

BotH₂nia

The Hydrogen Bay of the North

P2X - Green Hydrogen from Wind Power

by AHK, German-Finnish Chamber of Commerce

May 9 2023, Helsinki

Life is local

Hydrogen actors in Finland and Sweden

- RISE / Swedish Hydrogen Development Center
- LTU / CH2ESS
- Invest in Norrbotten
- Vätgas Sverige
- Svenska Kraftnät
- Nordion Energi
- Regional hydrogen projects becoming hydrogen valleys
- Big Companies
- Start-ups
- Business Sweden

- Finnish hydrogen cluster
- Hydrogen Research Forum Finland
- Suomen Vetylaakso ry
- CLC's P2X committee
- Fingrid
- Gasgrid Finland
- Regional hydrogen projects becoming hydrogen valleys
- Big companies
- Start-ups
- Business Finland

**Wind and sun are major parts of the
green hydrogen value chain**

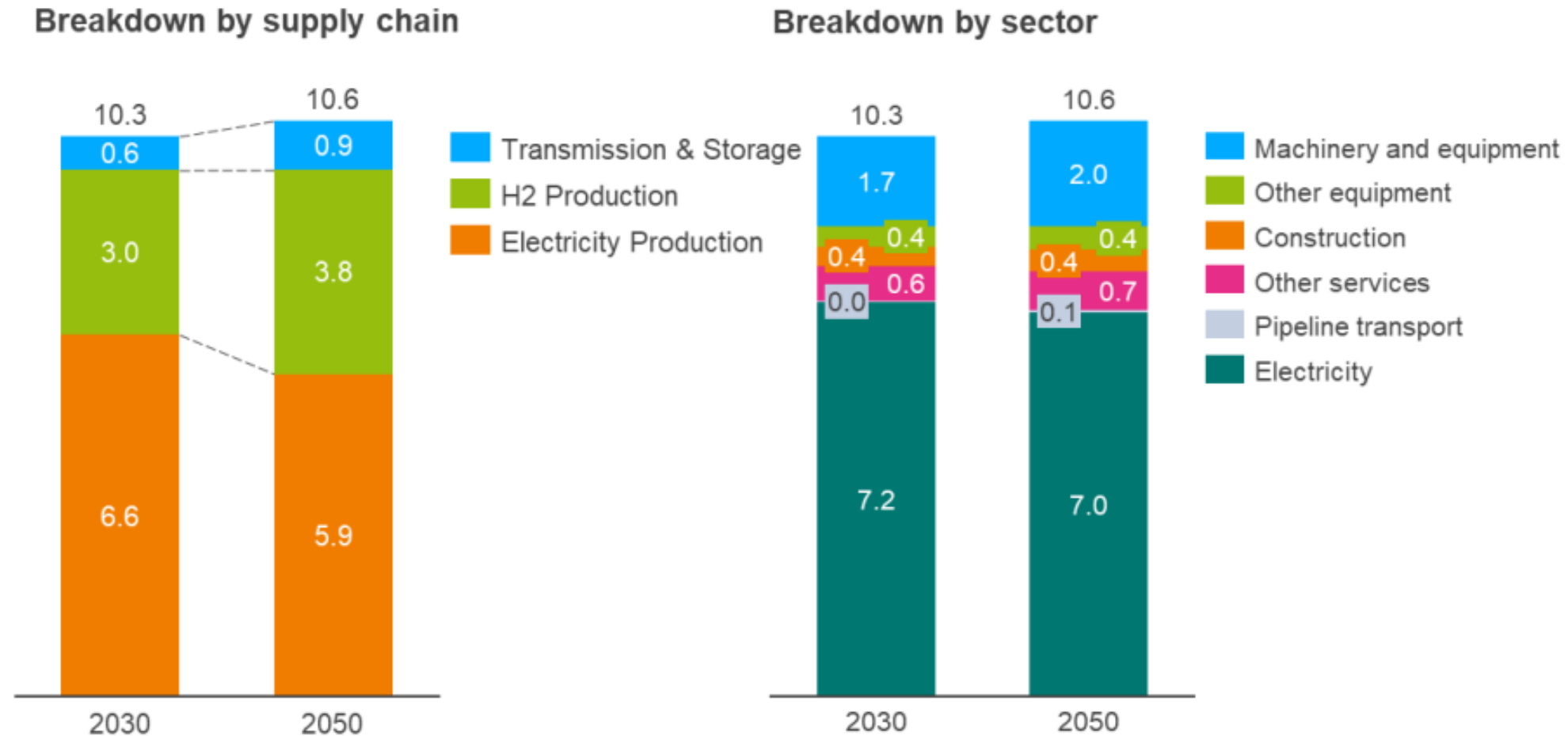
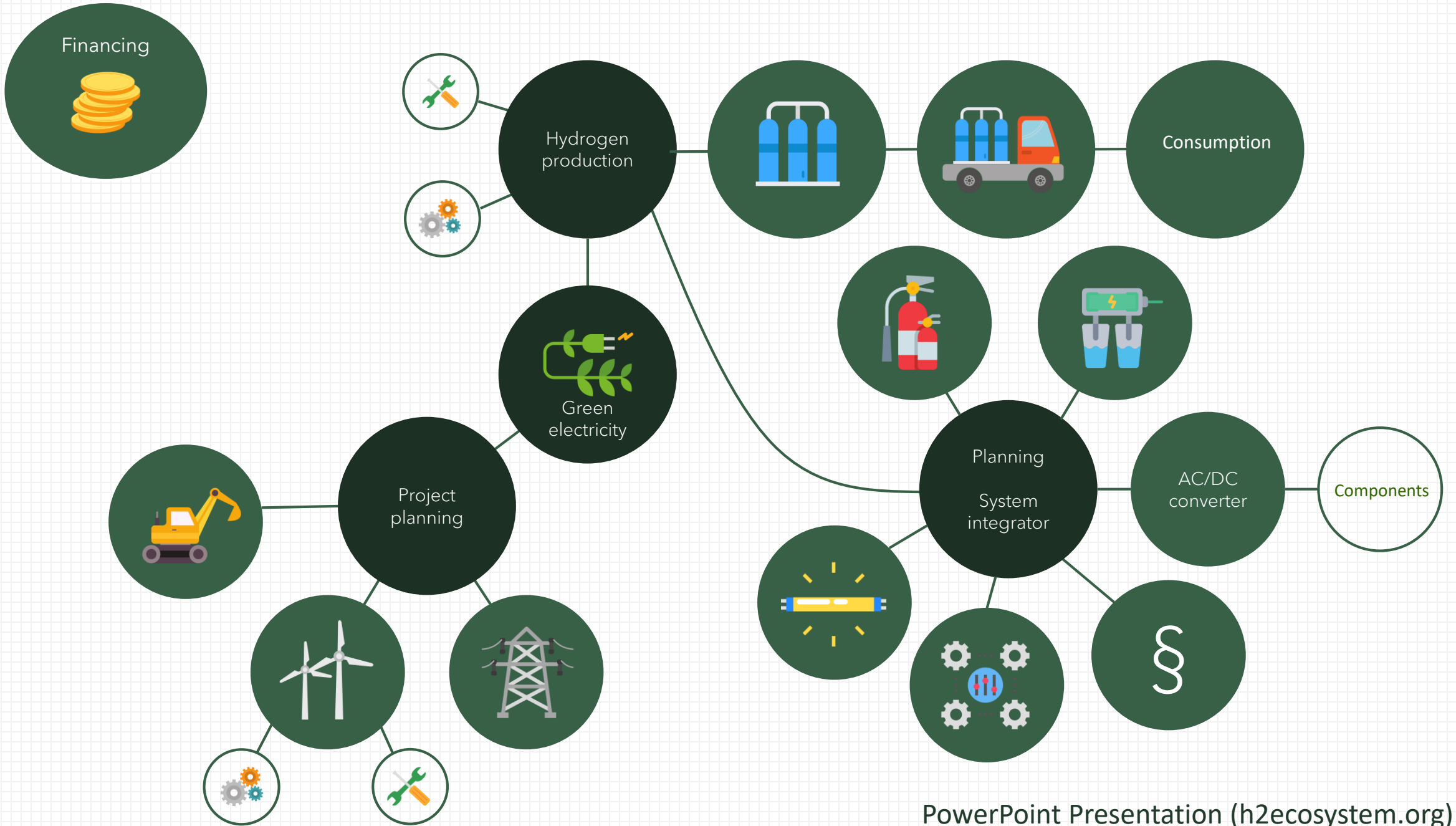


