



The infrastructure challenge

Copenhagen Infrastructure Forum
25/11/2021



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Énergie et de
l'Aménagement du territoire

Département de l'énergie

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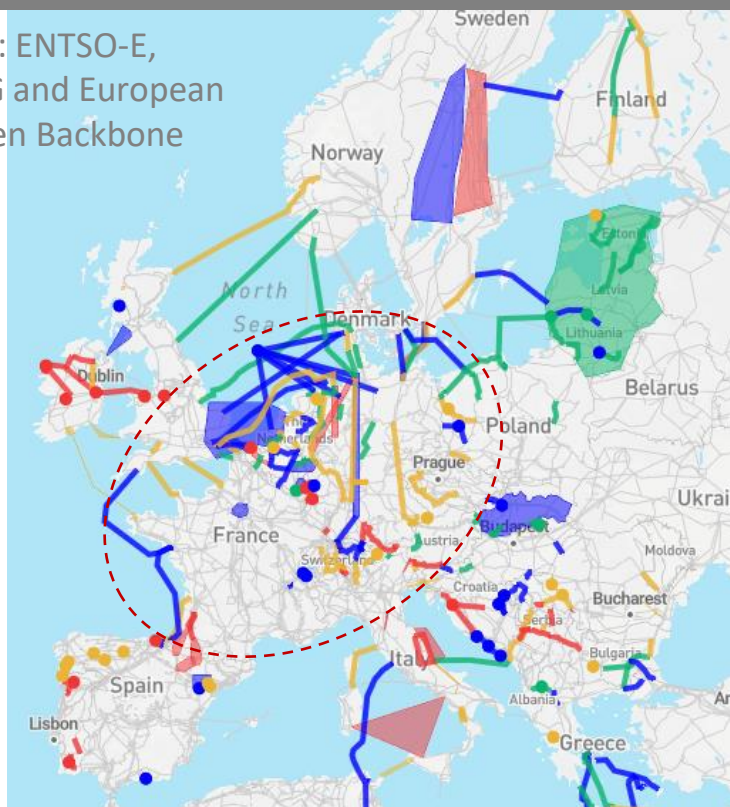


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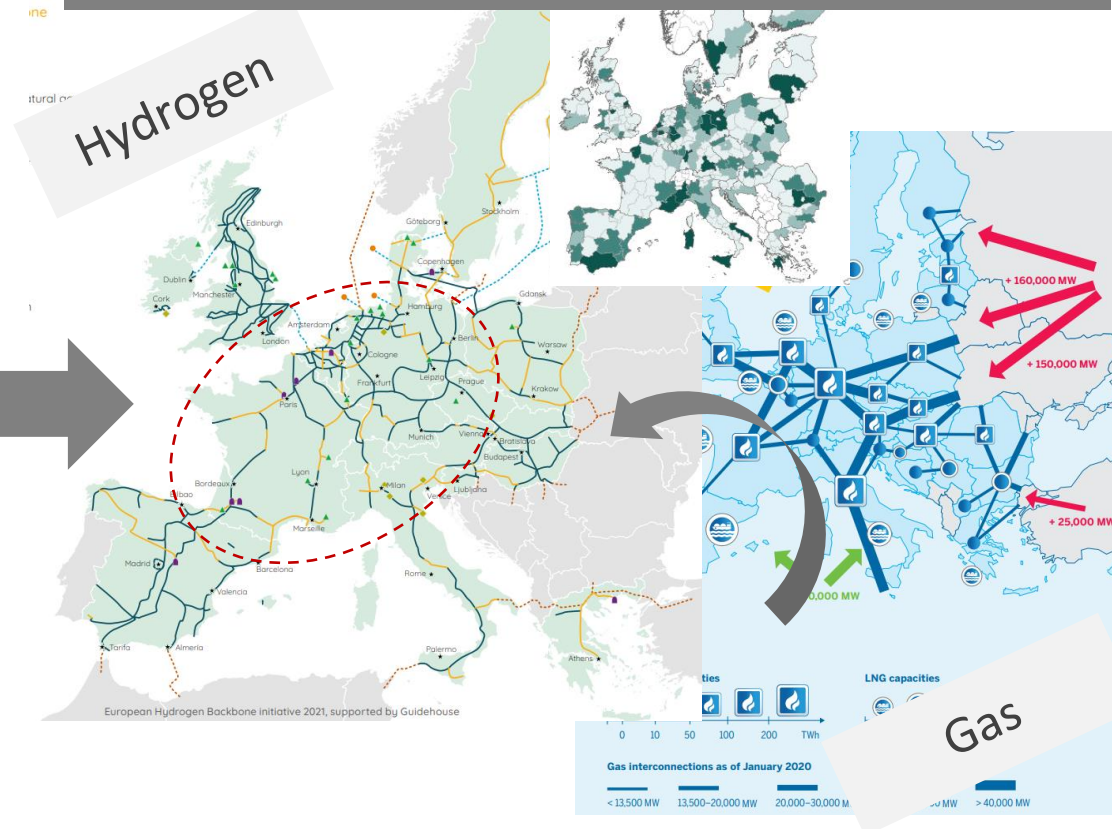
Département de l'énergie

Electrons

Sources: ENTSO-E,
ENTSO-G and European
Hydrogen Backbone



Molecules



- Shaping a future-proof renewable-based energy system requires a comprehensive approach and integrated systems crossing borders and sectors
- Grid infrastructure is a key enabler of energy system integration

The infrastructure challenge is **multi-objective**

- Climate targets in 2030 and full decarbonisation by 2050
- Affordability and security of supply
- Technical requirements for grid connection and development
- Sustainability wrt spatial planning, env. protection & public acceptance
- Integration of multiple sectors and markets

Existing **regulatory frameworks** largely cover these dimensions, but need to be **leveraged** and **developed**



1. Infrastructure planning

- TYNDPs
 - Key for coordinated planning, but need to get more integrated
 - Require governance compliant with objectives
 - All scenarios to achieve 2030 objectives and climate neutrality by 2050, incl. a 100% renewable scenario
- Offshore network development plans to be integrated and compatible with onshore grid planning
- Complementarities with regional and national planning processes



2. Development and financing of infrastructure projects

- Flexibility to include infrastructure as part of RED-II cooperation and Renewable energy financing mechanisms
- PCI lists to include offshore and onshore grids, no PCI status for fossil fuel related projects
- Extension of ENTSO-E CBA to offshore wind+grid projects, while considering project and sectorial dependencies
- CBCA for allocating grid investment costs, considering each country's benefit-to-cost ratio in a systemic analysis

3. Market functioning and system operation

- Internal market is key to coordinate market actors and to allocate costs and benefits
- Offshore bidding zones reflect costs and benefits, and steer short-term operational and long-term investment decisions (incl. grid assets); need to align with suitable renewable financing
- Particularities of offshore grids to be considered in CACM
- ITC mechanism to be ready for impact of offshore wind integration
- Merchant vs. regulated grids: Theory and practice show that merchant models are challenging