



Session 1: Electrification - end use and RES integration perspective



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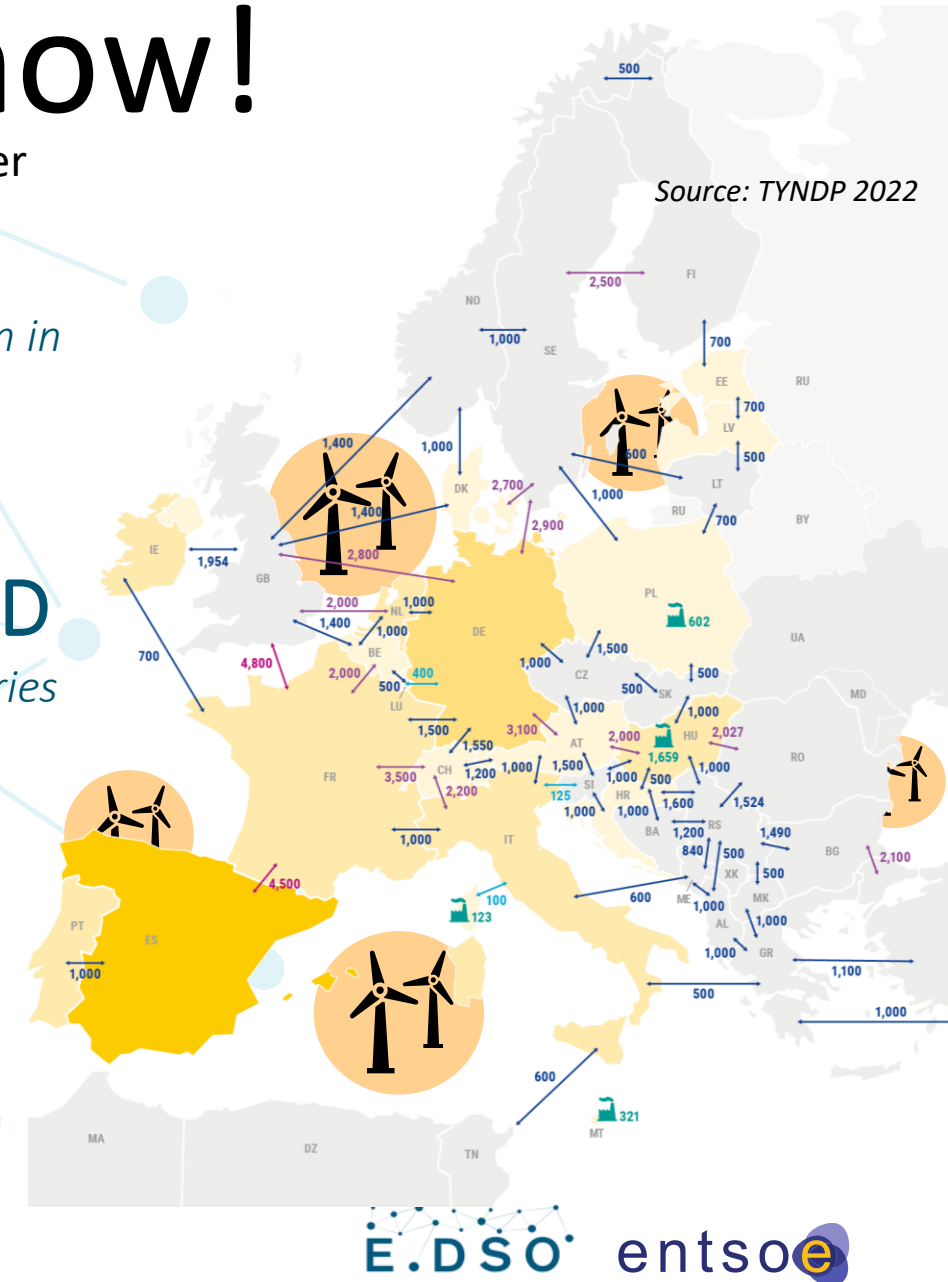
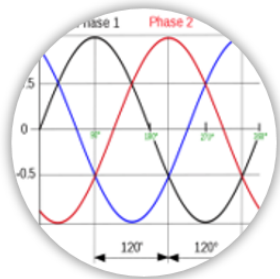
Chair of Research, Development & Innovation Committee, ENTSO-E,
Executive Vice President Offshore Development, Statnett SF



Green shift is now!

