

A Hydrogen Act for Europe

Frank Wouters

Dutch-Israeli Mini Symposium on Hydrogen and
Renewable Energy
February 2021



Flow

1. Why Hydrogen?
2. Hydrogen in Europe
3. A European Hydrogen Act



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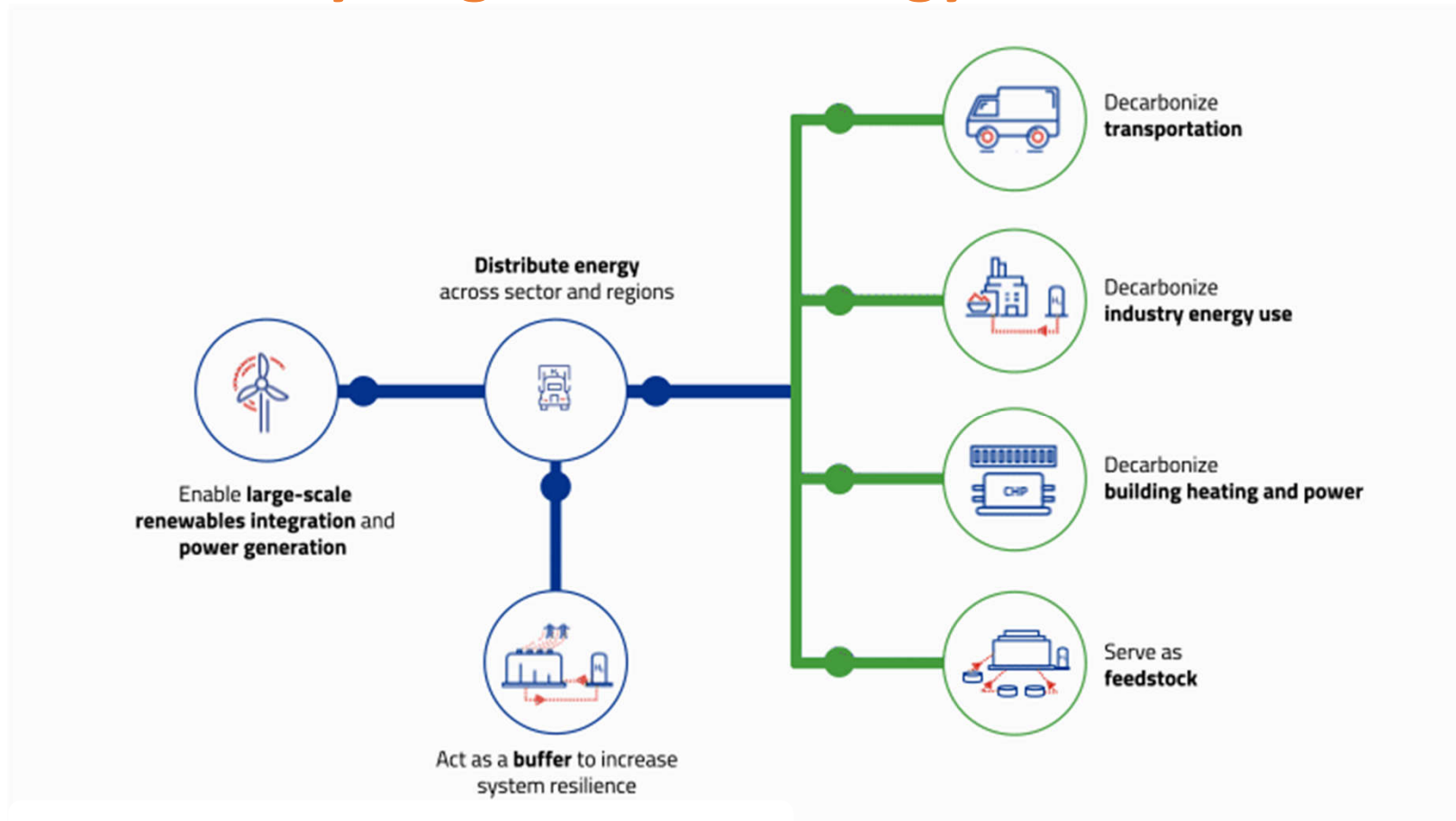
Why Hydrogen?



