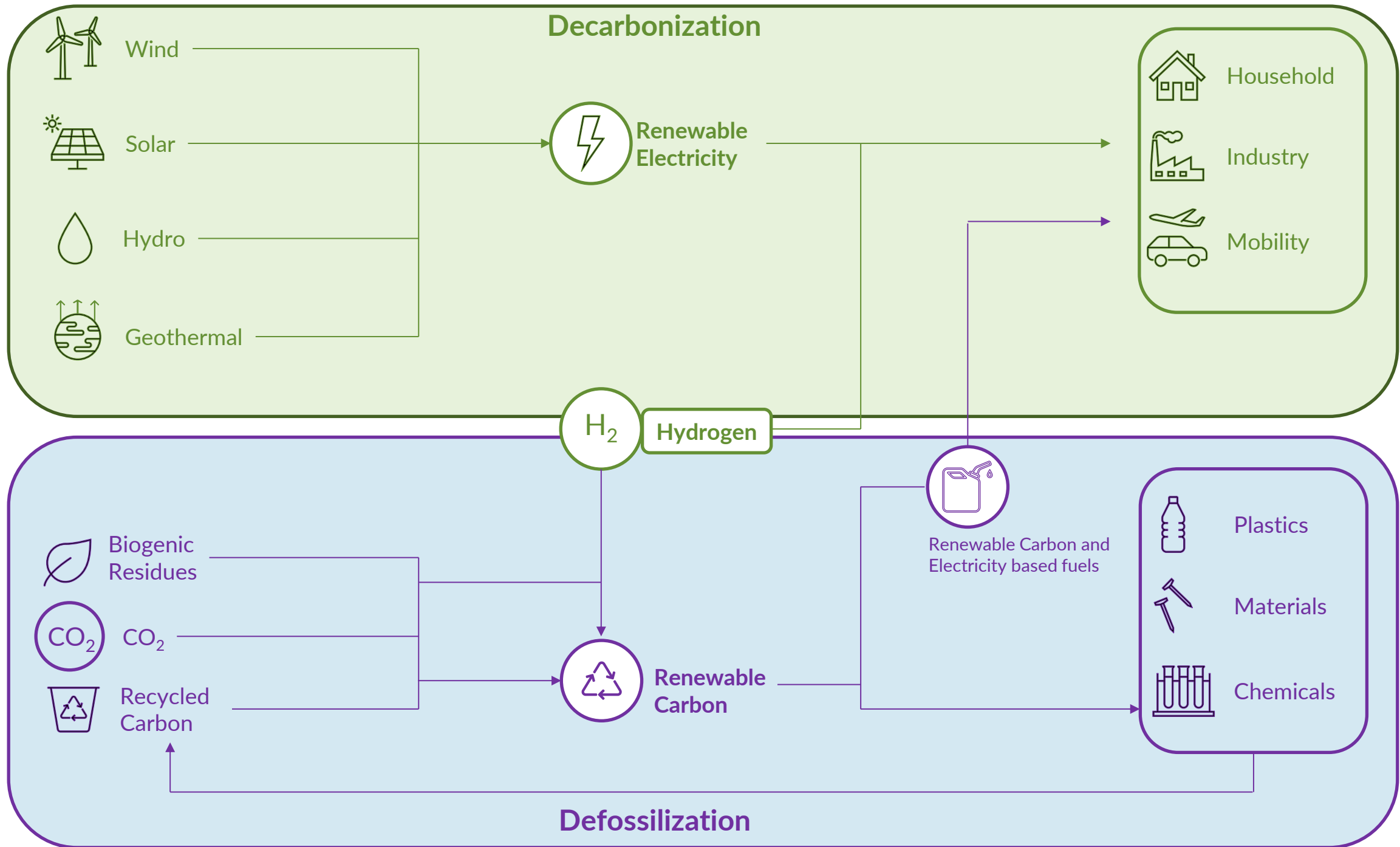


Promoting Green Hydrogen Economy in South Africa - Expert and Knowledge Exchange

Innovation in hydrogen distribution and application

