

**HOW TO DEVELOP REGIONAL MARKETS FOR HYDROGEN
STEPWISE?
THE ROLE OF BUSINESSES AND THE ROLE OF THE PUBLIC
SECTOR**

2023 Nordic-Baltic Energy Conference
Nordic Council of Ministers' Office in Estonia

Tallinn, December 11-12, 2023

A leading platform for the transition to fossil-free energy

Hydrogen Sweden is represented by over 170 Swedish companies and organizations from the entire hydrogen value chain. Together, we push the role of hydrogen in the energy and climate transition.



Pawel Seremak
Head of Projects

DISCOVER OUR NETWORK →



WHY HYDROGEN

GAME CHANGER IN DECARBONISATION - WIDE USE AS ENERGY CARRIER & STORAGE, FUEL AND INDUSTRIAL FEEDSTOCK



ENERGY



AGRICULTURE



INDUSTRY



TRANSPORTS

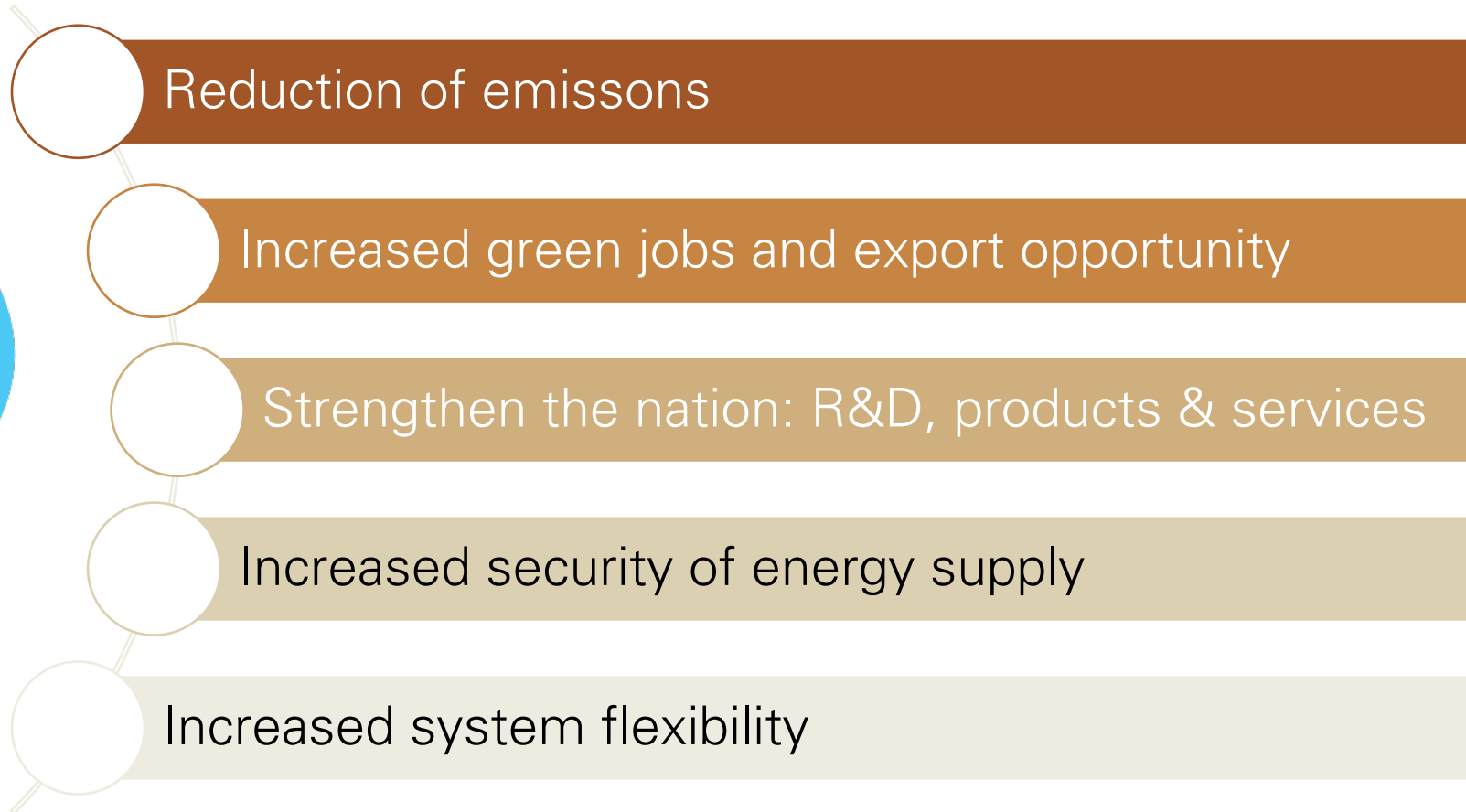


REAL ESTATE

- RePowerEU green hydrogen goal 2030: 10 MT production + 10 MT import
- Great systemic potential, Oxygen and Residual heat
- 100+ years of industrial scale experience, however fossil-based
- New green jobs, Energy security, Technology self-reliance

