



Hydrogen Europe

Can we produce „green steel“ with „blue hydrogen“?

Jorgo Chatzimarkakis, Secretary General

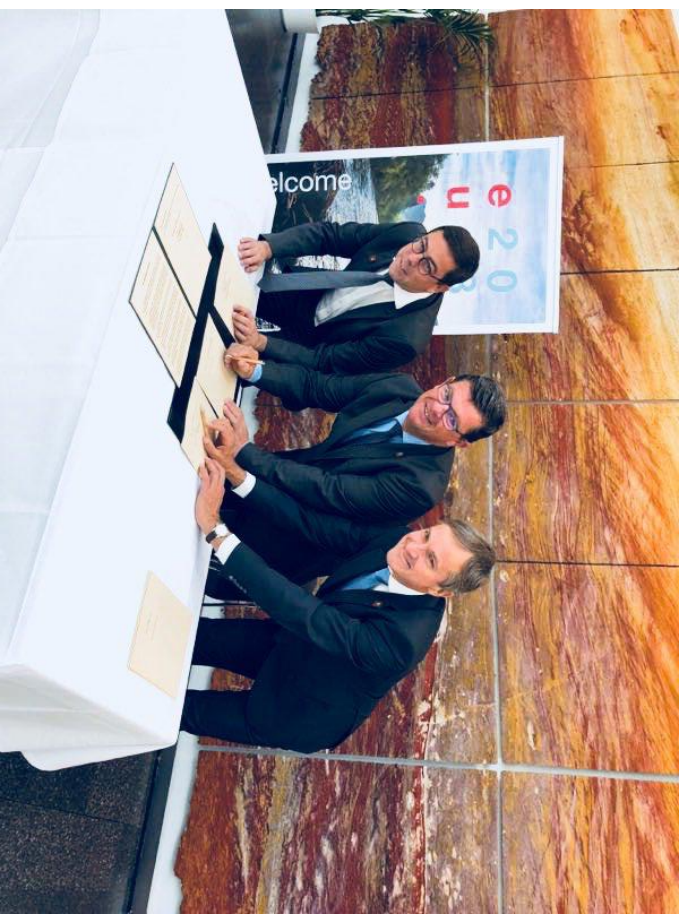
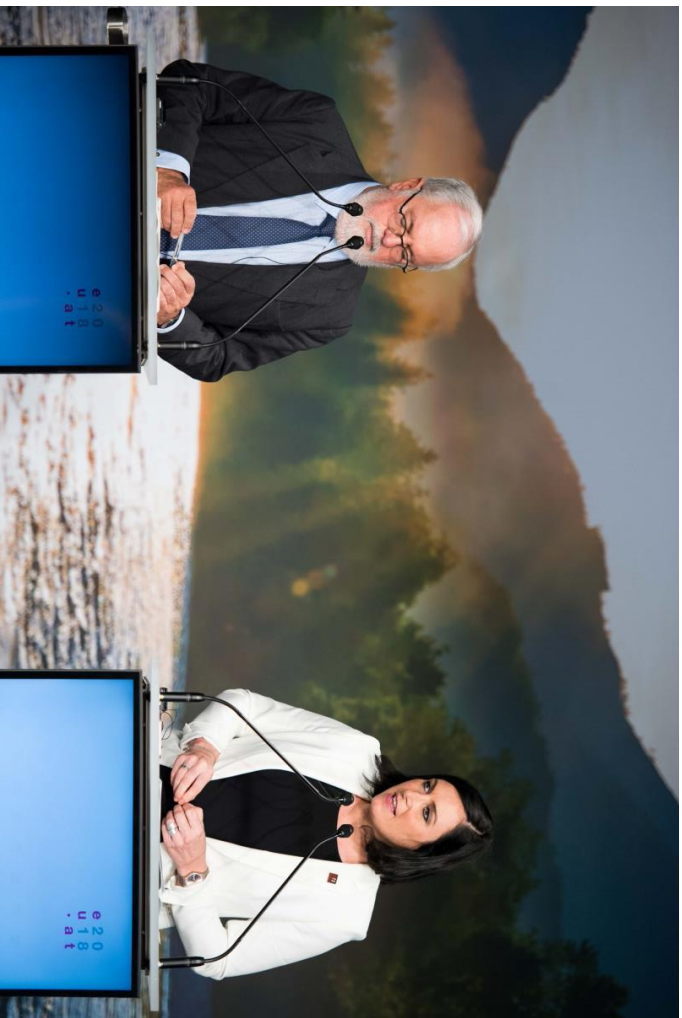
Elegancy, 8.10.2018 – Brussels

