Natural Gas Fuelling the Future

James Watson, Secretary General

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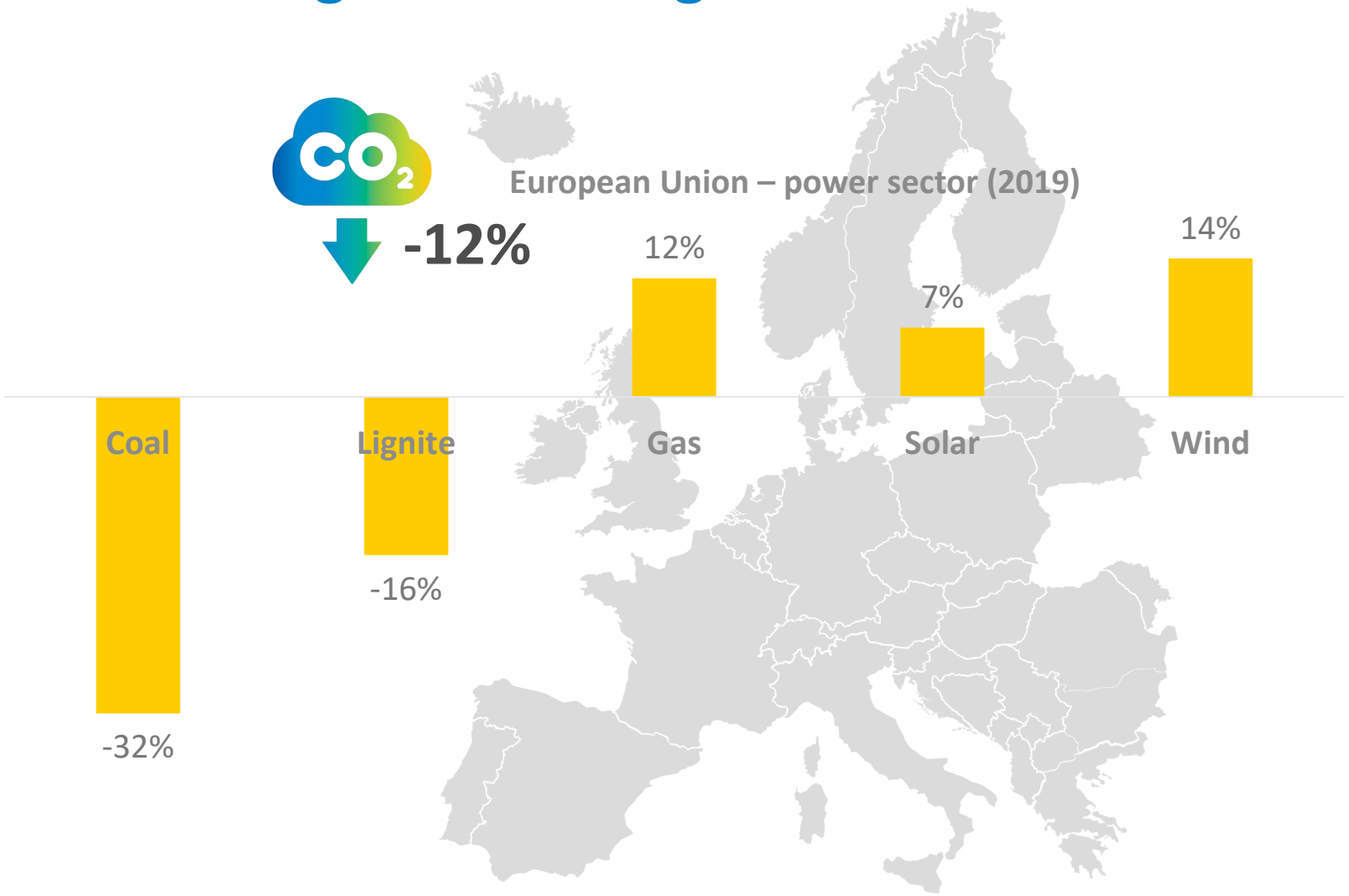
Gas and renewables displace coal and drive down greenhouse gas emissions



