

An aerial photograph of a coastal town in Norway, likely Longsight, featuring a large body of water, mountains, and a dense urban area with colorful buildings. The sky is blue with some clouds.

Cognitud

Norway's Longship Project: World's First Full-Scale CCS Chain

Norway has officially inaugurated Longship, the world's first full-scale, end-to-end carbon capture and storage (CCS) value chain, marking a significant global milestone in industrial decarbonization and climate action

Overview of the Longship Project

Integrated CCS System

Longship combines carbon capture, ship-based transport, and permanent geological storage into a single, scalable system, demonstrating the feasibility of cutting industrial and waste emissions safely and effectively.

Public-Private Investment

The project represents Norway's largest-ever climate investment with an estimated total cost of NOK 34 billion (~USD 3.3 billion), including ten years of operation. The Norwegian government is funding NOK 22 billion (~USD 2.2 billion) in grants.

European Climate Leadership

Longship is recognized as a breakthrough for CCS in Europe and has been designated a "Project of Common Interest" by the European Union, unlocking €131 million in funding from the Connecting Europe Facility.

Key Components of Longship

CO₂ Capture Facilities

- Heidelberg Materials' cement plant in Brevik, Norway, capturing approximately 400,000 tonnes of CO₂ annually—the first of its kind for the cement industry worldwide.
- A planned facility at Hafslund Celsio's waste-to-energy plant in Oslo, expected to capture 350,000 tonnes of CO₂ annually by 2029.

Transport Infrastructure

- Liquefied CO₂ is transported by ship from the capture sites to the Øygarden terminal on the Norwegian west coast.



Storage Facility

- The Northern Lights project, operated by Equinor, Shell, and TotalEnergies, provides open-access CO₂ storage by injecting the gas 2.6 kilometers beneath the North Sea seabed.
- Northern Lights has already secured commercial contracts with emitters from Denmark, Sweden, and the Netherlands, making it a scalable and international CCS infrastructure.

Phased Expansion and Capacity

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Phase 1

The initial phase will store 1.5 million tonnes of CO₂ annually.

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Phase 2

Approved by the Norwegian Ministry of Energy, this phase will expand storage capacity to over 5 million tonnes per year, significantly increasing the project's impact on emissions reduction.

Significance and Impact

Climate Goals

Longship sets a new standard for industrial emissions reduction and offers a blueprint for scalable, cross-border carbon infrastructure, essential for meeting Norway's and the EU's climate targets.

Economic and Technological Innovation

The project is expected to create future jobs and drive technological advancements in CCS, demonstrating that CO₂ management is safe, feasible, and necessary.

Global Leadership

Norway's Longship project is the first operational full-scale CCS chain in the world, positioning the country as a leader in climate technology and industrial decarbonization.

Official Launch Events

The launch included a two-day event in Oslo and Brevik featuring:

The naming ceremony of the CO₂ transport ship Northern Pathfinder.

A high-level conference at the Oslo Opera House.

The opening of Heidelberg Materials' CO₂ capture facility at the Brevik cement plant.

Conclusion

Norway's Longship project represents a pioneering step in global efforts to combat climate change by enabling large-scale carbon capture, transport, and storage. It combines significant public investment, industrial collaboration, and innovative technology to create a replicable model for reducing industrial greenhouse gas emissions worldwide.

This flagship project not only advances Norway's climate ambitions but also provides a scalable solution for Europe and beyond to achieve net-zero emissions targets through CCS technology.

