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Hydrogen Vision

Third IEF-EU Energy Day

Dr. Jochen Penker
Head of Staff Department for International Energy Affairs
DG Energy and Mining

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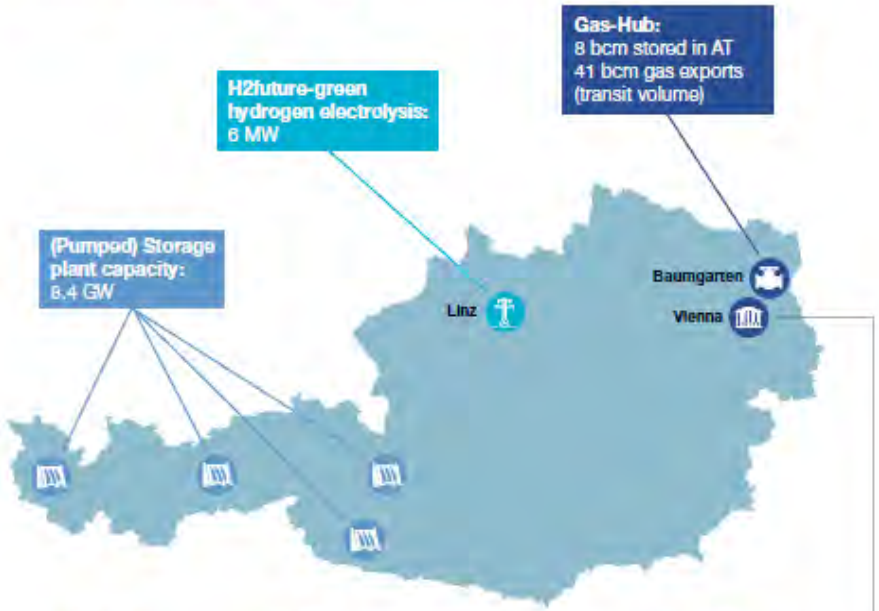
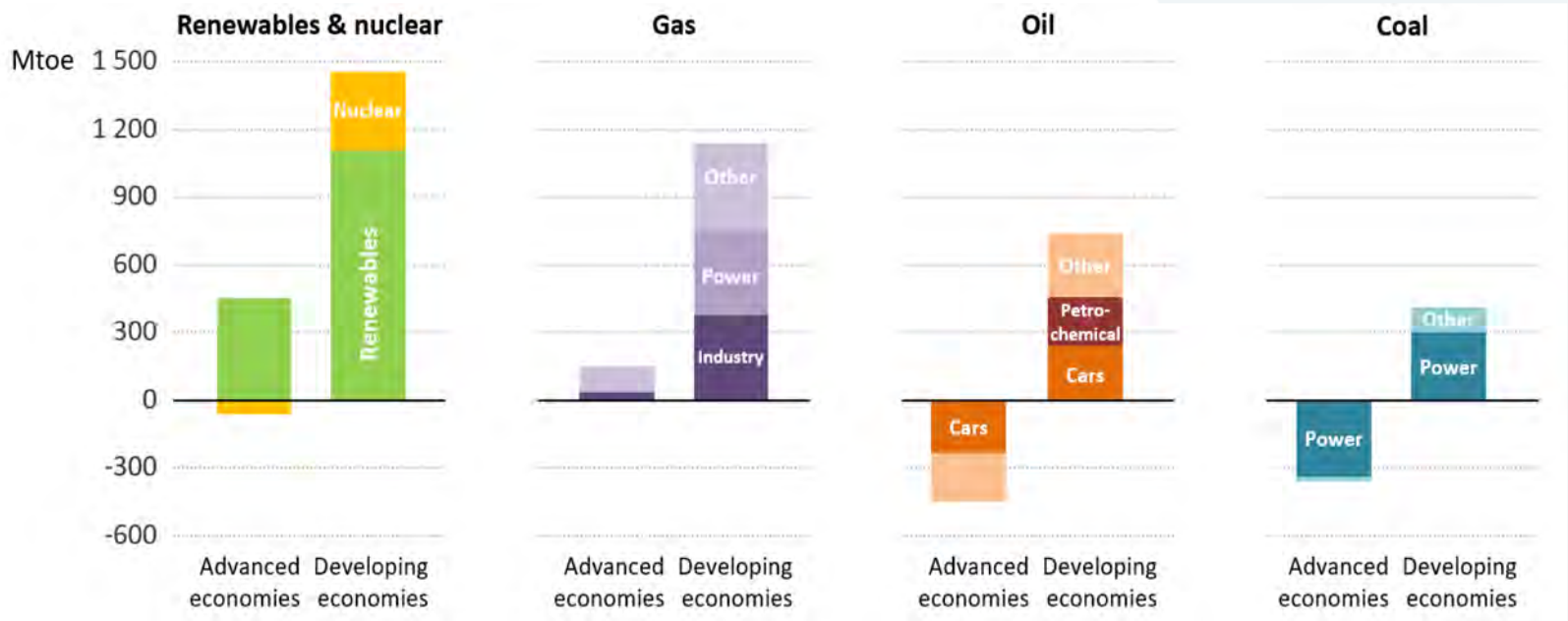
International Energy Hub
Austria

