

Le partenariat « Clean Hydrogen for Europe » dans Horizon Europe

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Paris, 5 février 2020

THE NEXT EU RESEARCH & INNOVATION PROGRAMME (2021 – 2027)



Budget Horizon Europe suspendu à la finalisation de la MFF

New approach to European Partnerships

Partnerships with public or private sector partners can achieve certain Horizon Europe objectives more effectively than the Union alone. A new generation of objective-driven and more ambitious partnerships in support of agreed EU policy objectives are planned to be set up.

Key features

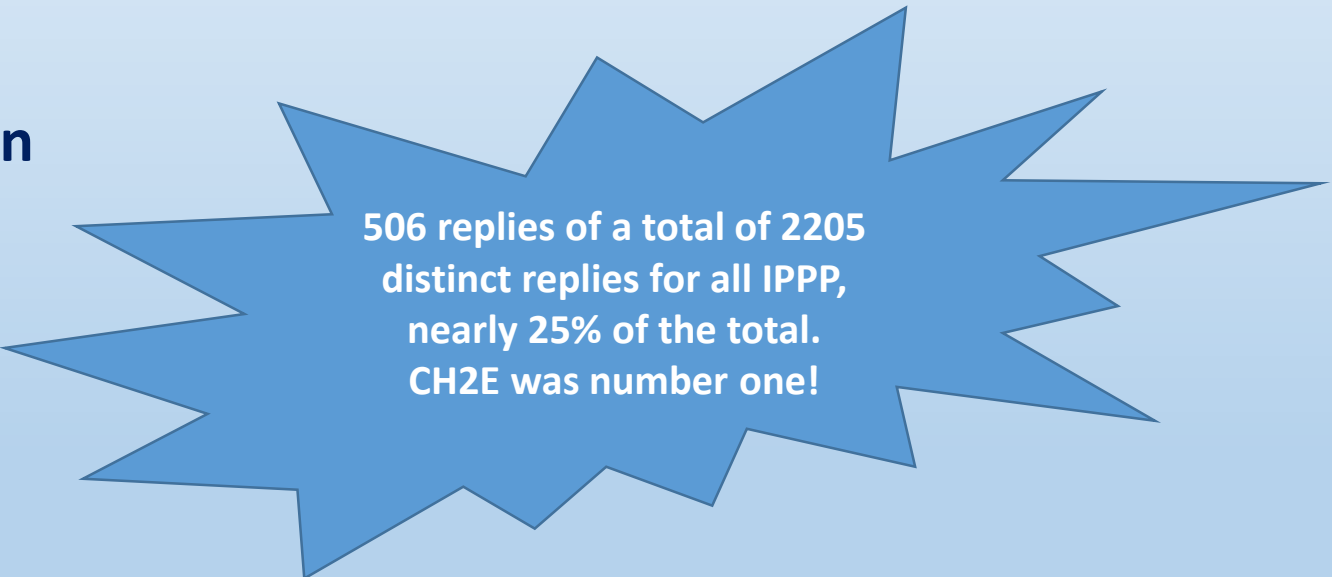
- **Simple Simple architecture and toolbox**
- **Coherent life-cycle approach**
- **Strategic orientation**

Co-programmed Based on MoUs / contractual arrangements; implemented independently by the partners and by Horizon Europe

Co-funded Based on a joint programme agreed by partners; commitment of partners for financial and in-kind contributions and integration of activities, while Horizon Europe also makes a financial contribution

Institutional Based on long-term dimension and need for high integration, partnerships based on **Articles 185 / 187** of the TFEU and the EIT-Regulation will be set-up and supported by Horizon Europe

- On May 2019, **Shadow Strategic Programme Committee (SSPC)** first discussion on proposed partnerships
 - Overview of partnership landscape; focus on institutionalised European Partnerships (**Clean H2 for Europe**)
 - EC published an **Inception Impact Assessments**
- June 2019 Start of **Impact Assessments**
 - Followed by **public consultation**



506 replies of a total of 2205 distinct replies for all IPPP, nearly 25% of the total. CH2E was number one!

- On September 24-26 (**Research & Innovation Days**), each partnership had a dedicated session

- **December 2019**, submission of **IPPP requests** and **Strategic Research & Innovation Agenda (SRIA)**
- **February 2020 Finalisation of Ex-ante Impact Assessment**, submission of drafts to the Regulatory Scrutiny Board
- In parallel: **Partnership proposal** is further developed together with partners, based on common guidance/template;
- Drafting of **COM proposals** for Article 185 and Article 187 initiatives
- **Commitments from Partners**, finalisation of Strategic Research and Innovation agenda/roadmap
- Agreement on **budgetary provisions** for all partnerships in the portfolio
- **Commission adopts proposal** for Article 185/7 initiatives
- **Negotiation in Council (and European Parliament)**, in parallel: preparatory work (MGAs, preparation of first Annual Work Programme ...)
- **By End of 2020 Adoption of basic act**
- **By early 2012 Launch of the European Partnership**, preparation and launch of implementation structure, subsequent launch of activities, including calls for proposals

We have 3 convictions

- 1. The energy transition in the EU will require hydrogen at large scale. Without it, the EU would miss its decarbonisation objective.*
- 2. FCH 2 JU has been a key instrument: we should build on its success and expand it*
- 3. Hydrogen Technologies and Systems will play a key role in the EU's (re)industrialisation policy*

These convictions are now well-shared



International Partnership
for Hydrogen and Fuel Cells
in the Economy

IPHE Steering Committees on Enabling Hydrogen and Fuel Cells Progress Through Global Collaboration

April 2019, Vienna, Austria and October 2019, Seoul, Korea



G20 Ministerial Meeting on Energy Transitions and Global Environment for Sustainable Growth
June 15-16, 2019, Karuizawa, Japan

The importance of hydrogen has been referred in the Communique and Action Plan (first time).
Hydrogen Report released at G20 by IEA



CEM -New Hydrogen Initiative

May 27-29, 2019, Vancouver, Canada

Objective: Advance policies, programs and projects to accelerate commercial scale deployment of hydrogen and fuel cell technologies across all sectors of the economy