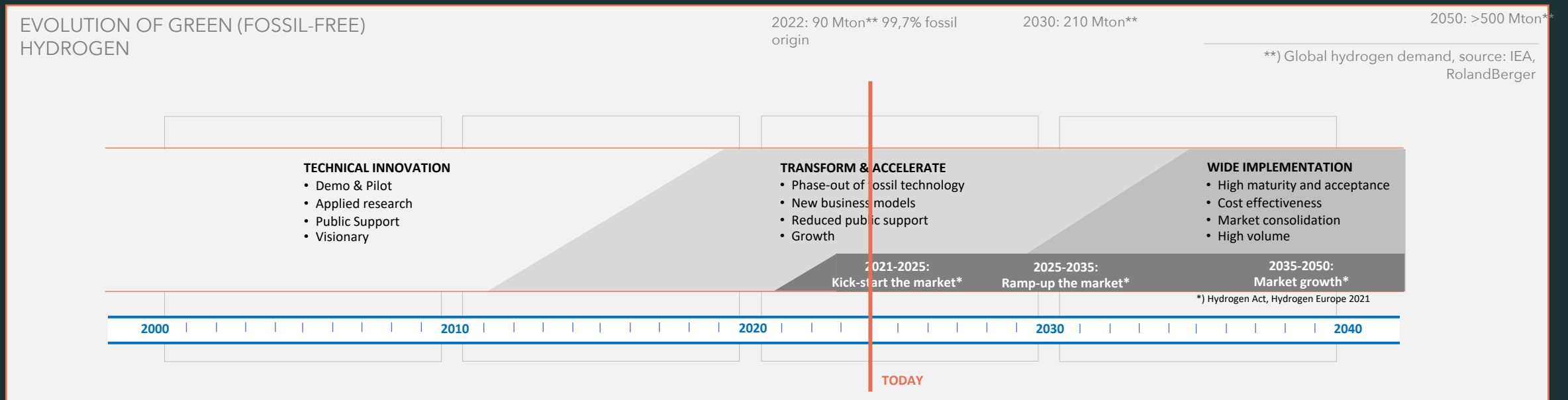
HYDROGEN'S POTENTIAL

EU 2030:
13 million households use
hydrogen
1 million new jobs created



FUTURE IS CREATED FROM OUR ACTIONS TODAY

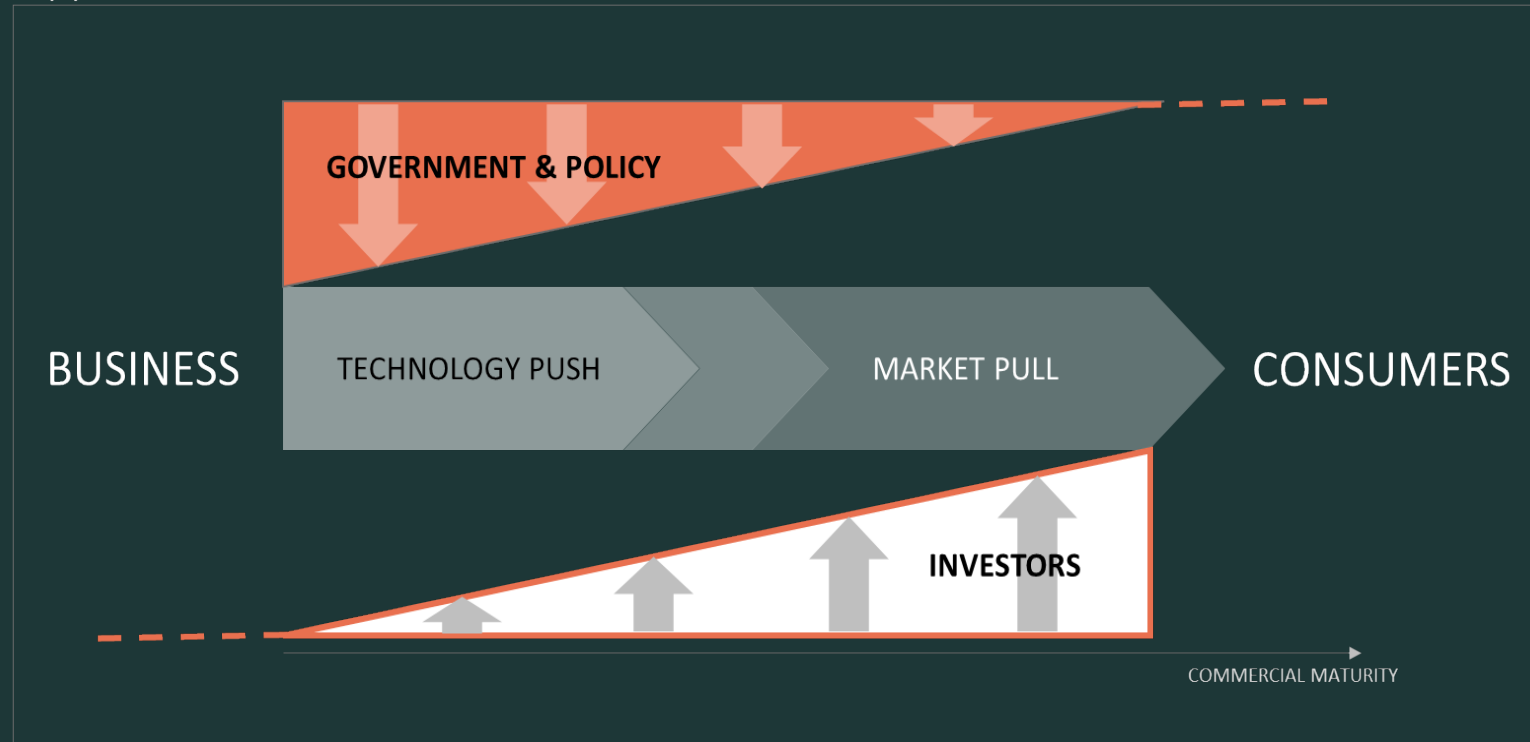
As hydrogen and fuel cells replace fossil fuels and traditional combustion technology, a new industry is emerging. This means demand for new skills, new components, new systems and new market solutions. The possibilities for regional development and new business opportunities are great. Early adopters' initiatives increase their chance for becoming a strong player in the future.



