



Hydrogen
Europe

Hydrogen as an transport fuel and energy carrier -
Enabler for the Implementation of the European low carbon economy

- 12th October 2021

Fuel Cell & Hydrogen Joint Undertaking 2



Hydrogen Europe
Industry

European Union represented by the European Commission

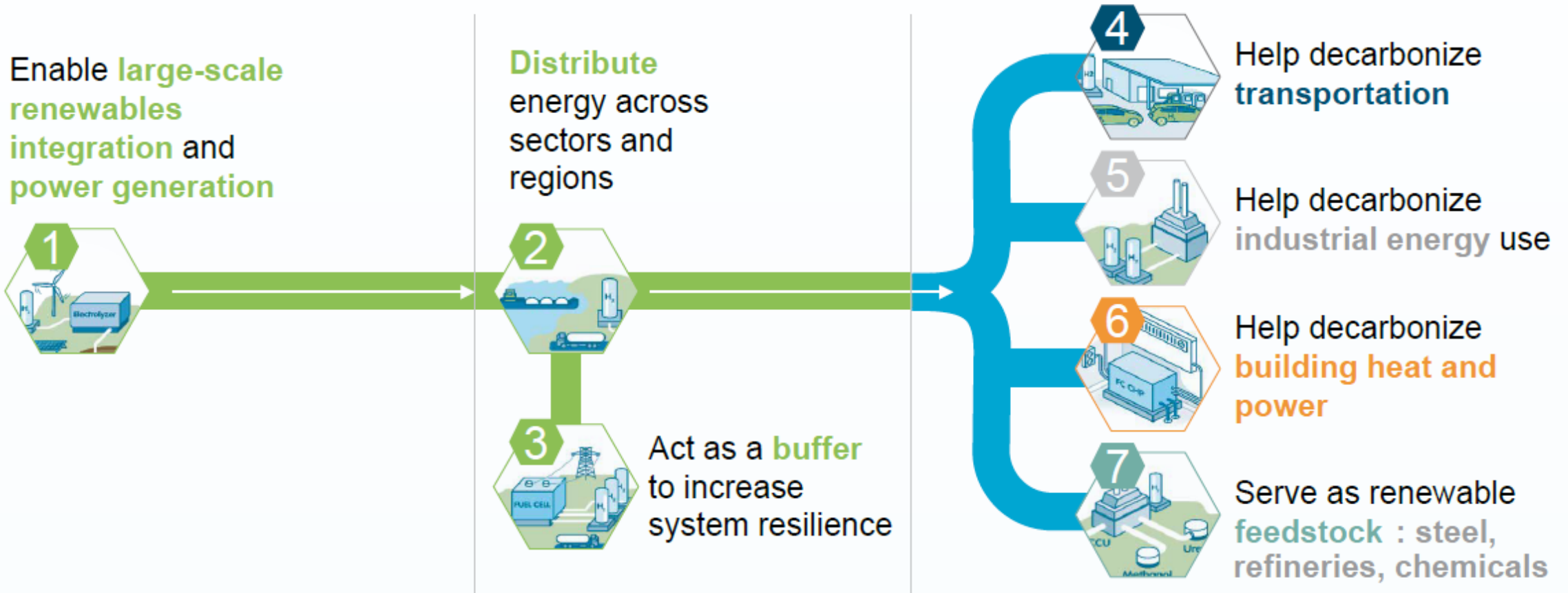
Hydrogen Europe
Research

A portfolio of clean, efficient and competitive solutions based on fuel cells and hydrogen technologies in energy and transport