A place for dialogue, synergy and creative solutions in Europe



Changes in Global Energy Consumption 2017 – 2040



Quelle: IEA, World Energy Outlook 2018

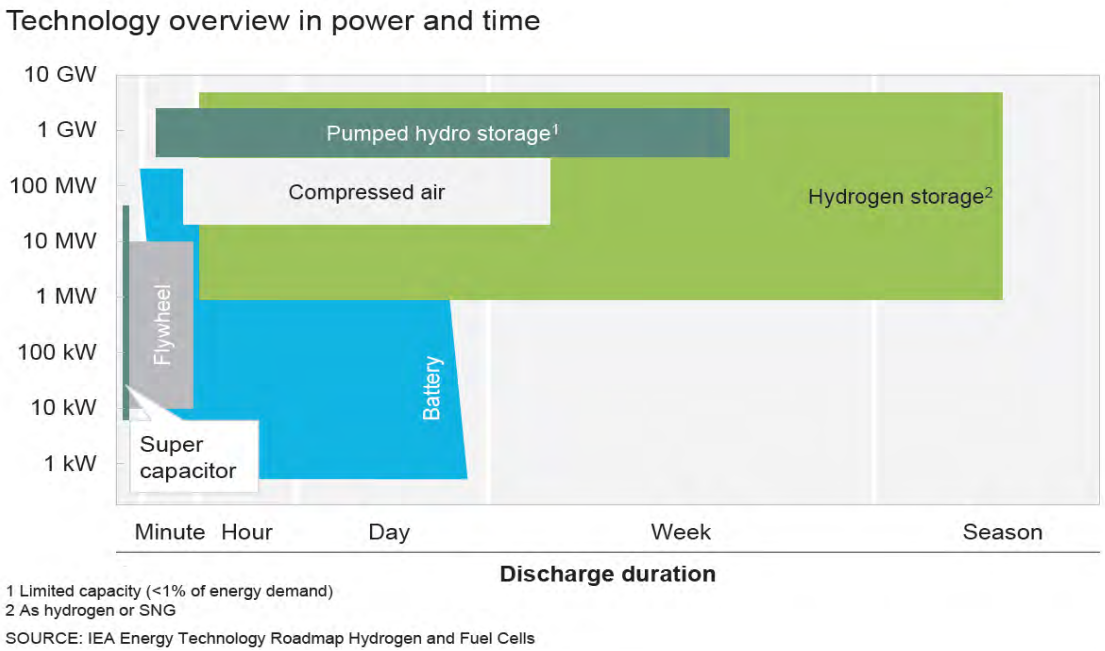
Without energy efficiency, the increase in energy demand would be twice as high

Recent developments in Climate and Energy Policy

- EU-Level: Clean Energy Package
  - 32 % renewable share until 2030
  - 32,5 % energy efficiency until 2030
- International Level:
  - Finalised Working Programme for Paris Agreement at COP 24 in Katowice

Renewable energy storage

- With increasing share of renewable intermittent electricity, flexible long- and short-term storage solutions are essential
- Availability of renewable energy with hydrogen as energy carrier
- Regional production of green hydrogen increases energy security



