International Partnership for Hydrogen and Fuel Cells in the Economy

Norway Update

34th IPHE Steering Committee Meeting

1 – 4 December 2020

Virtual Meeting

Announcements and/or New Initiatives

Norway

Funding:

- 29 May: NOK 120 million was granted the Research Council of Norway's ENERGIX-program for innovation projects where hydrogen projects held a high priority.
- 29 May: NOK 2 billion was granted ENOVA for research and technology development, amongst of which concerns hydrogen.
- 7 October: NOK 100 million has been proposed for the 2021-budget for the development of hydrogen infrastructure, focusing on synergies and value chains.

Policies:

- 3 June: The Norwegian Hydrogen Strategy was announced.
- 12 November: A hydrogen roadmap is under development and will be part of a White Paper to parliament to be presented next spring that will concern the long-term value creation and industrial development based on Norwegian energy resources.

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

- 21 September: The Carbon Capture and Storage (CCS) Project "Longship" was announced in a Government White Paper to the Norwegian Parliament submitted on the 21 September 2020. Longship will build infrastructure that enables the production of low-carbon hydrogen from natural gas with CCS. Low-carbon hydrogen can potentially kick-start a market for hydrogen in Europe.
- 31 October: The upcoming tender for Norway's longest ferry-route, Bodø-Moskenes, crossing Vestfjorden in Northern Norway will require the use of hydrogen technology. This requirement will enable a stable market for hydrogen and contribute to world class zero emission solutions for ferries along the Norwegian coast.

Examples of Lessons Learned and Impact

Norway

Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
The procurement process "competitive dialogue" for the Norwegian Public Roads Administration's development contract for a hydrogen-electric ferry on the National Road 13 Hjelmeland-Nesvik-Shipavik route from 2021. NORLED AS won the development contract and will therefore build the first hydrogen-electric ferry in the world that will be operational from October 2021.	• The procurement process "competitive dialogue" allowed for a close cooperation between the participants in the competition for the development contract with the Norwegian Public Roads Administration as the client, in addition to the Directorate for Civil Protection and the Norwegian Maritime Authority as the authorities responsible for safety aspects. • The authorities were able to follow the competing shipping companies' nine concepts from the outline stage up to detailed solutions. This has provided a broad platform for the development of regulations. The high number of contributors to each concept has helped to provide the Norwegian maritime industry with a foundation for the implementation of several hydrogen projects.

Norway – Profile December 2020

Status of Deployments

Application in the transport sector:

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

Use of hydrogen included as a requirement in upcoming tender for a ferry-route

+ some industrial application

Leading Government Initiatives

- The Norwegian Hydrogen Strategy was published in June.
- A hydrogen roadmap is under development
- The "Longship" CCS project, announced in a Government White Paper in September, will build infrastructure that enables the production of low-carbon hydrogen from natural gas with CCS.

Deployment Goals

N/A

Goals or Focus Areas

Support development of a full H2 value chain in Norway:

- Production
- Distribution
- Use

Funding

NOK 2 billion granted ENOVA for hydrogen-related research and technology development.