ROLES IN INNOVATION CHAIN

INTERPLAY OF MARKET PLAYERS IN BRINGING A TECHNOLOGY FROM NICHE TO SCALE

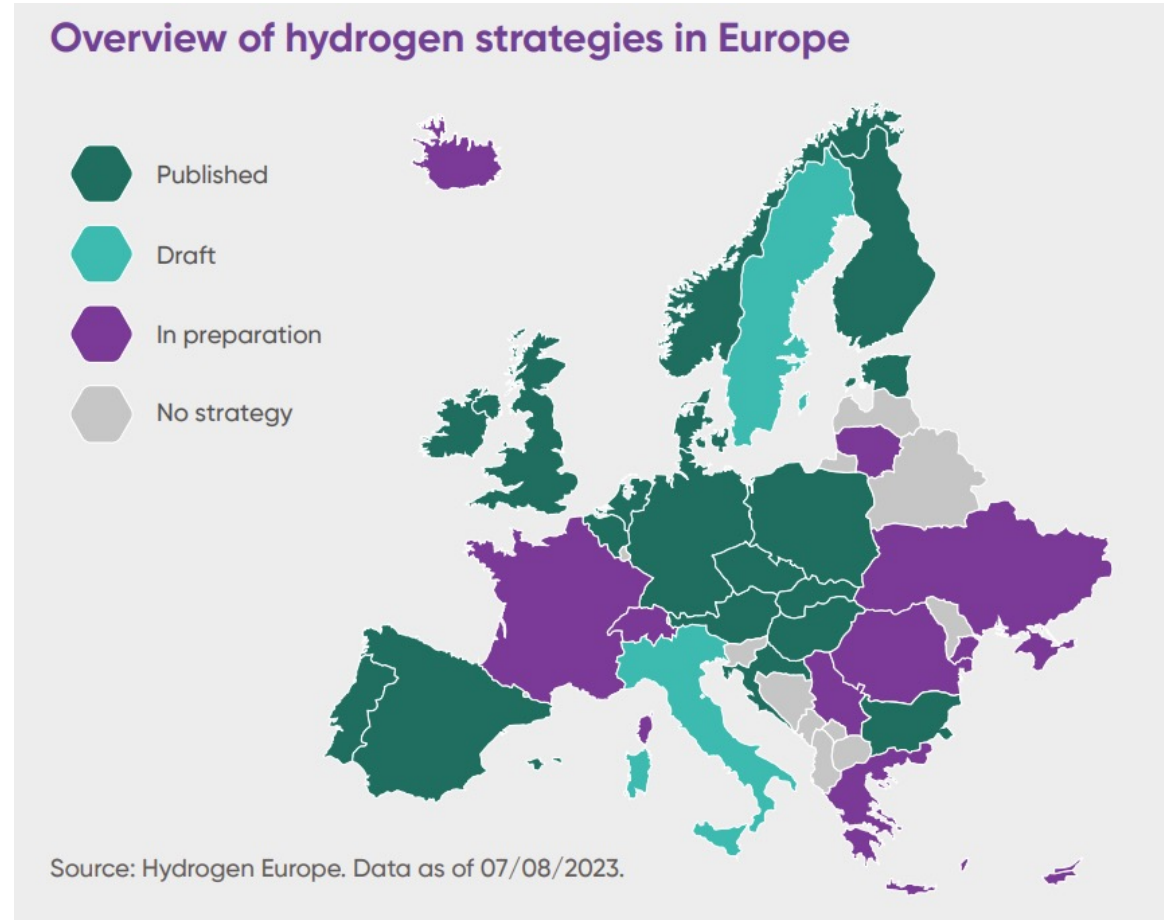
Many green hydrogen applications