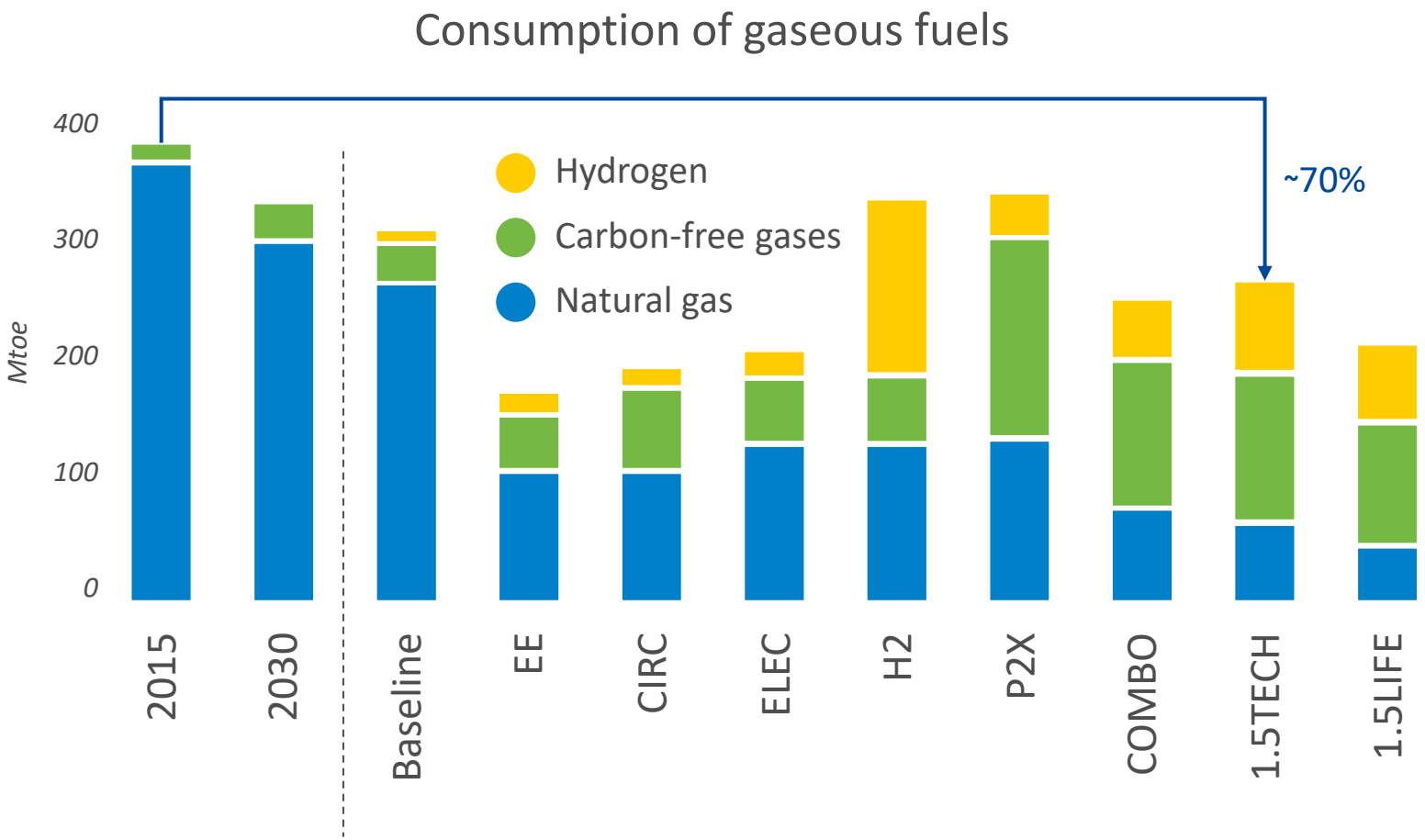
Low prices drive fuel switching.