7 roles of hydrogen

Enable the renewable energy system \longrightarrow Decarbonize end uses

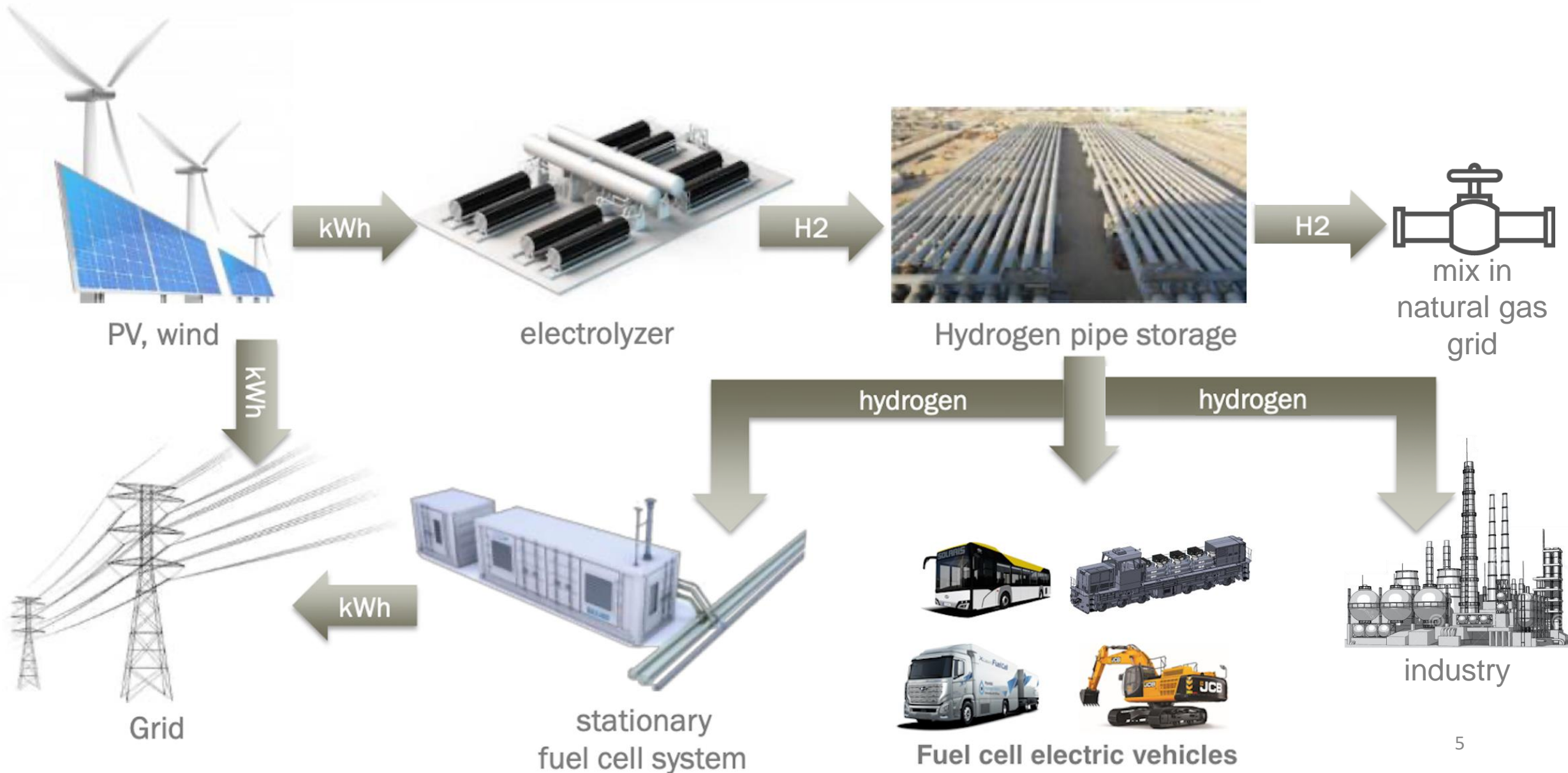


SOURCE: Hydrogen Council

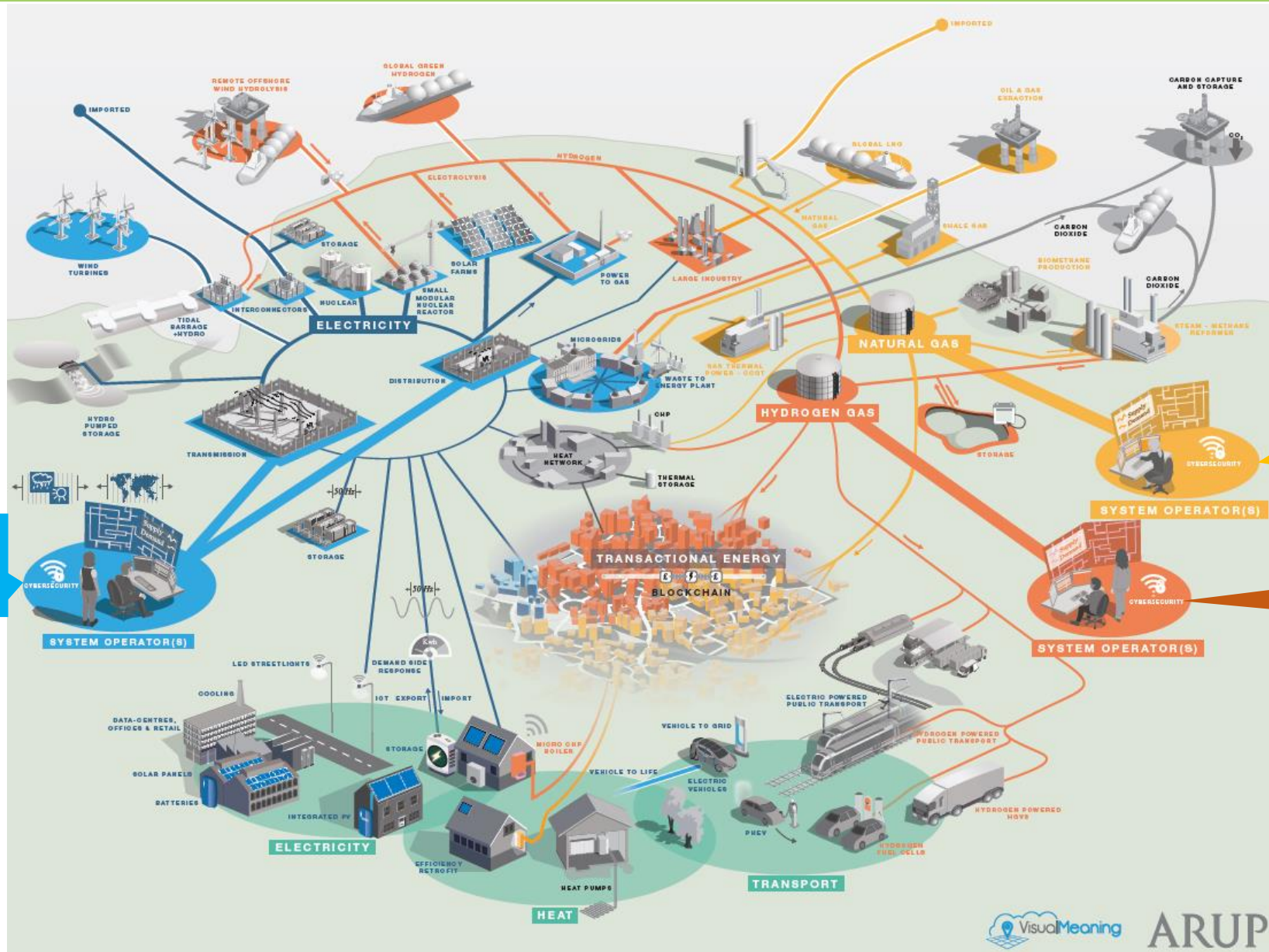
EU framework and hydrogen role in it

Sector	Requirement	Legislative Tools	Hydrogen's role
Transport	-CO ₂ reduction -PM/NO _x /SO _x reduction -Integration of RES	1. Renewable Energy Directive (RED2) 2. CO2 emission standards for LDVs/LCVs 3. CO2 emission standards for HDVs 4. Clean vehicle Directive 5. Alternative Fuel Infrastructure Directive	-H2 as a fuel -H2 made fuels -Renewable hydrogen for refineries
Energy-intensive industries	Decarbonisation	EU ETS	Renewable / low - carbon hydrogen as feedstock switch
Gas/ Heating	Decarbonisation (to remain a player) Integration of RES	1. Renewable Energy Directive (RED2) 2. Upcoming Gas Regulation (2020-2021)	Renewable / low - carbon hydrogen as feedstock Fuel cell as energy converter
Power	Storage / ancillary services Integration of RES	1. Renewable Energy Directive (RED2) 2. Electricity Market Design	Rapid response electrolysers + Sectoral Integration