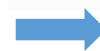
Japan July 2020



The role of hydrogen in the energy transition



Enable the renewable energy system

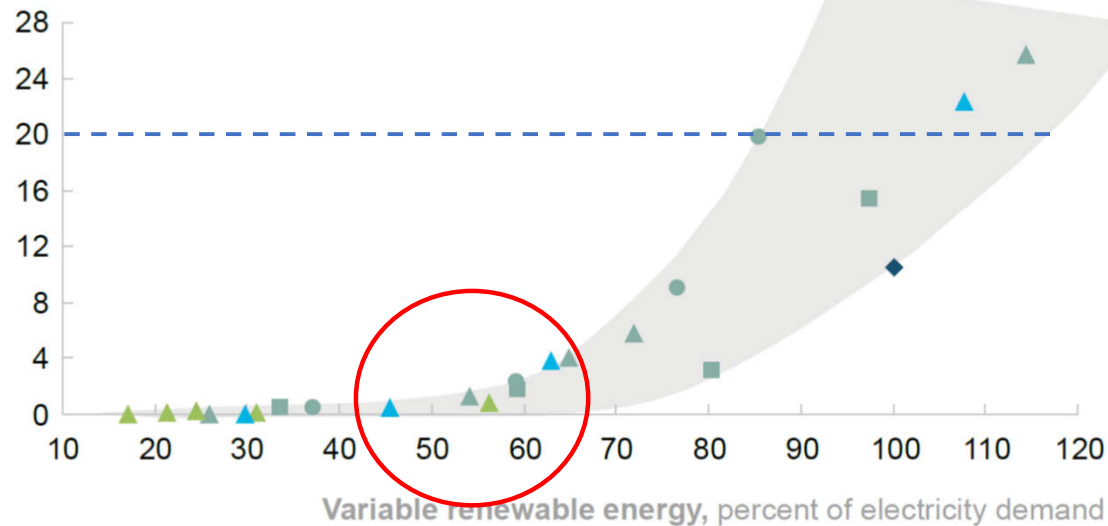


Decarbonize end uses

Hydrogen as an enabler of variable electricity

Overview of study results

Hydrogen demand, percent of electricity production



Colors

- Germany
- Sweden
- Spain
- Europe

Shapes

- Fraunhofer (storage and sector coupling)¹
- McKinsey
- RWTH Aachen (power only)²
- Sterner/Stadler (mean)

At increasing rates of variable renewable energy, demand for hydrogen grows exponentially

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Hydrogen in Europe



Frans Timmermans – November 2019



A North Africa - Europe Hydrogen Manifesto


Prof. Dr. Ad van Wijk
Frank Wouters, MSc
Dr. Samir Rachidi
Dr. Badr Ikken



Manifesto


→ 2x40 GW Initiative

→ EU H₂ Strategy



A North Africa - Europe Hydrogen Manifesto

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Dii
Dii Desert Energy
Dubai, London, Madrid, Munich