Reaching carbon neutrality even faster

- **10 x wind & solar faster**
Zero target gives radical changes of the power system in Europe
- **Vast volume of new flex & GRID**
Increased integration & cooperation between countries and sectors needed
- **Accelerated innovation is key:**
*Fast deployment of mature innovative solutions
Long term : sustainability drives the innovation*

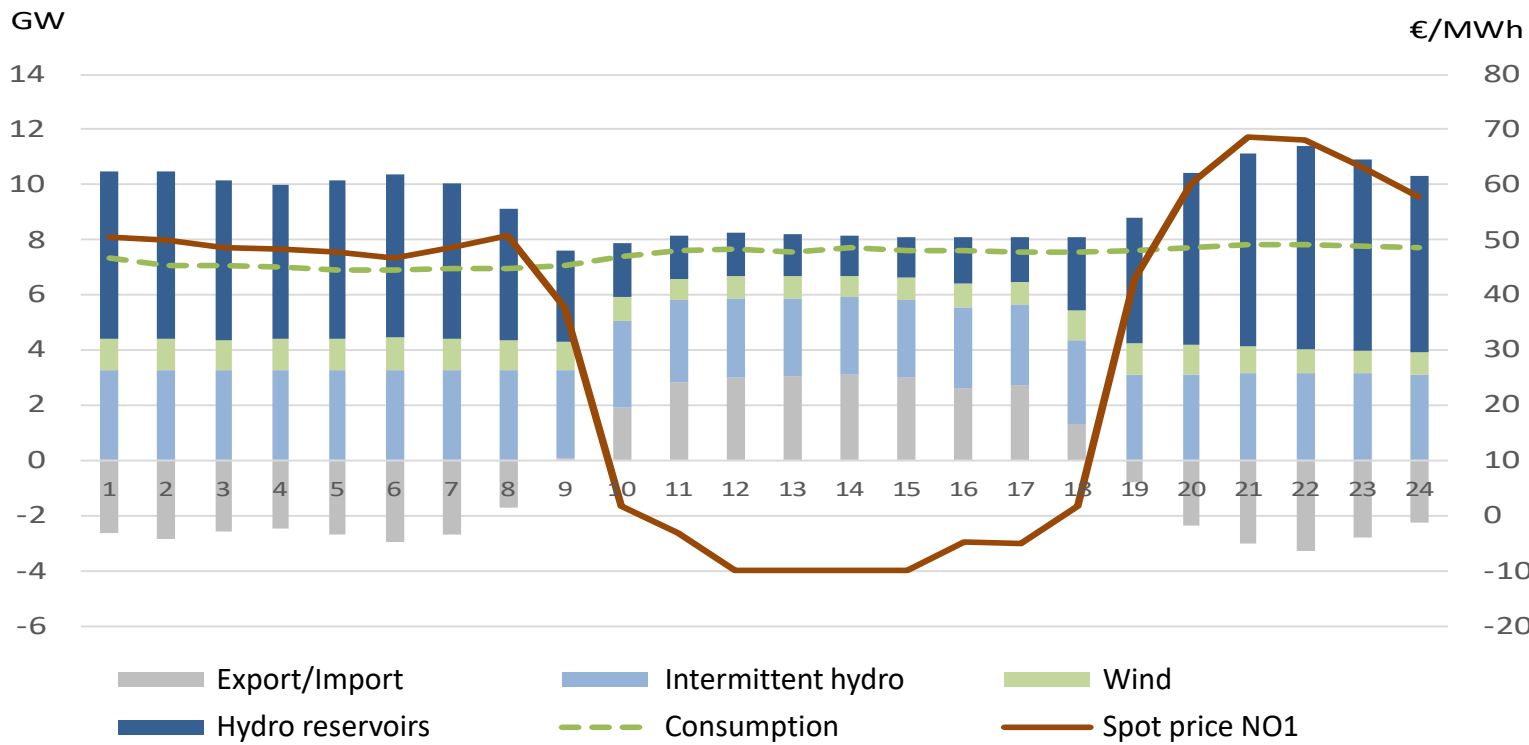




Flex need is huge already – Various mechanisms and improved market design features needs to be implemented