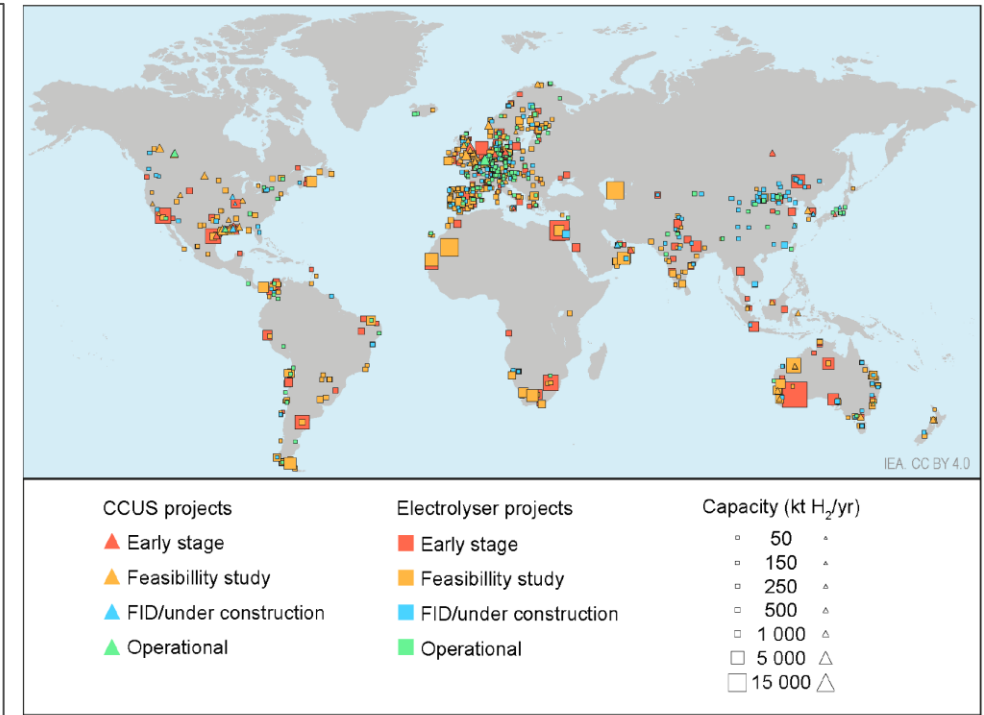
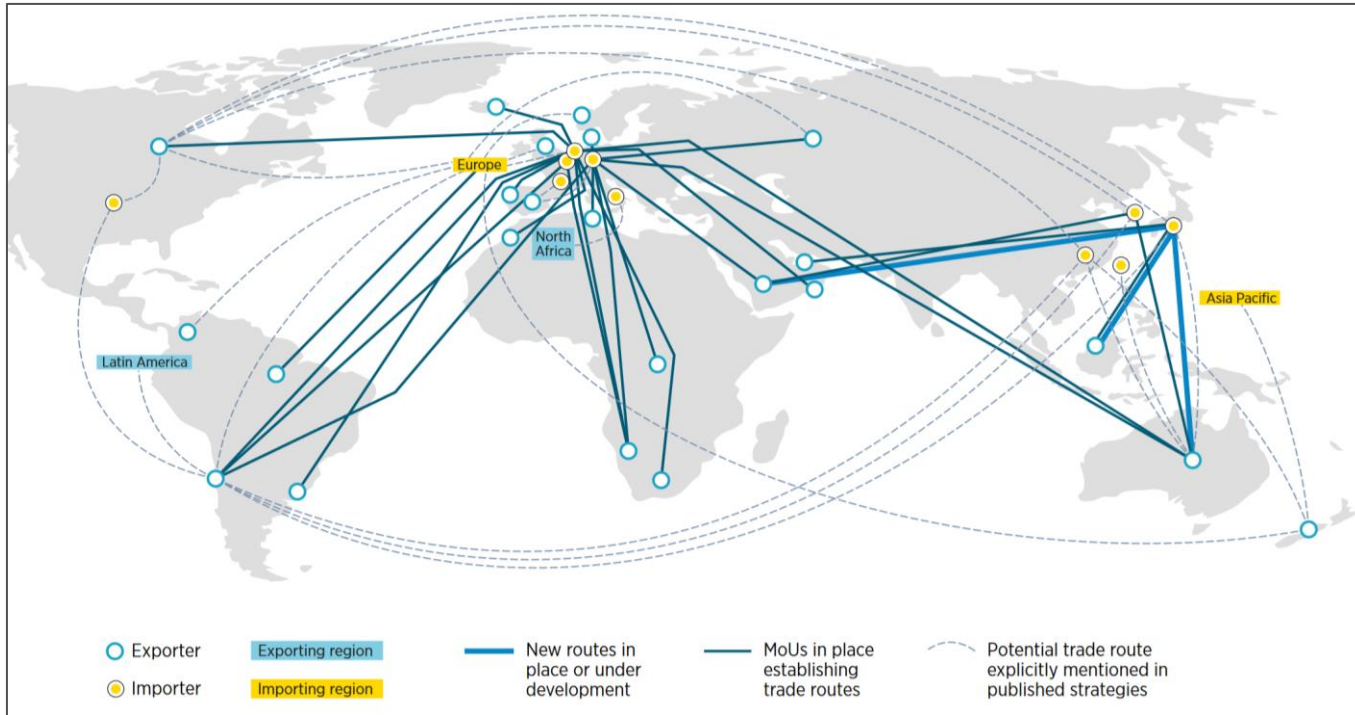
David Coleman
hynes – Hydrogen and New Energy Solutions GmbH