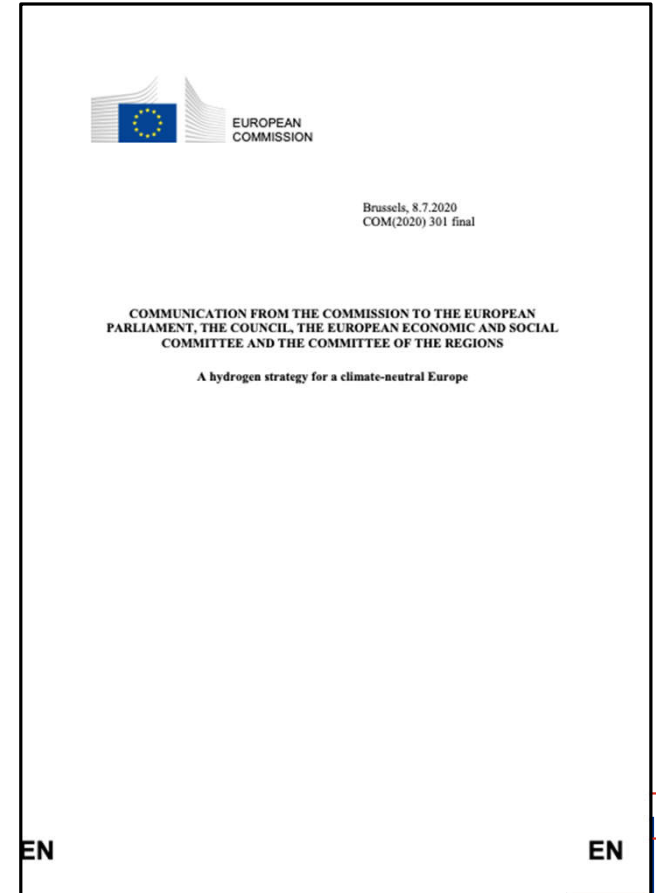


**Green Hydrogen
for a European Green Deal
A 2x40 GW Initiative**

Prof. Dr. Ad van Wijk
Jorgo Chatzimarckakis



Dii
Hydrogen Europe



EUROPEAN COMMISSION