are still in Technology Push phase requiring suitable public support



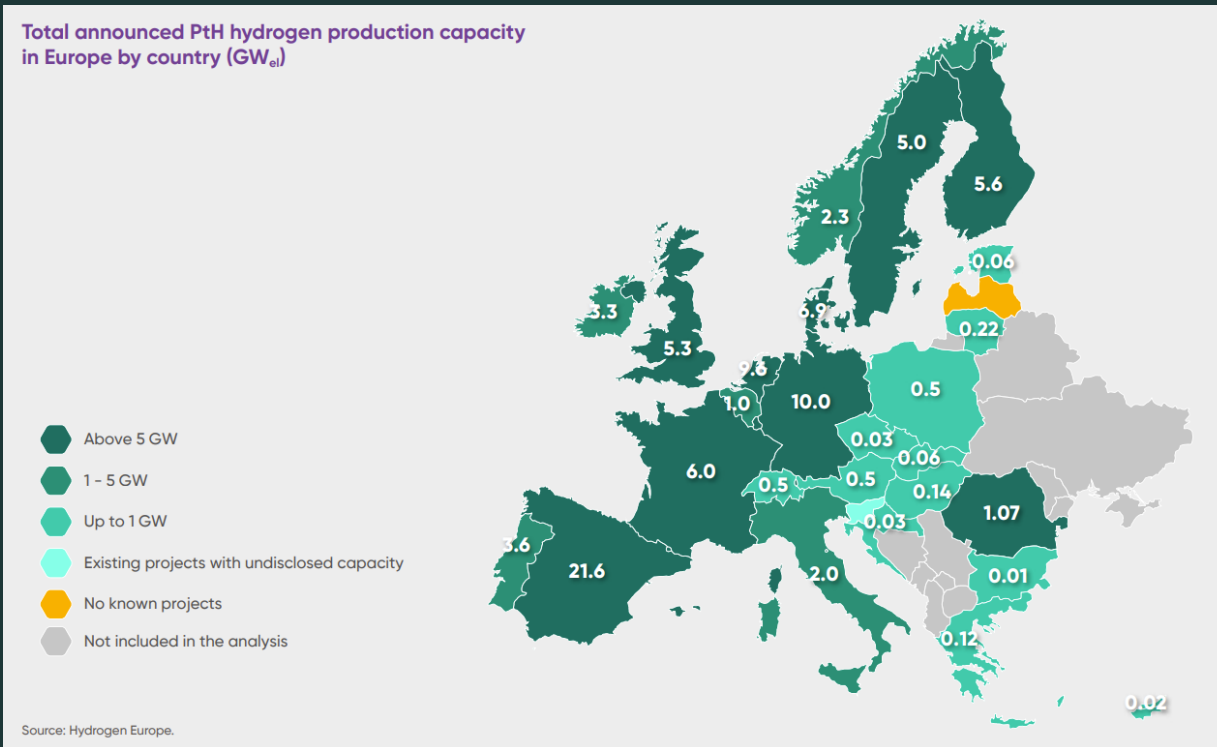
Source: P.Ekins, Hydrogen Energy: Economic and Social Challenges

