

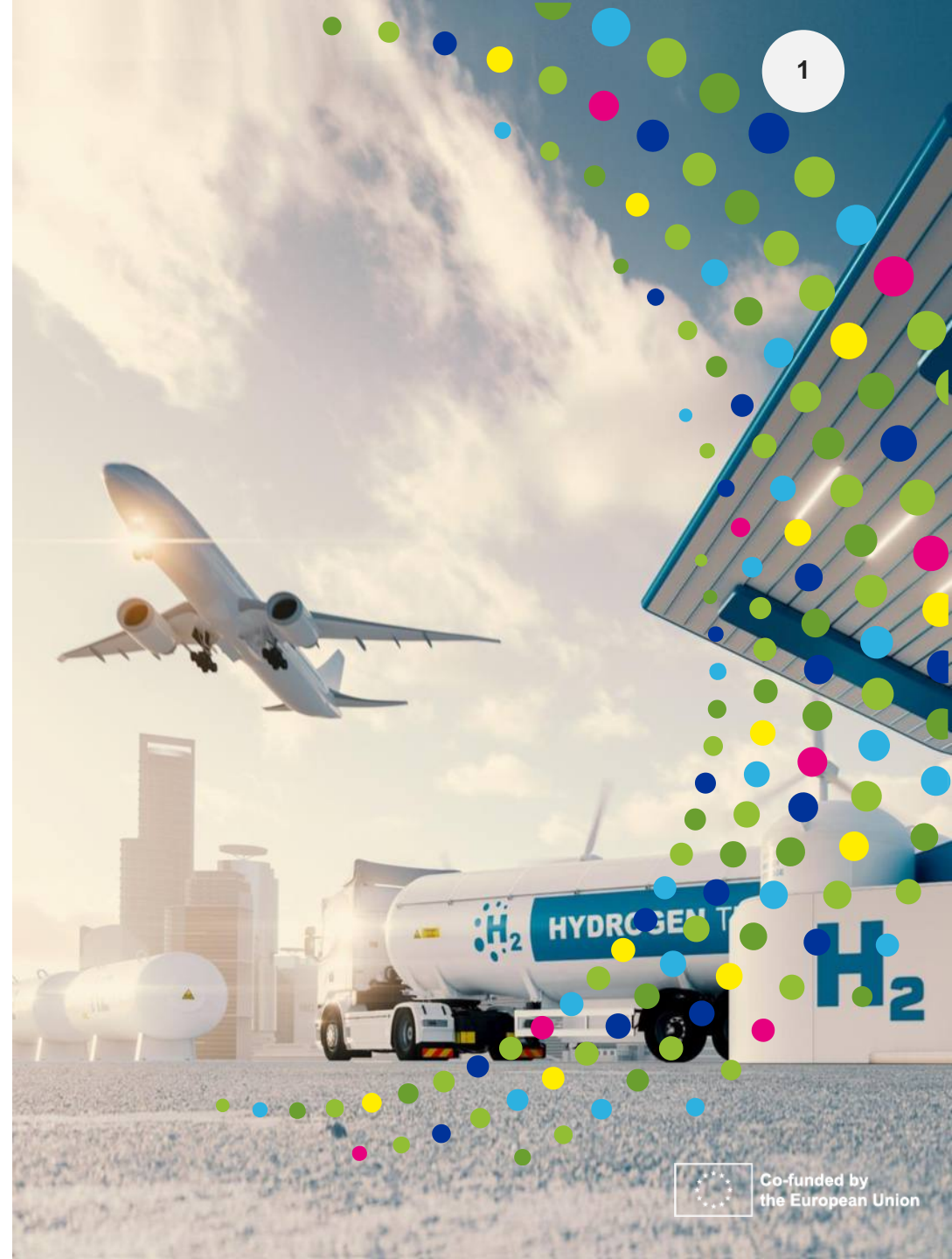
Clean Heat and Power with Hydrogen

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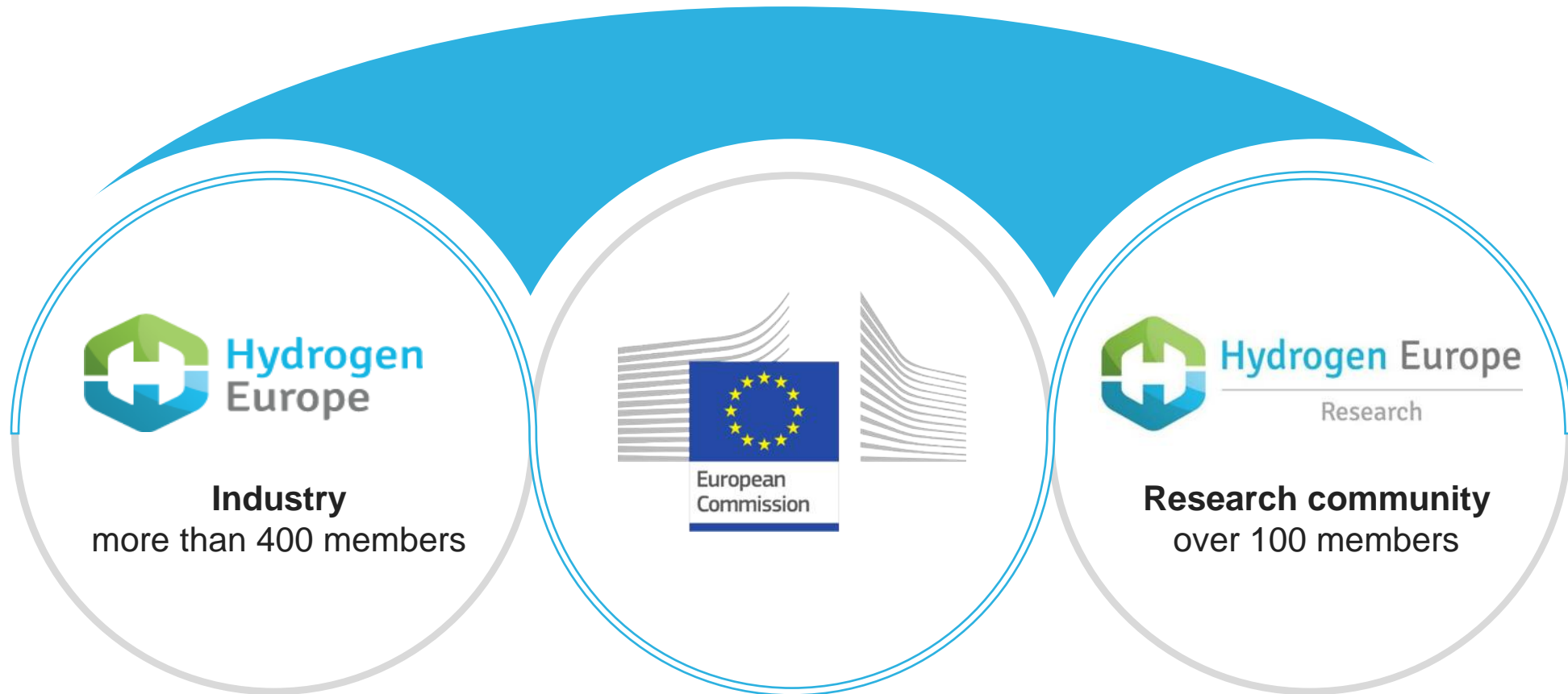
Brussels

26/04/2023



Clean Hydrogen Joint Undertaking

EU Institutional Public-Private Partnership (IPPP)



1 billion EURO from Horizon Europe* to implement R&I activities and facilitate the transition to a greener EU society through the development of hydrogen technologies

*** additional 200 million EURO for Hydrogen valleys (under RePowerEU)**

Clean Hydrogen JU Objectives

General



Support the implementation of the Commission's **Hydrogen Strategy**



Stimulate **research and innovation on clean hydrogen** production, distribution, storage and end use applications



Strengthen the **competitiveness of the EU clean hydrogen value chain**



Contribute to the EU ambitious **2030 and 2050 climate ambition**

Specific



Improve the **cost-effectiveness, efficiency, reliability, quantity and quality of clean hydrogen solutions across entire value chain**



Strengthen the **knowledge/capacity of scientific and industrial actors** along the Union's hydrogen value chain while supporting the **uptake of skills**

