

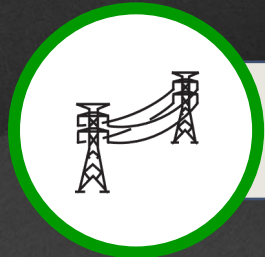


Challenges and opportunities for hydrogen transmission: Important factors for a successful market development

Vätgaskonferensen, 5-6 Dec 2023, Stockholm

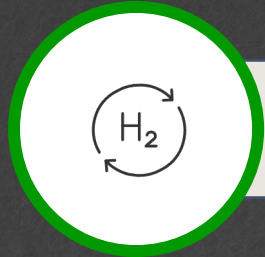
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Main **benefits** and **challenges** of a hydrogen transmission network



Transmission of hydrogen vs electricity from a systemic cost perspective

Uncertainty of volumes and parties connecting to the H2 pipeline over time



Enabling a hydrogen market with competitive prices and possibility of selecting supplier

Large infrastructure projects require large up-front investments



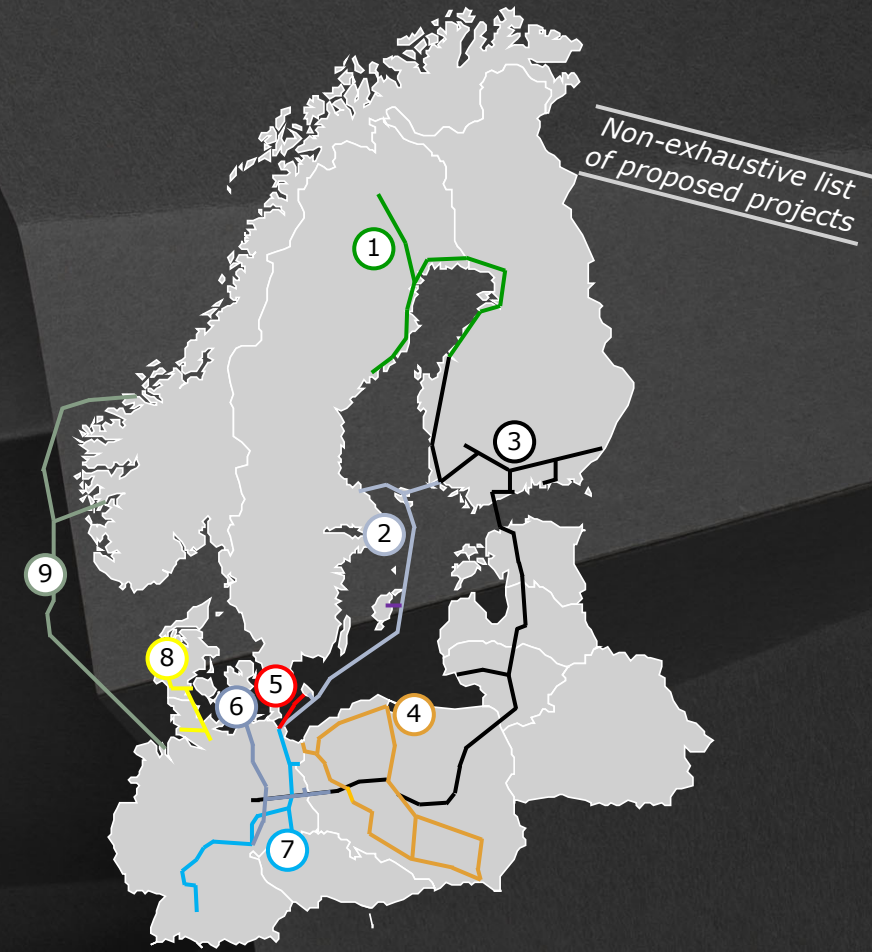
Linepack and potential storage in the transmission system enable balancing between supply and demand

Risks of under- or oversizing and misplaced or costly routing



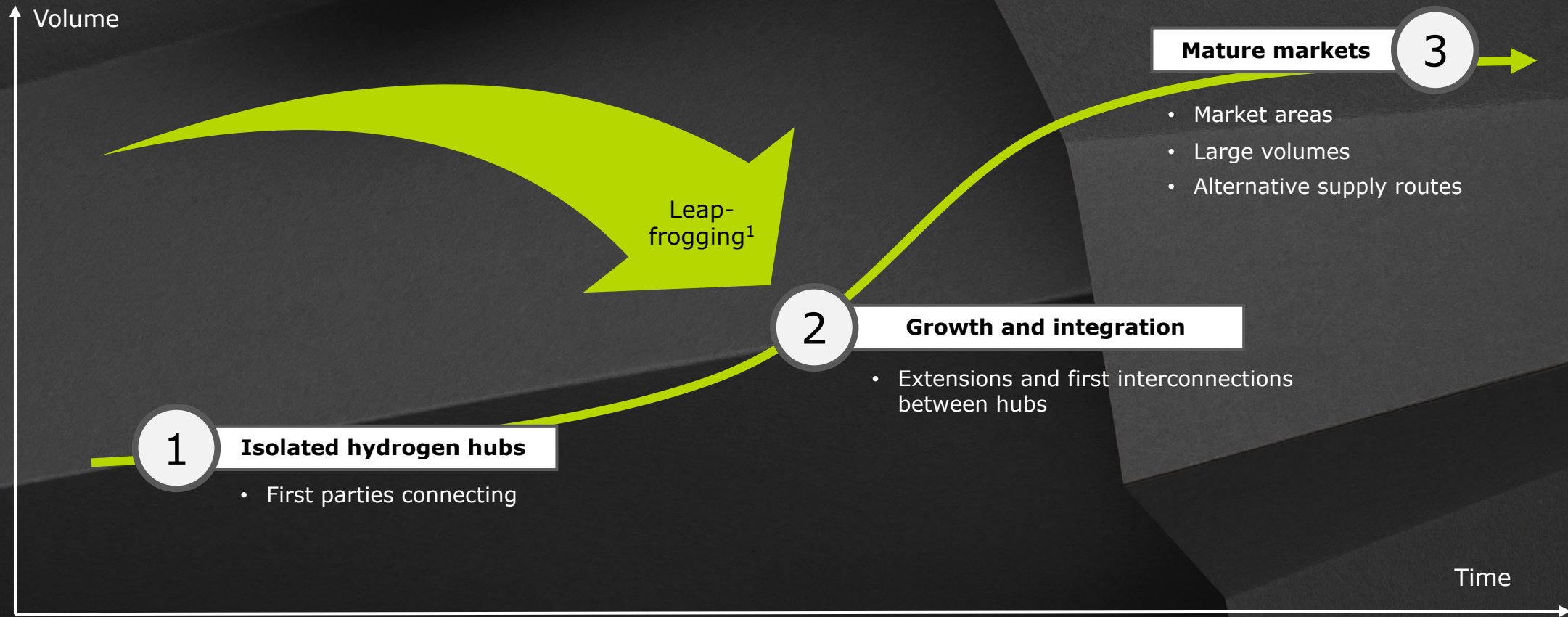
Several proposed hydrogen transmission projects have recently acquired PCI/PMI-status from the European Commission