• Spot price and production in South of Norway :

28th May 2023



RES and consumers must be more exposed to spot prices to be incentivized to contribute with flexibility

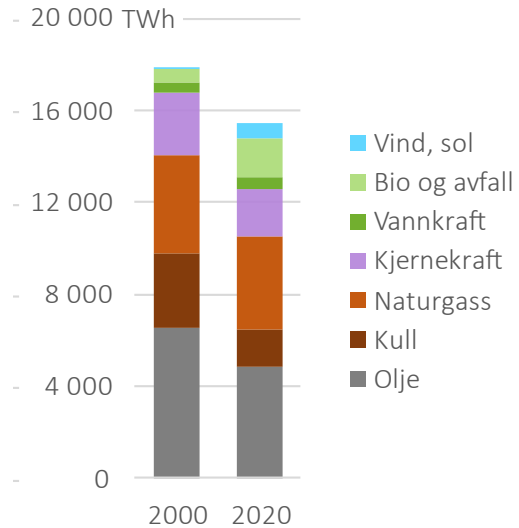
- **26-28 the May:** Low prices over the weekend. The lowest prices in the Netherlands (-400 €/MWh), but also quite low elsewhere in Europe.
- **Why so low prices?** Combination of high RES-infeed, low demand, in combination with market parties' and consumers behavior
- **Reasons for not responding to the low prices:** Lack of any exposure to the spot prices (e.g. feed-in subsidies, net metering) and lack of flexibility (e.g. energy storage, grid capacity consumer behavior)

» **Markets and incentives to provide signals to react to system needs, activate flexibility services, and enable necessary investments in all flexibility resources**



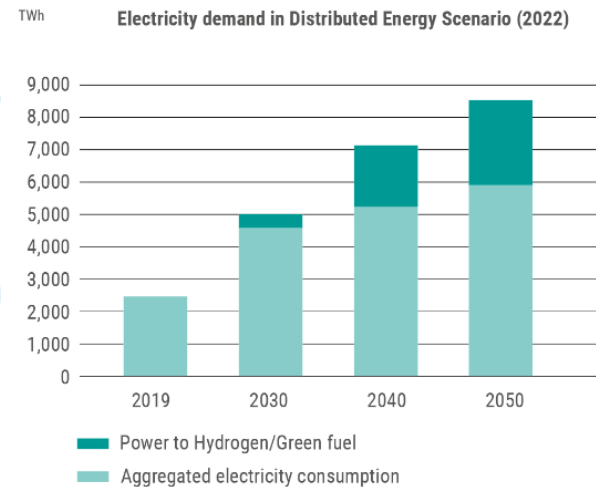
Electrification x3 drives the need for RES and flex

Total **energy** consumption is decreasing due to efficiency through electrification