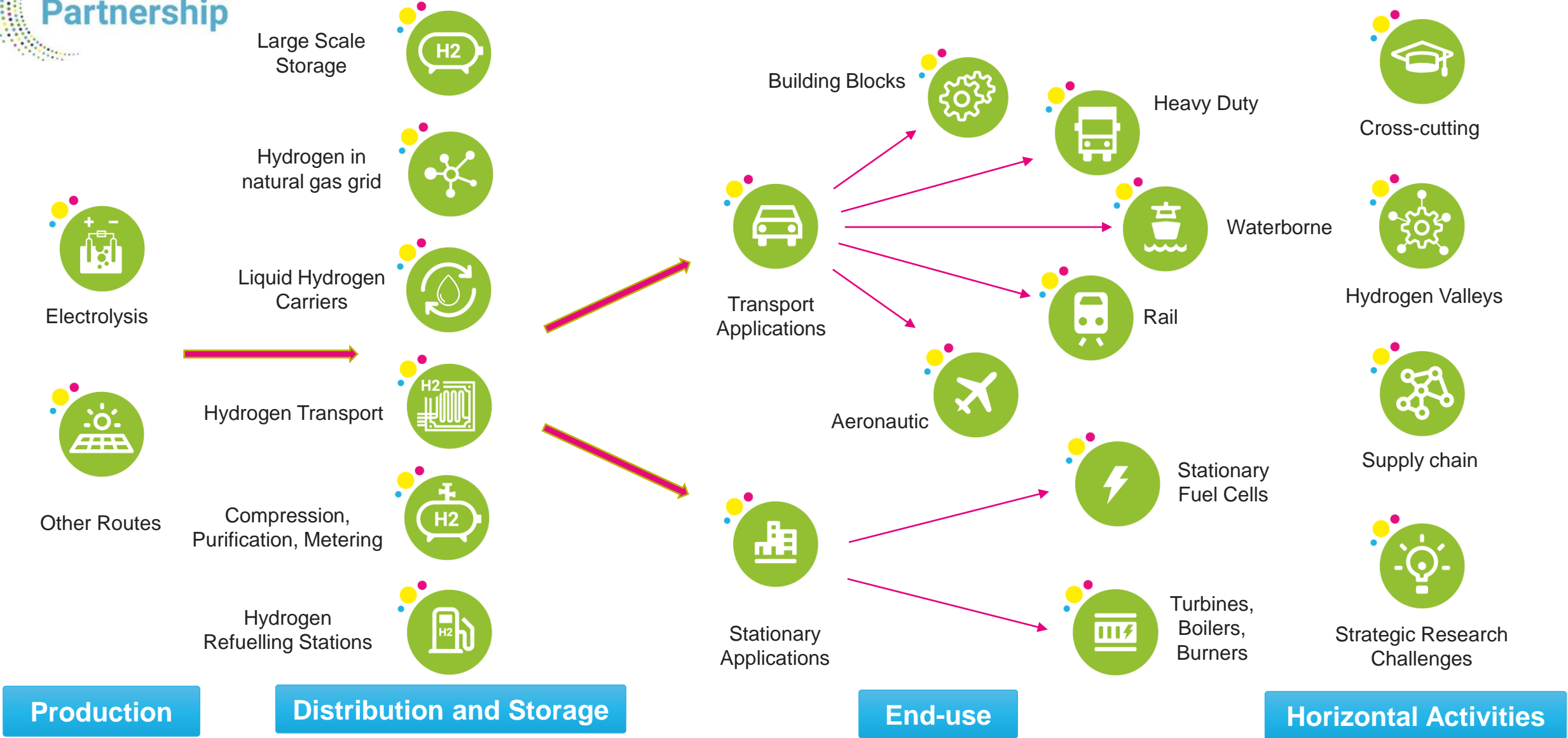


Demonstrations of clean hydrogen solutions with a view to **local, regional and Union-wide deployment**, aiming to involve stakeholders in all Member States and across **entire value chain**



Increase **public and private awareness, acceptance** and uptake of clean hydrogen solutions