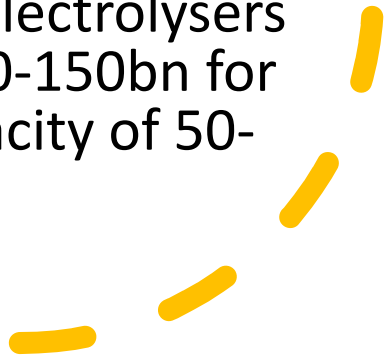
Brussels, 8.7.2020
COM(2020) 301 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

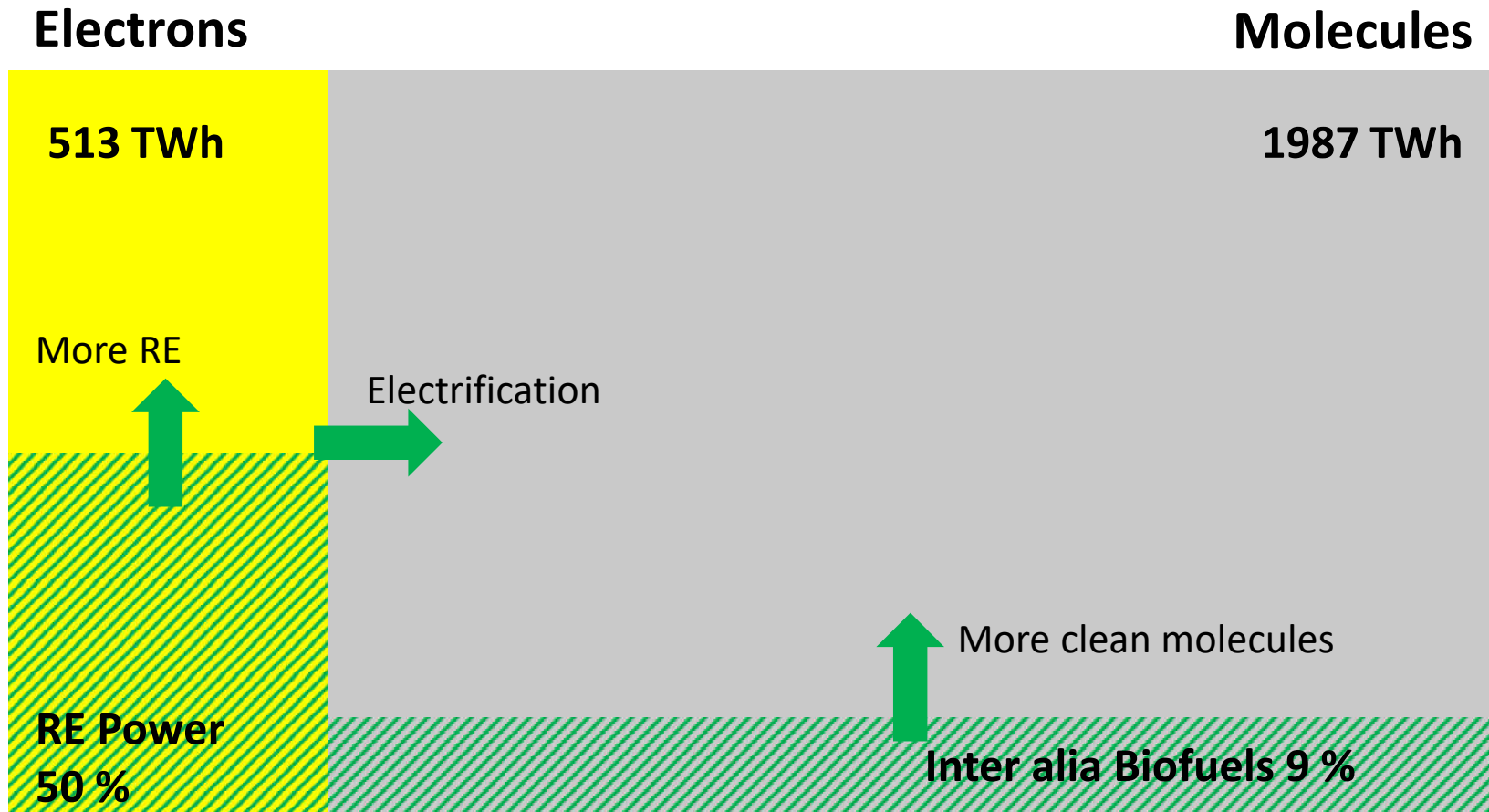
A hydrogen strategy for a climate-neutral Europe