HYDROGEN STRATEGIES IN EUROPE

- 20 countries with national hydrogen strategies or roadmaps.
- Since September 2022, four new strategies have been adopted: Bulgaria, Estonia, Finland, and Ireland.
- By the end of 2023, four additional strategies are expected: those of Lithuania, Cyprus, Romania, and Greece.
- Belgium, the United Kingdom and most recently, Germany have updated their strategies.
- France is preparing its strategy update planned to be published in December 2023.



PtH HYDROGEN PRODUCTION CAPACITY



The number of announced PtH projects planning to be operational in Europe by 2030 increased by 30% since 2022.

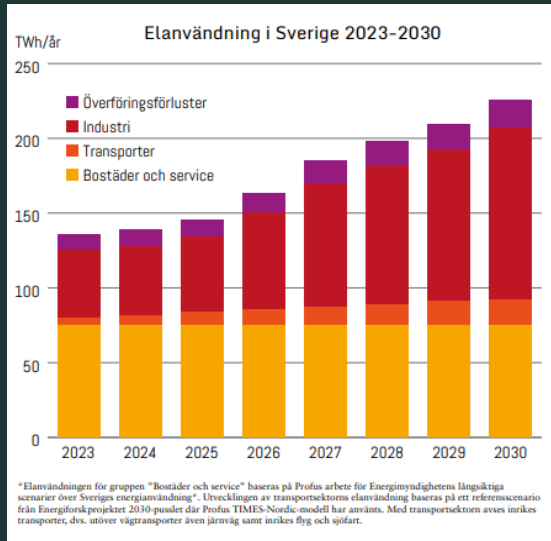
In the same period the number of delayed projects increased by some 25%

Main reasons for delays:

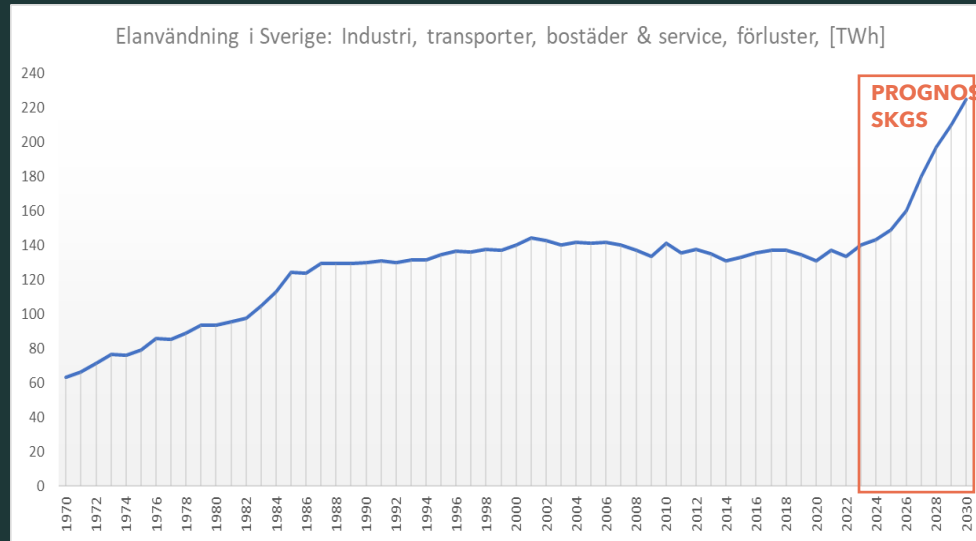
- Regulatory uncertainty
- Limited access to funding
- Lack of offtakers
- Disturbed delivery of components
- Uncertainty of certification

