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How to fit efficiency, electrification and other sectors in scenario development- 5th workshop

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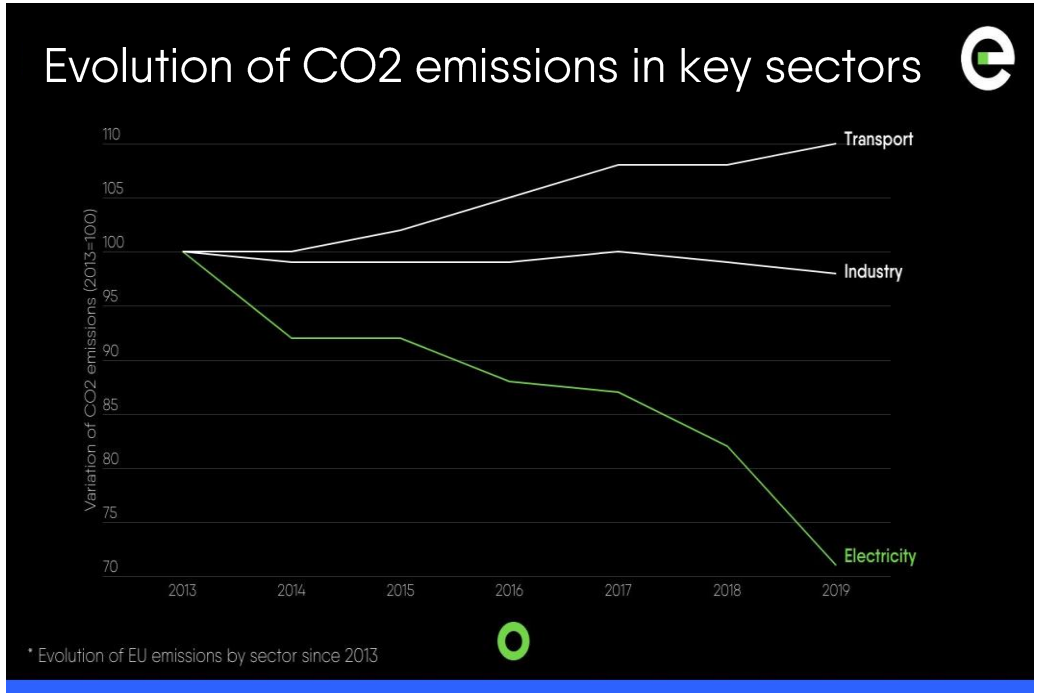
Increase direct electrification ambition

- Direct Electrification ambition is less in the TYNDP 2022

46 % in DE Scenario	37 % in GA Scenario

- For eg: IEA's NZE scenario has 49 % electrification for the world
- EU's power sector emissions has been decreasing fast. **Generating 1 kilowatt hour in 2020 emitted, on average, one third less CO2 than it did just a decade ago.**
- Direct electrification is the most energy efficient way of decarbonizing and hence we urge more ambitious direct electrification rate in one of the scenarios, underlying both energy and cost efficiency gains while considering consensus assumptions on technology costs and commodity prices.



Source: Eurelectric's Power Barometer based on EEA and Ember data

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Energy Efficiency not only on final energy but also on primary energy

- Energy efficiency should be considered not just in energy end-use but also on total primary energy demand/supply.
- Total primary energy demand shows the use of total use of energy in its primary form before converting to electricity or other fuels or energy carriers.
- In the net zero scenarios there are significant energy losses resulting from the conversion of electricity into hydrogen and biomass into biomethane.
- Total primary energy demand includes the energy lost in those conversions and provides a more complete picture of the energy efficiency improvements in the scenarios.

Improvement in sector coupling modelling needed

- The lack of proper sector coupling modeling especially of both gas to power & power to gas streams is a major shortcoming, as it does not allow to properly assess what could be the synergies btw. power and gas systems
- Power-to-gas and gas-to-power flows should be better described and highlighted, notably when it comes for 2- week cold snaps, extreme daily peaks and “kalte Dünkelflaute” scenarios modelling. This is required to assess the supply/demand balance of each system but also for identification of both adequacy issues or network congestion constraints (for which infrastructure investments needs may be identified).
- TYNDP 2022’s expansion model focused on electricity & H2 systems. The future development of methane system is not well represented. This would undermine the flexibility and cross-commodity synergies stemming from such a coupling.
- The demand for methane (progressively shifting from nat.gas to biomethane and synthetic methane) should be the result of the interaction of market & technology and not a narrative driven outcome.
- This is to be improved and will need enhanced coordination btw ENTSO-E & ENTSO-G and also engagement with key stakeholders (for input on key parameters).

Consideration on technologies

- There is no evaluation on perspective needs of ancillary services in the TYNDP 2022 which is critical for electric grid operation . This is needed to understand the prospects of different technologies fulfilling this demand.
- Role of offshore hybrid should be integrated into modelling to understand the value addition of this technology.
- CCS and net-negative emission technologies should be treated with caution. Such assumptions can have significant impact on the global results and on the contribution of other technologies need for carbon neutrality in absence of such intensive use of CCS.