Motivation

An expanding network of hydrogen trade routes, plans and agreements

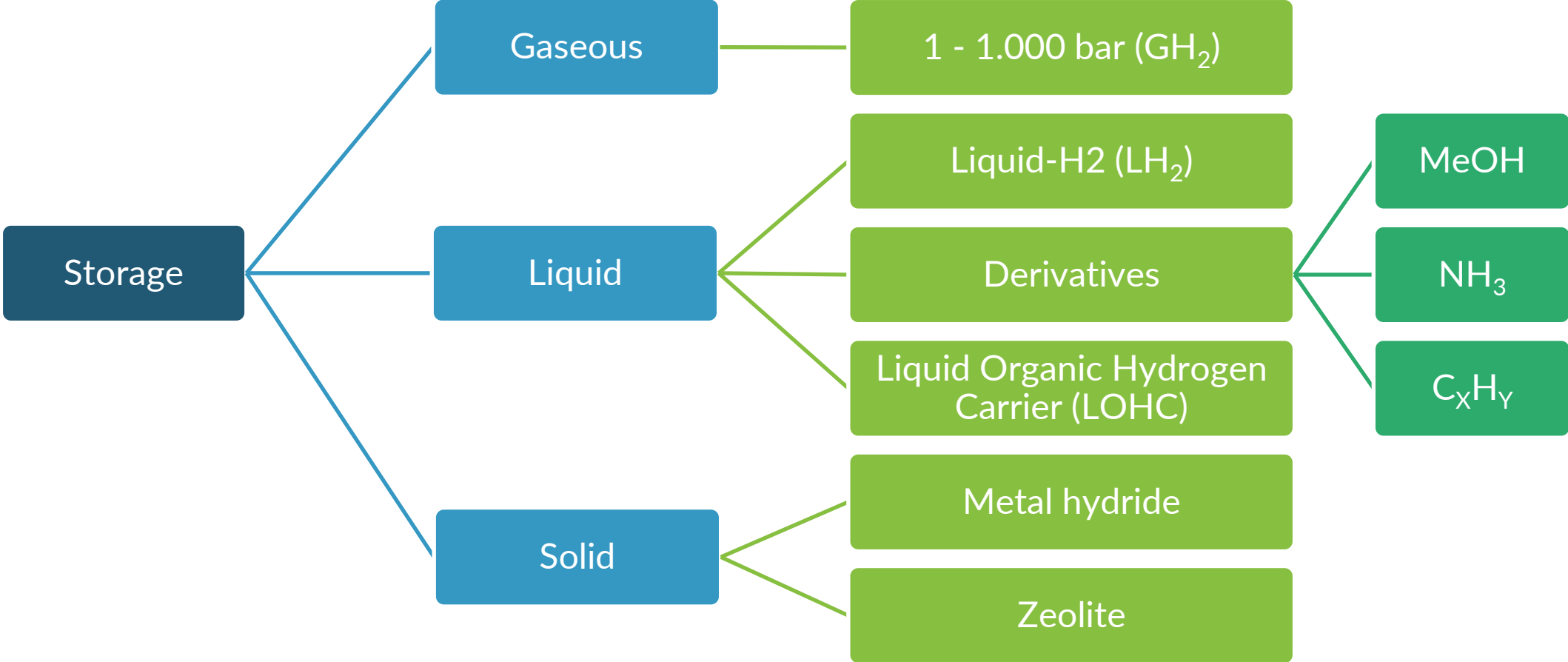


- Over 30 countries and regions have hydrogen strategies that include import and/ or export plans, which indicates that cross-border hydrogen trade will grow significantly
- Not traditionally energy exporting regions are establishing bilateral relations centering on hydrogen-related technologies and molecules

