



International Partnership
for Hydrogen and Fuel Cells
in the Economy

Norway Update

35th IPHE Steering Committee Meeting

22 – 23 June 2021

Virtual Meeting

Announcements / New Initiatives *Norway*

New Investments/Funding/Policies/Initiatives:

- The Norwegian government's hydrogen roadmap was published 11 June 2021, in a Whitepaper to the Parliament titled "Putting Energy to Work – long-term value creation from Norwegian energy resources"
- The Norwegian Government allocates 200 million kroner (in the budget for 2021) to support development of technology, infrastructure and a commercial market for hydrogen.

New Research & Development, Demonstration and/or Deployment Activities:

- Establishment of a Centre for Environmentally-friendly Energy Research focusing on hydrogen and ammonia. Close, long-term cooperation between research, industry and the public sector, in broad cooperation with international players.

Key Collaborations:

- A cooperation with the purpose of coordinating relevant policy instruments for hydrogen in Norway has been established and named HEILO. The Norwegian Research Council, Enova, Gassnova and Innovation Norway takes part in this cooperation.

Examples of Lessons Learned and Impact *Norway*

Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
<p>The Norwegian government's hydrogen roadmap (June 2021)</p>	<p>Demand for hydrogen in the maritime sector is expected to be limited in the initial stages and modular, decentralized production of hydrogen from renewable energy through electrolysis is well suited.</p>
	<p>Demand for hydrogen for industrial use will be dependent on large production units and can therefore provide a basis for establishing production of hydrogen from natural gas with CCS.</p>
	<p>The establishment of hydrogen clusters in Norway will enable the distribution of hydrogen for different purposes in close proximity to these clusters.</p>



Norway – Profile June 2021

Status of Deployments

H2 production ≈ 220 kt H2/yr

Mainly industrial application (Refineries, ammonia production, methanol production)

Some application in the transport sector:

- 153 Passenger cars
- 5 busses
- 4 Heavy freight trucks
- 1 light commercial vehicle

Leading Government Initiatives

11th June: A hydrogen roadmap was presented as part of a White Paper to the Parliament titled "Putting Energy to Work – long-term value creation from Norwegian energy resources". This roadmap builds on the Norwegian hydrogen strategy and gives direction for the hydrogen development in the years to come and in a longer perspective.

Goals or Focus Areas

Vision of a well-established market for the production and use of hydrogen in Norway in 2050

Focus on maritime clusters, industrial projects and application in transport

Deployment Goals

By 2025: 5 maritime clusters / 1-2 industrial projects with associated production units / 5-10 pilot projects

Funding

Allocation of 200 million kroner in the budget for 2021

Thank you



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Announcements / New Initiatives *Norway*

The Norwegian government's hydrogen roadmap (June 2021)

The Norwegian Government has an ambition for 2025 to work together with the private sector in establishing:

2025

- Five maritime clusters for hydrogen, with the potential of tying these clusters to relevant solutions for land transport.
- One to two industrial projects with associated production units of hydrogen. The projects are supposed to demonstrate value-chains with a global potential.
- Five to ten pilot projects for development and demonstration of new and more cost-effective hydrogen solutions and technologies

The Norwegian Government has an ambition for 2030 that hydrogen as an energy carrier is well-established as a competitive alternative within the maritime sector, and increasingly so in heavy manufacturing / chemical industries. The first maritime projects that can be realized without public funding are under development. The Government will support a development trajectory that fulfills the following ambitions:

2030

- A network of geographically spread and demand-driven hydrogen clusters in accordance with the availability of hydrogen solutions in transport.
- Hydrogen-based vessels are a competitive and secure alternative for maritime transport in Norwegian coastal waters and areas of short sea transport.
- Hydrogen has become a competitive alternative to fossil energy.
- Norwegian hydrogen companies relate to a European market for hydrogen through the exports of goods and services.

2050

The Norwegian Government has a vision of a well-established market for the production and use of hydrogen in Norway in 2050