

PROJECT GREENSAND

PAVING THE WAY FOR MITIGATING CLIMATE CHANGE WITH CCS

With CO₂ storage in the North Sea, Project Greensand is taking a significant step in the advancements of Carbon, Capture & Storage (CCS) as a tool to mitigate climate change and achieving net zero emissions. Since 2020, a wide range of consortium members have been working to bring the project from vision to reality, and in March 2023, we are ready to mark a milestone in the project, with a landmark event in Esbjerg. We call it *'First Carbon Storage'*.

The event marks the world's first cross-border, offshore CO₂ storage intended to mitigate climate change. The project will demonstrate a mature and deployment-ready technology across the full value chain. From when the CO₂ is captured in Antwerp, transported by ship to Esbjerg, and finally stored in the depleted Nini West oil field in the North Sea, paving the way for the development of an international CCS value chain. This marks the culmination of the project's pilot phase. The Final Investment Decision (FID) for a full-scale project is planned for the first half of 2024. In full scale, the project can store up to 1,5 million tons of CO₂ per year in 2025/2026 and potentially up to 8 million tons of CO₂ per year in 2030. In February 2023, leading consortium partners INEOS and Wintershall Dea received the necessary storage license from the Danish authorities.

CCS IS AN IMPORTANT TOOL TO MITIGATE CLIMATE CHANGE

CCS is a safe and proven technology counted as one of the most effective ways to decarbonise. In its latest report ([Working Group III: Mitigation of Climate Change](#)), the IPCC reaffirms CCS as a key technology to mitigate global climate change and achieve net-zero emissions in line with the 2050 1.5 degrees trajectory of the Paris Agreement. The technology behind CCS is well-proven and has been around for more than 40 years. The companies and organisations behind Project Greensand know the underground thoroughly from many years of experience with working in the North Sea environment.

THE GREENSAND CONSORTIUM

The Project Greensand Consortium consists of 23 Danish and international partners who contribute with expertise on capture, liquefaction, transportation, storage and monitoring of CO₂ in the subsoil. The consortium include participants from Danish and international companies to research institutes, universities and start-ups. This way, Project Greensand secures active involvement throughout the value chain, which is needed to support an international infrastructure of CCS.

With the First Carbon Storage landmark event, we send an open invitation to all Danish and international partners and stakeholders to cooperate and exploit the full potential of CCS as a tool to mitigate climate change.

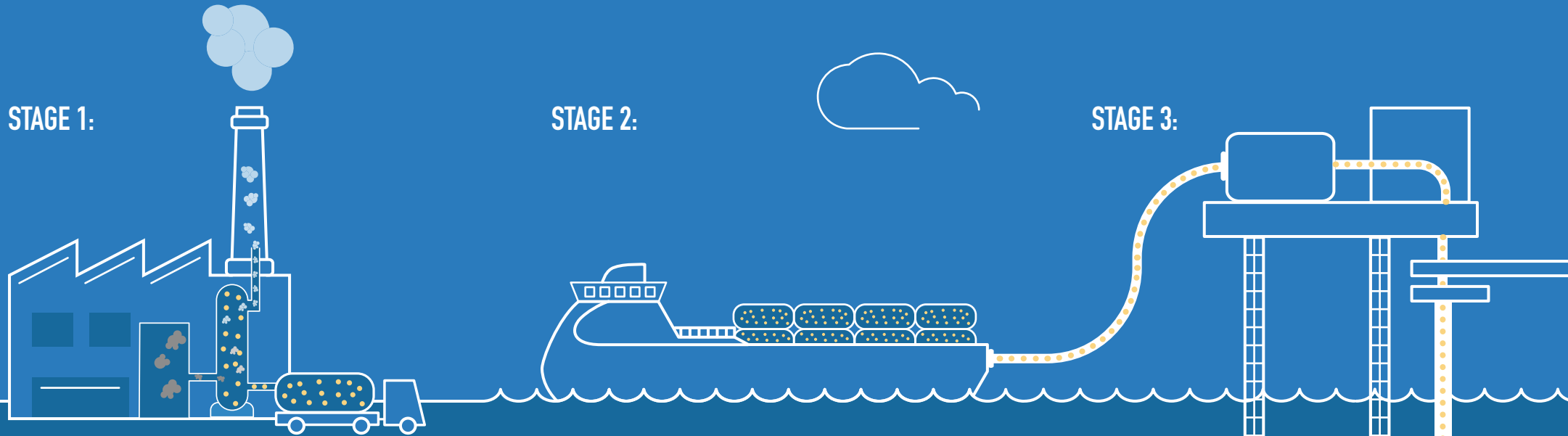
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THE ROAD TO FIRST CARBON STORAGE – A FULL CCS VALUE CHAIN

First Carbon Storage of Project Greensand marks a key development in terms of scalability and potential, demonstrating how CCS can move across borders through an international infrastructure that connects emissions sources with storage capacities. In the following overview, the journey from CO₂ capture in Antwerp to storage in the North Sea shows how this international, full value chain works in practice.



STAGE 1:

STAGE 2:

STAGE 3:

CO₂ IS CAPTURED AT THE ANTWERP INEOS OXIDE SITE

CO₂ IS TRANSPORTED BY SHIP TO THE NORTH SEA

CO₂ IS STORED IN THE NORTH SEA SUBSOIL

There are many ways to capture CO₂. The most efficient way is to capture from a large and stable supply of CO₂. For example from large emissions in industry, energy production or incineration plants, where the CO₂ is separated from the smoke. The captured CO₂ is then transformed into liquid. This can be done by heating, compressing, and cooling.

The liquid CO₂ is transported by ship to the Nini West Field located in the larger Siri subsoil storage area in the Danish part of the North Sea. In this pilot phase, the CO₂ will be held safely in custom-built tank-containers during transport. Once Project Greensand is fully matured, the CO₂ will be transported on transport vessels built specifically for this purpose.

Liquid CO₂ is sent down into the Nini West sandstone reservoir approximately 1,800 metres underground via CO₂ wells. The fields for CO₂ storage in the subsoil have been screened over many years and new groundbreaking technologies are being developed for monitoring the CO₂ storage.