Gas is an ideal alternative to coal while cutting emissions by half.

Gas enables and supports deployment of intermittent renewables

Source: Agora Energiewende: The EU Power Sector in 2019 (Feb 2020)

European Commission Vision for Gas to 2050



European Commission Long-Term Strategy confirms role of gaseous fuels in the energy transition

There is a major reduction in natural gas consumption in Europe between 2030 and 2050 predicted

Source: European Commission Long-Term Strategy

Alternative views of the future

Eurogas has a pathway study to a carbon neutral future, comparing it to the European Commission's 1.5TECH

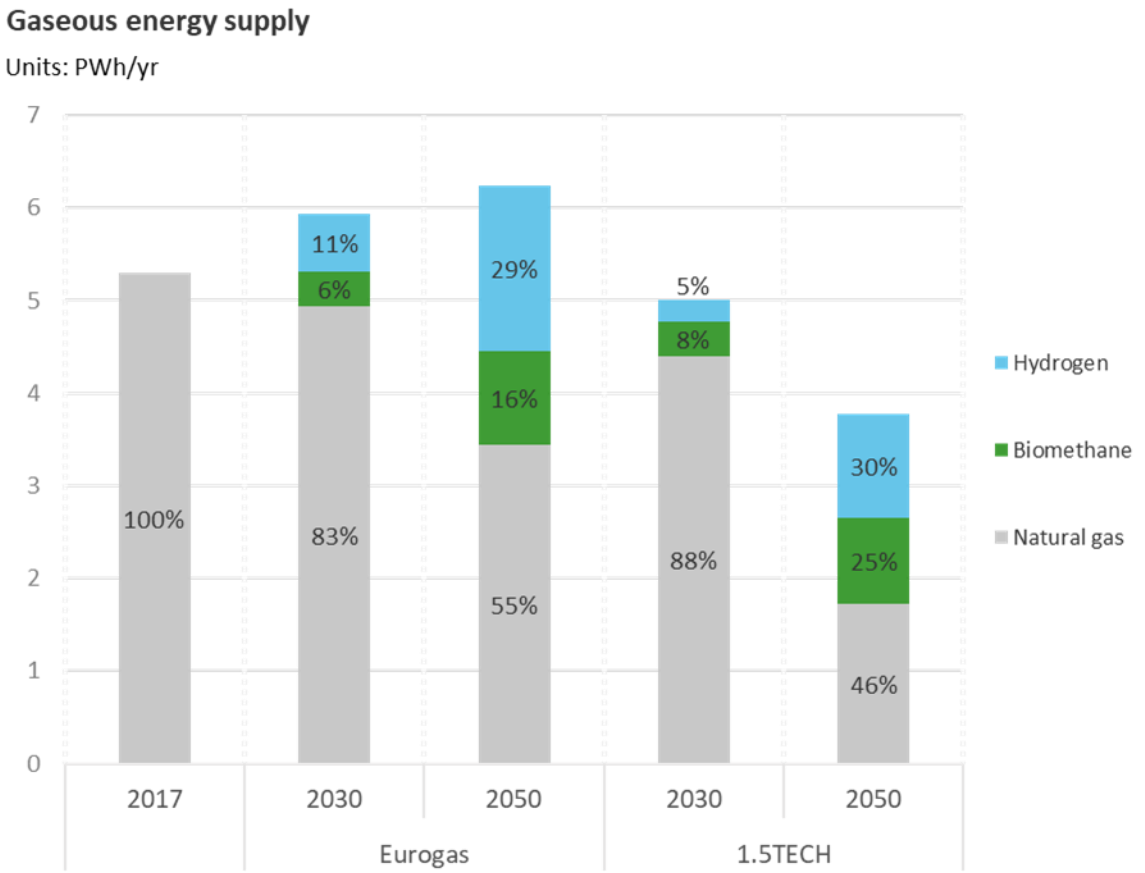
Commissioned DNV GL to carry out the study