Fuel Cell & Hydrogen Joint Undertaking 2



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

The Hydrogen Initiative: Energy Ministers open new chapter



We, the signatories of this initiative, gathered in Linz, Austria, on the 17th and 18th of September 2018, collectively aim to maximise the great potentials of sustainable hydrogen technology for the decarbonisation of multiple sectors, the energy system and for the long-term energy security of the EU.

Linz, Austria 18 September 2018

Hydrogen: Suddenly in the news all over the globe



World premiere: Alstom's hydrogen trains enter passenger service in Lower Saxony



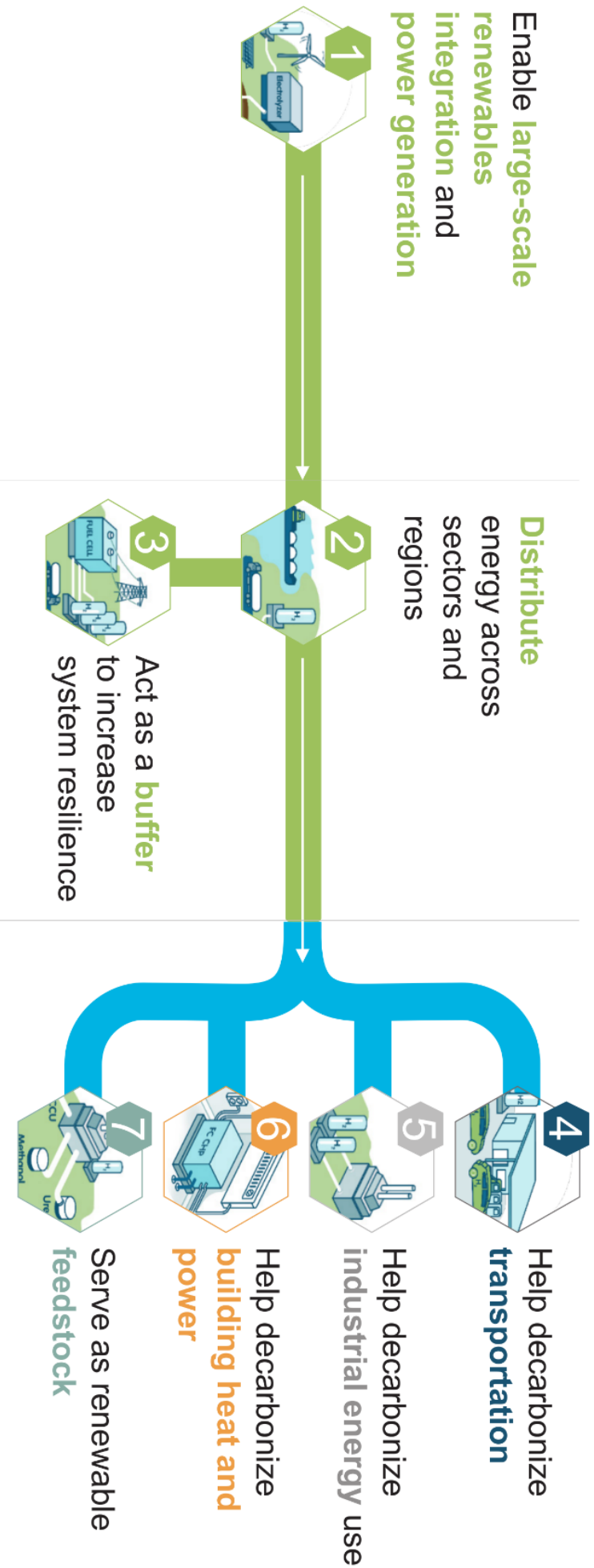
"This is a revolution for [@Alstom](#) and for the [#FutureOfMobility](#).