Source: IRENA (2022), Geopolitics of the Energy Transformation: The Hydrogen Factor, International Renewable Energy Agency
 Source: IEA.; Global Hydrogen Review 2023; P. 11; International Energy Agency, Website: www.iea.org

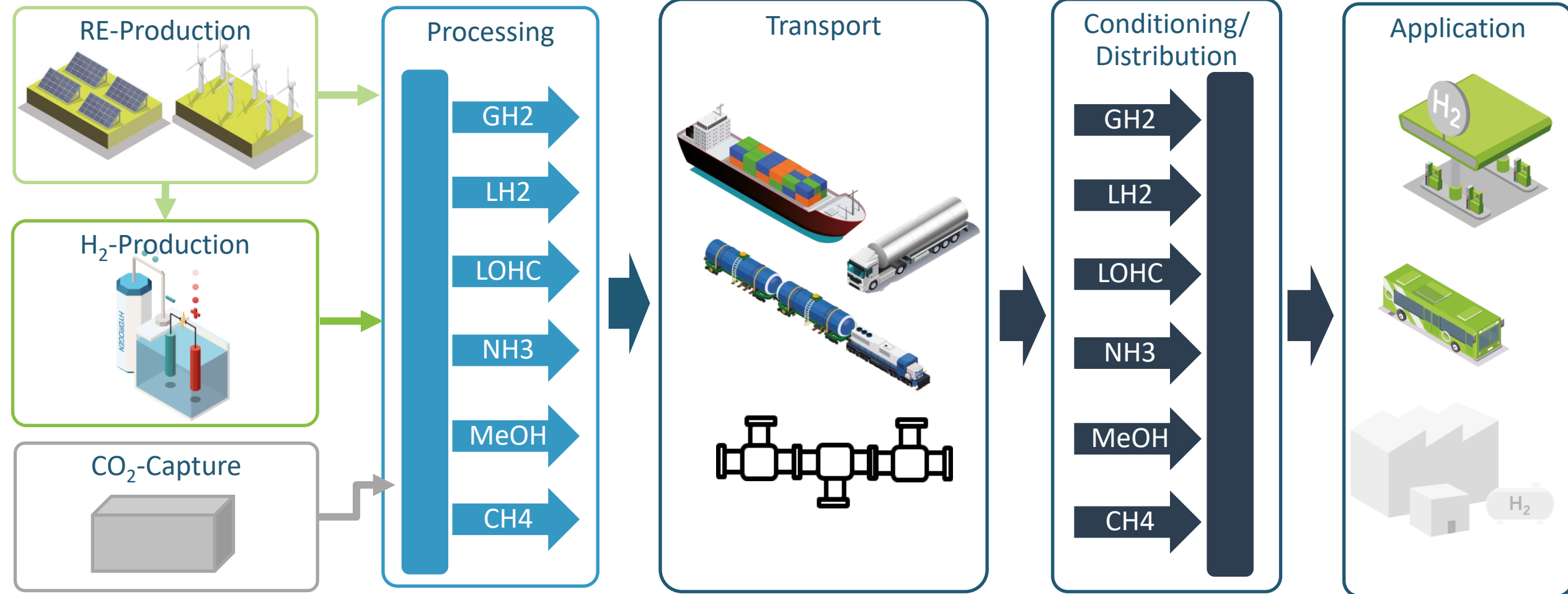
Hydrogen value chain

Storage



Hydrogen value chain

Overview



Hydrogen value chain

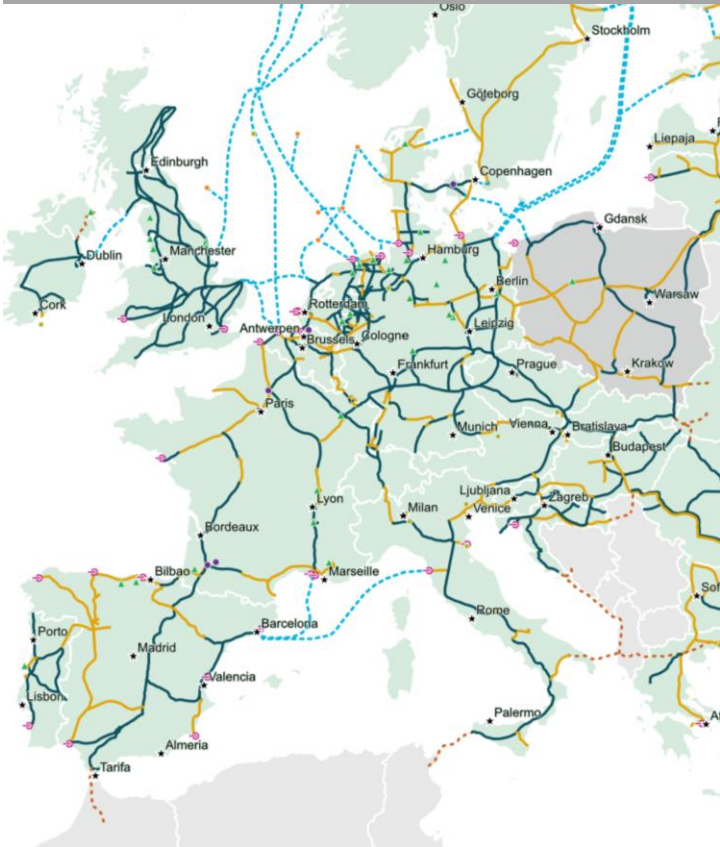
Transport



Water



Pipeline



Street/ Rail