To provide estimates of any cost savings associated with a transition utilising a multi-vector approach

To outline at what point, and under which conditions, renewable and decarbonised gases will be available in Europe

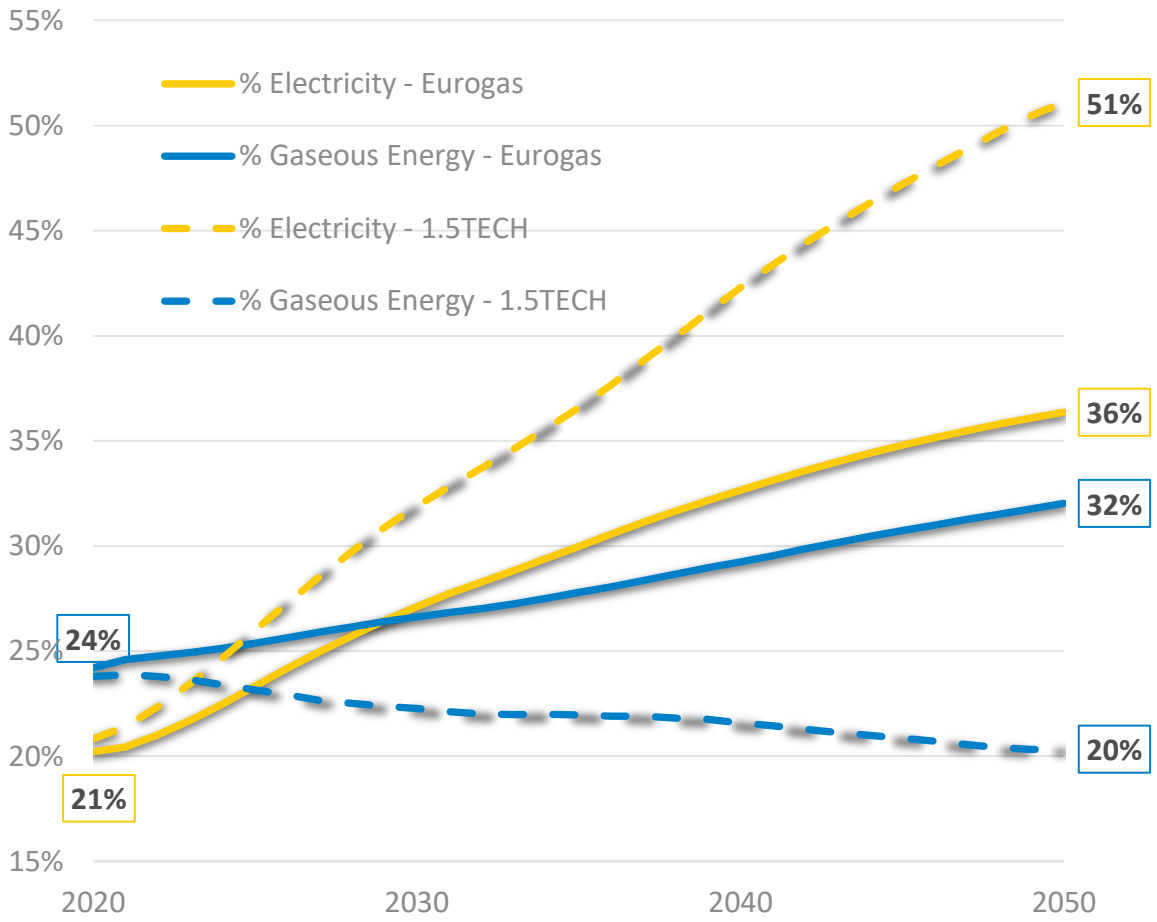
The gaseous energy supply chain to 2050

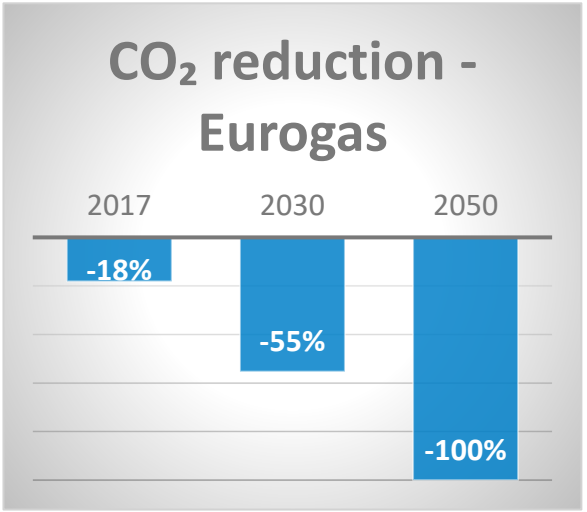
Gaseous energy supply in the Eurogas scenario increases by 18% over 2017 levels (natural gas supply reduces by 35%) – Hydrogen accounts for 29%