The world's first [#hydrogen](#) [#fuelcell](#) train is entering passenger service and is ready for serial production"
emphasises Henri Poupart-Lafarge, Chairman & CEO of Alstom

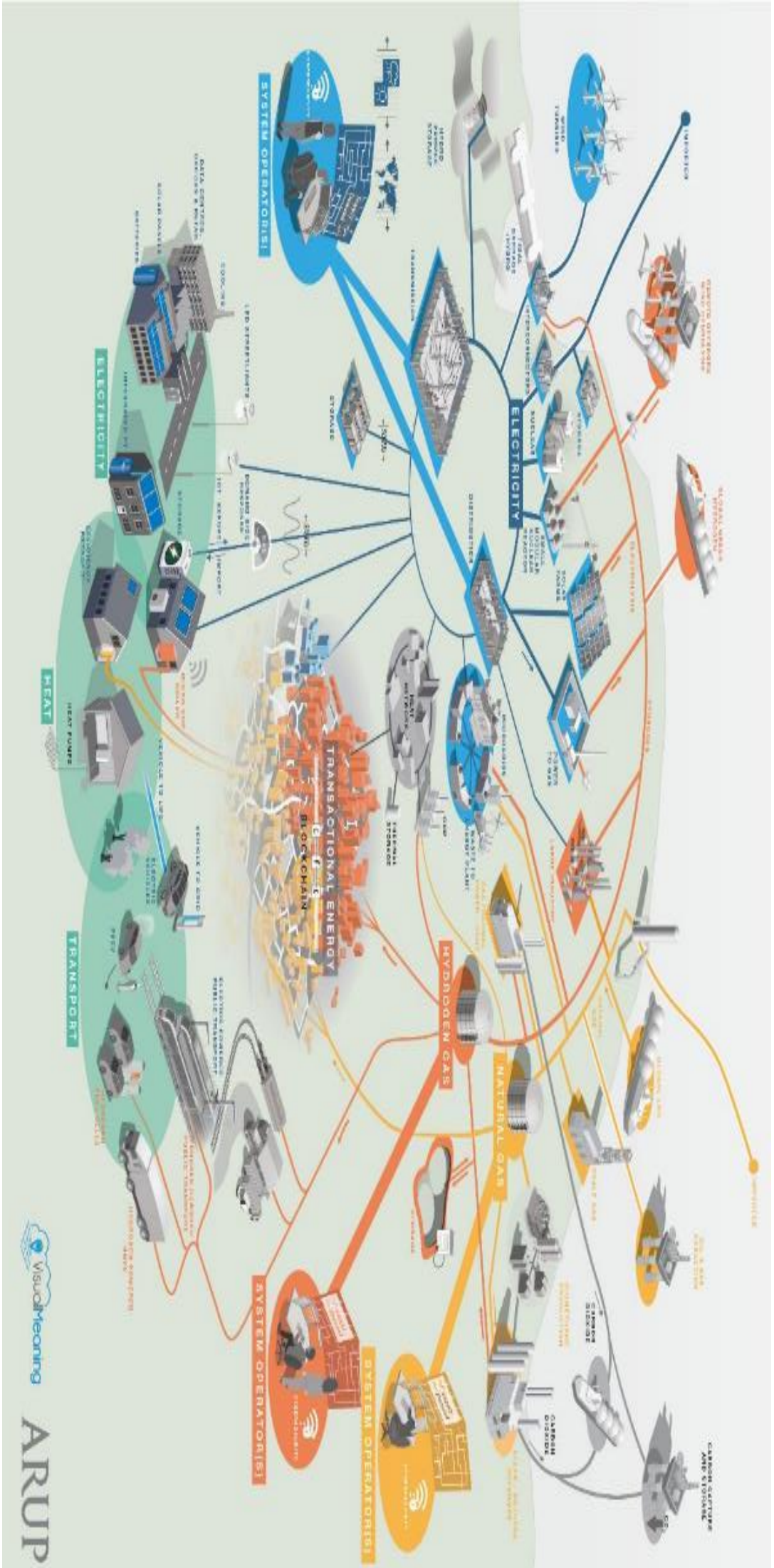
16 September 2018

The Solution

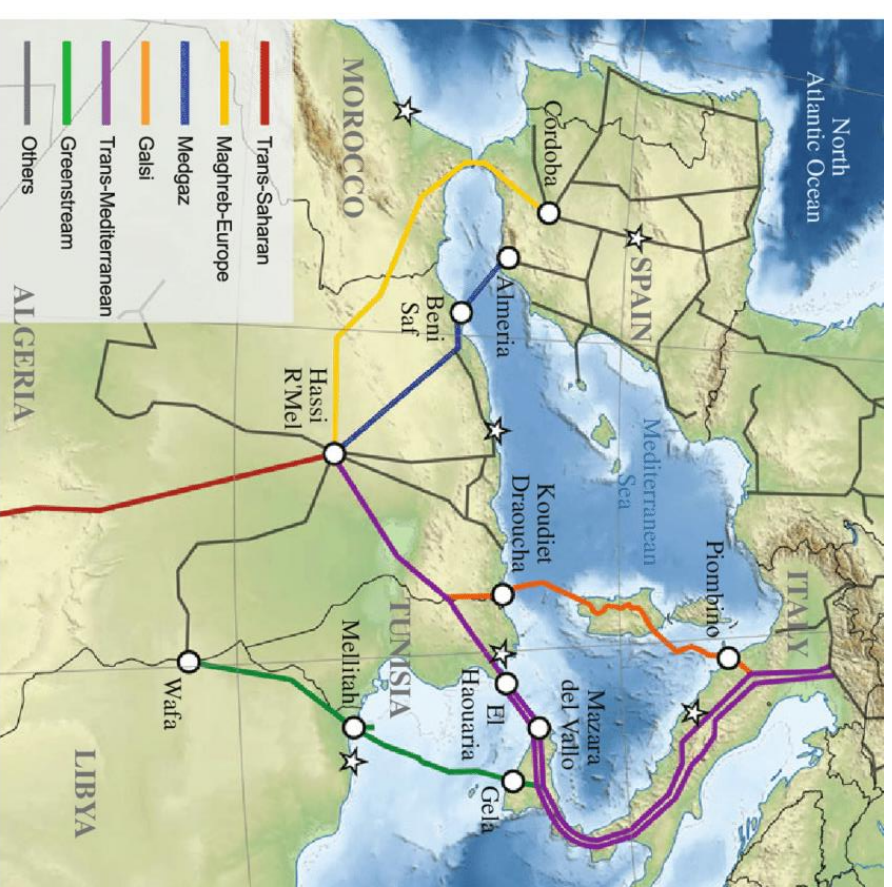
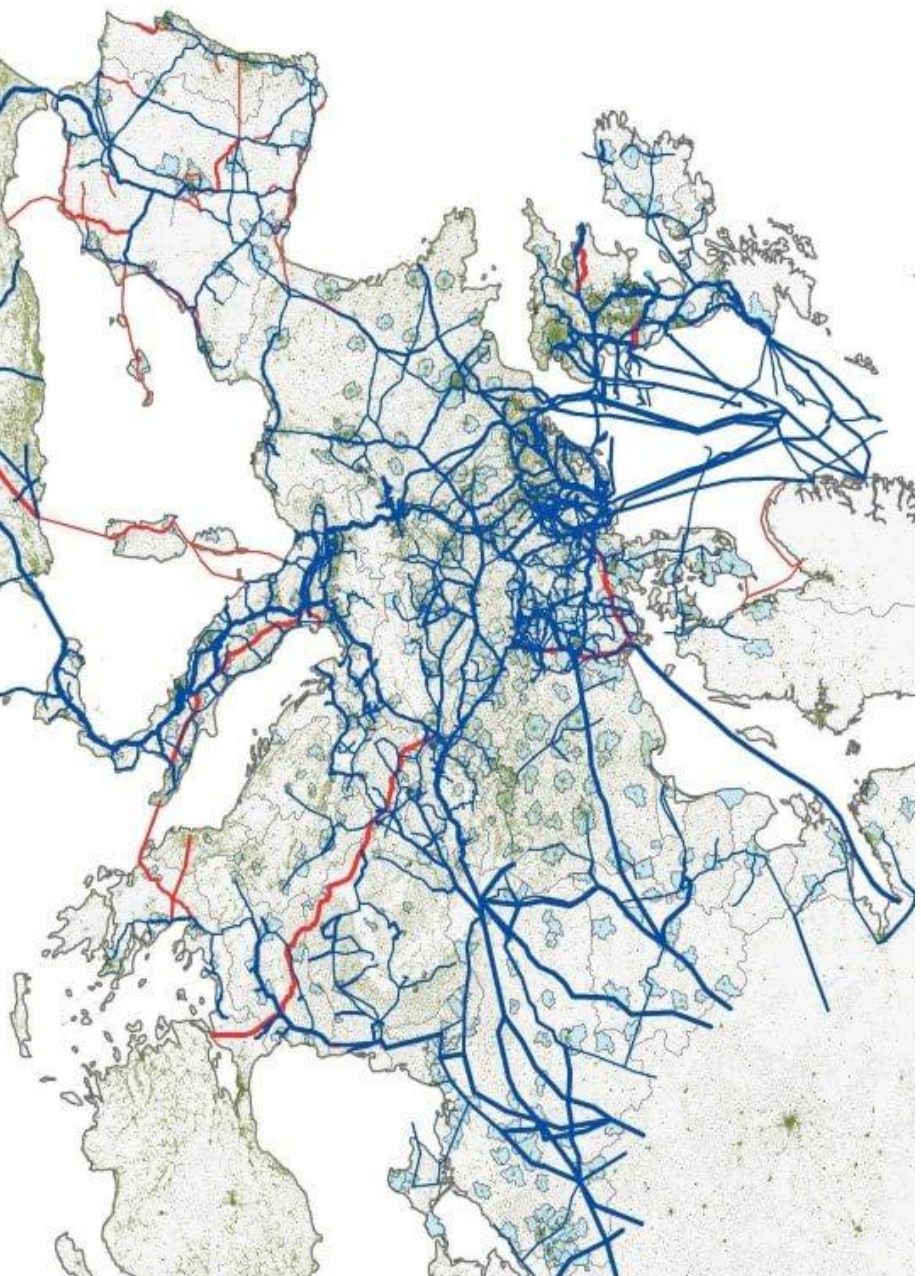
Enable the renewable energy system → Decarbonize end uses



