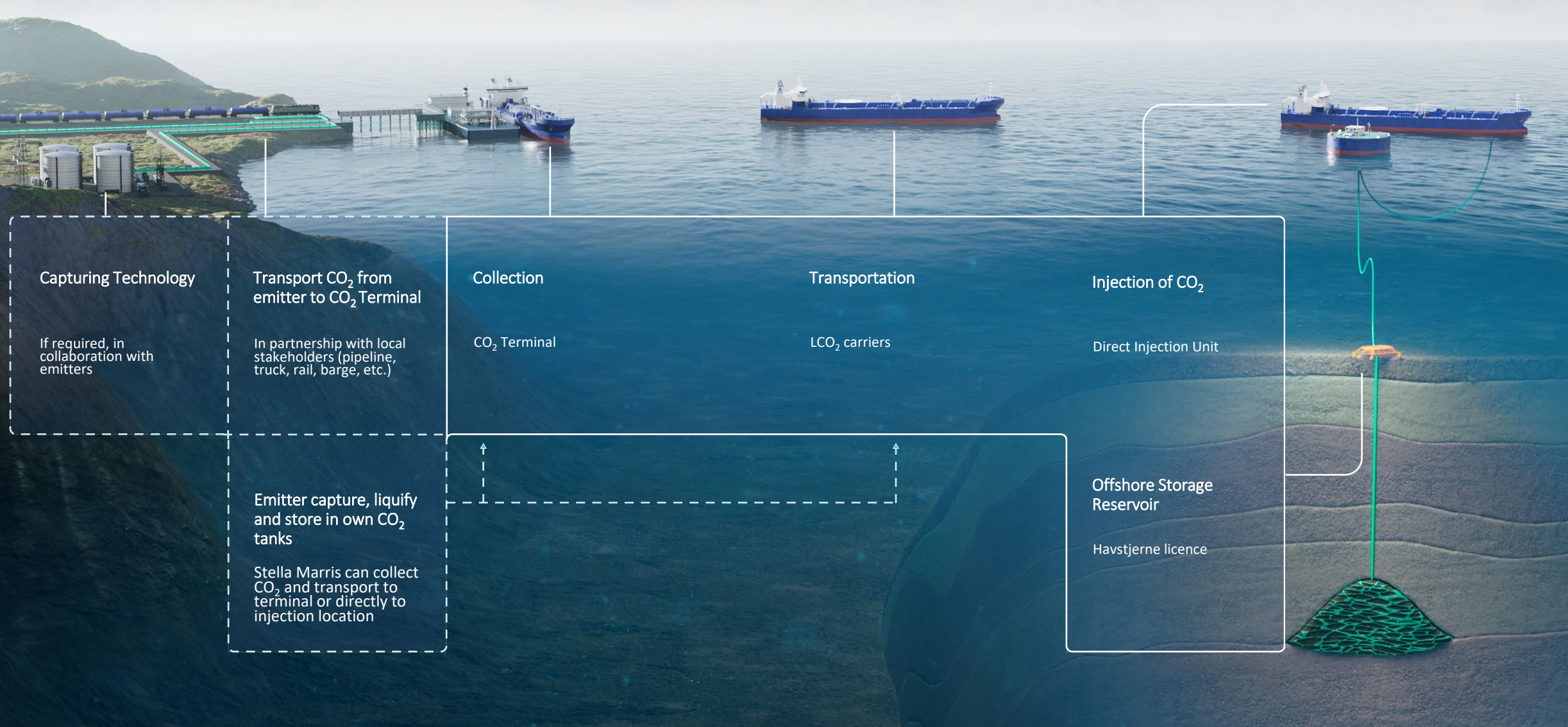


Stella Maris – from terminal to storage

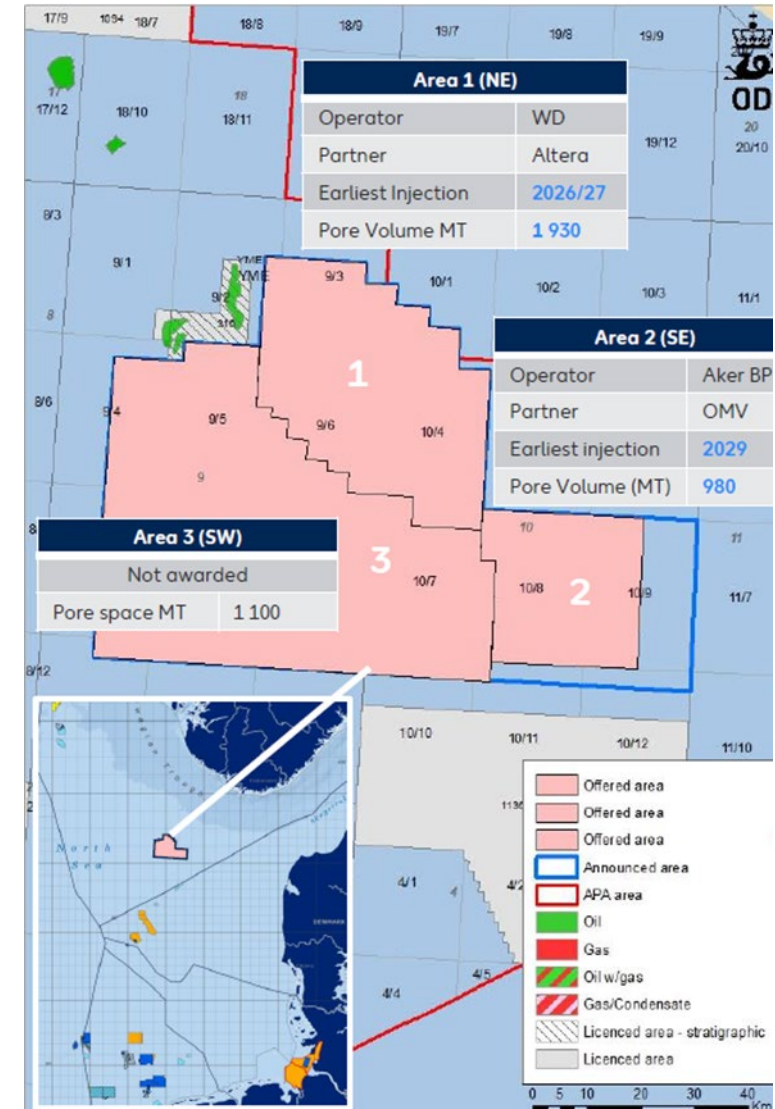
A single Stella Maris project will have the capacity to store 10 Mt CO₂/year



Altera has been awarded a CO₂ exploration licence offshore Norway

The Havstjerne reservoir is planned to be in operation in 2027

- Licence awarded together with our partner Wintershall Dea
 - 40/60% ownership share
 - Wintershall Dea as operator of the licence
- Located south of the North Sea – closer to the European market
- The reservoir is expected to have the capacity of receiving around 7 Mt CO₂/year and with total capacity of around 200 Mt CO₂
- Plan for first CO₂ injection in 2027



CO₂ Terminal (CO₂T)

Collection, Processing and Export

**Principal dimensions
(80k cbm design):**

Length o.a. 220m

Breath (M) 58m

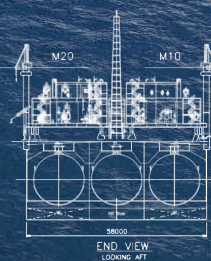
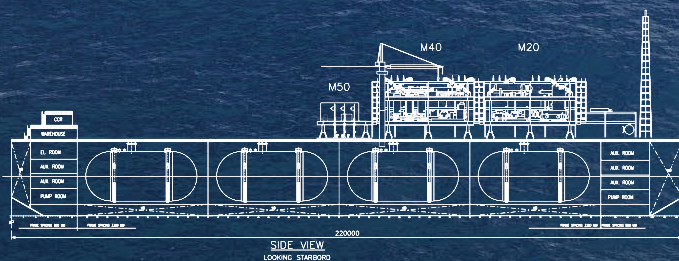
Depth (M) 24.5m

