN, 22 JUNE 2021



Climate-neutral energy systems: No more unabated gas in 2020.

EU natural gas gross inland consumption

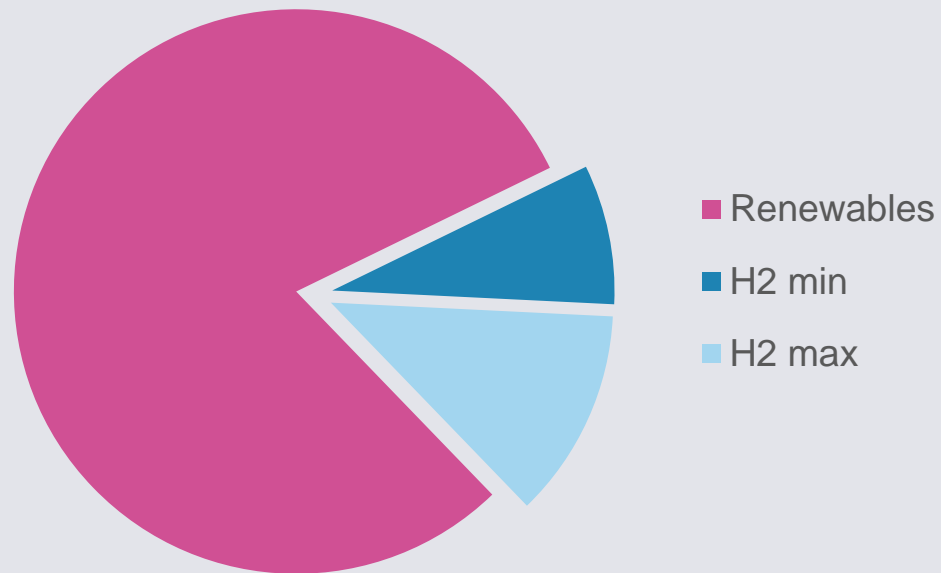


COM (2020): Climate Target Plan Impact Assessment

- **Climate neutrality** by latest 2050 and 55% reduction by 2030 commit Europe to ending use of (unabated) fossil gas. The indicative EU GHG-budget (2030-2050) will quantify remaining emissions from gas use.
- The EU gas market is a **shrinking** market (-30% by 2030). The Q4 gas package is a **transition package**.
- **Key issues:** priority uses for remaining fossil/renewable gas? Cost-efficient alternatives to fossil gas? Implications for infrastructure and public support?

Climate-neutral energy systems: Hydrogen supplies the last 8 to 20 % and needs to be made green

Share in final energy demand according to major global scenarios







- Hydrogen and decarbonised gases supply **niches**; if they supply beyond those, cost-effectiveness declines (cost of supply 1.5-5 times higher than for natural gas)
- A commitment to hydrogen is a **commitment to additional renewables** upscaling in a context of 99 % fossil fuel based hydrogen.
- EU's 40 GW **electrolyser ambition** = 80-120 GW additional solar and wind by 2030

Agora Energiewende based on JRC, IRENA, BNEF, IEA

Hydrogen demand: Which applications really need green molecules to become climate-neutral?

Need for green molecules, in addition to green electrons



Green molecules needed?	 Industry	 Transport	 Power sector	 Buildings
Uncontroversial	<ul style="list-style-type: none"> • Reaction agents (DRI steel) • Feedstock (ammonia, chemicals) 	<ul style="list-style-type: none"> • Long-haul aviation • Maritime shipping 	<ul style="list-style-type: none"> • Long-term storage for variable renewable energy back-up 	<ul style="list-style-type: none"> • District heating (residual heat load *)
Controversial	<ul style="list-style-type: none"> • High-temperature heat 	<ul style="list-style-type: none"> • Trucks and buses ** • Short-haul aviation and shipping 	<ul style="list-style-type: none"> • Absolute size of need given other flexibility and storage options 	
Bad idea	<ul style="list-style-type: none"> • Low-temperature heat 	<ul style="list-style-type: none"> • Cars • Light-duty vehicles 		<ul style="list-style-type: none"> • Individual buildings

* After using renewable energy, ambient and waste heat as much as possible. Especially relevant for large existing district heating systems with high flow temperatures. Note that according to the UNFCCC Common Reporting Format, district heating is classified as being part of the power sector.