MISSION - INNOVATION – Innovative Challenges 8 « Renewable and Clean Hydrogen Challenge»

May 27-29, 2019, Vancouver, Canada

Objective: To accelerate the development of a global hydrogen market by identifying and overcoming key technology barriers to the production, distribution, storage, and use of hydrogen at gigawatt scale



HEM - Hydrogen Energy Ministerial Meeting 2019

September 25, 2019, Tokyo, Japan

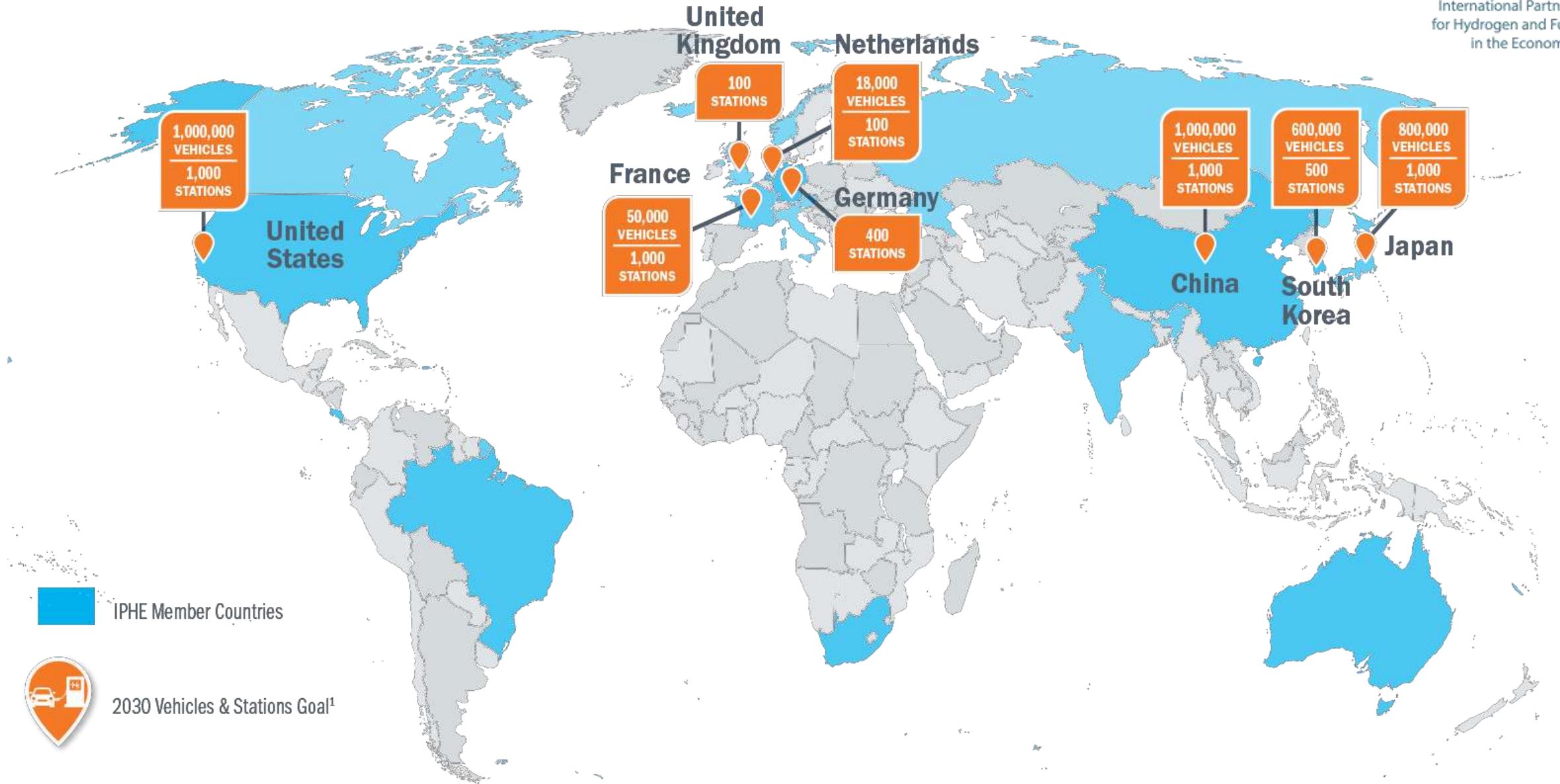
Objective: Follow up “Tokyo Statement” to realize it and set “Global Hydrogen Target” to share global goal.



IPHE members comprise 2/3 of the world's GDP and invest nearly \$1 Billion annually on H₂ and fuel cells



International Partnership
for Hydrogen and Fuel Cells
in the Economy



Key Drivers



- 1. Environment and Climate Change**
- 2. Energy System Resiliency and Stability**
- 3. Energy Security**
- 4. Economic Growth: Innovation & Technology**

IPHE Activities



Regulations, Codes, Standards and Safety (RCSS)

- Foster RCS harmonization across countries
- Share safety information, best practices, lessons learned

Outreach

- Policy forum events
- Workshops

Sharing information between members

- status, gaps, analysis, opportunities, etc.

Develop Partnerships to Accelerate Progress

Ministerial Meetings, IEA, Mission

Innovation, Clean Energy Ministerial, IRENA, Hydrogen Council,



International Partnership for Hydrogen and Fuel and Fuel Cells in the Economy

24th Steering Committee Meeting





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24th Steering Committee Meeting





Réunion IPHE 2020 en France



1. Lyon Hôtel de Région 14, 15, 16 juin 2020

1.1 Comité de pilotage 14 et 15 juin (Réunion restreinte)

1.2 Colloque international 16 juin (250 invités)

“Importance of Regions in the development of the hydrogen economy”

2. ENGIE La Défense 17 juin

Réunion « **Perspectives politique et économique de l’Hydrogène en France et dans le Monde** » (130 participants)