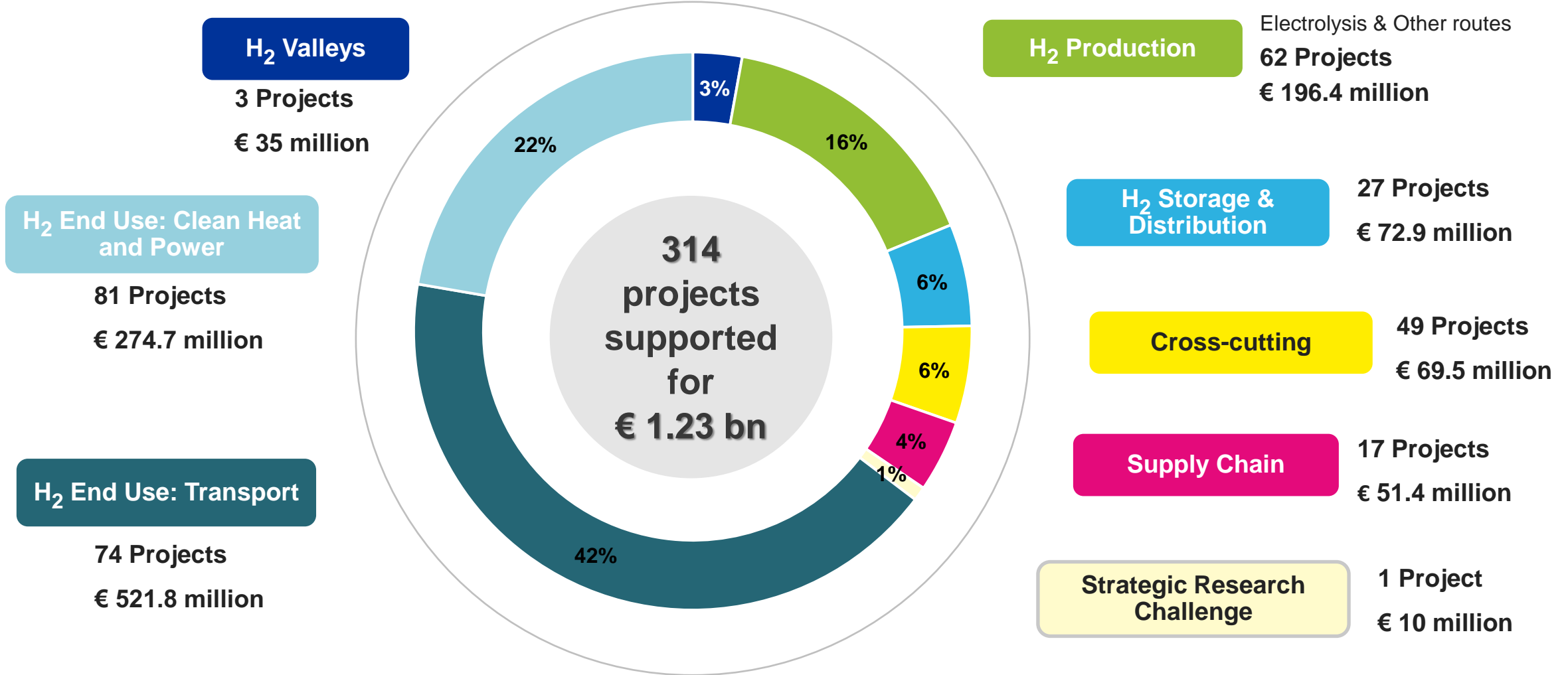
Other Activities

Additional activities are necessary to fulfil the Clean Hydrogen JU objectives



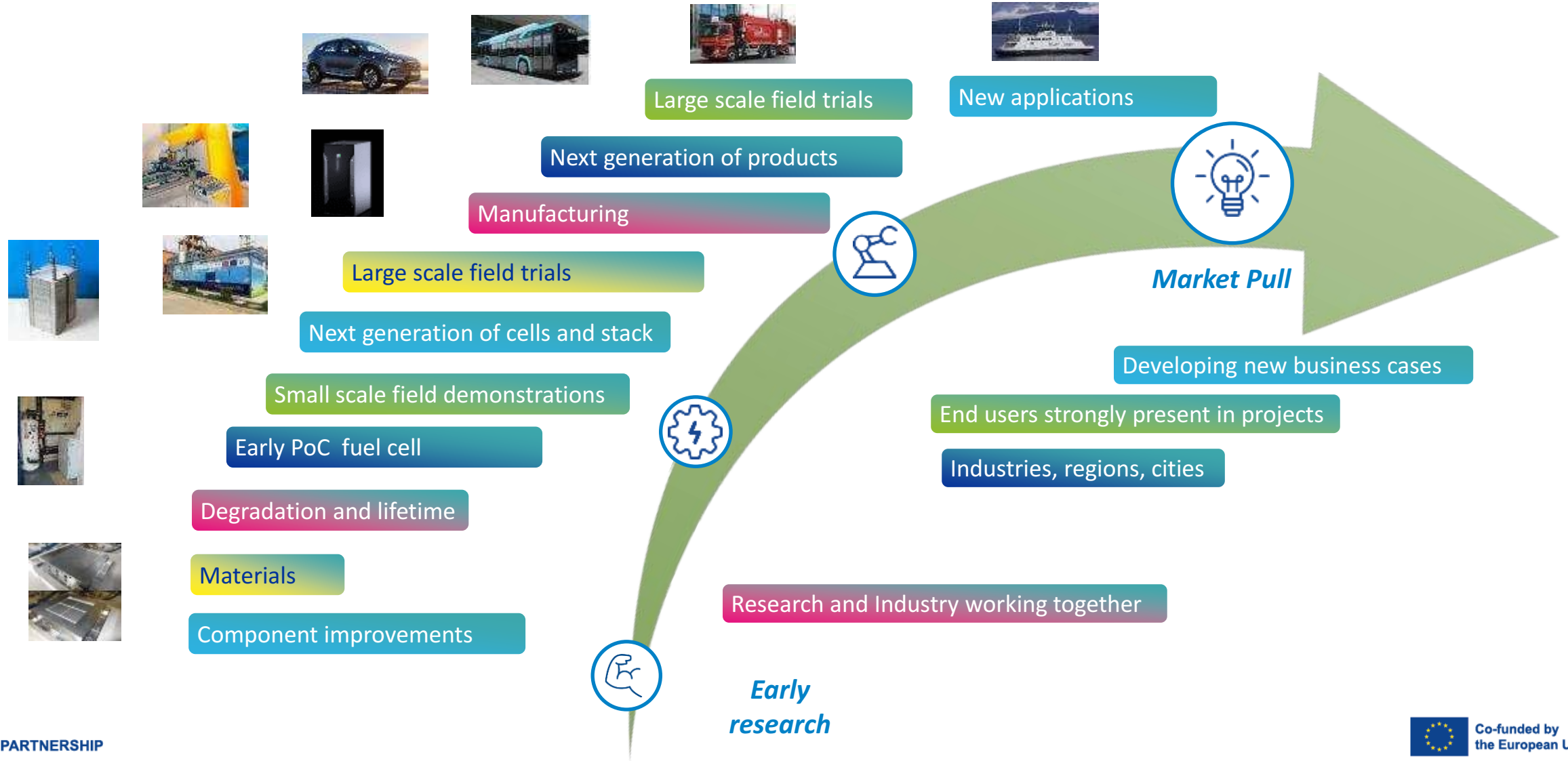
- **Developing synergies with other partnerships and programmes**
- Regulations, Codes and Standards
- European Hydrogen Safety
- European Hydrogen Sustainability and Circularity
- Knowledge management
- Competitiveness, SMEs
- International Cooperation
- Communication activities

Clean Hydrogen JU Programme *incl legacy of FCH JU*



15 years journey of the Joint Undertaking

From research to delivering solutions in the market

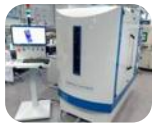


Clean Heat and Power with Hydrogen

Residential, commercial buildings, service sector, industry

H₂ End Use: Clean Heat and Power

81 Projects
€ 274.7 million funding



Next Generation Products

Trials and Demonstrations

End use ready solution, new business models for market introduction

Proof of Concepts

Research

- Lifetime & performance
- Monitoring & Diagnostics
- Component and System aspects
- Materials & Manufacturing



Fuel cells

- O1: Reducing CAPEX and TCO of FCs
- O2: Next generation 0-100% H₂ and H₂-rich fuels
- O3: Improve flexibility with reversible fuel cells
- O4: Reducing critical raw materials and recycling
- O5: Mass manufacturing

Gas turbines + burners/furnaces

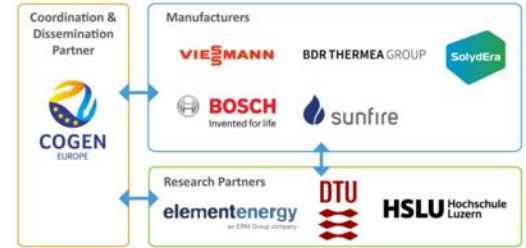
- O1: 0-100% H₂ (low NO_x, high eff., flexible op.)
- O2: Demos (retrofitting) + safety and plan integration