Sector coupling & sectoral integration



EU Gas Grid: Basis for affordable decarbonisation

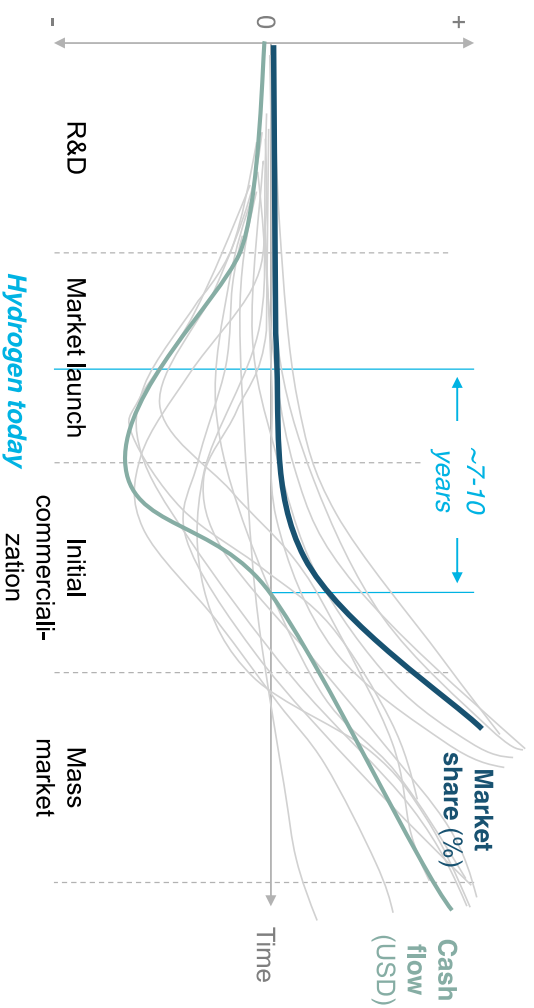


How to enhance market development?