EN

European Hydrogen Strategy – 8 July 2020

- Priority focus on **green** hydrogen, role for blue
 - At least **6 GW** of electrolyzers by 2024 at least **40 GW** installed by 2030.
 - But also 1 million to by 2024 and 10 million ton by 2030
 - Role for **import** (40GW) from neighboring regions
 - By 2030, the Commission estimates that €13-15bn could be invested in electrolyzers across the EU, in addition to €50-150bn for a dedicated wind and solar capacity of 50-75GW.
- 

Energy in Germany 2020



Energy in Germany 2050

Electrons

Molecules

50 %

50 %

100 % RE Power

100 % clean molecules

Energy in Germany 2050

Electrons

1250 TWh

100 % RE Power

Molecules

1250 TWh

- **Biofuels (limited)**
- **CCS (limited)**
- **H₂**
- **H₂ based substances**
 - **Ammonia**
 - **Methanol**
 - **E-fuels**

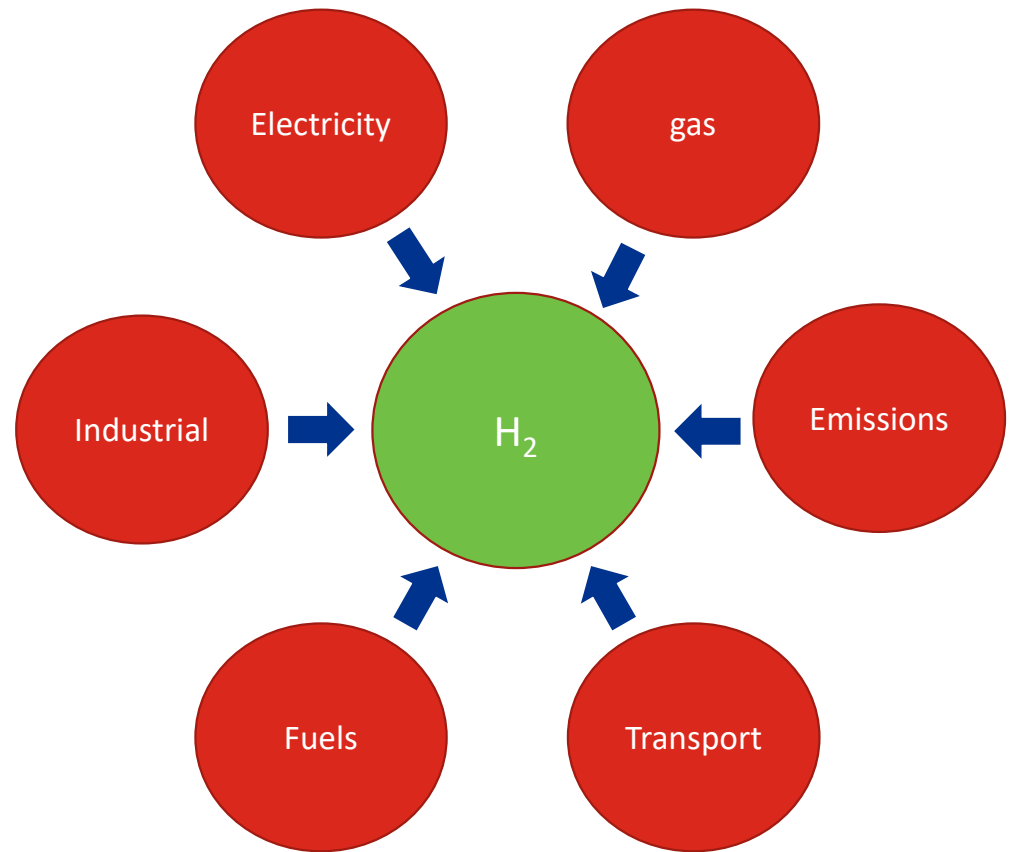
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A European Hydrogen Act