Figure 2-5: Number of jobs (000's) created per billion EUR invested, breakdown by supply chain and by sector

Source: [European Commission, Hydrogen generation in Europe: Overview of key costs and benefits.](#)



Local benefits of wind

- Municipalities, regions and local SME's benefit less than anticipated when building wind power
 - *"In the current situation, at best less than 6% of the total investment generated during construction remains in the municipality where the wind power project is located and less than 10% in the region and the rest of Finland."* p. 64, [Pohjois-Pohjanmaan tuulivoimaosaamisen kehittäminen](#)
- The share of local benefits is higher in places with construction and operational services, such as maintenance.
- Local benefits would also be increased by co-ownership of wind farms, as in Germany, for example

Pohjois-Pohjanmaan tuulivoimaosaamisen kehittäminen -selvitys

Hankkeen loppuraportti

Käännekohta t & k Oy

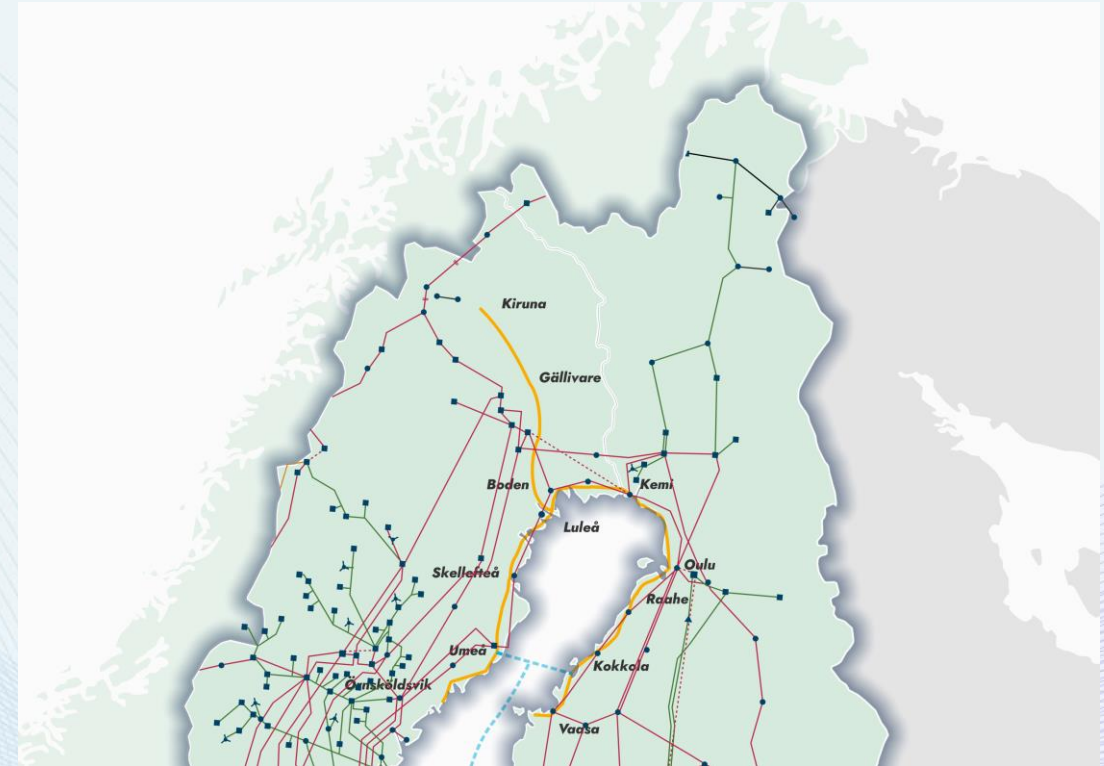


**Hydrogen economies know no
country borders**

Hydrogen economies emerge around pipelines

Published plans along Nordic Hydrogen Route:

- **Vaasa**, EPV Energia, hydrogen, investment value €35 million
- **Mustasaari**, Westenergy, hydrogen and methane, value €90 million
- **Kokkola**, Flexens, hydrogen and ammonia, value €500 million
- **Raahe**, SSAB, steel made from Gällivare-produced sponge iron, value 2000 million euro
- **Luleå**, HYBRIT/SSAB, steel made from Gällivare-produced sponge iron, value 2000 million euro
- **Luleå**, HYBRIT, underground hydrogen storage for 100 000 - 120 000 cubic metres of compressed hydrogen
- **Luleå**, Fertiberia, hydrogen and its ammonia, value €1000 million
- **Boden**, H2 Green Steel, hydrogen steel, 5 million tonnes per year
- **Gällivare**, HYBRIT/LKAB, iron ore to sponge iron using hydrogen
- **Örnsköldsvik**, FlagshipONE, Hydrogen to methanol, capacity 50 000 tonnes of methanol per year



Source:

[Map with electricity grid overlay withBlueLine.png](https://www.nordichydrogenroute.com/Map_with_electricity_grid_overlay_withBlueLine.png)
(4998x3535) (nordichydrogenroute.com)

EKONOMI

Bottenviken planeras bli världens största vätgasvik

Publicerad 2023-01-25

Foto: Luleå University of Technology

Examples of action points identified by [BotH2nia Goes Luleå –event](#) in Jan 2023

- Support to SME cooperation so that a common Nordic offer and cross-border value chains can be built
- Cross-border collaboration between educational institutions to diversify the supply of training



Ready to learn about hydrogen and green energy?

On this page, we have compiled hydrogen and green energy related trainings and courses in Finland and Sweden.

[Source: training calendar \(both2nia.com\)](https://both2nia.com)