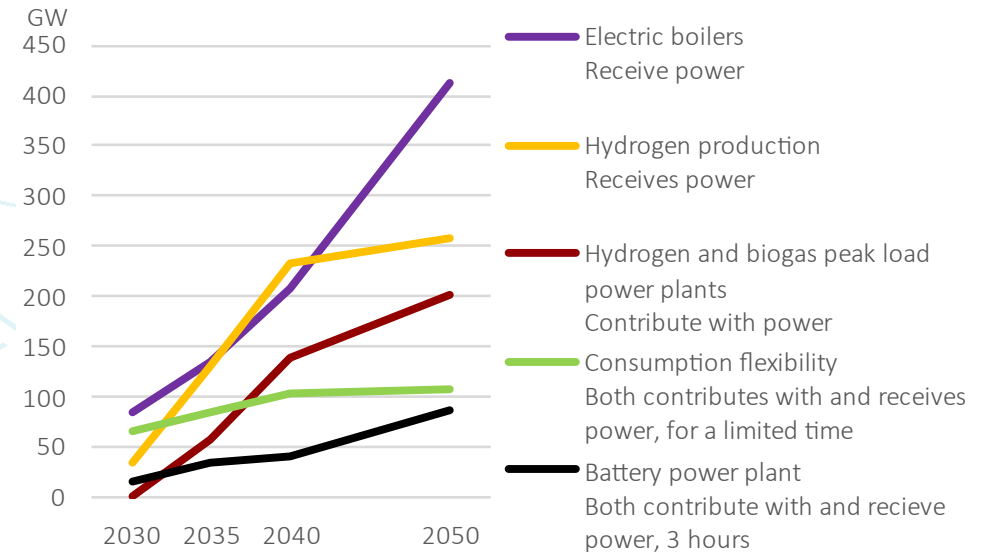


Fuel switch: Several thousand TWh oil, coal and gas shall be substituted with RES

Electrification drives increase in **power** demand (ENTSO-E)



Large volumes of new flexibility will be needed (Statnett)

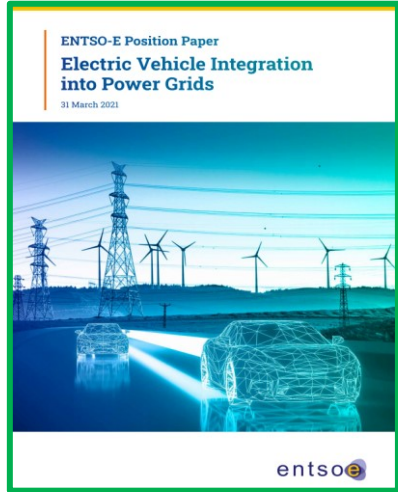


Modelled area*:





Electrification of the end users and the impact on the electricity system



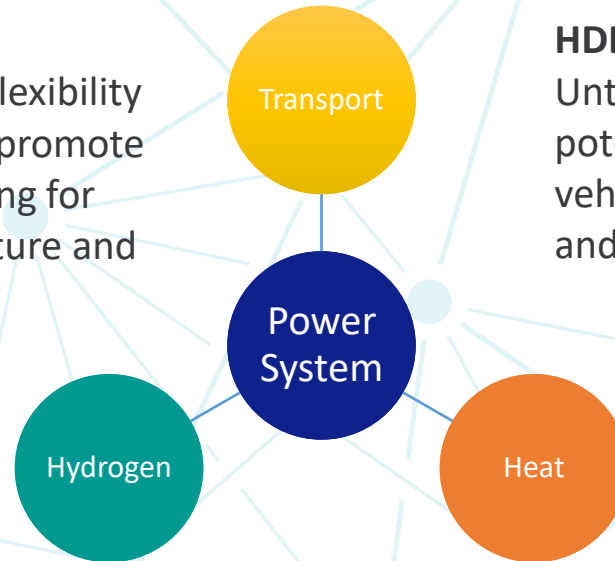
EV Position Paper

Impact on TSOs – Flexibility Opportunities and promote coordinated planning for charging infrastructure and electric grid



P2H2 study

Electrolysers can provide a wide range of services and long-term storage potential



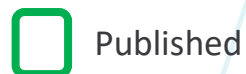
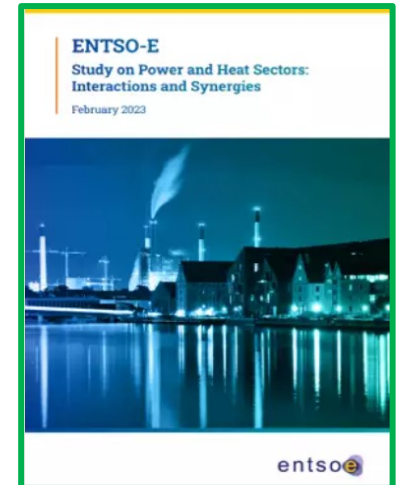
HDEV study

Untap the electrification potential of heavy-duty vehicles segment (use cases and flexibility)