Thank you

International Partnership
for Hydrogen and Fuel Cells
in the Economy

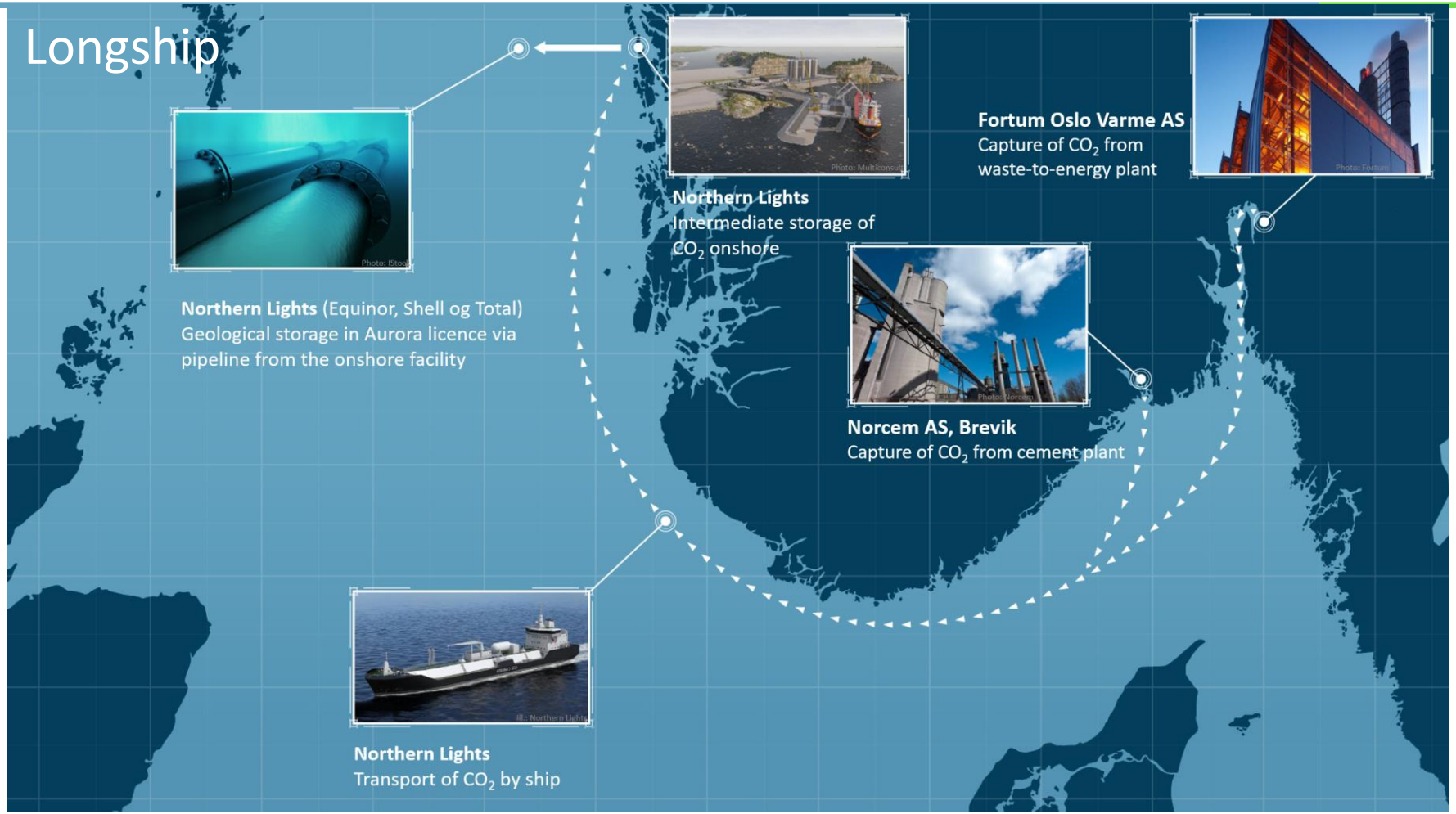
Highlight to Include in IPHE Newsletter *(Norway)*

The Carbon Capture and Storage (CCS) Project "Longship" was announced in a Government White Paper to the Norwegian Parliament submitted on the 21 September 2020.

Longship will build infrastructure that enables the production of low-carbon hydrogen from natural gas with CCS.

Low-carbon hydrogen can potentially kick-start a market for hydrogen in Europe.

For Longship to have the desired effect, a collective European effort to develop CCS further is needed - in addition to European CO2 capture projects utilizing the Northern Lights transport and storage infrastructure, further collaboration to develop the European CO2 transport and storage capacity is needed.



Longship
Source: Gassnova

Status of Applications and Goals *(Norway)*

(to be submitted with country update but not to be presented. Will be used to update IPHE infographic/country pages on website)

Application		**Status** (As of November 2020)	**Goal** (N/A)
1) H_2 Applications			
a.	Energy Storage (e.g. MW, GW of capacity)	*N/A*	*N/A*
b.	Electrolyzers (e.g. MW, GW of capacity)	*N/A*	*N/A*
c.	Other (e.g., Steel, Marine, Fertilizer, etc.)	*225 000-ton H2, primarily produced from natural gas reforming without CCS*	*N/A*
2) Transportation			
a.	Light Duty Vehicles	*153 Passenger cars;* *1 Light commercial vehicle;*	*New cars and light vans must be zero emission vehicles by 2025*
b.	Medium and Heavy Duty Vehicles	*0 Medium freight trucks;* *2 Heavy freight trucks*	*By 2030, new large vans, 75% of new long-distance buses and 50% of new trucks must be zero emission vehicles* *By 2030, goods distribution in the biggest urban centres must be virtually zero emission* *Public agencies must use biofuel, low and zero emission technology as much as possible in their own and leased vehicles and vessels.*
c.	Buses	*5*	*New urban buses must be zero emission vehicles or use biogas by 2025*
d.	Trains	*0*	*N/A*
e.	Forklifts	*N/A*	*N/A*
3) Stationary			
a.	Residential	*N/A*	*N/A*
b.	Commercial	*N/A*	*N/A*
c.	Back Up Power	*N/A*	*N/A*