The Hydrogen Initiative

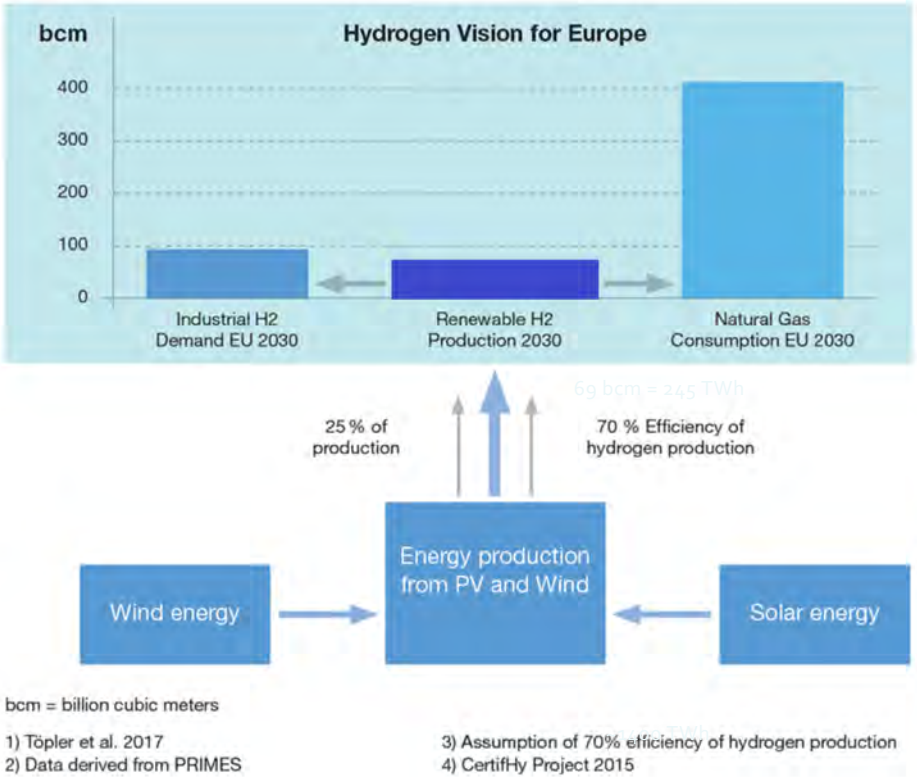
- Aims to evoke synergies in application of renewable hydrogen technology in following fields:
  - Sector coupling
  - Short- and long-term storage
  - Direct injection into the gas grid
  - Conversion to renewable methane
  - Industry
  - Transport and mobility
- Supported by 26 Member States + CH and IS
- Supported by ~100 European companies, organisations and institutions

Hydrogen Vision for Europe 2030

Long-Term Strategy Scenario for reaching REDII and EED Targets 2030 :

-) Wind + PV Production 2030**: ~1400 TWh** -) 75 % of industrial H2-demand could be covered

-) >15 %Vol injection of H2 into the natural gas grids



Data derived form LTS PRIMES baseline scenario

Long-Term Strategy 2050 of the European Commission

- Strategic Vision for a prosperous, modern, competitive and climate neutral economy by 2050
- 8 Scenarios to reach a reduction between 80 - 100 % of GHG-Emissions (compared to 1990)