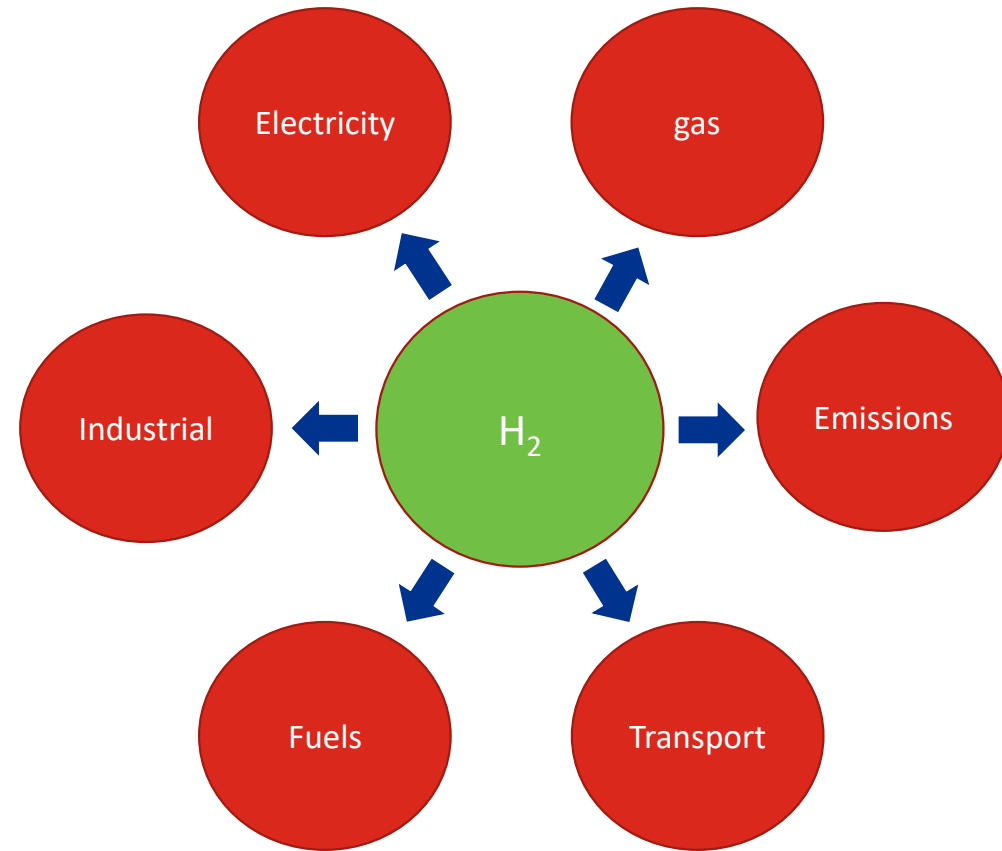
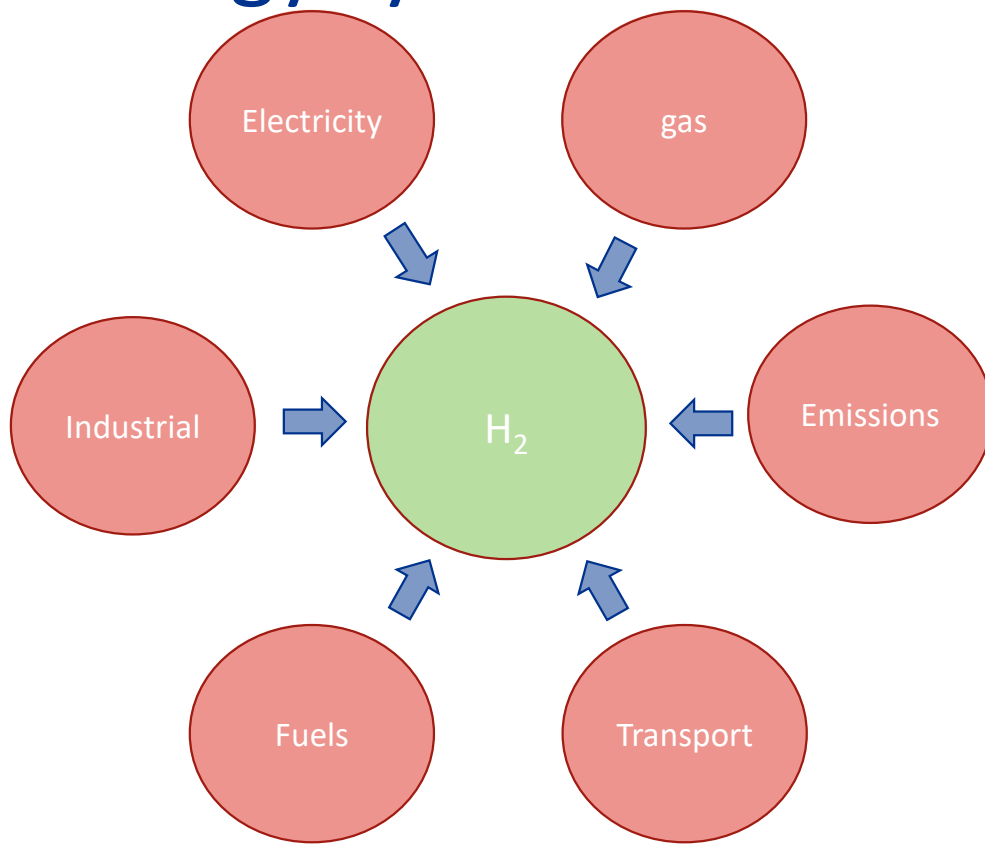


Regulatory and legal aspects concerning clean hydrogen

- **Europe** is working towards a **net zero carbon economy** by 2050
- Europe imports most fossil fuels it consumes, hence a **switch** to clean hydrogen is **strategic** and the main thrust behind the hydrogen strategy
- The European Hydrogen Strategy is rich in ambition (with reference to a target of **24%** share of final energy), but poor in policy detail
- Current policy and regulatory elements of hydrogen are **distributed** over the gas, electricity, fuels, emissions and industrial frameworks
- Clean hydrogen needs a separate and dedicated legal regime: **A Hydrogen Act**



