

CO₂ storage projects in Europe

Overview of existing and planned CO₂ storage projects in Europe

BULGARIA

1. ANRAV (IF)

CROATIA

1. Petrokemija Kutina*
2. Bio-Refinery Project*
3. CCGeo (IF)
4. **CO₂ EOR Project Croatia***
5. Geothermal CCS project (PCI)

CZECH REPUBLIC

1. CO₂-SPICER

DENMARK

1. **Greensand***
2. Bifrost* (PCI)
3. Stenlille demo CO₂-storage
4. **Norne (PCI)**
5. Ruby

FRANCE

1. Pycasso* (PCI)

GREECE

1. Prinos CCS (PCI)

HUNGARY

1. MOL-Hungary CCS Project*

ICELAND

1. **Orca**
2. **Silverstone (IF)**
3. Coda Terminal (IF)
4. Mammoth

ITALY

1. Ravenna CCS (includes Callisto)* (PCI)

THE NETHERLANDS

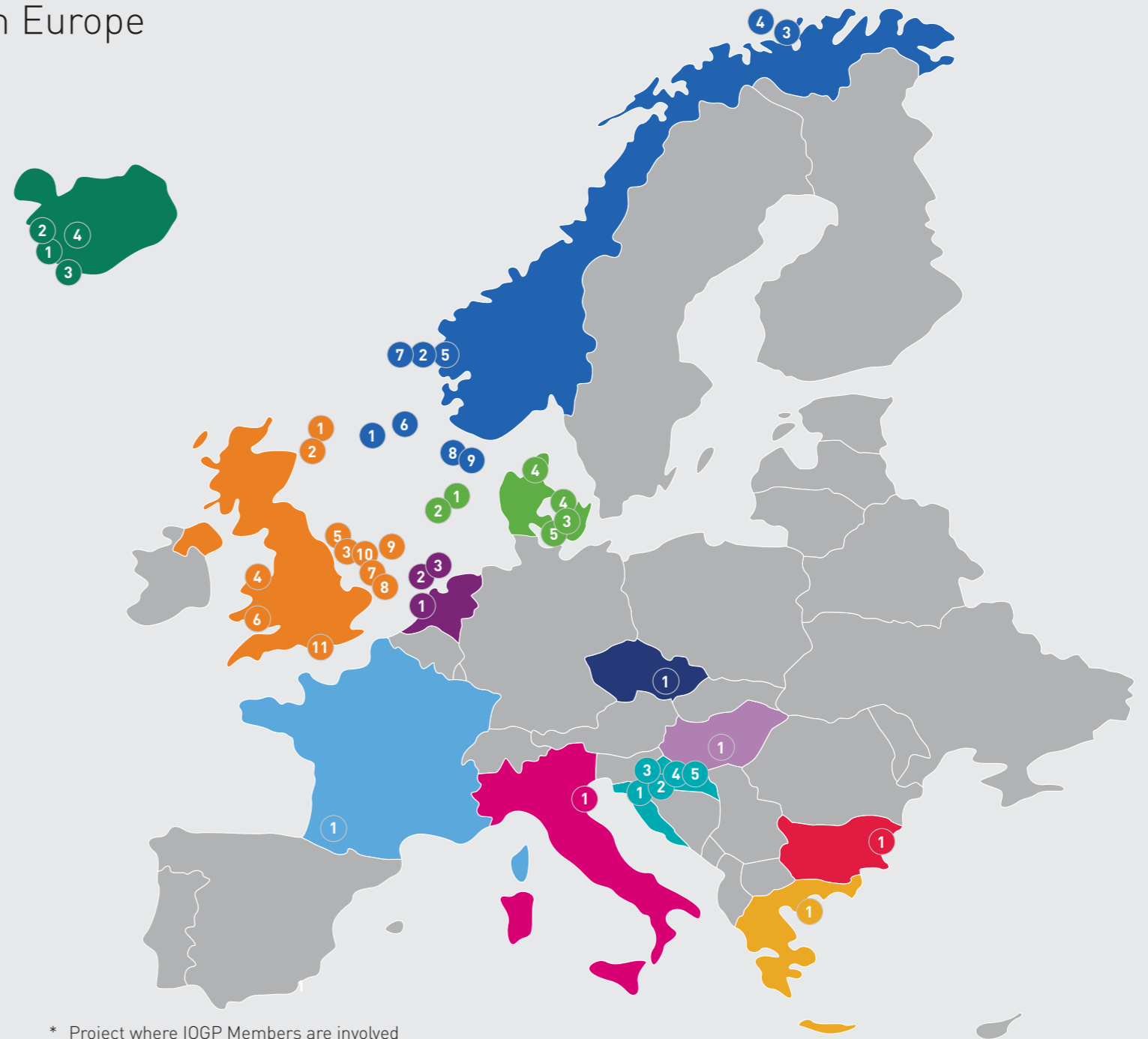
1. Porthos* (PCI)
2. Aramis* (PCI)
3. L10 CCS*

NORWAY

1. **Sleipner***
2. Longship (includes Northern Lights)* (PMI)
3. Barents Blue (includes Polaris)
4. **Snøhvit***
5. Smeaheia*
6. Trudvang*
7. Luna*
8. Havstjerne*
9. Poseidon (NO)*

UK

1. Acorn*
2. Caledonia Clean Energy
3. Zero Carbon Humber*
4. HyNet*
5. Net Zero Teesside*
6. South Wales Industrial Cluster
7. Bacton Thames Net Zero initiative*
8. Poseidon (UK)
9. Viking CCS*
10. Orion
11. Solent Cluster*



* Project where IOGP Members are involved
Projects listed in **bold** are in operation