In order to reach this target investments are needed now

PRELIMINARY
ILLUSTRATIVE

Hydrogen technologies are ready to be launched and scaled up...



...requiring significant investments in manufacturing facilities and infrastructure

USD billion, 2018-2030

240
bn

Infrastructure investments (project finance, corporate debt..)

Hydrogen production, hydrogen refueling stations, distribution (liquefaction plants, shipping, trucks, pipelines)

215
bn

Scaling up manufacturing (corporate debt..)

Scaling up manufacturing for fuel cell and components, new R&D for components and new models

20+
bn

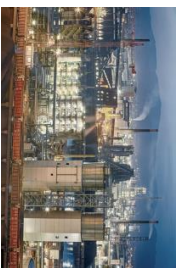
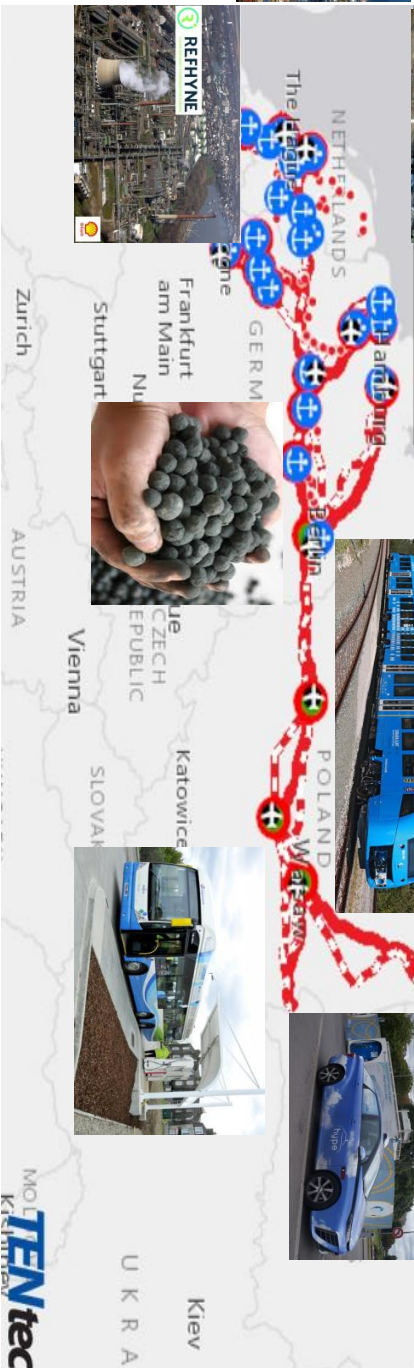
New business (venture capital/equity)

Investments in end-use applications, e.g., FCEV taxi and truck fleets, financing of CHPs in buildings, ...

SOURCE: Hydrogen Council

McKinsey & Company 9

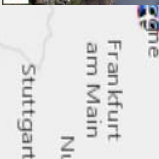
Market through Projects of Common Interest (IPCEI)