From an afterthought to central pillar of the energy system



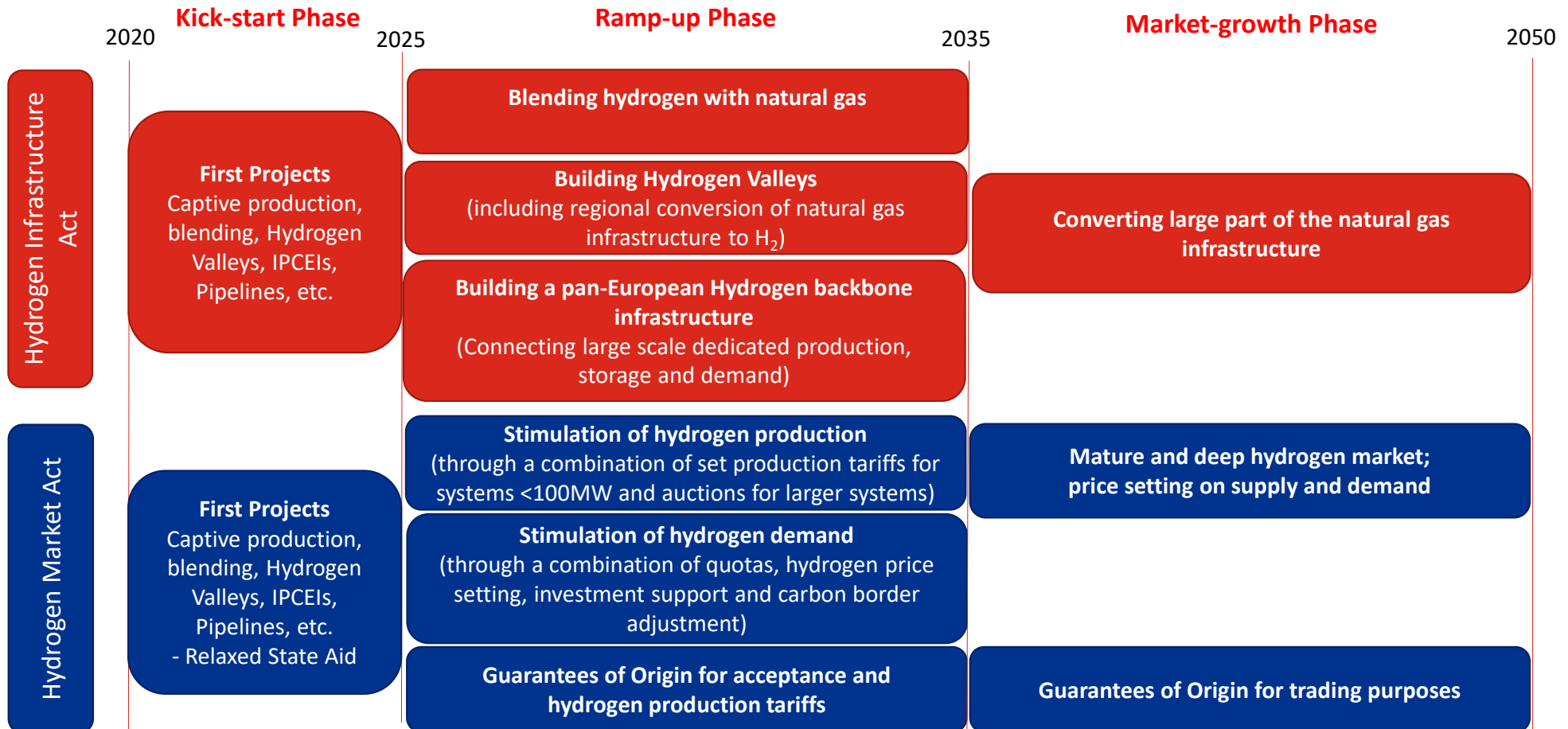
Hydrogen Act

Hydrogen Infrastructure act

A sophisticated European hydrogen infrastructure that has replaced large parts of the natural gas infrastructure.

Hydrogen Market Act

A mature market for affordable and reliable renewable hydrogen that has replaced natural gas and other fossil fuels



QA