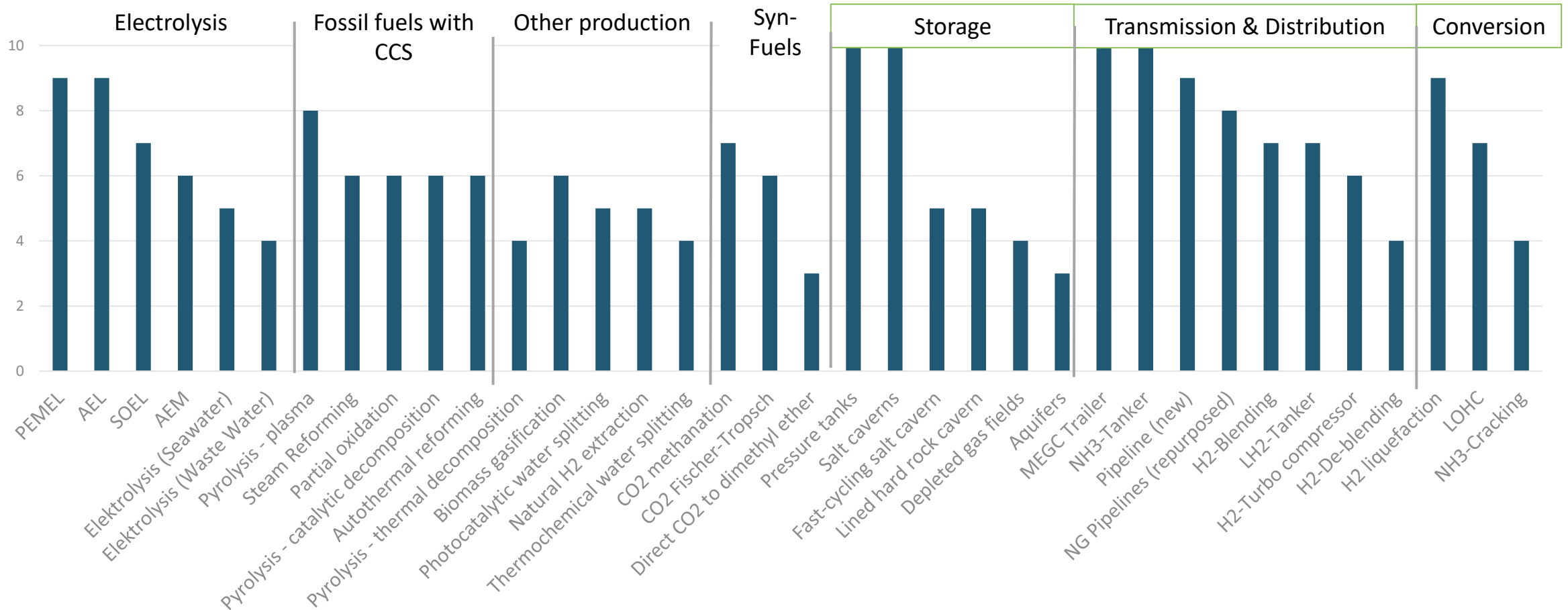


Hydrogen value chain

Technology readiness level



TRL of H2 Value Chain



Hydrogen application

Examples of H₂-FCEV and H₂-ICE



Summary



- H₂ innovation needs to accelerate for hydrogen to play its role in the clean energy transition
- Level of maturity of H₂ technologies varies widely across the supply chain
- Low emission H₂ supply shows higher TRL than end user applications
 - Except for chemical industry and refining