Vetyteknologian ABC

Koulutuksesta saat kattavan kokonaiskäsityksen vetytalouden



Vetytalouskoulutusta työelämän tarpeisiin – Talous



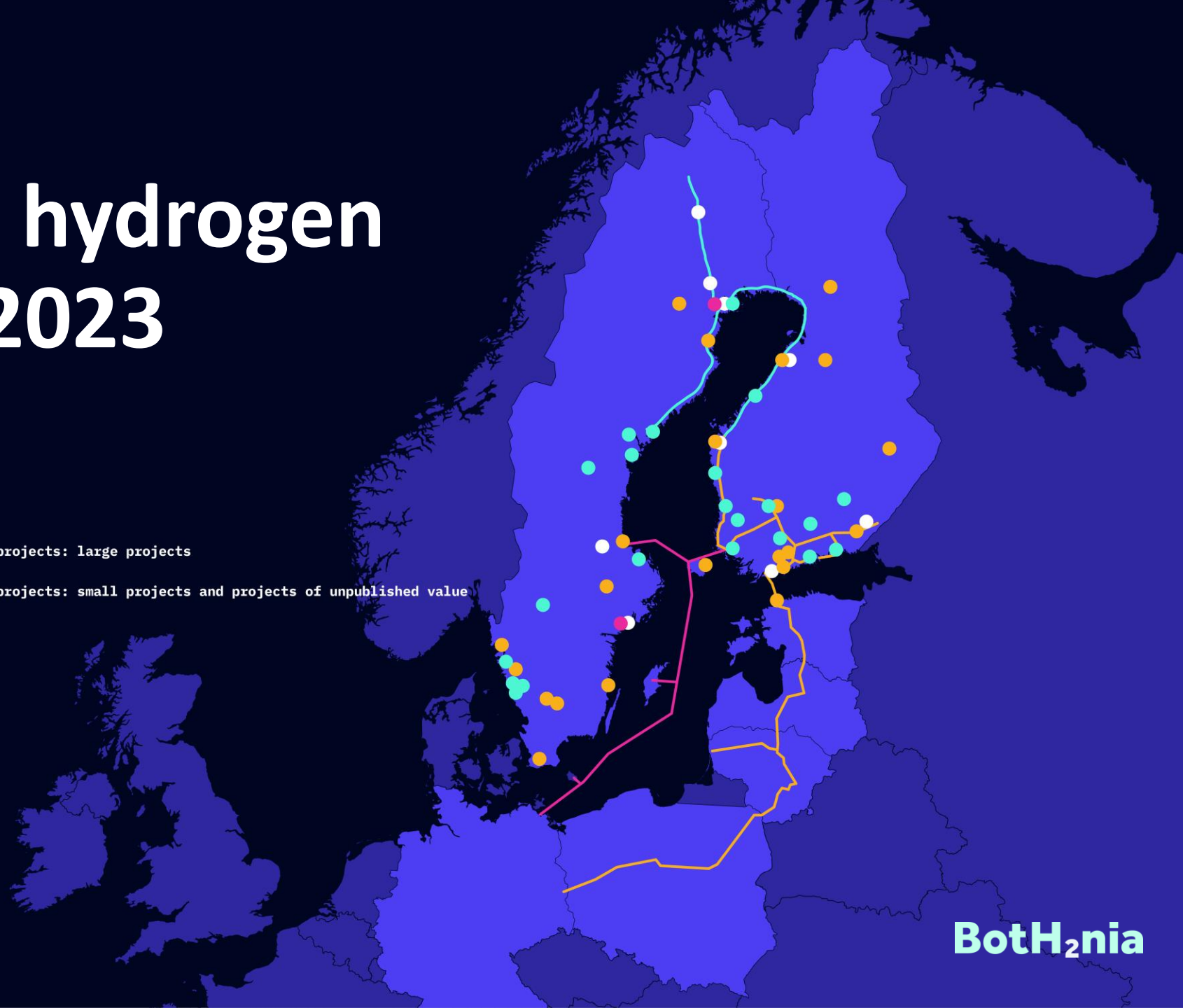
Hydrogen in heavy transports



**Intra and cross-country regions
can be upgraded to European
level by communications**

Announced hydrogen projects 2/2023

- Announced hydrogen and synthetic fuels production projects: large projects
- Announced hydrogen and synthetic fuels production projects: small projects and projects of unpublished value
- Hydrogen steel production projects
- Infrastructure projects
- Baltic Sea Hydrogen Collector (BHC)
- Nordic-Baltic Hydrogen Corridor (NBHC)
- Nordic Hydrogen Route (NHR)