3. Workshop « **Hydrogen production analysis methodology** » 18 juin, au CEA

These convictions are now well-shared

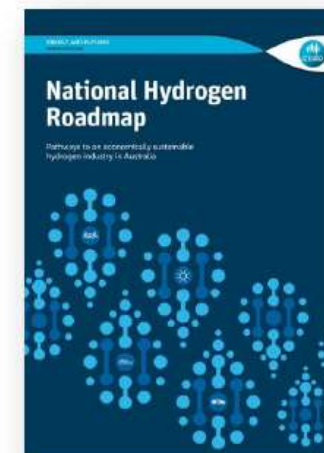
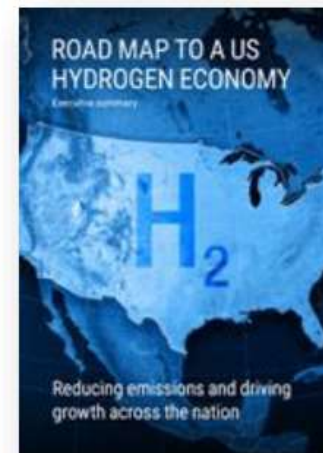
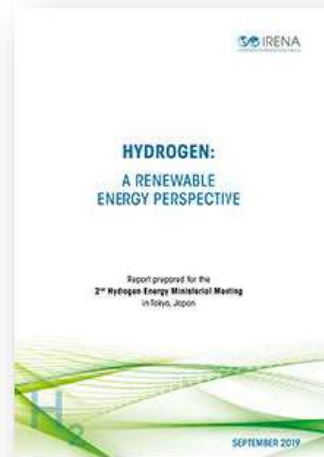
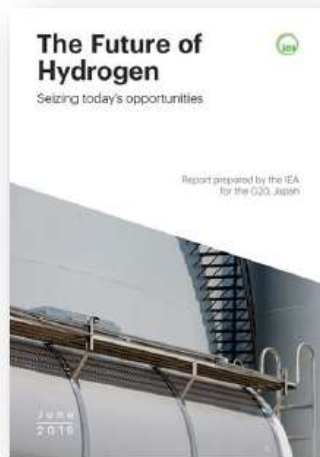


Frans Timmermans
Executive Vice President of the European Commission
Responsible for Europe's Green Deal

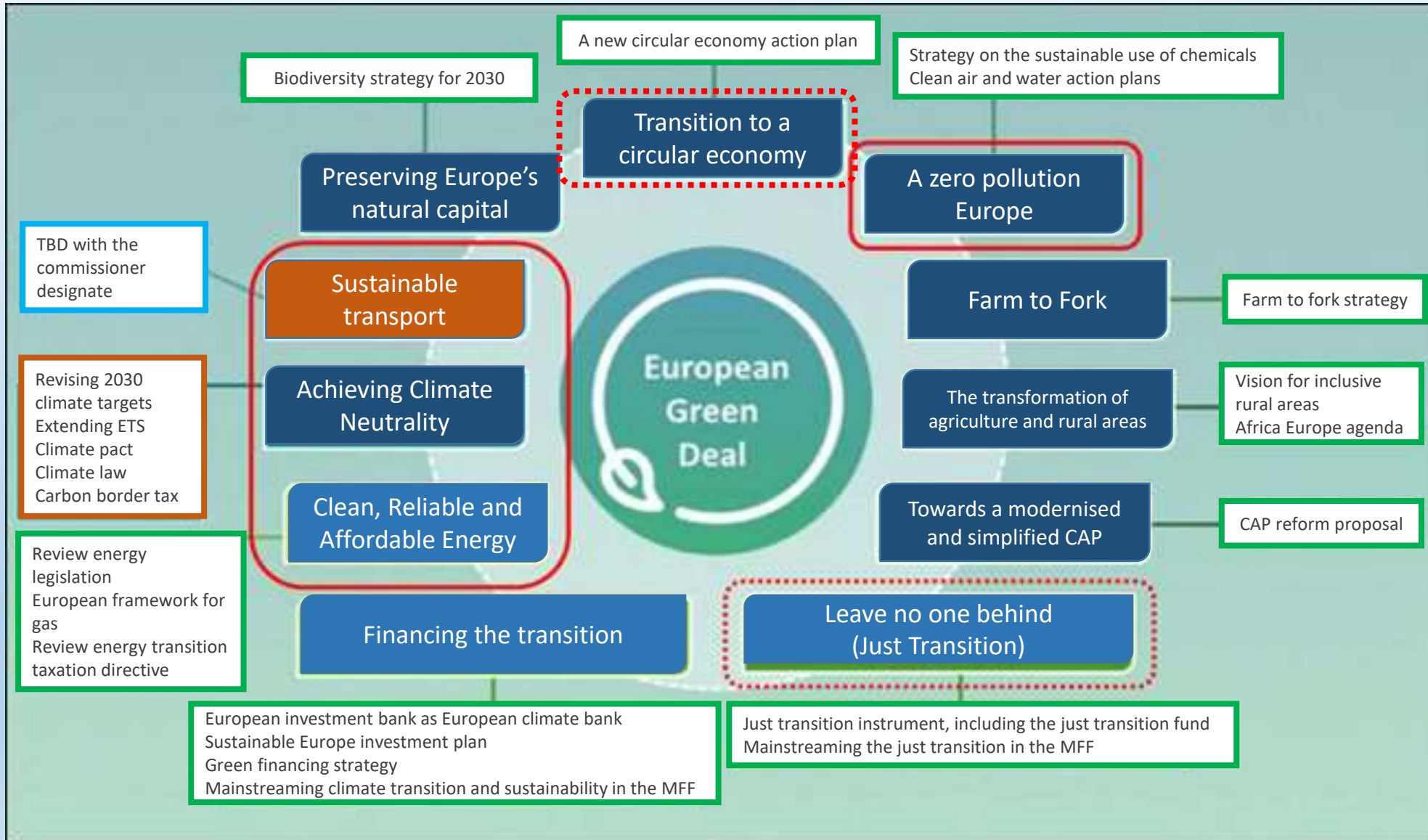
“Hydrogen could be a huge opportunity for our economy”

“It is not that difficult to use gas infrastructure to import [green] hydrogen using gas infrastructure”

“we need to protect our industries and [...] help them free themselves from fossil fuels, for example when hydrogen is used in the manufacturing of steel”



Clean Hydrogen for Europe is well aligned with the goals of the European Green Deal