Power-to-Heat study

Impact on load profiles and increased flexibility potential by demand side and thermal storage



Published



Under development

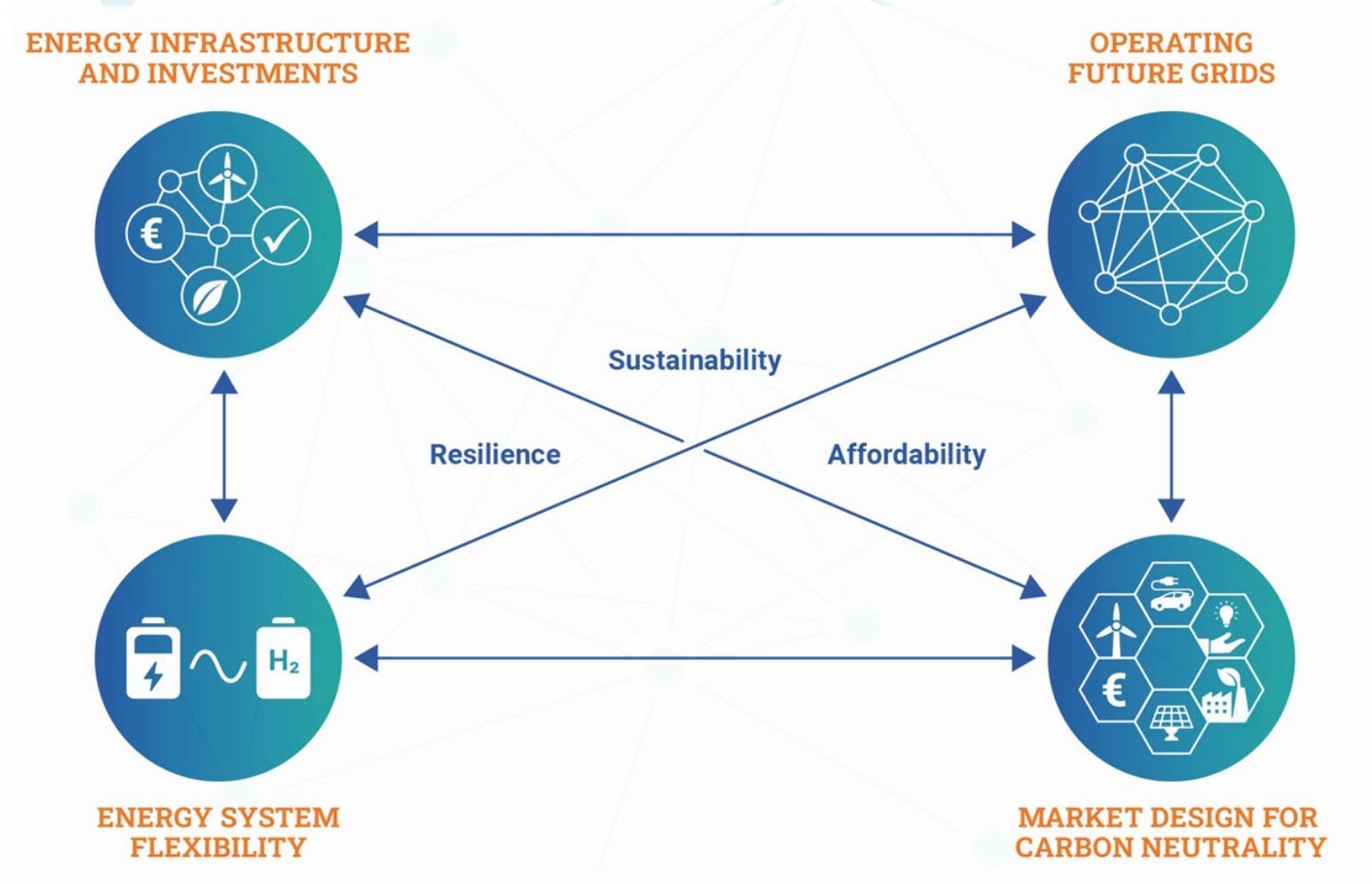


