



Knowledge grows

CCS Sluiskil



Yara's CO₂ liquefaction plant in Sluiskil, the Netherlands

CO ₂ source	Ammonia production
CO ₂ liquefaction	125 ton/hour liquid CO ₂
Volume	800,000 ton per year
Start of operations	2026
Final Investment Decision	November 2023
Project Management	Yara Technology and Projects
Transport and permanent CO ₂ storage	Northern Lights JV
Scope	CO ₂ liquefaction plant, storage, ship loading and shore power



Projects insights and learnings

Strategic upscaling

Successfully expanded plant capacity beyond existing benchmarks and through the integration of pioneering machinery.

Innovative partnerships

Initiated and negotiated a first-of-its-kind CO₂ export agreement with a strategic partner.

Policy engagement

Formalized collaboration via a Memorandum of Understanding with Norway, involving political and governmental stakeholders.

Regulatory breakthrough

Reframed CO₂ as a valuable resource rather than waste, paving the way for a future legal framework and for other stakeholders.



Aim of the project

- Decarbonizing the production of fertilizers and chemicals;
- Permanently storing CO₂ to reduce emissions;
- Developing and building markets for products with low carbon intensity.



Key suppliers

Engineering and Procurement CO₂ liquefaction
Linde Engineering

Compressors
Baker Hughes

Air cooler banks
Famet

Construction CO₂ liquefaction
MBG, Ferris, Equans, Fincimec

Storage tanks
Geldof

Piperack
Billfinger

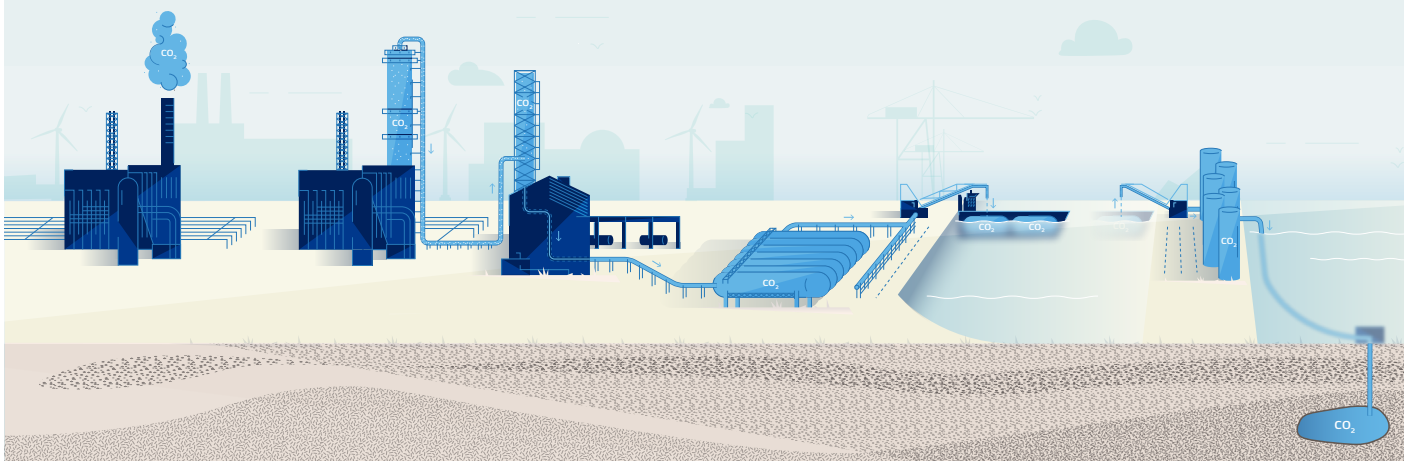
Loading arms
Wiese

In-site project layout



1. CCS Plant | 2. CO₂ Storage | 3. Pipe Rack | 4. Ship Loading

CO₂ liquefaction, storage and ship loading process description



1. CO₂ as byproduct of ammonia production

Yara's ammonia production relies on hydrogen generated via steam methane reforming (SMR), a process that emits high-purity CO₂.

2. CO₂ capture

CO₂ is captured at the ammonia plants using MDEA absorption technology.

3. Liquefaction

Captured CO₂ is compressed and liquefied for safe transport. Yara expanded its liquefaction capacity to handle 800kt/yr.

4. Temporary storage at the plant

The liquid CO₂ will be temporarily stored in the storage tanks on site in Sluiskil. There are 7 storage tanks with a total capacity of 15,000 tons.

5. Loading into ships

Twice per week, a ship of Northern Lights arrives in Sluiskil and liquid CO₂ is loaded from the storage tanks into the ship.

6. Transport and permanent storage

The ship delivers CO₂ to Øygarden, Norway, for intermediate storage. Subsequently the CO₂ is injected into a deep geological reservoir, which has been verified and approved by the Norwegian authorities.

CO₂ liquefaction process

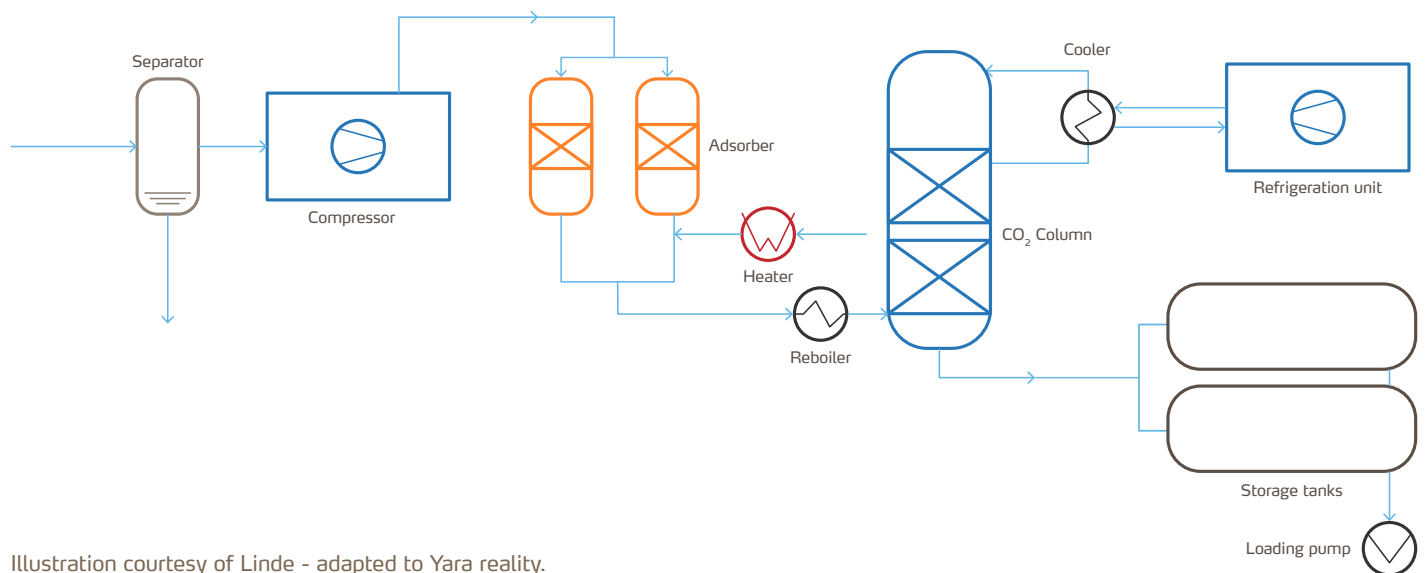


Illustration courtesy of Linde - adapted to Yara reality.