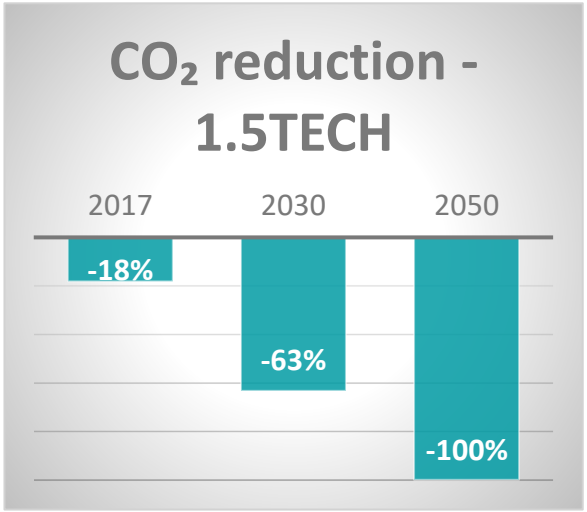


Eurogas Study compared to Commission 1.5 Tech 2018 LTS scenario

Share in final energy demand







Eurogas scenario delivers decarbonisation at lower cost

130 billion per year ➔ 4.1 trillion by 2050

More efficient use of gas and electricity infrastructure

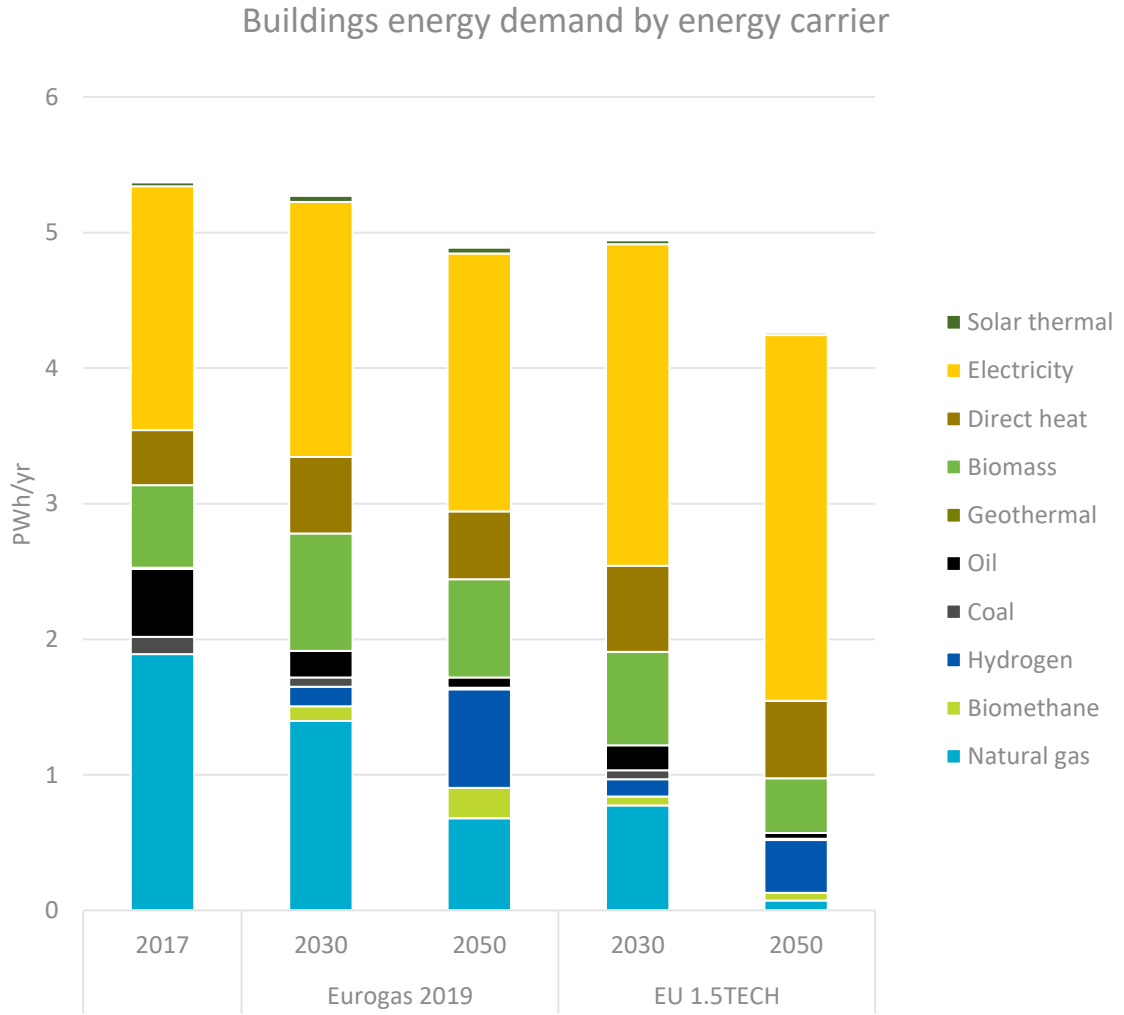
Gas is still needed in the building sector

Gaseous energy, delivers a more cost-effective pathway

True: Electrification of heating can reduce energy demand compared to gaseous solutions

Also true: **over €10 trillion in subsidies needed to transform Europe's buildings stock** and replace appliances in 1,5 TECH

Social acceptance is a barrier that should not be underestimated – gaseous solutions are easy to implement and affordable for households across Europe



LNG underpins its role in the transition to a low carbon energy system

Global demand for LNG grew by 12.5% in 2019, underpinning LNG's growing role in the transition to a lower-carbon energy system.

Europe absorbed the majority of 2019 supply growth.

- new LNG liquefaction projects near completion – Krk in Croatia
- competitively-priced LNG furthered coal-to-gas switching in the power sector
- 2019 saw record FIDs with 71 mil tonnes of new capacity being sanctioned.