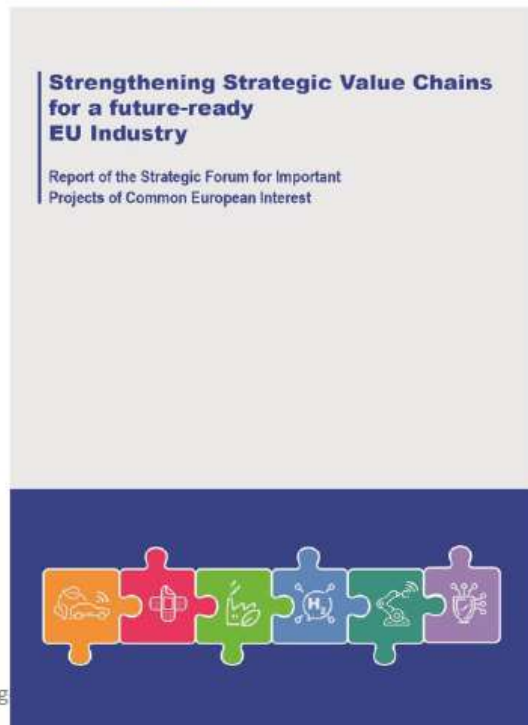
Mrs von der Leyen



M. Timmermans

➤ **FCH JU mid-term review:** "The choice of a Joint Undertaking as instrument continues to ensure good alignment with both policy and industrial objectives. The IEG is of the view that Europe's competitive position would be less favorable without the activities of the FCH 2 JU"

➤ **Strategic Forum for IPCEI:**



HYDROGEN TECHNOLOGIES AND SYSTEMS

- Potential to replace fossil-based energy with low-emission renewable hydrogen.
- Could enable and optimise large-scale renewable electricity generation.
- Could increase EU energy security and resilience.

RECOMMENDATIONS:

- Develop a roadmap for a future European Hydrogen Economy.
- Build a supportive regulatory framework by reviewing legislation on renewable energy, develop common standards.
- Support R&D investments and build an innovative industrial system through cross-border collaboration and partnerships in Horizon Europe.
- Ensure safety and public acceptance through demonstrations and standardisation.

Horizon Europe Clean Hydrogen for Europe

A continuation of a **strong European support** is however needed to create a hydrogen economy

Strategic Opportunities

Clean Hydrogen technologies are on the brink of reaching commercial maturity, competing against (and winning over) fossil based alternatives.

Large scale deployment of Clean Hydrogen technology would have immense positive impacts on climate, energy and environmental goals

European companies hold global leadership and/or strong positions in key parts of the clean hydrogen value chain

But...

Problems

- Some applications do not exist yet commercially / are not mature enough or have not been demonstrated
- Mature Clean Hydrogen technologies are more expensive compared to fossil based alternatives
- Clean Hydrogen is not available, in sufficient quantities and at low cost when and where it is needed
- Infrastructure not in place or ready to store, transport and distribute hydrogen at scale
- Stakeholder knowledge and acceptance not sufficient

Drivers (Root causes)

Research funding is necessary to progress further in Technology Readiness Levels (TRL)	Long-Term, strategic development plans are necessary to priorities resources	The development and deployment of hydrogen applications is usually part of broader systems involving other hydrogen applications and/or other sectors therefore requiring a large coordination effort	Innovative applications have not been proven, at scale, in real-life scenarios
Mature clean hydrogen technologies do not reach the scale necessary to catalyze cost reductions	Improvements in efficiency, cost, durability and manufacturability are necessary		Lack of policies to drive demand (out of scope of the IPPP)
Infrastructure and demand need parallel development	Distribution infrastructure is not fit for purpose		Renewable energy costly / not available (out of scope of the IPPP)
Stakeholders (policy makers, private actors general public) require clear information	Safety should be embedded at all levels		RCS barriers persist
			Large scale H2 storage and transport solutions need to be proven
			Geographical differences create large gaps between regions

Solution

An Institutional PPP, which leverages public and private resources, channeling them at addressing all drivers holding back the large scale deployment of clean hydrogen technologies using:

Funding instruments tailored to address the root causes behind the problems identified, while targeting