Renewable Power to X



Sectoral Integration = System Efficiency



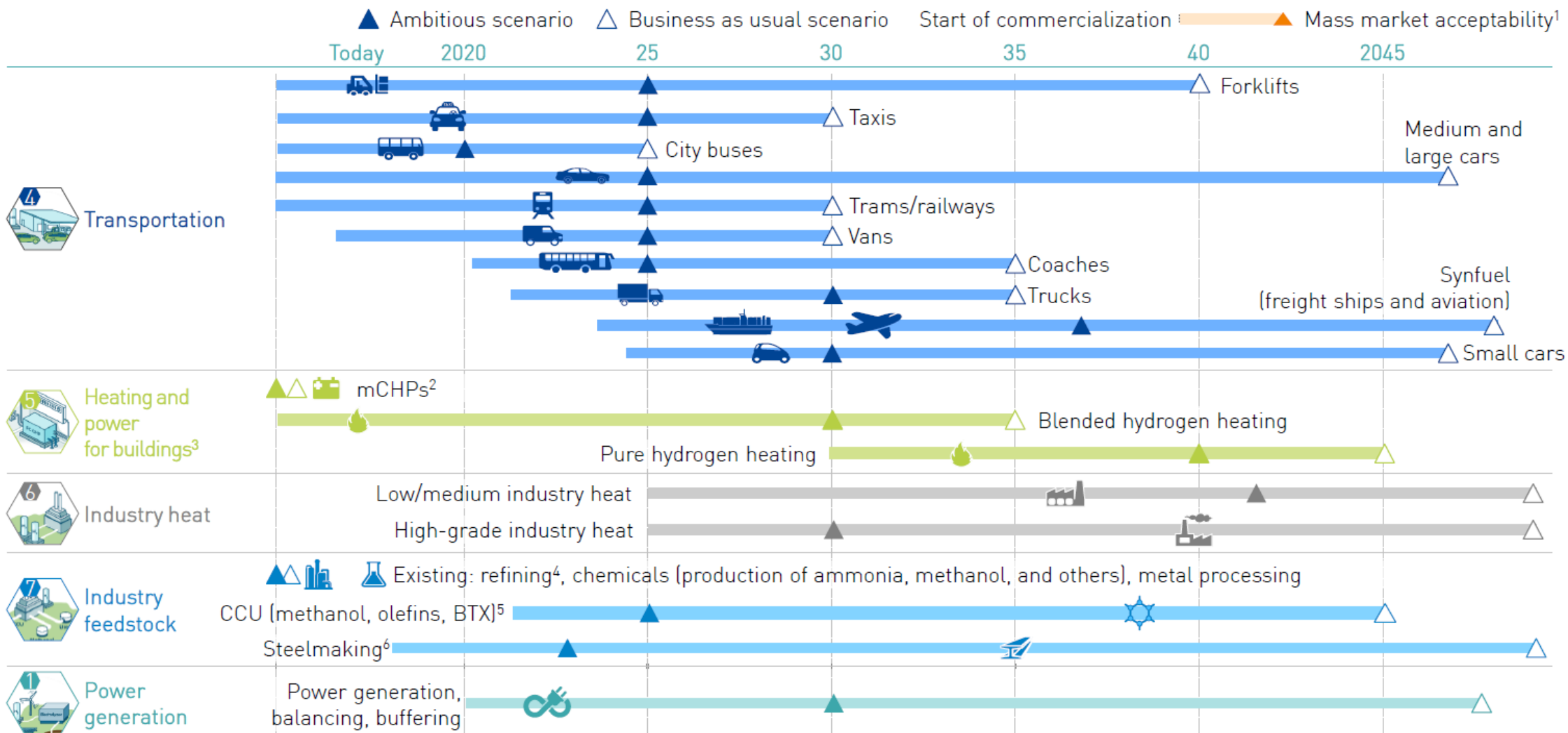
Electricity grid

Natural gas grid

Hydrogen supply

Hydrogen Roadmap Europe

HYDROGEN TECHNOLOGY EXISTS AND IS READY TO BE DEPLOYED





REVISED RENEWABLE ENERGY DIRECTIVE

The revised Renewable Energy Directive promotes the use of renewable hydrogen:

- Extending the **EU-wide certification system** for renewable fuels to include hydrogen
- Decarbonising industry and heavy-duty and long-distance transport, with concrete targets

TRANSPORT



2.6%

for renewable fuels of non-biological origin

INDUSTRY

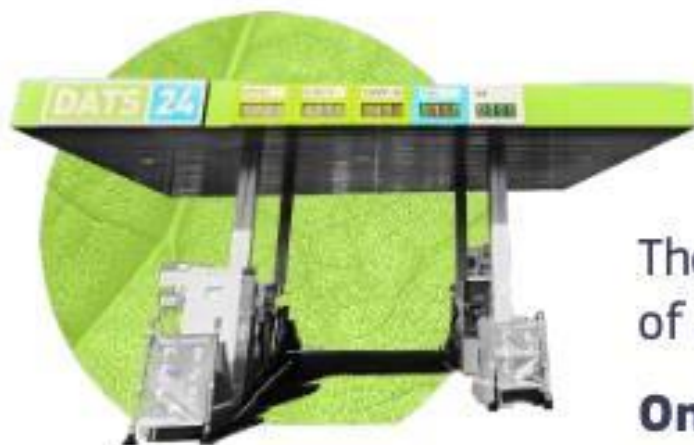


50%

renewable share in hydrogen consumption

CO₂ STANDARDS FOR CARS AND VANS

The CO₂ standards for cars and vans set technology neutral targets to reduce emissions by 2030 and by 2035. Hydrogen can be part of the solution, **in particular for heavy-duty vehicles**, if the industry chooses to invest in this technology.



ALTERNATIVE FUEL INFRASTRUCTURE REGULATION

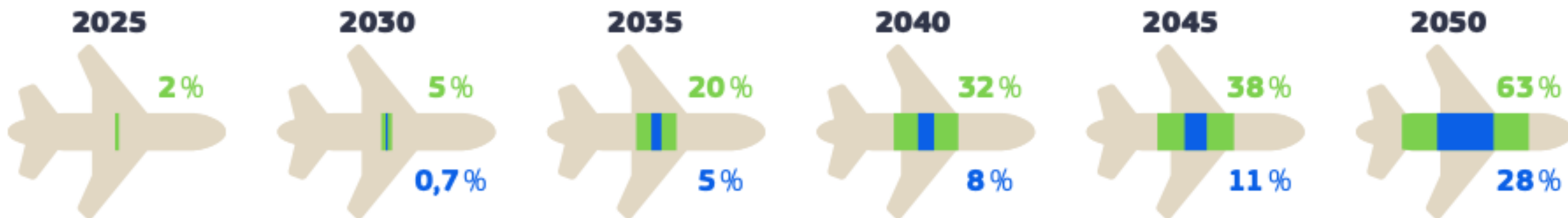
The Alternative Fuel Infrastructure regulation will also support the deployment of alternative fuels infrastructure, including refuelling points for hydrogen.

One refuelling station will be available every 150 km along the TEN-T core network and in every urban node.

Big achievements in Fit for 55

New targets for sustainable aviation fuels (as % of fuel mix)

■ Sustainable aviation fuels ■ Specific sub-mandate on e-fuels



Maritime targets on the limits on greenhouse gas intensity of the energy used on-board compared to 2020



Thank you! Questions?



Hydrogen
Europe

Contacts

Hydrogen Europe

Avenue de la Toison d'Or 56-60

1060 Brussels

Belgium

Aivars Starikovs

Member of the Board

E-mail: aivars@h2lv.eu

Tel.: +32 2 540 87 75

www.hydrogeneurope.eu