- Innovation in hydrogen storage, transportation and application is aiming for:
 - Scalability
 - Reliability
 - Efficiency
- South Africa will play a crucial role in decarbonization of global energy systems

Thank you for your attention!

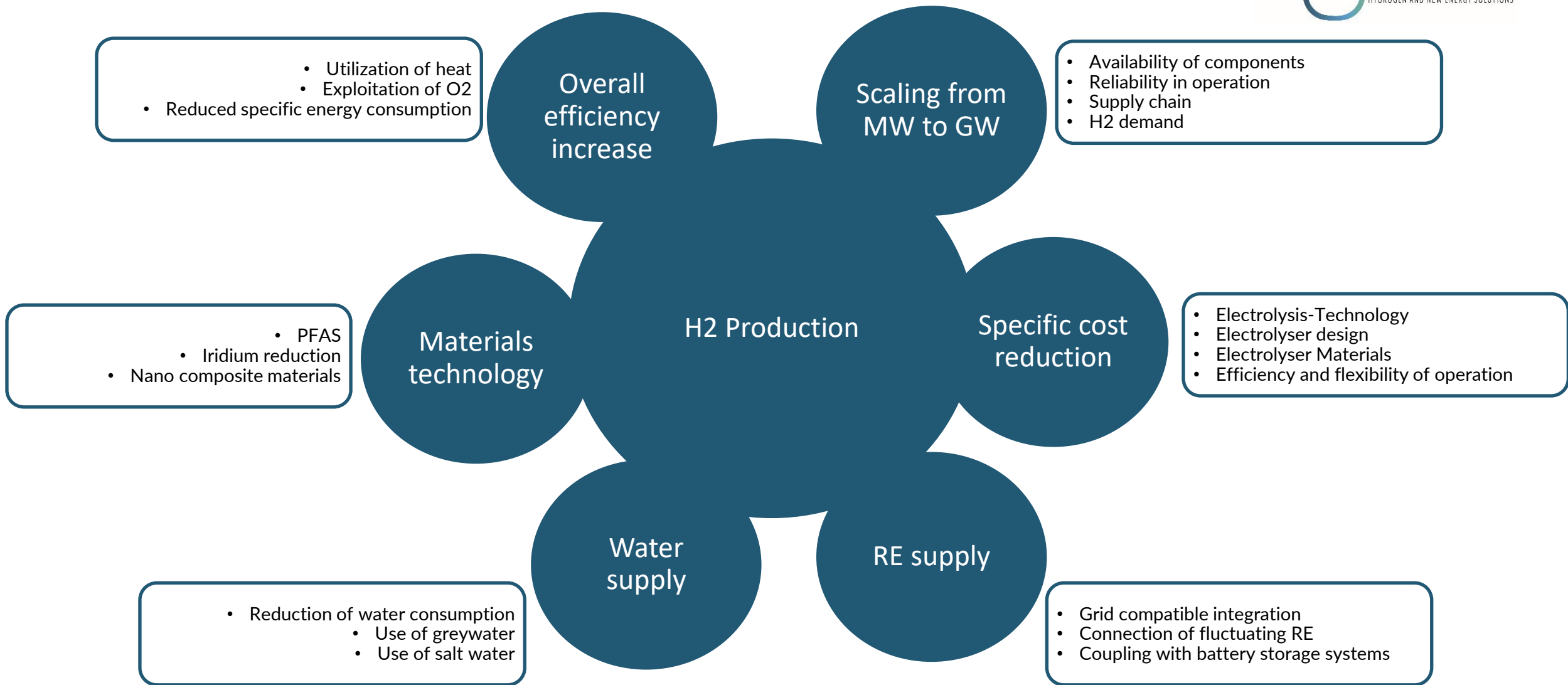


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Hydrogen transport

Existing and announced port infrastructure projects for hydrogen and hydrogen-based fuels trading

