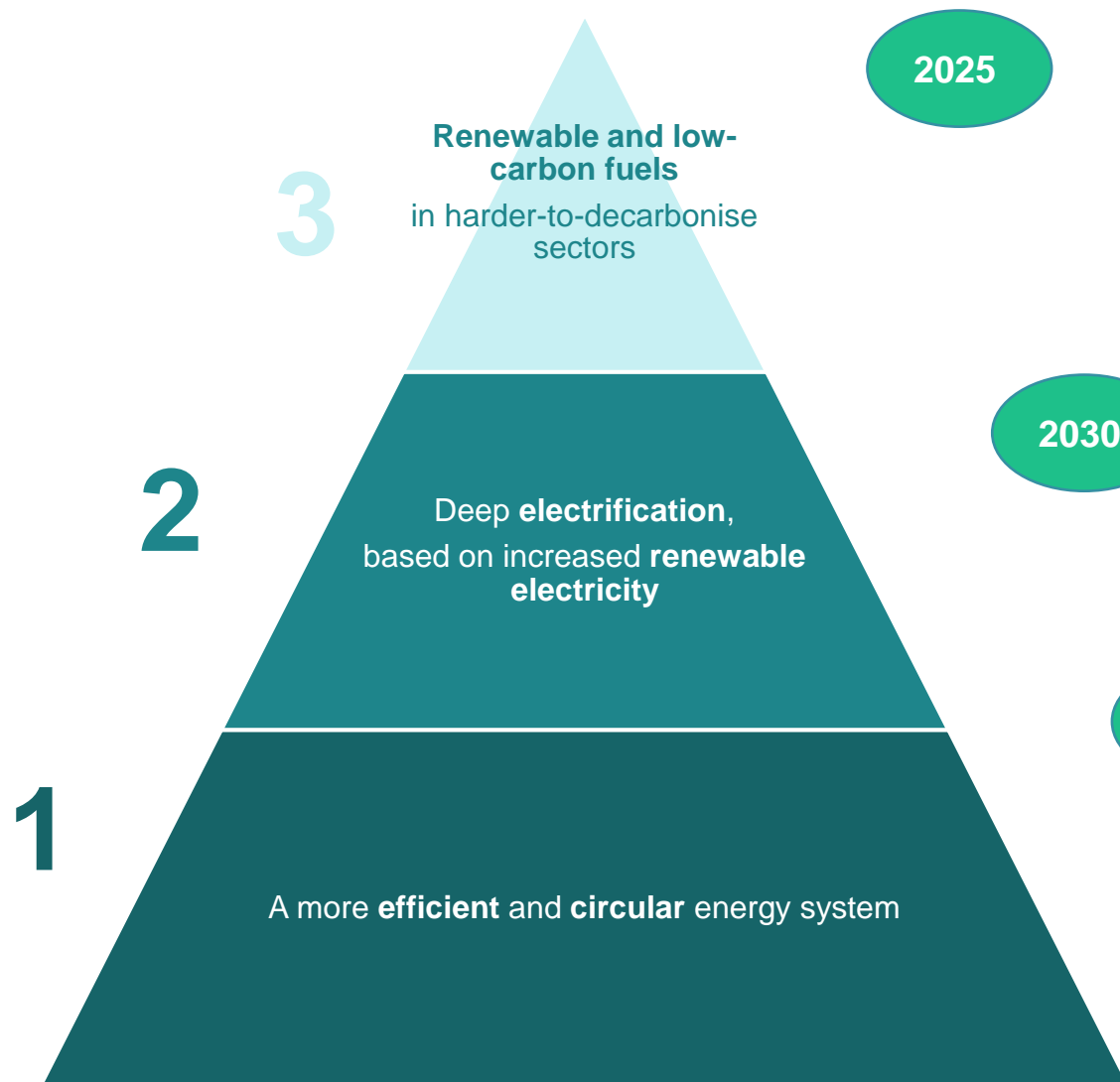




Hydrogen and gas markets decarbonisation package

Transforming our energy system



- **6 GW** of renewable hydrogen electrolyzers (= production facilities)
- Replace **existing hydrogen production** (based on natural gas)
- **Regulation** for liquid hydrogen markets
- Planning of hydrogen infrastructure