ENERGY PRODUCTION NEEDS

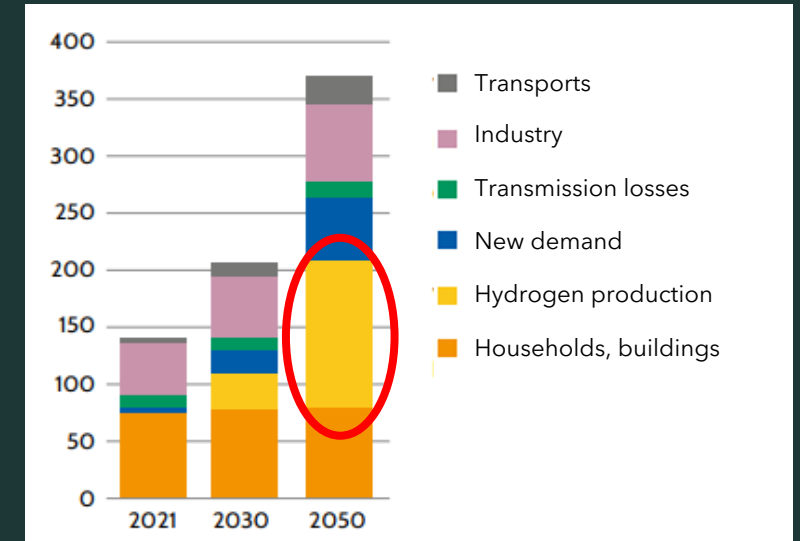
PHASING OUT FOSSIL ENERGY IN SWEDEN IMPLIES 65% MORE GREEN ELECTRICITY BY 2030



Source: SKGS, 2023



Source: SCB, Energimyndigheten och SKGS



Source: Swedish Wind Association

- The electricity demand in Sweden is expected to total 370 TWh by 2050
- By then, hydrogen production is expected to require approximately 130 TWh per year
- Considerable increase in electricity use can take place as early as 2030, as it is expected to increase to 207 TWh

UNLOCKING THE POTENTIAL: HYDROGEN VALLEYS

CREATING LOCAL AND REGIONAL GREEN HYDROGEN ECOSYSTEMS

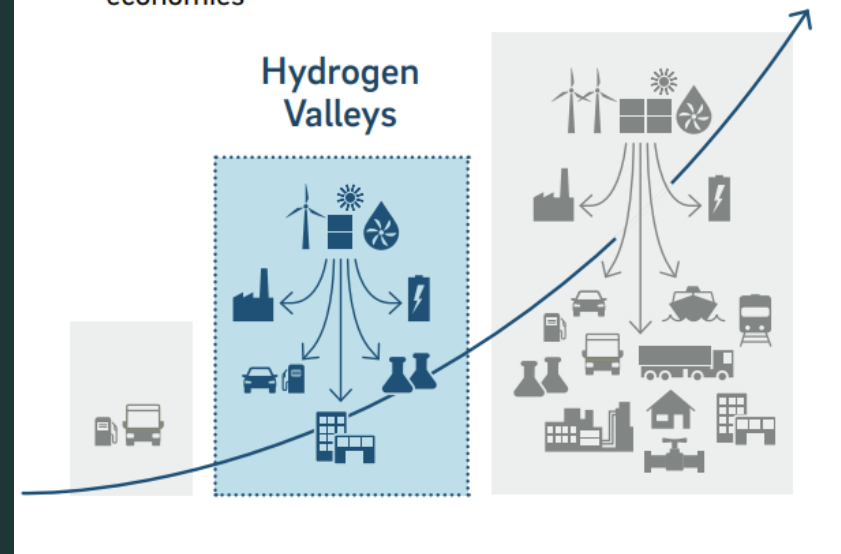
Hydrogen Valley definition criteria:

- Supply of more than one sector
- Large-scale
- High value chain coverage
- Geographically defined scope
- Suitable project feasibility

60 Hydrogen Valley projects are currently under development in Europe

THE AMBITION

- Next-generation market development
- Integrated (and larger-scale) projects covering more and more of the value chain – "mini hydrogen economies"