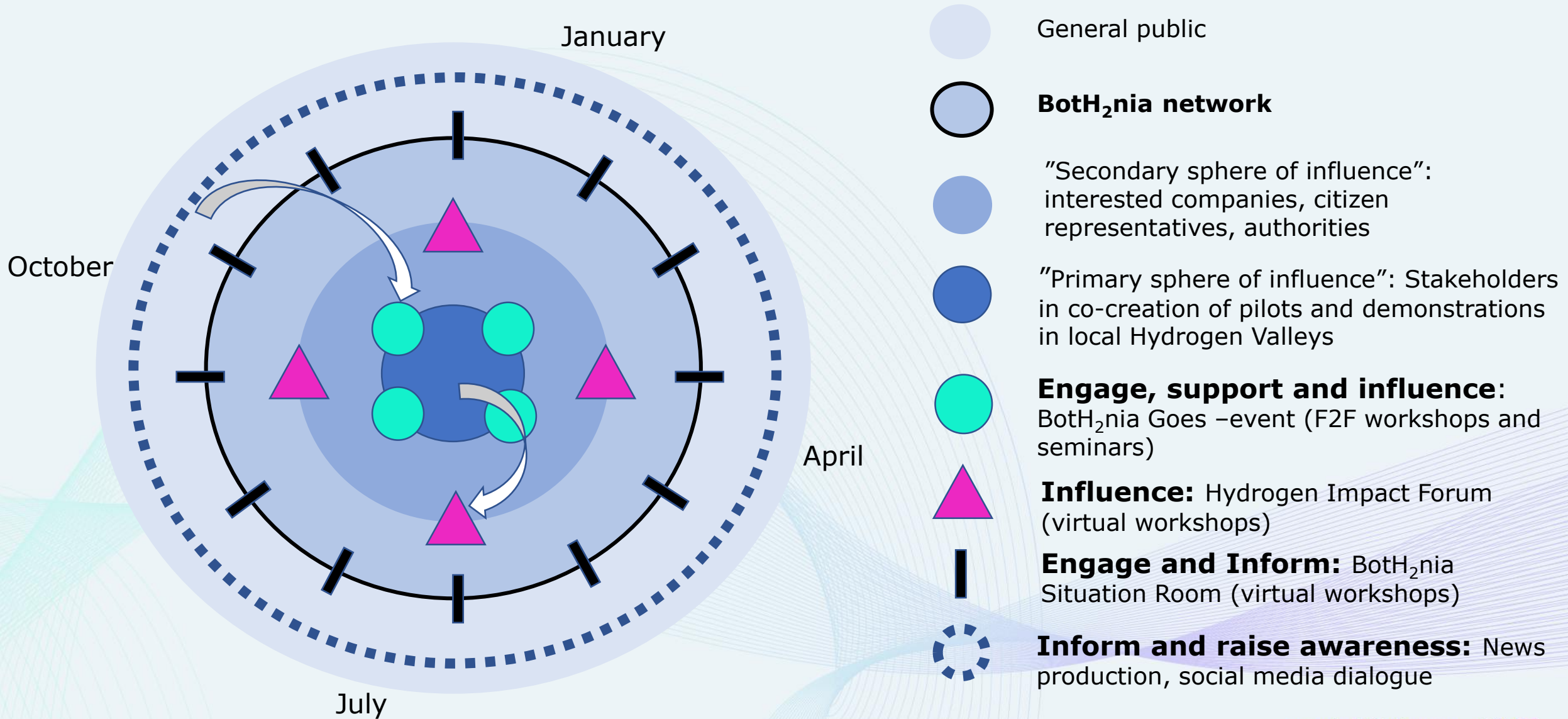


BothH₂nia

**Cross-border communications for bridging
the emerging hydrogen economies
in the Baltic Sea area and Central Europe**

BothH₂nia Communication Annual Plan

BothH₂nia



BothH₂nia supports connecting the Hydrogen Bay of the North to Central Europe

In 2030

30% of domestic H₂ produced in EU

could come from

Finland, Sweden and the Baltic states



STOCKHOLM

HELSINKI

TALLINN

BothH₂nia

Cross-border value chains and energy trade will connect Germany to the North-Eastern corner of Europe

For instance, German investors are already building a plant in Kristiinankaupunki, Finland to produce synthetic fuels for the German transport market.

For Kristiinankaupunki, this means jobs and tax revenue, and, for nearby sources of carbon dioxide, this means transforming emissions to money.























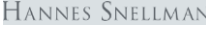



































Source: [Germany's new decisions boost Finland's energy exports again \(both2nia.com\)](https://www.both2nia.com)



Both₂nia Network – public actors

 Åbo Akademi	 BUSINESS FINLAND	 OULU BUSINESSOULU	 EDUCATION CENTRE BRAHE	 cursor	 DIGIPOLIS	 Energiforsk	 Estonian Association of Hydrogen Technologies
 GREEN INDUSTRY PARK	 HANKEN	 KAMK - University of Applied Sciences	 KEHY BUSINESS IMATRA REGION	 Kristiinankaupungin elinkeinokeskus OY	 Kauhajoki	 Kokkola Karleby	 KVARKENRÅDET MERENKURKUN NEUVOSTO
 LAB University of Applied Sciences	 LAPIN AMK Lapland University of Applied Sciences	 LAPPEENRANTA	 LULEÅ UNIVERSITY OF TECHNOLOGY	 LUT University	 MERINOVA TECHNOLOGY CENTRE	 MICRO POLIS	 OAMK
 OULU	 OULUN YLIOPISTO	 PIRKANMAA	 POHJANMAAN KAUPPAKAMARI	 POHJOIS-POHJANMAA COUNCIL OF OULU REGION	 Prizztech	 PYHÄJOKI	 RAAHE
 RAAHEN SEUDUN KEHTYS	 RISE Research Institutes of Sweden	 SIIKAJOKI	 Tampere University Tampere University of Applied Sciences	 TURKU BUSINESS REGION	 TURKU AMK	 TURUN YLIOPISTO	 UTAJÄRVEN YRITYSPUISTO OY
 Vaasan yliopisto UNIVERSITY OF VAASA	 VAMK VAASAN AMMATTIKORKEAKOULU UNIVERSITY OF APPLIED SCIENCES	 VASEK	 VTT	The Both ₂ nia network aims to build a robust hydrogen industry around the Gulf of Bothnia and combine our resources to pursue this common goal.			

BothH₂nia Network – commercial actors

							
							
							
							
							
							
							
		The BothH ₂ nia network aims to build a robust hydrogen industry around the Gulf of Bothnia and combine our resources to pursue this common goal.					

See you soon again!

BotH₂nia



EVENT · EVENT · EVENT

BotH₂nia goes Helsinki

together with H2 Cluster Finland: Towards Sustainable Hydrogen Economy

1-2 June 2023

Vielen Dank!




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