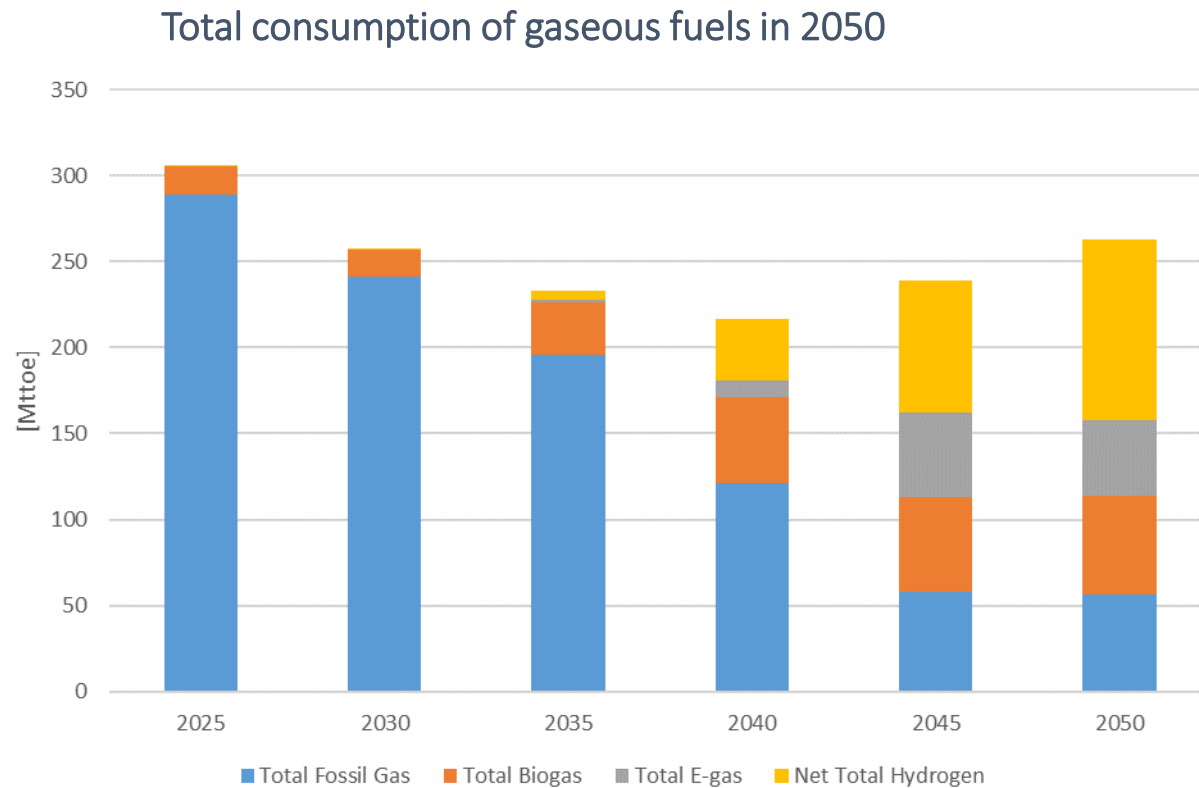
- **40 GW** of renewable hydrogen electrolyzers
- New applications in steel and transport
- Hydrogen for electricity balancing purposes
- Creation of “**Hydrogen Valleys**”
- **Cross-border** logistical infrastructure

REPowerEU: 20 million tonnes renewable H2

- 5.6 mt in H2 Strategy
- 5 mt additional H2 produced in Europe and 10 mt H2 imported
- Additional **40 GW** electrolyser capacity

- Scale-up to **all hard-to-decarbonise sectors**
- Expansion of hydrogen-derived **synthetic fuels**
- EU-wide infrastructure network
- An open international market with € as benchmark

Expected changes in the composition of gaseous energy carriers in the EU towards 2050



- Gaseous fuels will represent approximately 20% of final energy consumption in 2050
- Shift from unabated fossil gas towards renewable and low-carbon gases
- Gaseous fuels in 2050 to include mainly biogas, bio-methane, renewable and low-carbon hydrogen as well as synthetic methane

Source: EC PRIMES MODEL, MIX H2 scenario. This scenario takes strategic targets of European hydrogen strategy into account and considers options of promoting RFNBOs in industry and transport.

Hydrogen and gas markets decarbonisation package:

Policy aims

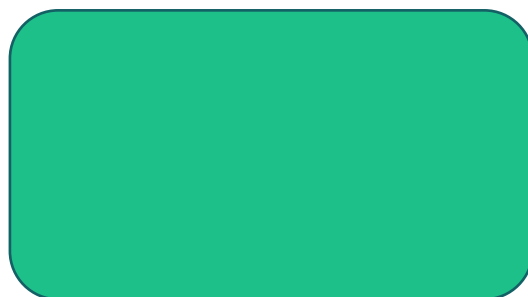
- I. Facilitate access of renewable and low-carbon gases to **existing gas network**
- II. Enabling development of **dedicated hydrogen infrastructure** and market

Vertical unbundling of hydrogen networks (separation from energy production and supply)