- **Record supply investment due to confidence in long-term LNG demand growth.**

Hydrogen is going to be important

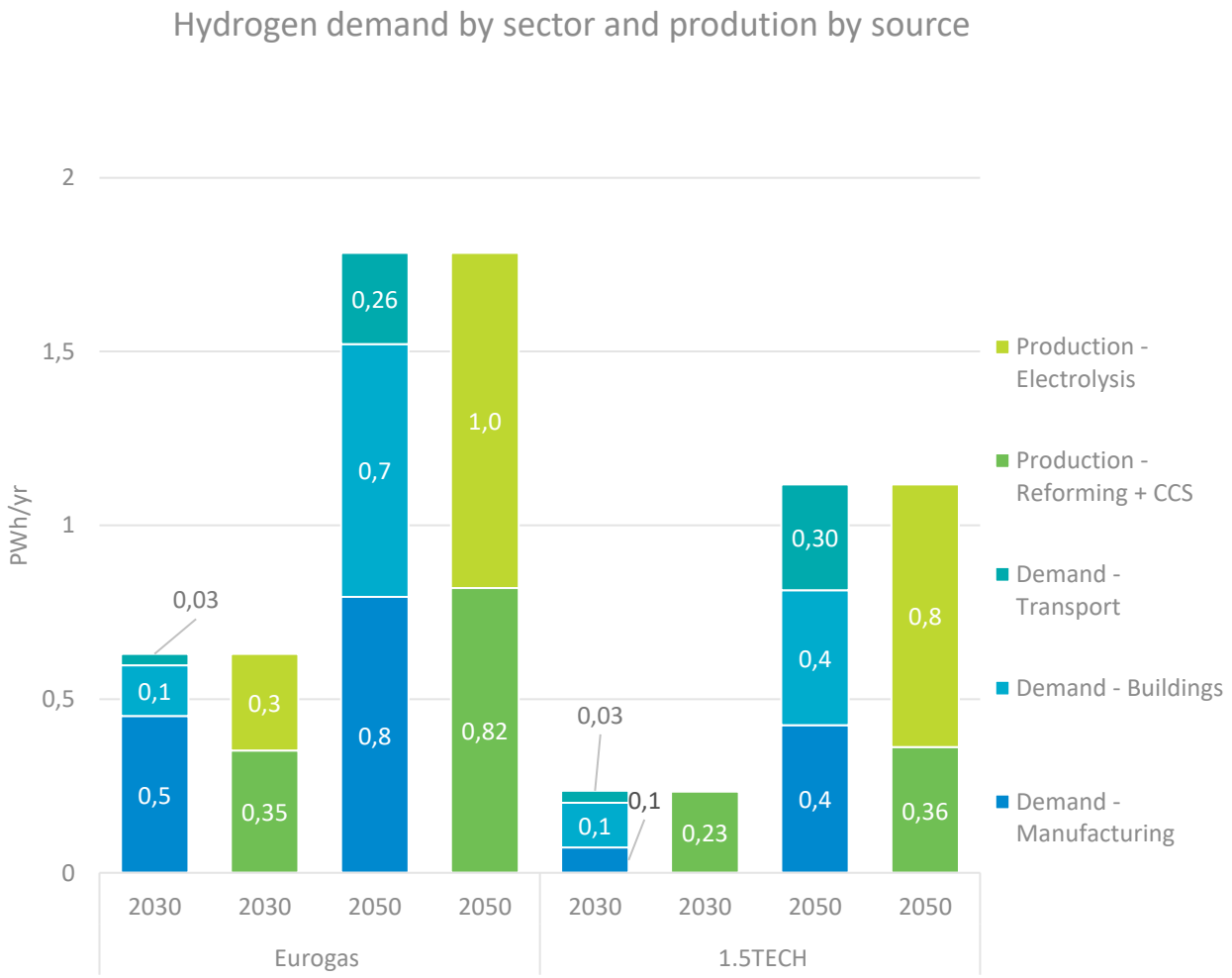
Eurogas scenario sees manufacturing lead hydrogen uptake until 2030

Hydrogen *(together with biomethane)* displaces natural gas in heating after 2030 towards 2050 – in the beginning blending will be especially important for this sector

The transition is gradual and requires appropriate framework conditions are set in 2020s

Both scenarios show an important role for hydrogen from reformed natural gas as an early driver to provide scale by 2030

The share of hydrogen from electrolysis overtakes hydrogen from reformed natural gas by 2050