** Series production currently more advanced on electric than on hydrogen for heavy duty vehicles and busses. Hydrogen heavy duty to be deployed at this point in time only in locations with synergies (ports, industry clusters).

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Thank you for your attention!

Questions or comments? Feel free to contact me:

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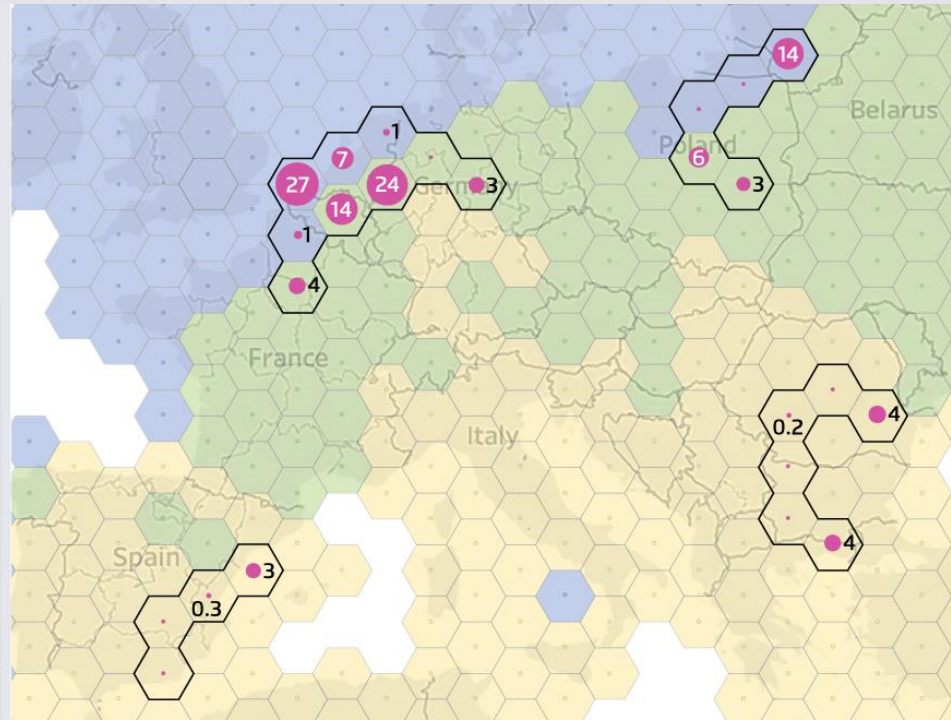


Hydrogen infrastructure: Where to start? No-regret investment opportunities 2030 for hydrogen pipelines, based on industrial demand.

No-regret corridors for 2030 based on industrial hydrogen demand in TWh/a

Best LCOH 2050

- Hybrid
- Solar
- Wind
- Industrial hydrogen demand 2050 in TWh per year



- Adding potential hydrogen demand from power, aviation and shipping sectors is likely to **strengthen the case** for a more expansive network of H₂ pipelines.
- Even under the most optimistic scenarios any future **H₂ network will be smaller** than the current natural gas network.
- A no-regret vision for H₂ infrastructure **reduces the risk of oversizing** by focussing on inescapable demand, robust green hydrogen corridors and storage.
- Ensure link between energy infrastructure **planning** and new JRC energy and industry geography labs announced in updated clean industry strategy

AFRY (2021)

Only those hydrogen pipelines that are resilient to the future levels of hydrogen demand and the technology assumptions used here have been considered to be “no-regret”.

Publications on climate-neutrality, hydrogen and industry

No-regret hydrogen: Charting early steps for H ₂ infrastructure in Europe	Towards a climate-neutral Germany by 2045	Breakthrough Strategies for Climate-Neutral Industry in Europe	A Clean Industry Package for the EU	The Future Cost of Electricity-Based Synthetic Fuels
				
<ul style="list-style-type: none"> > full study 	<ul style="list-style-type: none"> > summary (EN) > full study (2050 DE) 	<ul style="list-style-type: none"> > summary > full study 	<ul style="list-style-type: none"> > full study 	<ul style="list-style-type: none"> > full study > PtG/PtL calculator
<ul style="list-style-type: none"> > data appendix > webinar 	<ul style="list-style-type: none"> > data appendix (2050 DE) 	<ul style="list-style-type: none"> > webinars 	<ul style="list-style-type: none"> > slide deck > webinar 	<ul style="list-style-type: none"> > slide deck > webinar