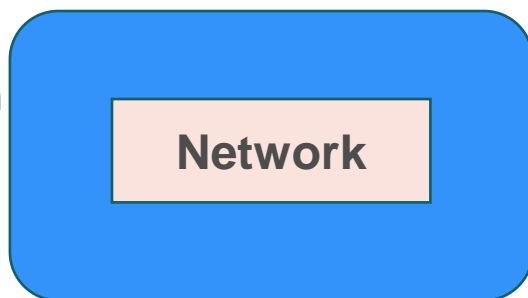
Ownership

Unbundling: supply and network owned by separate entities

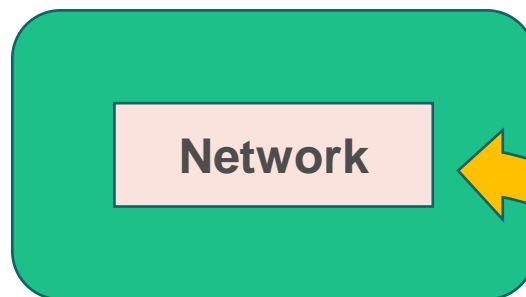
Supply



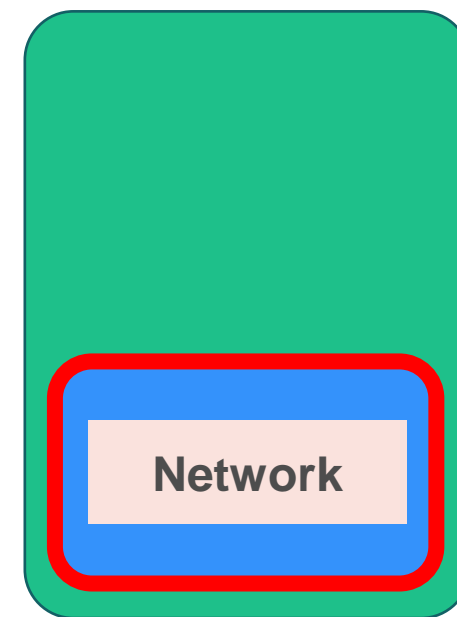
Hydrogen
Network
Operator



ISO: network owned by supplier, but operated by an independent system operator



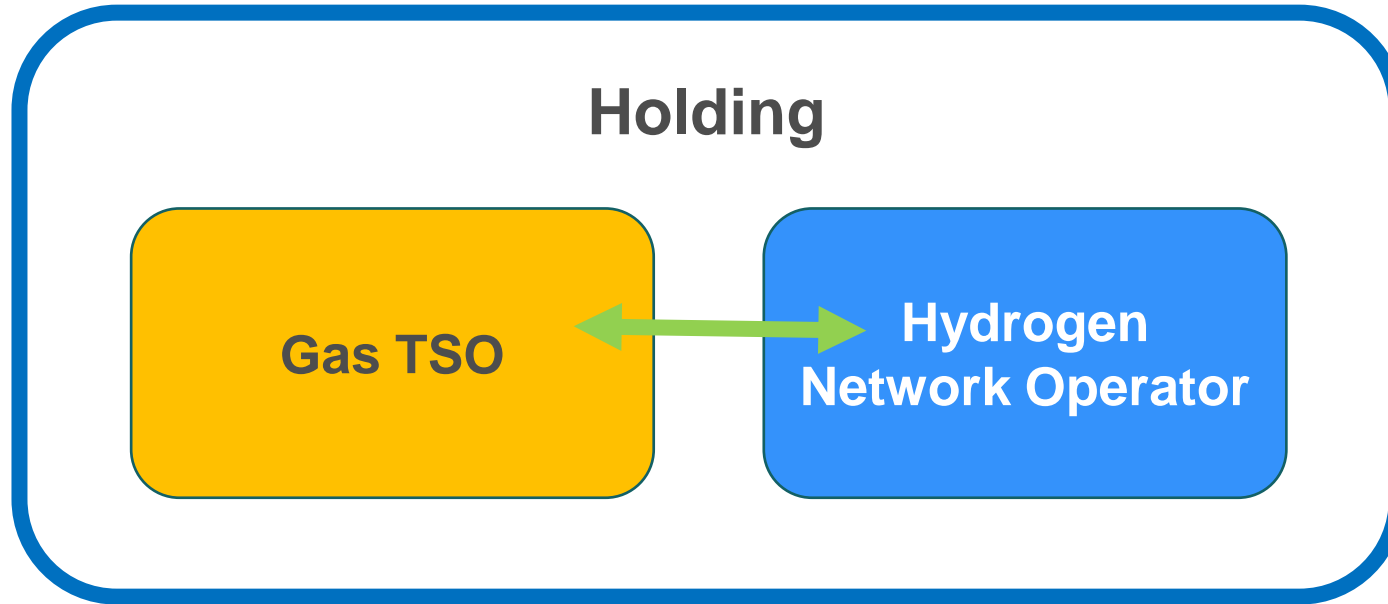
ITO (until 2030): vertically integrated company owns network, but separated by „chinese walls“



Exceptions to ownership unbundling requirement for hydrogen networks

- **ITO** model (in transition phase until 2030)
- **ISO** model
- Derogation for **existing vertically integrated networks** (until 2030)
- Derogation for **geographically confined networks** (2030 / beyond*)
- Exemptions for **major new hydrogen infrastructure**
(cross-border connections, terminals, underground storage)

Horizontal unbundling of hydrogen networks (separation from other energy network activities)



Legal unbundling:

- Separate subsidiary
- Separate regulated asset base & accounts
- Shared management, staff, IT possible