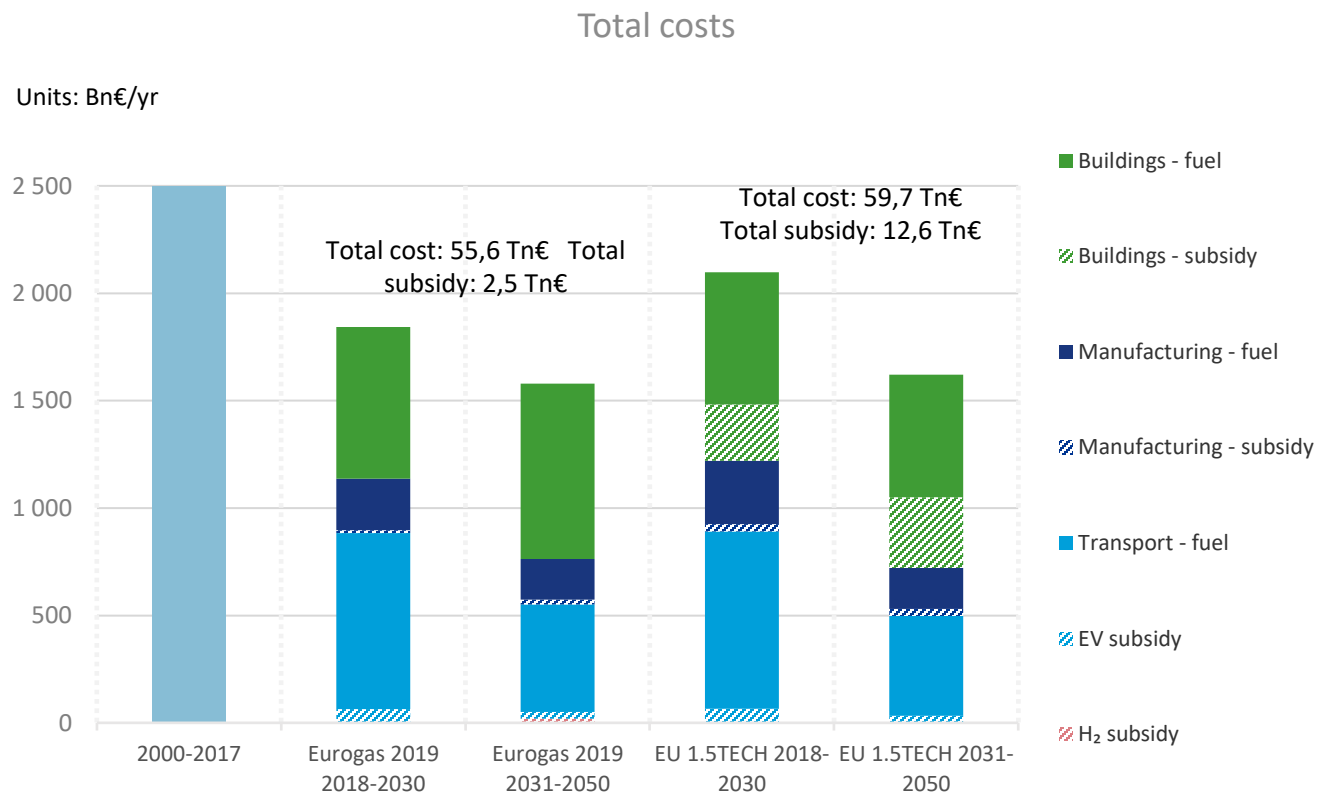
The energy transition in Europe requires trillion+ Euro Investments every year

A holistic energy system approach to the transition is the most cost-effective saving over 4 trillion Euros in the period

Rolling out gaseous solutions across all sectors, **using existing infrastructure, saves €130 billion per year until 2050**

Main cost driver of the European Commission's scenario is the electrification of heating

- Over €10 trillion in subsidies needed to retrofit buildings
- Over €1 trillion needed to match electricity infrastructure to meet peak demand



Fuel costs are after taxes and subsidies