Design Draft 13m

50–80k cbm storage

Annual capacity up to 7 mt/unit

Designed for shore power



Designed to receive and process:



High- & low-pressure gas from pipelines



Medium & low-
pressure liquid
from road, ships or
barges



Various qualities
with different levels
of impurity

LCO₂ Carriers

Transport and DP offloading

Key Innovations:

- Dynamically positioned LCO₂ carrier
- Low pressure CO₂ tanks
- Equipment for offshore offloading of CO₂
- Power Source for injection unit

New, state of the art LCO₂ carrier design

50,000 cbm - low pressure tanks

CO₂ stored and transported as liquid at 6,5 barg & -47°C

Zero emission capable

Battery hybrid installation

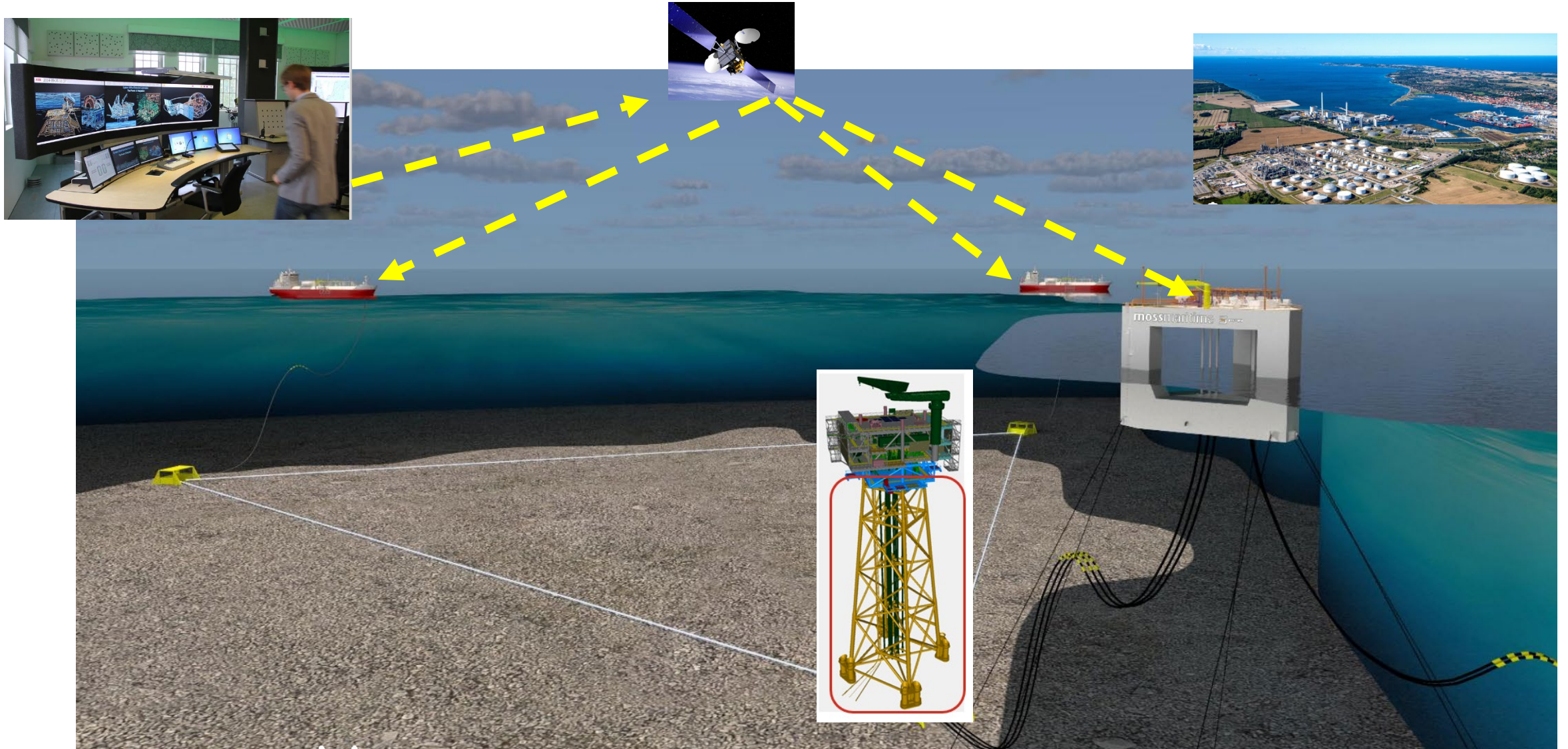
LNG/Biogas/NH3 as fuel

Principal dimensions:

Length o.a.	238m
Breath (M)	38m
Depth (M)	22m
Design Draft	13m

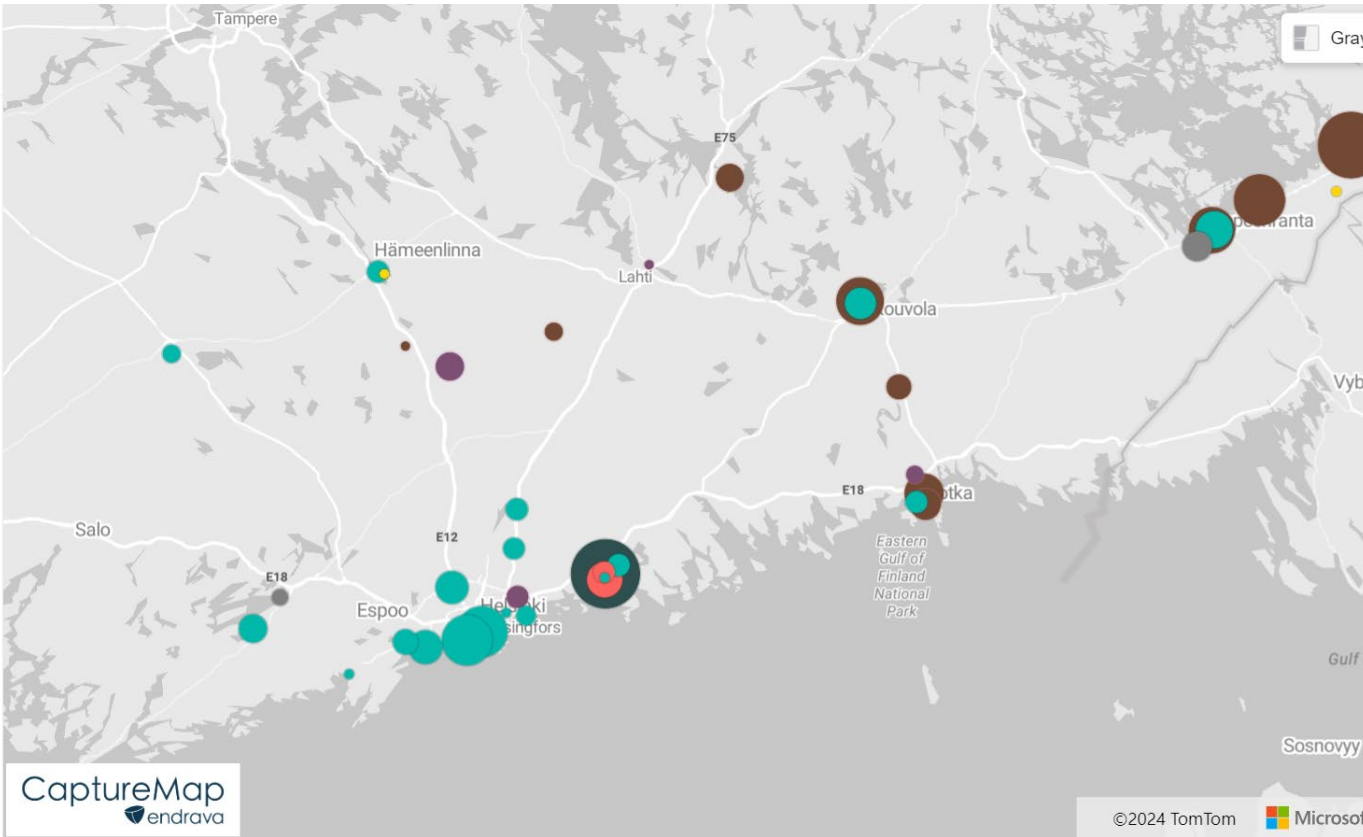


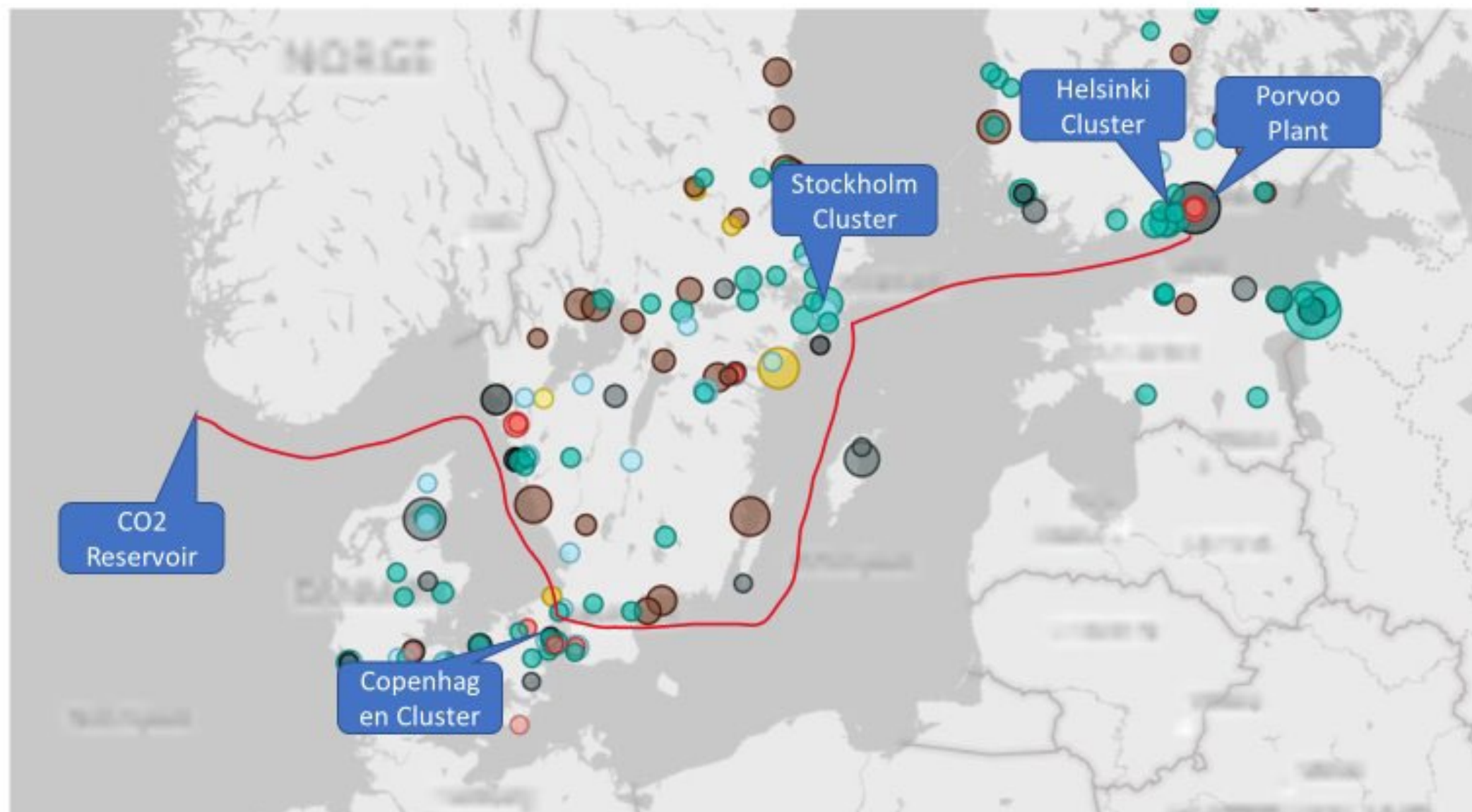
Stella Maris CCS concept



Helsinki Region emissions adding up to 18 Mtpa of CO₂

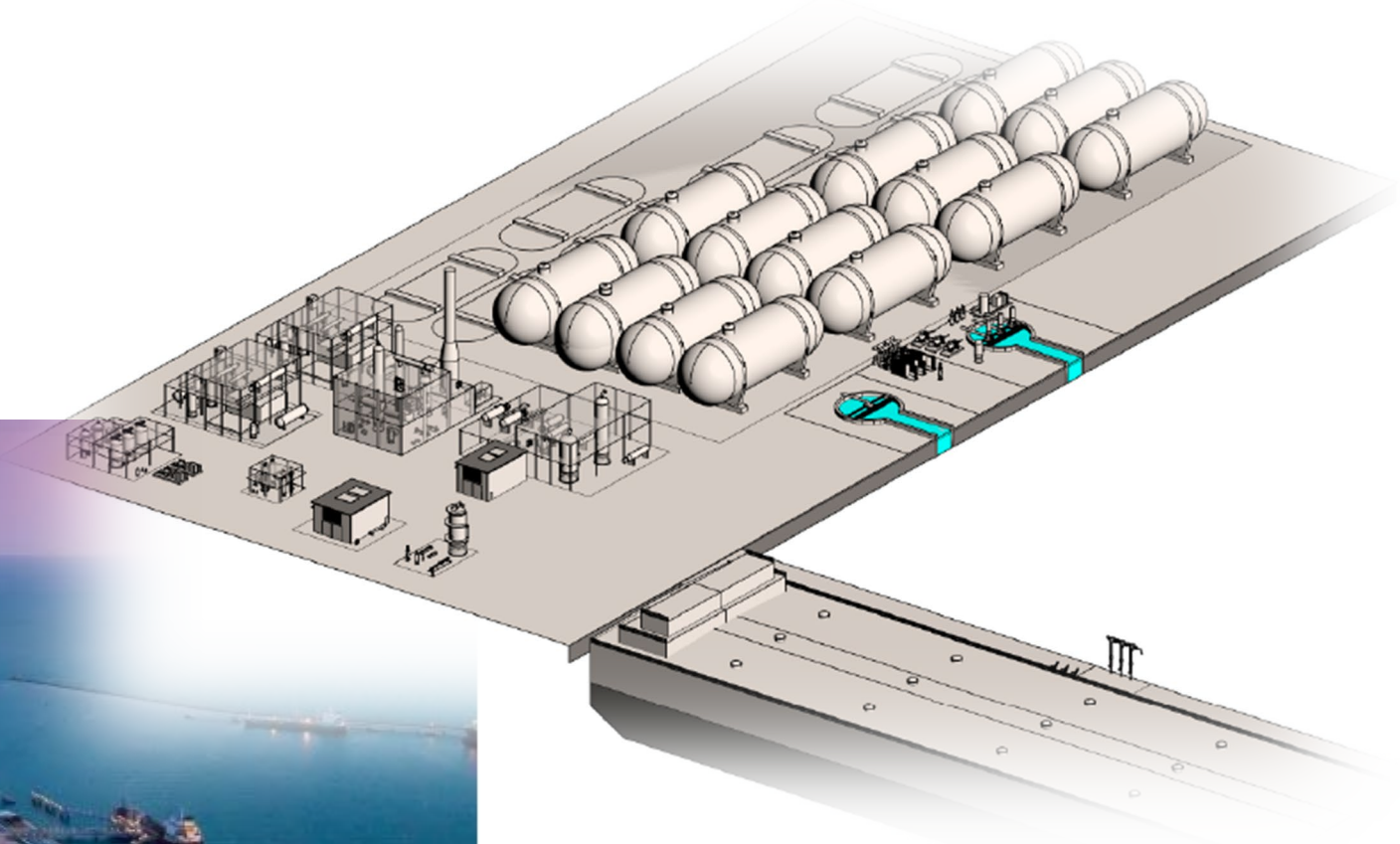
Facility name	Company name	Latest total CO2 emissions [tonnes]	Latest biogenic CO2 emissions [tonnes]	Latest biogenic CO2 share
Porvoo Refinery	Neste Oyj	2,570,000	0	0 %
Imatra Mills	Stora Enso Oyj	2,360,000	2,178,000	92 %
Joutseno Pulp Mill	Metsä Fibre Oy; Metsä Board Oy	1,340,000	1,312,000	98 %
Hanasaari B Power Plant, Helsinki	Helen Oy	1,290,000	0	0 %
Salmisaari Power Plant	Helen Oy	1,270,000	240,000	19 %
Kymi Mill	UPM-Kymmene Oyj	1,130,000	1,052,000	93 %