NETHERLANDS
GERMANY
POLAND
CZECH REPUBLIC
SLOVAKIA
FINLAND
UKRAINE

Zurich
Stuttgart
Frankfurt am Main
Vienna
Katowice
Kiev

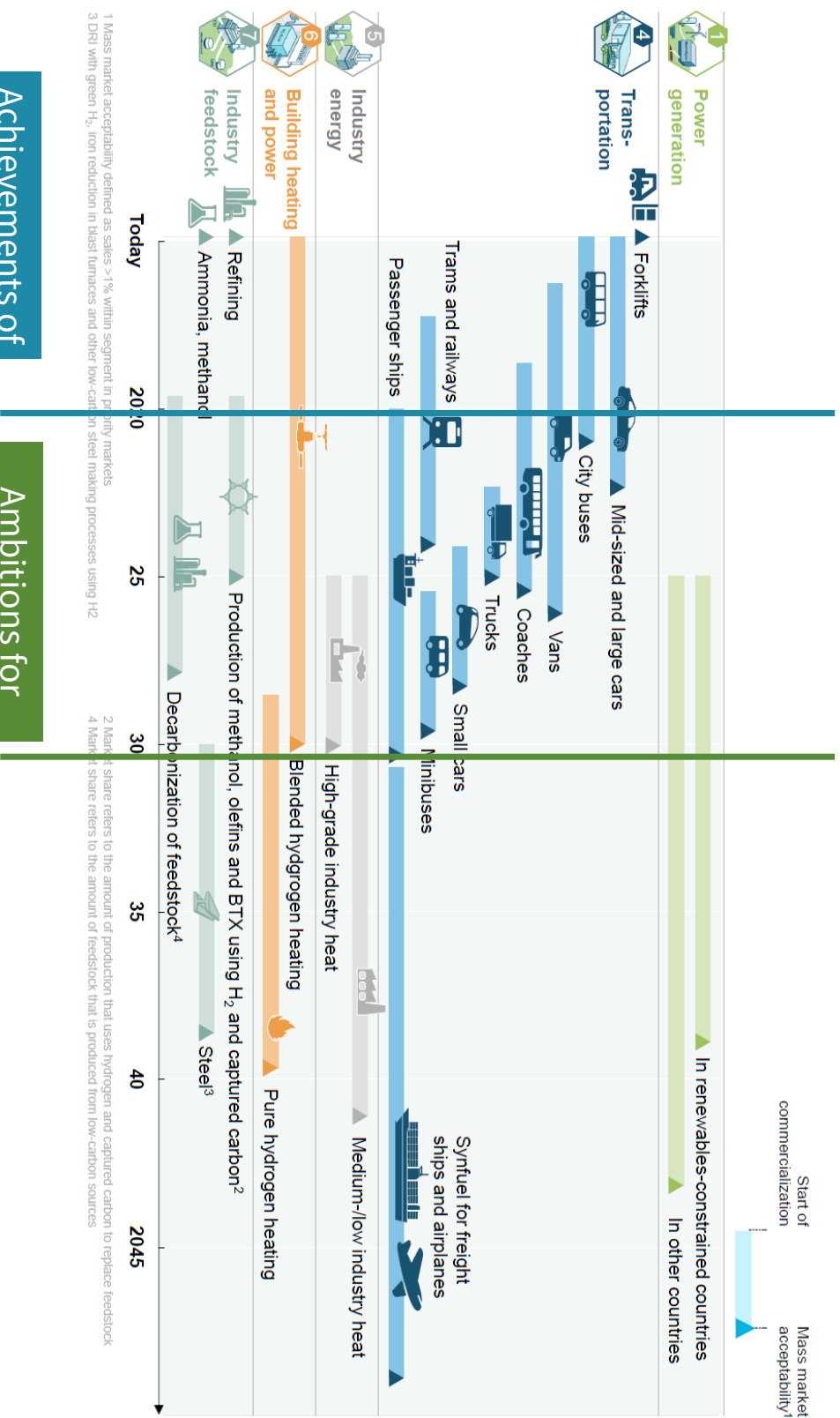
TENtec



Market through Financial Engineering



Why we need to continue R&D



1 Mass market acceptability defined as sales >1% within segment in priority markets
 2 Market share refers to the amount of production that uses hydrogen and captured carbon to replace feedstock
 3 DRI with green H₂, iron reduction in blast furnaces and other low-carbon steel making processes using H₂
 4 Market share refers to the amount of feedstock that is produced from low-carbon sources

Achievements of FCH 2

Ambitions for Horizon Europe

Green steel as a new EU narrative

The EU evolved starting with coal and steel

European Coal and
Steel Community

Treaty of Rome

Treaty of Maastricht

„Green Steel“ redefines
Europe’s global role

1951



1957



1992



2020?



Shift happens!

Hydrogen enables you.



Contacts

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