Production

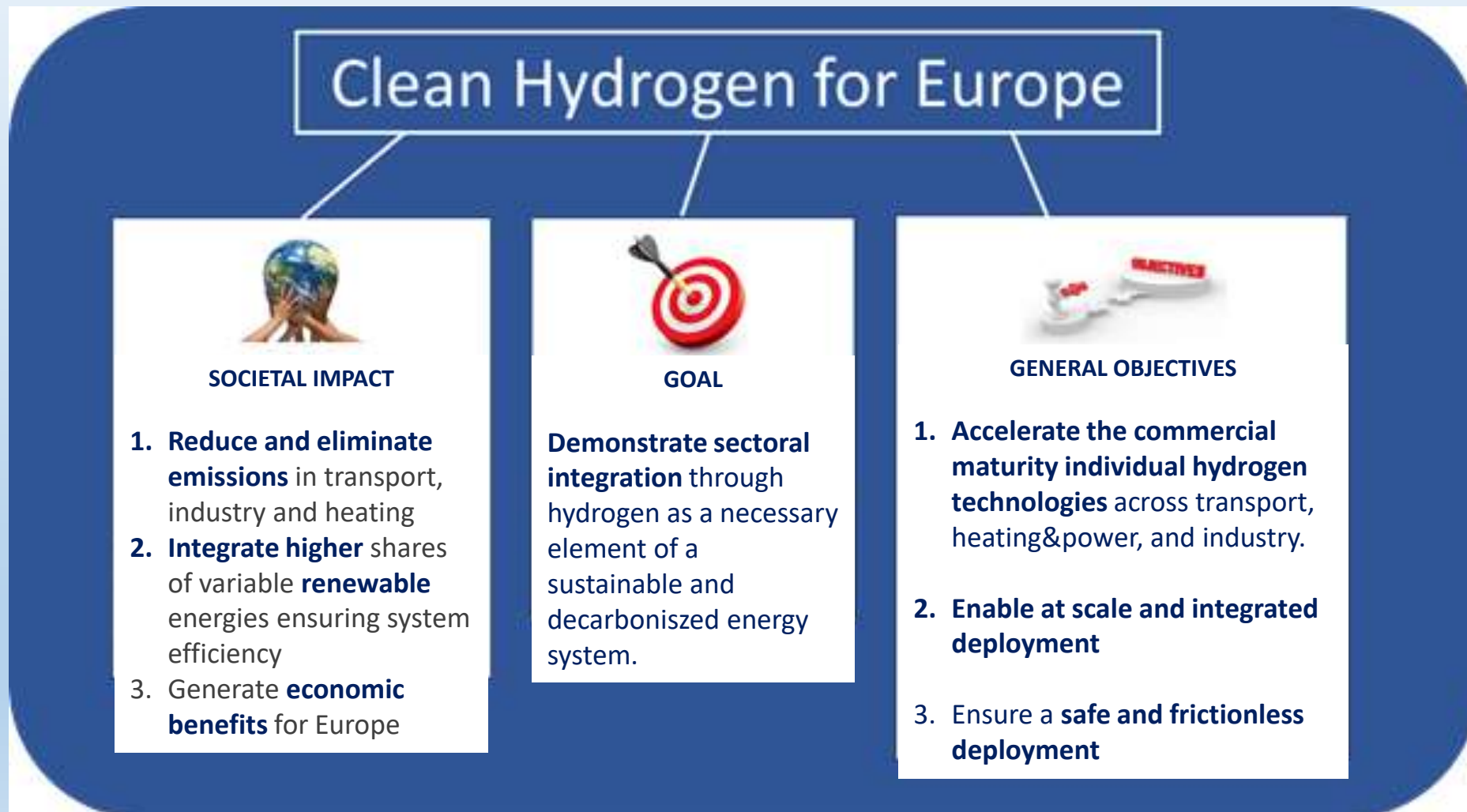
Distribution

End-uses

As well as

Horizontal tasks, which address broader societal issues

Overall ambition and policy impacts pursued by Clean Hydrogen for Europe



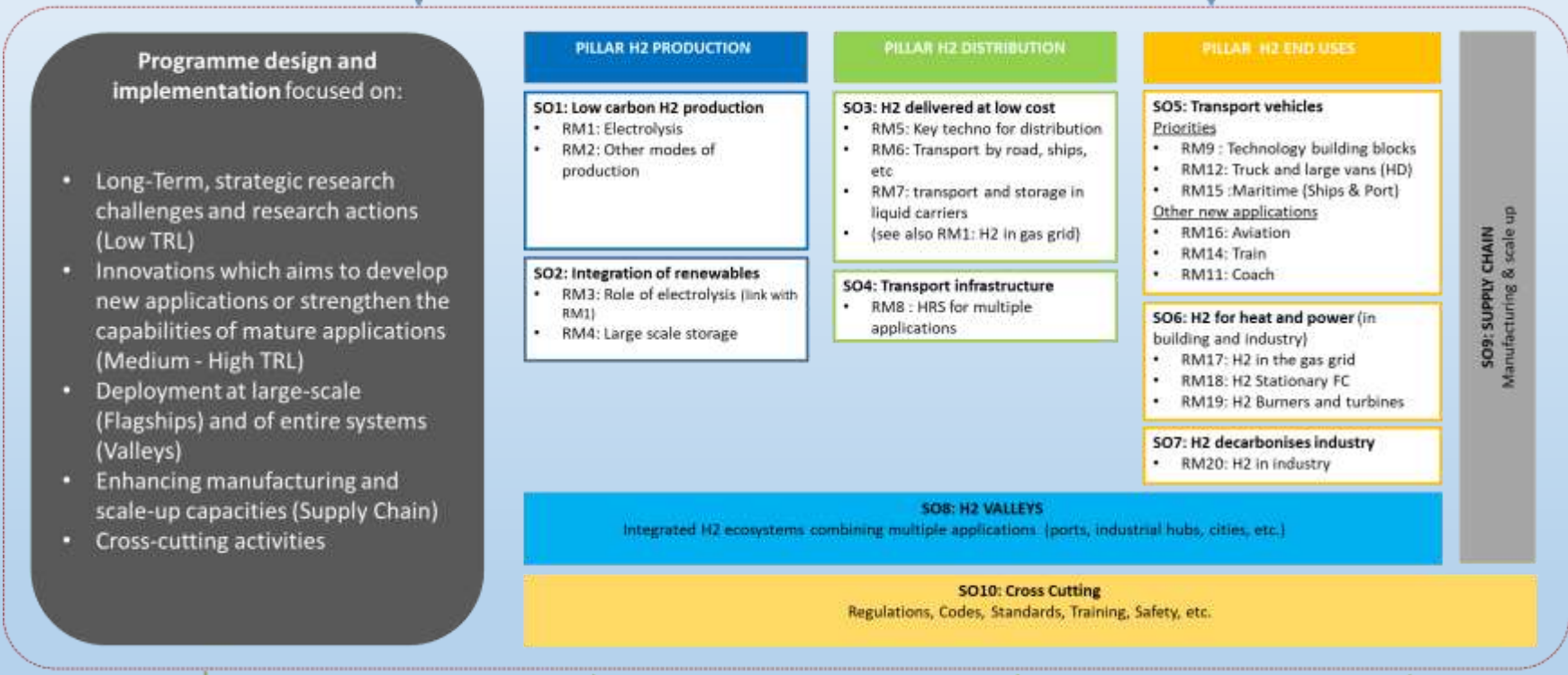
Horizon Europe Clean Hydrogen for Europe

GO1: Accelerate the commercial readiness of nearly zero GHG emission hydrogen-based technologies across energy, transport, building and industrial end-uses

