

S3 Hydrogen Valleys

Industriell modernisering

How does interregional cooperation contribute to growth and development in our regions?

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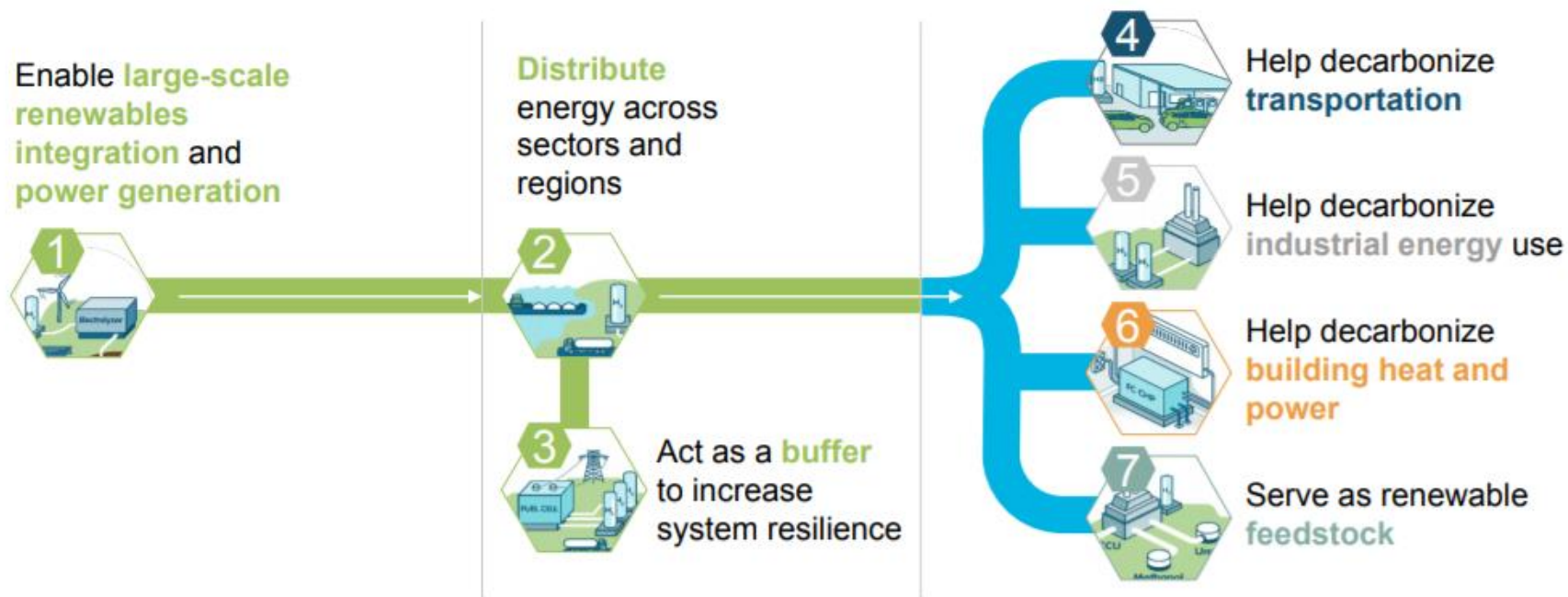


Gävleborg's S3 priorities



Why is Hydrogen of interest for Gävleborg?

Enable the renewable energy system → Decarbonize end uses



Hydrogen: Low Carbon Society enabler

- 3 of our 5 Smart Specialisation areas have challenges & opportunities relating to low emissions & energy
- Hydrogen is a zero emission energy vector: it can serve industry, mobility and other stationary applications.
- Produced typically from green electricity and water (electrolysis)
- Can be combusted or produce electricity via a fuel cell: releasing water.
- Many applications and innovations across the region: matching the initiatives of the S3 Platform.

S3 Hydrogen Valleys

'To achieve the decarbonization of the EU economy, FCH technologies are a promising solution which need to be further deployed'