2021-2027

Fuel cell for domestic heat and power

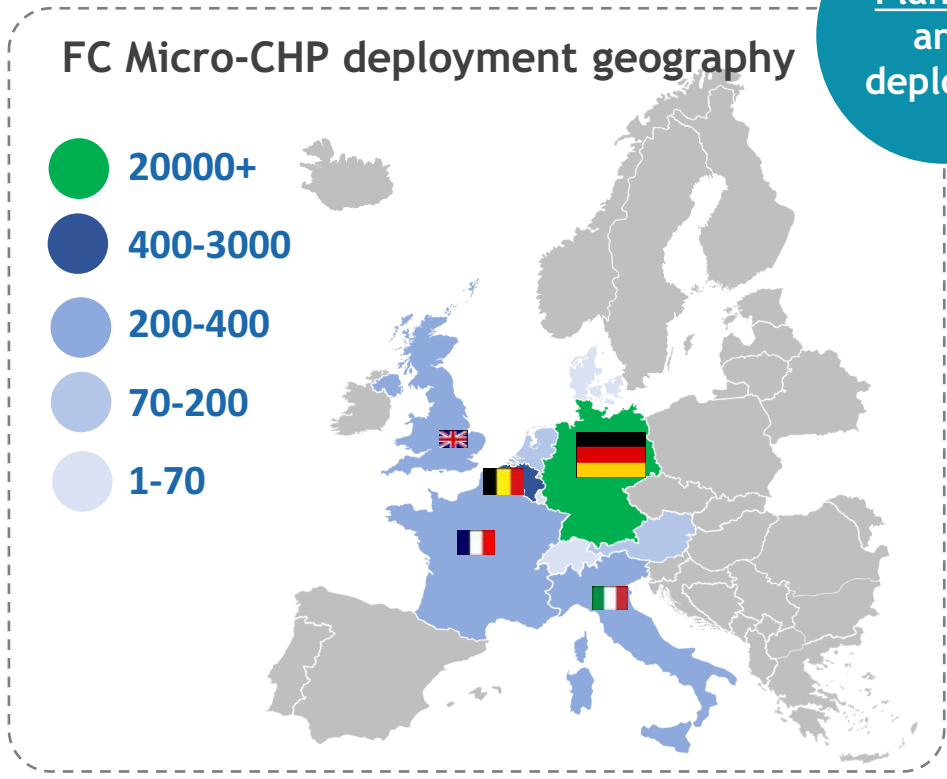
Europe market is in the order of 25,000s systems



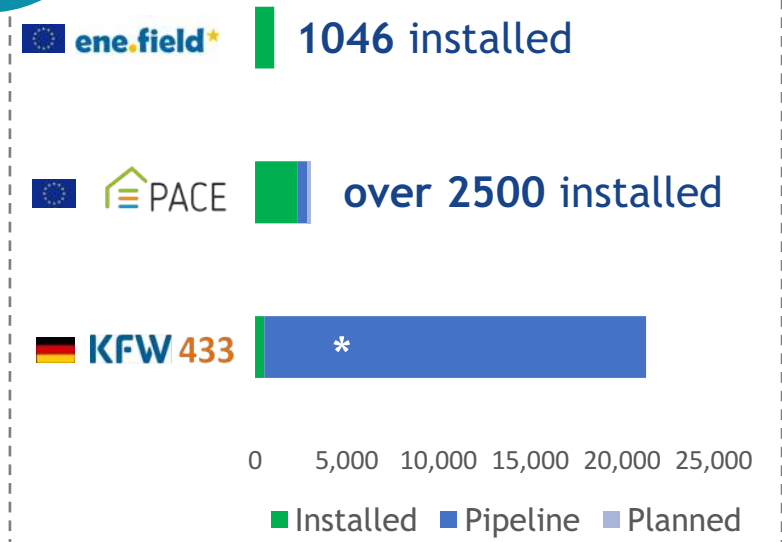
Complementary to heating system



Replaces heating system



Planned and deployed



* ~20,000 applications filed under German KfW since 2016 until Sep 2022

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For further information
<https://www.clean-hydrogen.europa.eu/>