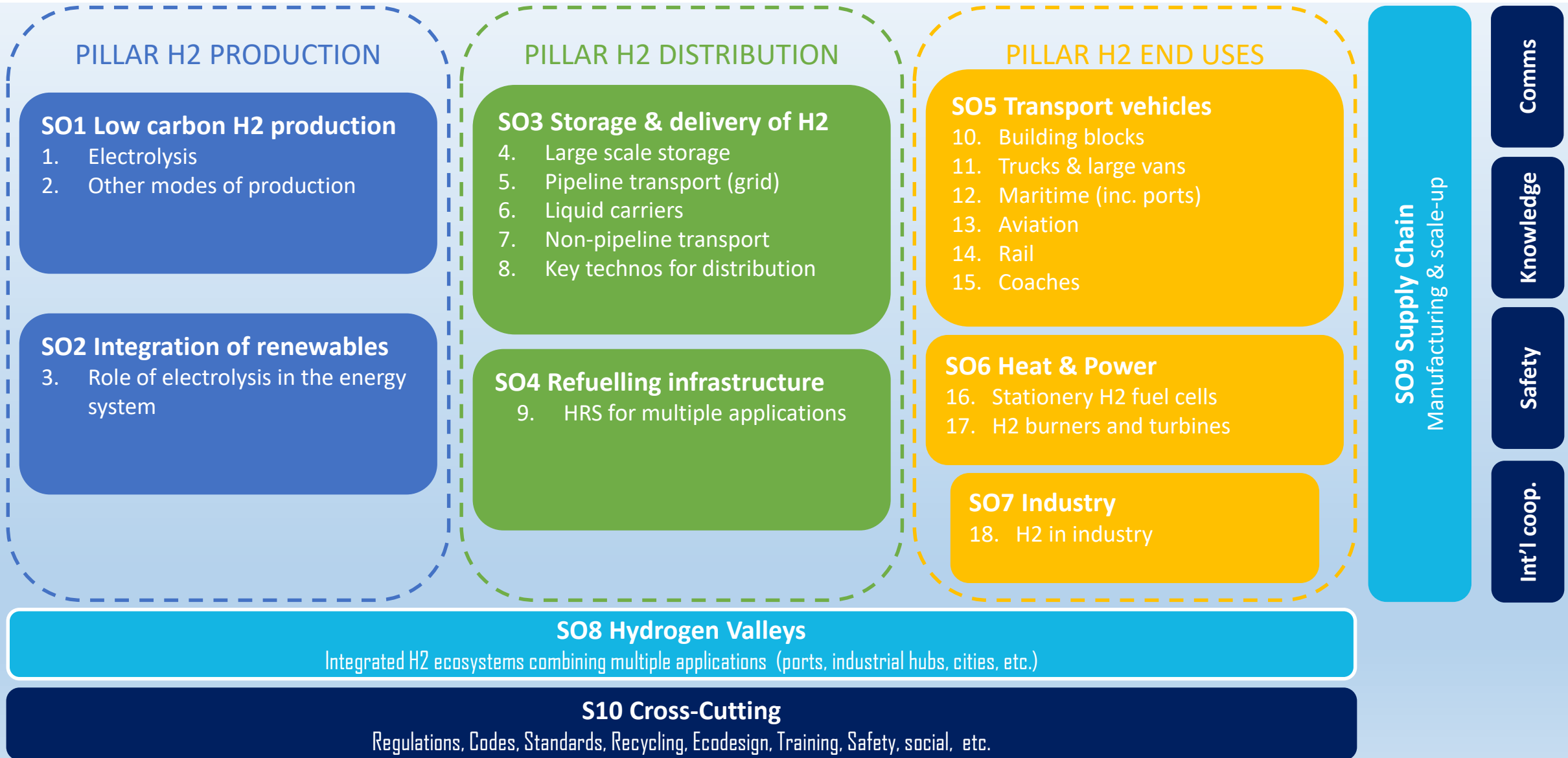
GO2: Enable at scale deployment capacity for key parts of the clean hydrogen value chain

GO3: Ensure a safe and frictionless deployment of Clean Hydrogen technologies

GO4: Leverage technical and financial resources from both private and public sources