Kaukaan Tehtaat, Lappeenranta	UPM-Kymmene Oyj	1,060,000	983,000	93 %
Sunila Factory	Stora Enso Oyj	736,000	704,000	96 %
Kaukaan Voima Power Plant, Lappeenranta	Kaukaan Voima Oy	630,000	542,000	86 %
Porvoo Olefins Production Facility	Borealis Polymers Oy	568,000	0	0 %
Espoo Power Plant	Fortum Power And Heat Oy	502,000	0	0 %
Martinkaisto Power Plant	Vantaan Energia Oy	470,000	243,000	52 %
Kuusankoski Power Plant, Kouvola	Kymin Voima Oy	425,000	383,000	90 %
Kotka Mills	Kotkamills Oy	417,000	229,000	55 %
Lappeenranta Cement Factory	Finnsmentti Oy	376,000	0	0 %
Riihimäki Facility	Fortum Waste Solutions Oy	342,000	0	0 %
Kirkniemi Power Plant, Lohja	Säppi Finland Operations Oy	331,000	83,000	25 %
Heinola Fluting Mill	Stora Enso Oyj	326,000	211,000	65 %
Anjala Mill	Stora Enso	252,000	158,000	63 %
Kivenlahti Heating Plant, Espoo	Fortum Power And Heat Oy	243,000	242,000	100 %
Simpele Factory	Metsä Board Oy	238,000	157,000	66 %
Vantaa Waste-to-Energy Plant	Vantaan Energia Oy	184,000	0	0 %
Tolkinen Power Plant	Porvoon Energia Oy	182,000	182,000	100 %
Hovinsaaren Power Plant, Kotka	Kotkan Energia Oy	175,000	120,000	69 %
Järvenpää Power Plant	Fortum Power And Heat Oy	174,000	150,000	86 %
Vanajan Power Plant, Hämeenlinna	Loimua Oy; Elenia Lämpö Oy	170,000	163,000	96 %
Kerava Power and Heat Plant	Keravan Lämpövoima Oy	163,000	158,000	97 %
Klipplahden Hydrogen Production Facility, Porvoo	Linde Gas Oy Ab / Aga Oy Ab	160,000	0	0 %
Vuosaari Power Plant	Helen Oy	127,000	0	0 %
Järvelä Plywood Factory	Loimua Oy	110,000	108,000	98 %
Hanko Boiler Plant	Adven Oy	102,000	100,000	98 %
Forssa Power Plant, Kilmassuo Power Plant, For...	Nevel Oy; Fingrid Oyj	101,000	100,000	99 %
Waste-to-Energy Plant Kotka	Kotkan Energia Oy	100,000	50,000	50 %
Tyttyri Lime Factory, Lohja	Nordkalk Oy Ab	77,000	0	0 %
Kymijärvi Power Plant, Lahti	Lahti Energia Oy	7,000	0	0 %
Hämeenlinna Factory	Ssab Europe Oy			
Imatra Steel Mill	Oravo Imatra Oy Ab			
Kantvik Power Plant	Suomen Sokeri Oy			
Myllypuro Heat Plant	Helen Oy			
Porvoo Power Plant	Klipplahden Voimalaitos Oy			
Tervakoski Facility	Tervakoski Oy			
Total		18,708,000	9,848,000	





CO2 Terminal

- Modules of 5 mtpa capacity
- Tankfarm sized for 100' m3 ships



3. Process Block Flow Diagram