Project	Countries concerned	Expected Commissioning	PCI-status
1 Nordic Hydrogen Route	 	2028	✓
2 Baltic Sea Hydrogen Collector	   	2030	✓
3 Nordic-Baltic Hydrogen Corridor	     	2030	✓
4 Polish Hydrogen Backbone	 	2029 (west), 2039 (east)	✗
5 Bornholm-Lubmin Interconnector	 	2027	✗
6 Doing Hydrogen		2029	✗
7 FLOW East		2025	✗
8 Danish Hydrogen Infrastructure	 	2028/2030	✓
9 CHE Pipeline	 	2030	✓



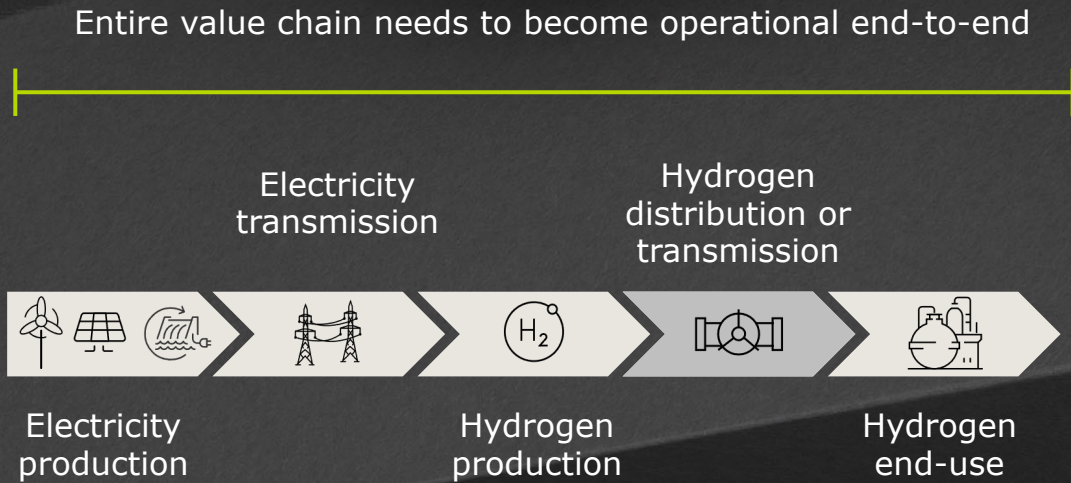
PCI – Project of Common Interest (linking two or more EU member states)
 PMI – Project of Mutual Interest (between EU and non-EU countries)

Life-cycle of hydrogen transmission development



1) For example  German government has backed an initial core hydrogen network by 2032 with government advance payments.

Accelerating the change



WHAT DOES THIS MEAN FOR TRANSMISSION?

- 1 Initial sizing and routing**
- 2 Prioritisation between projects**
- 3 Private vs. public roles as needed**
 - **Supporter, investor, lender, and/or guarantor**

Recommendations for successful market development



State should define its own role

- Make clear what the benefits and risks are
- Develop a national strategy for H2 transmission from the societal perspective
- Define incentives if and where necessary



Increase public acceptance/interest

- Public acceptance is important to accelerate permitting
- State hydrogen transmission strategy should be communicated to the public



Cost-benefit analysis

- Initial plans are subject to prioritization and revision over time
- Risks should be identified and accompanied by the appropriate risk mitigation measures

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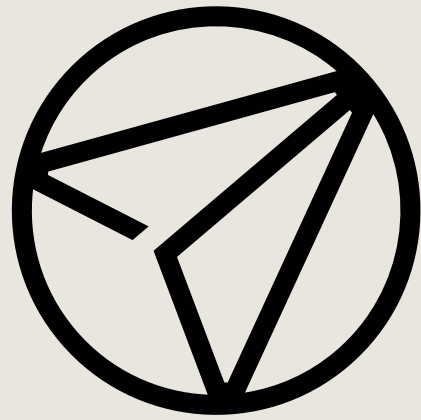


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