Source: Clean Hydrogen JU, RolandBerger

BALTIC SEA REGION HYDROGEN COUNCIL

COLLABORATIVE EFFORT INVOLVING PARTNERS IN BALTIC SEA REGION COUNTRIES AND UKRAINE

Field Workshops with industry experts, strategists and business developers

Meetings in Baltic Sea Region Hydrogen Council

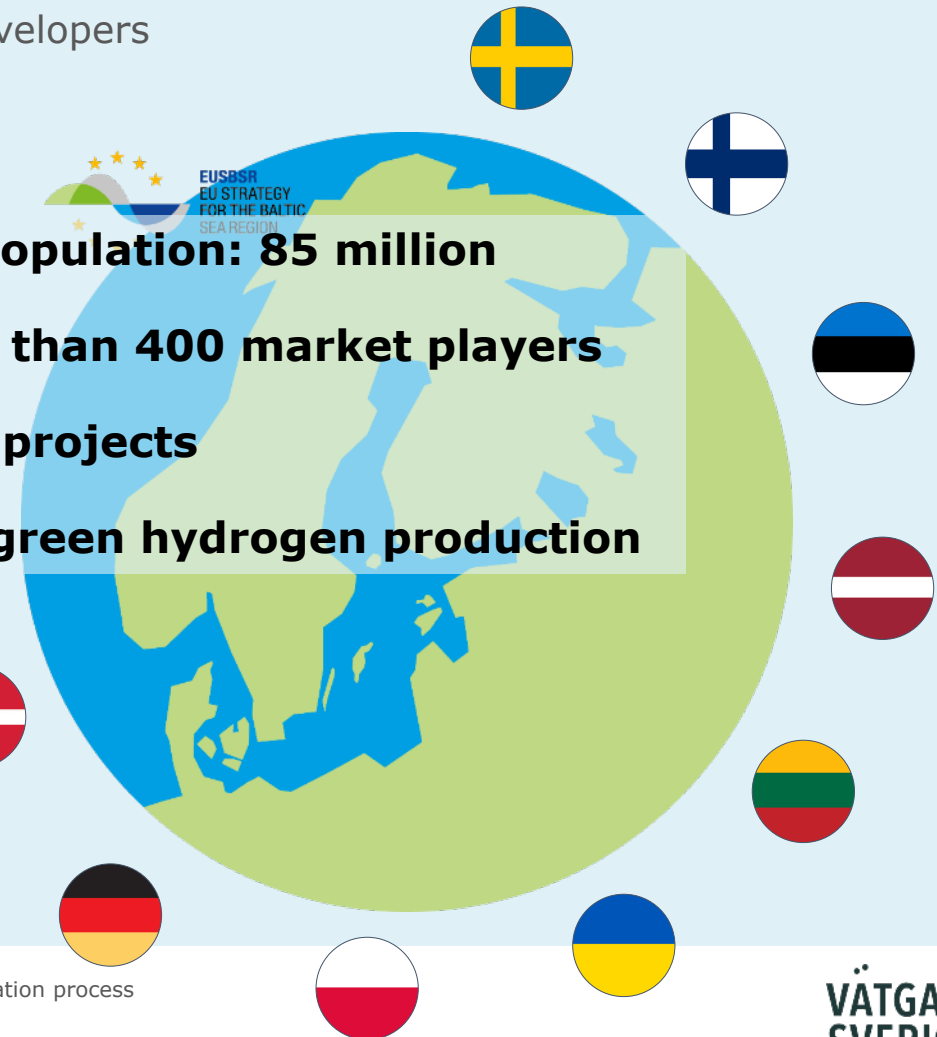


Baltic Sea Region population: 85 million

Representing more than 400 market players

More than 100 PtH projects

2030: over 1,7 MT green hydrogen production



Germany:
Ongoing confirmation process



Funded by
SI. Swedish Institute

VÄTGAS SVERIGE

SECURING GROWTH OF GREEN HYDROGEN MARKET

TRANSITION IN PROGRESS

Safeguard sufficient production of clean energy in the region

Stimulate development of competence, all levels

Facilitate efficient permitting processes

Support initial access to market by public procurement procedures

Assist in de-risking new investments by strategic financial aid

Contribute to suitable legal development by deployment of regulatory sandboxes

Actively search for best practice and foster collaboration



THANK YOU!

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**VÄTGAS
SVERIGE**