

## Northern Lights/Longship

This pioneering public-private partnership in Norway uses ships to transport carbon dioxide from around Europe and store it in a collective reservoir under the North Sea.



Northern Lights is not a physically localized hub, but distributed. While other hubs are based on compact industrial clusters linked by pipeline, this Norwegian hub will use ships to connect geographically distant carbon dioxide sources from around Europe. The investment decision was taken in late 2020 and the facilities are now under construction.

In its first phase, 80% subsidized by the Norwegian government, the project will store 800,000 tonnes of carbon dioxide per year from the [Brevik](#) cement factory and the Hafslund Oslo Celsio waste-to-energy plant, both in eastern Norway.

The captured carbon dioxide will be compressed and liquefied at each site. Specially designed ships will then take it to a temporary storage site in Øygarden in western Norway, from where it will be piped for permanent storage to the Aurora reservoir, a saline aquifer about 110 km from shore and 2.6 km under the seabed.

Transport and storage will be handled by the Northern Lights joint venture, owned by three OGCI members: Equinor, Shell and TotalEnergies. Gassnova is overseeing the project for the government, ensuring that the value chain from emitters to storage is properly regulated and managed.

For the second phase, starting in 2025, Northern Lights is offering commercial carbon storage services to companies across Europe. It has signed its first commercial agreement with [Yara](#), which will ship 800,000 tonnes of carbon dioxide per year from an ammonia and fertilizer plant in the Netherlands.

The receiving terminal, offshore pipeline and injection infrastructure are designed to be extended to accommodate over 5 million tonnes of carbon dioxide per year, depending on demand. Total storage capacity is expected to be at least 100 million tonnes. Northern Lights has identified over 90 suitable capture sites, and there is already interest from industrial site in eight countries, in sectors including steel, biomass and hydrogen. Four of these sites – a hydrogen refinery in Finland, hydrogen and

chemicals in Antwerp, a cement plant in France and a biomass with CCS plant in Sweden – have received investment from the EU's Innovation Fund to support large-scale capture of CO<sub>2</sub>.

The project's construction phase is creating between 1,500 and 3,000 jobs, with around 170 jobs created directly during operation, alongside many thousands of jobs created and safeguarded in industries that decarbonize through CCS or participate in carbon removals.

[Updated March 14, 2023]