  - Including **1 hydrogen scenario**

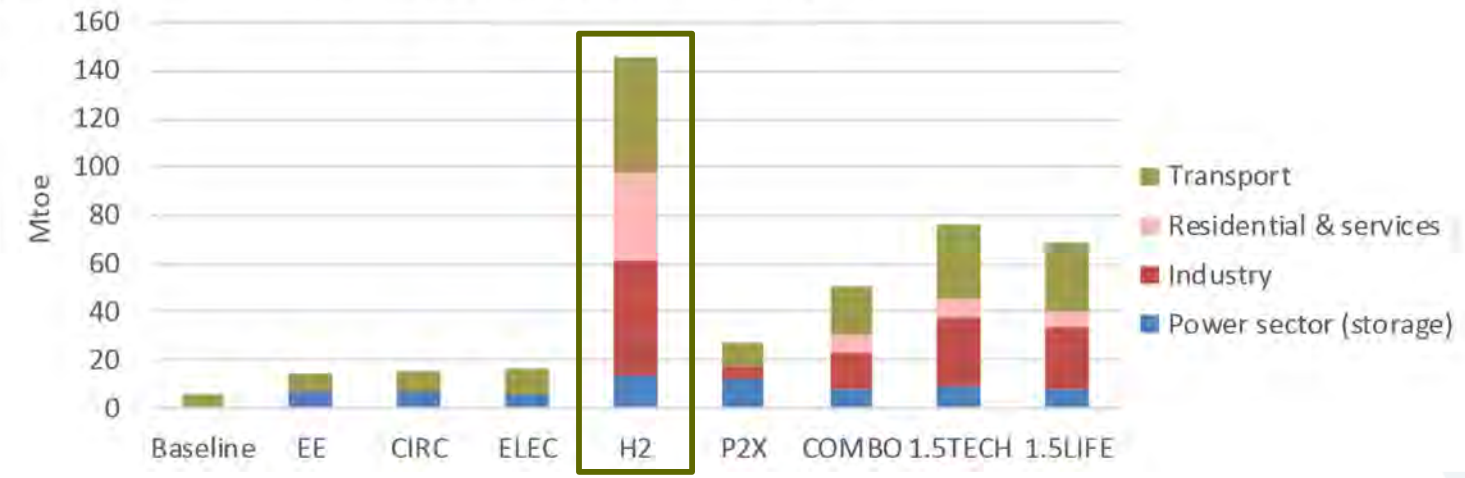
- Hydrogen is a main driver in industry, transport and buildings (heating)

Long-Term Strategy 2050 of the European Commission

H2-consumption in the hydrogen scenario 2050 in the EU:

147 Mtoe = 1 710 TWh = 483 bcm H2

Figure 32: Consumption of hydrogen by sector in 2050



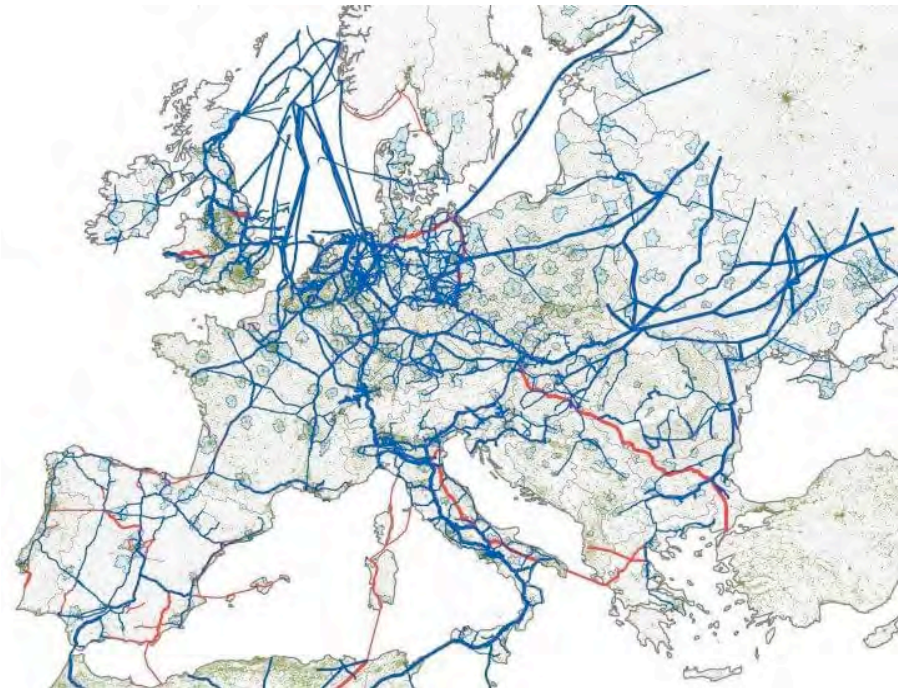
Souce: Long-Term Strategy 2050 of the EC, 2018; PRIMES

Estimated revenue potential from hydrogen economy

- Estimated investments into hydrogen economy by **2030**:
  - **280 bn USD**
- Estimated revenue potential from hydrogen economy by **2050**
  - **2.500 bn USD**

Source: Hydrogen scaling up, Hydrogen Council, 2017

European and middle east gas grid - network for decarbonisation



Sources: 1.) British Business Energy, Map created by ETH Zürich

2.) Researchgate.net