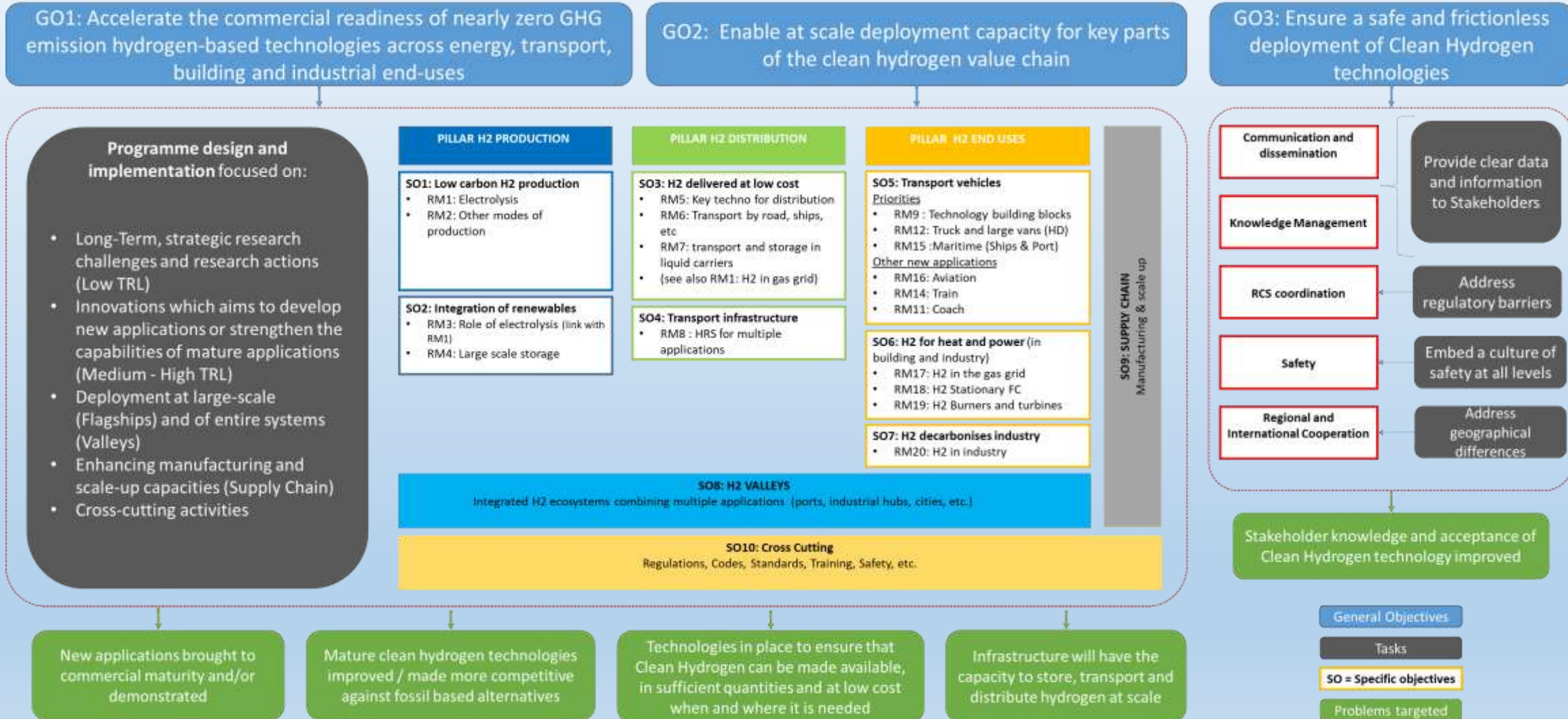


Horizon Europe Clean Hydrogen for Europe



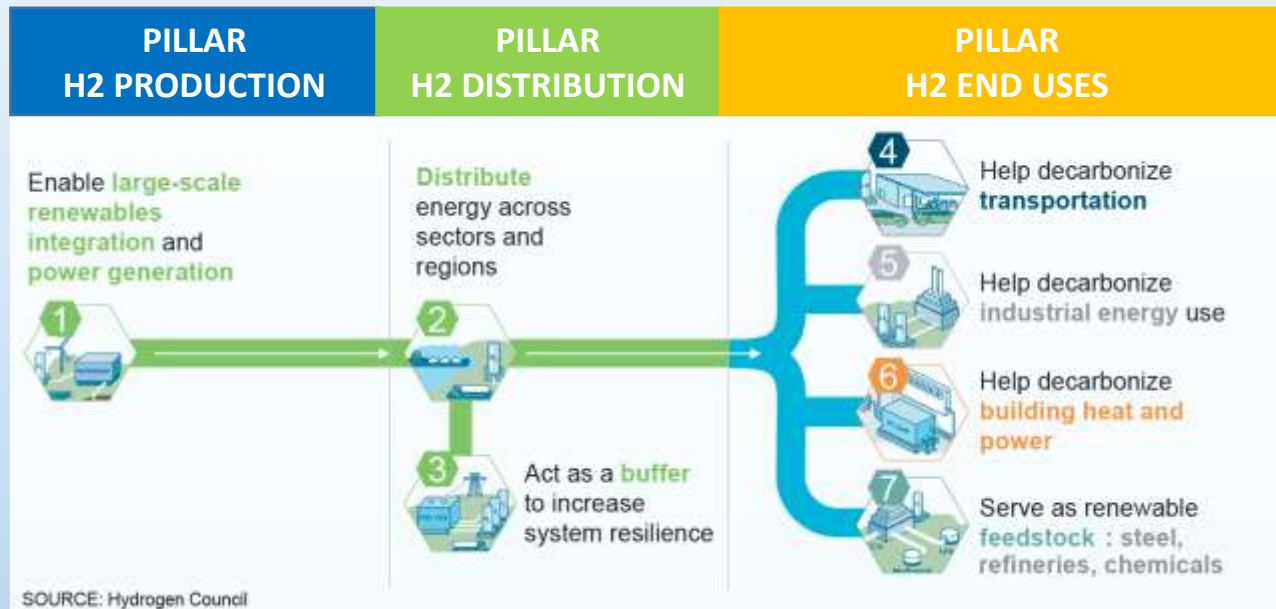
Horizon Europe Clean Hydrogen for Europe

GO4: Leverage technical and financial resources from both private and public sources



Complementarities with other partnerships

RES & low carbon elec



Trucks (car, bus, coaches)

Ships and ports

Trains

Aircrafts, drones, airport

- 2ZERO (COP)
- Batteries (COP)
- Waterborne (?)
- Transforming EU rail system (IPPP)
- Clean Aviation (IPPP)
- Built Environment (COP)
- Clean & low carbon steel (COP)
- Circular and Climate Neutral Industry (COP)

Circular and Climate Neutral Industry (COP)

Gas & elec grids

EU turbine

Batteries (cop)