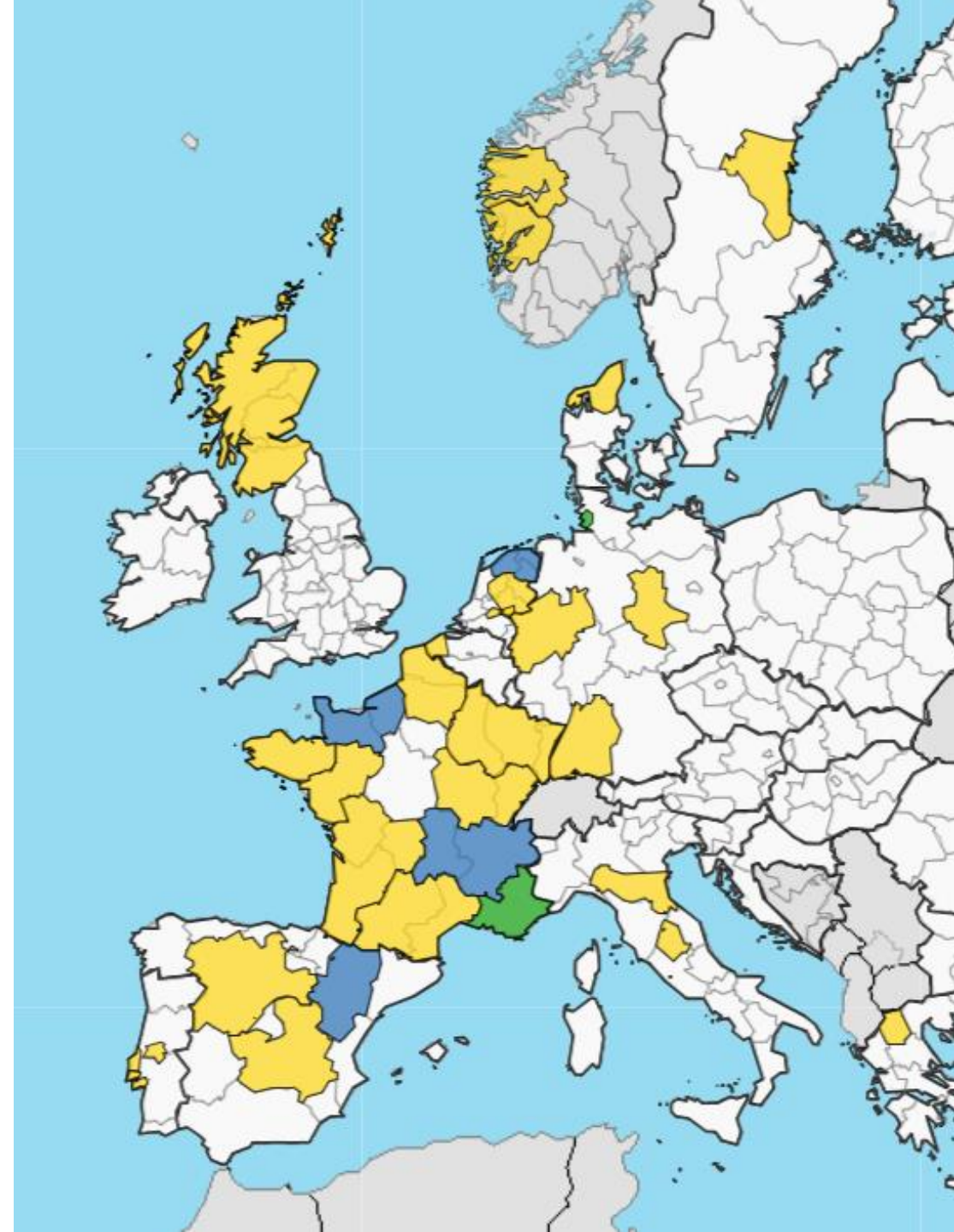
The key objectives of the partnership are:

- Develop the technological readiness and the commercial availability of FCH applications
- Overcome the lack of access to information and expertise in the field hydrogen
- Facilitate match-making and co-investment between European regions
- Strengthen the value chain for FCH technologies via interregional cooperation
- Contribute to the decarbonization of the EU's economy
- Green the production of hydrogen
- Be an active stakeholder on EU policy making on hydrogen



Member regions

S3 platform Hydrogen Valleys



Gävleborgs membership

- Gävleborg joined S3 Hydrogen Valleys June 2019:
 - Industrial modernisation & industrial transition pilot
- Smart specialisation areas:
 - Materials Technology & Sustainable Production: production, mobility,
 - Bioeconomy: production, mobility
 - Sustainable Cities & Communities: mobility, valleys & islands, heating
- Work in collaboration with Sandbacka Science Park (Regional Node for Material Technology & Sustainable Production)
- Gävleborg is a member of the Hydrogen Valleys & Islands Working Group- focusing on integration of hydrogen as an energy vector across multiple sectors



H2 Production

Decarbonising H2 production. E.g.:

- Power-to-H2 based on electrolysis (RES), production of green H2 from wind, solar, hydropower and all renewable energy sources ;
- Renewable-H2 generation plants, electrolyzers;
- Bio-H2 from biomass and blue hydrogen production, steam methane reforming (combined with CCU and/or CCS).



H2 Transportation, Storage and Conversion

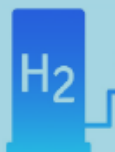
Integrating renewable energies into the energy systems on a large scale. H2 as at-scale technology for “sector coupling”, allowing to convert generated power into a usable form, to store it, and to channel it to end use sectors to meet demand.



H2 Mobility

Developing and deploying FCH applications in the mobility sector to reduce the environmental impact of mobility:

- Heavy-duty transport
- Trains and maritime/port applications
- Light vehicles,
- Aviation
- Infrastructure (e.g. refuelling stations)
- Fuel cells technologies for transport applications



H2 for industrial use and heating and cooling

Greening the industrial production processes to reduce their GHGs emission, fostering industrial innovation and development and reducing the environmental impacts of heating and cooling production (e.g. replace natural gas for process heat in combination with CCU/CCS, replace grey H2 as industry feedstock in different sectors, FCH-based combined heat and power (CHP) technology, heat and power to commercial/residential buildings)



H2 valleys/islands

Setting up geographical areas (e.g. city, region, island, industrial cluster etc.) where several H2 applications are combined together into an integrated H2 ecosystem



Next Steps

- Building the working groups
- Mapping the potential projects
- Establishing partnerships and project proposals
- Presentation in February 2020 Paris
- Developing financing and next steps

Key success factors

- H2 has potential for significant regional development opportunities.
- S3 membership has shown our commitment.
- Success is dependent upon a supportive policy context at all levels.





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