#iGrid2023



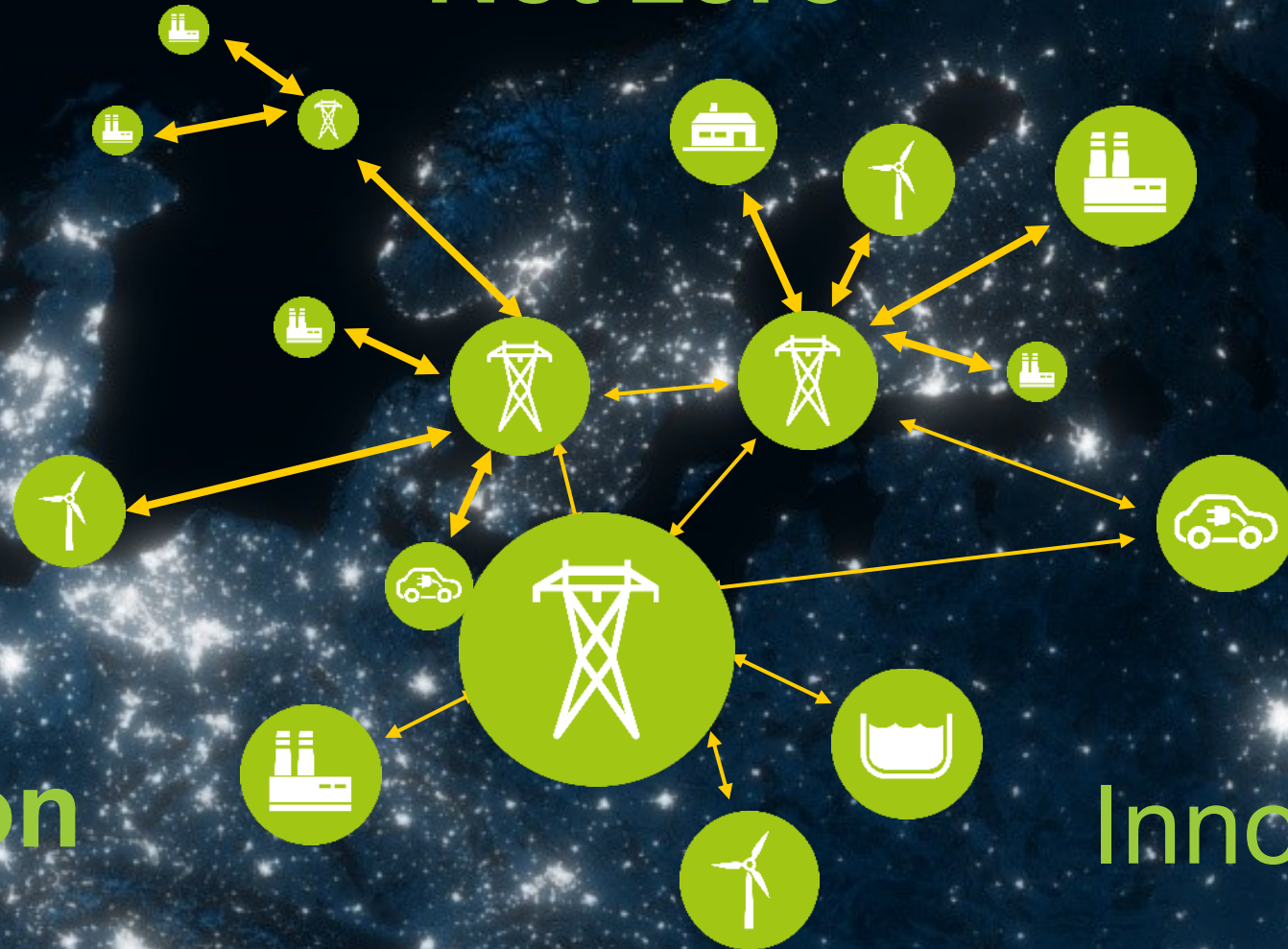


ENTSO-E Vision: A Power System for a Carbon Neutral Europe



The green transition is happening

Net zero



Collaboration

Innovation