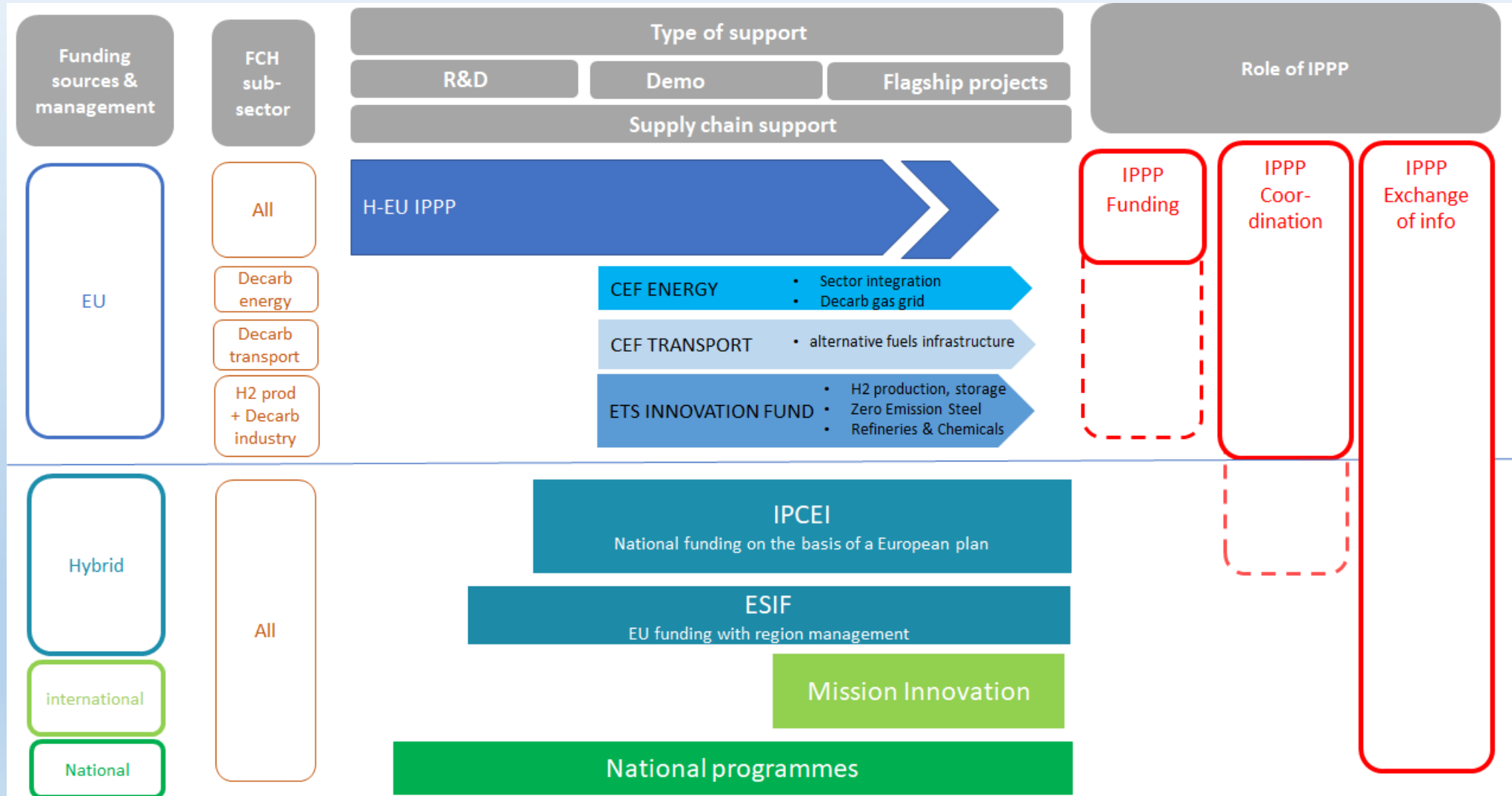
- Clean Energy Transition (COF)
- EIT Climate
- EIT Raw material
- EIT Inno Energy

Legend

- Colored box = complementarity + wish of active coordination
- Colored frame = complementarity + exchange of information
- Colored disc = no PPP but wish of active coordination

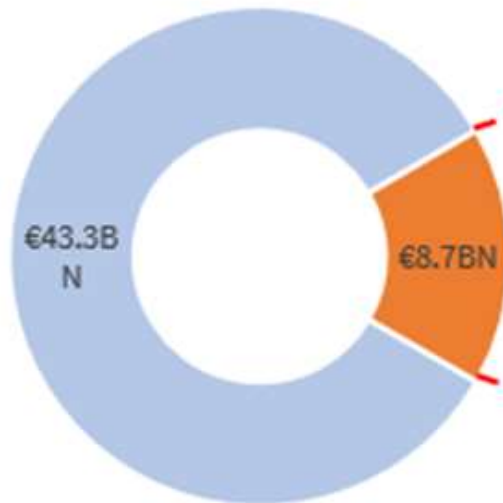
Horizon Europe Clean Hydrogen for Europe

Complementarities with other European and national programmes



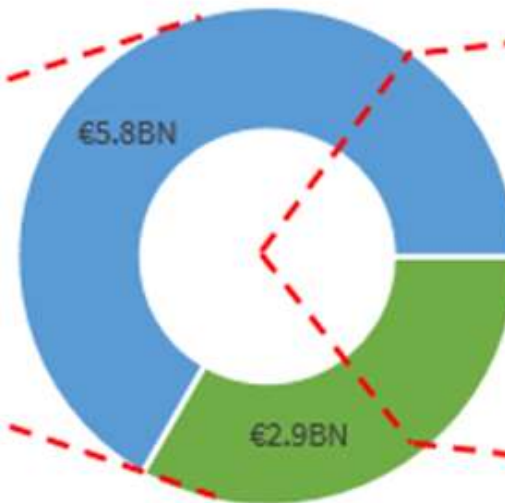
Budget, impact and private contribution

Total investment for the 2030 vision



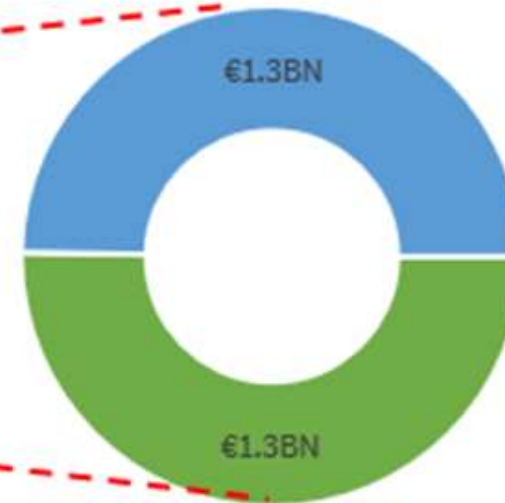
■ Industry & Member State investment
■ EU public private effort

Total investment triggered by EC 2021-2027



■ Industry contribution
■ Public contribution

Clean Hydrogen for Europe



■ Industry contribution
■ Public contribution

BUDGET request
Clean H2 for Europe
=
2 x FCH 2 JU

Horizon Europe Clean Hydrogen for Europe

Funding rate in HEU

	Industry	Research
RIA	100%	100%
IA	70%	100%



Funding rate in IPPP Hydrogen

	TRL	Industry	Research
Strategic research challenges	2-3	100%	100%
Research actions	3-6	70%	100%
Innovative actions	5-8	50%	80%
IA Flagship projects	7-8	30%	30%
IA H2 Valleys	7-8	30%	30%
IA Industrialisation actions	5-8	30%	80%
Cross-Cutting	n/a	100%	100%

Give your opinion on the draft SRIA

www.cleanhydrogenforeurope.eu

TAKE THE SURVEY

CLEAN HYDROGEN FOR EUROPE

ABOUT US



**CLEAN HYDROGEN
FOR EUROPE**

Let's make
Hydrogen
a strong part of it!