(PCI) – Project of Common Interest
(PMI) – Project of Mutual Interest
(IF) – Project supported by the EU Innovation Fund

EU	19 projects - 42 MtCO ₂ /yr by 2030
Europe	43 projects - 141 MtCO ₂ /yr by 2030

LOCATION	NO. ON MAP	PROJECT NAME	ELEMENTS OF CCS VALUE CHAIN COVERED	TYPE OF CAPTURE PROJECT	DESCRIPTION	PARTICIPANTS	STATUS OF THE PROJECT	PLANNED START OF OPERATIONS DATE	CO ₂ STORAGE INJECTION CAPACITY AT START DATE (MTPA)	CO ₂ STORAGE INJECTION CAPACITY AFTER EXPANSION (MTPA)	TYPE OF CO ₂ STORAGE
Bulgaria	1	ANRAV	Capture Transport Storage	Hard To Abate Industry (cement plant)	ANRAV aims to develop the first full CCS value chain project in Bulgaria and in Eastern Europe. The objective is to capture the CO ₂ streams at the Devnya cement plant in Varna (HeidelbergCement group) and through an onshore and offshore pipeline system to store them in a depleted gas field in the Black Sea. Subject to regulatory and permitting aspects, the full-chain CCS project could be operational on 2028.	Devnya Cement (Heidelberg Cement), Petroceltic Bulgaria EOOD	Early Development	2028	0.8	no data	Offshore - Depleted Gas Field (Galata), Black Sea
		Project supported by EU Innovation Fund									
Croatia	1	Petrokemija Kutina	Capture Transport Storage	Fuel Production (Ammonia)	A pilot, full chain CCS project is currently being conducted at the Petrokemija ammonia production plant at Kutina where natural gas is used as the main feedstock. More specifically, CO ₂ will be captured and transported via the existing pipeline infrastructure to be stored at the depleted oil and gas fields which are found close to Ivanić Grad, a town 41 km east of Zagreb. The project intends to capture, transport and inject 190.000 tonnes of CO ₂ per year.	MOL Group, Petrokemija	Early Development	2026	0.19	no data	Onshore - Depleted Oil & Gas Fields (Ivanić & Žutica)
	2	Bio-Refinery Project	Capture Transport Storage	Fuel Production (Biofuels)	A pilot, full chain CCS project which is part of an advanced bioethanol production plant currently being developed at the Sisak refinery site, where advanced bioethanol from biomass will be produced. More specifically, CO ₂ will be captured and transported via the existing pipeline infrastructure to be stored at the depleted oil and gas fields which are found 40 km away from the site. The project intends to capture, transport and inject 55.000 tonnes of CO ₂ per year.	MOL Group	Early Development	2024	0.055	no data	Onshore - Depleted Oil & Gas Fields
	3	CCGeo	Capture Transport Storage	Power Production (Geothermal Energy)	CCGeo stands for Closed Carbon Geothermal Energy – A full chain CCS project which intends to make use of a novel combination of existing technologies to generate electricity and heat from the geothermal brine and from the natural gases dissolved into it. The associated CO ₂ which will be produced will be injected back at the same reservoir from which the geothermal brine was extracted.	AAT Geothermae, CLEAG	Advanced Development	2022	no data	no data	Onshore - Saline Aquifer (Draškovec AATG)
		Project supported by EU Innovation Fund									
4	CO₂ EOR Project Croatia	Capture Transport Storage	Fuel Production (Oil & Gas)	At Gas Treatment Plant (GTP) found at Molve Municipality 640.000 m ³ /d of CO ₂ are produced from the purification of natural gas. The CO ₂ is compressed at 30 bar, dehydrated and transported via onshore pipeline 88 km long to the Fractionation Facilities of Ivanić Grad. Subsequently, the CO ₂ is compressed, liquefied and transported (200 bar) for injection at the mature oil fields Ivanić and Žutica for Enhanced Oil Recovery.	MOL Group	In operation	The injection of CO ₂ in Ivanić oilfield started in October 2014 and northern part of Žutica oilfields in October 2015.	no data	no data	Onshore - Depleted Oil & Gas Fields (Ivanić & Žutica)	

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Croatia	5	Geothermal CCS project	Capture Transport Storage	Hard to abate industry (cement plant)	The Geothermal CCS project includes the construction & repurpose of pipelines to transport CO ₂ from a cement factory in Beremend (Hungary) and a cement plant in Našice (Croatia) to be stored at a saline aquifer in the north of Croatia (Bockovac site). The project includes also the construction of a geothermal plant for the production of heat and electricity where the produced CO ₂ will be stored in the same saline aquifer from which the brine is extracted. The CO ₂ NTESSA project is linked to the Geothermal CCS project and refers to the CO ₂ capture infrastructure at the cement plant in Našice (Croatia).	Croatian Hydrocarbon Agency, NEXE, INA, Plinacro, Heidelberg Materials	Early Development	2029	1.04	No data	Onshore – Saline Aquifer (Bockovac site)
		Project of Common Interest									
Czech Republic	1	CO₂-SPICER	Storage	Not applicable	CO ₂ -SPICER (CO ₂ Storage Pilot In a CarbonatE Reservoir) is a Czech/Norwegian research project that aims at the preparation of a CO ₂ storage pilot in the mature Zar-3 oil & gas field located 30 km SE from the city of Brno, SE Czech Republic.	MND, VSB - Technical University of Ostrava, Institute of Geophysics of the Czech Academy of Sciences, NORCE Norwegian Research Centre, Czech Geological Survey.	In Planning	2031	0.4	No data	Onshore – Depleted Oil & Gas field (Zar-3), Southern Moravia
Denmark	1	Greensand	Transport Storage	Not applicable	Greensand project has successfully entered its demonstration phase on Wednesday 8th of March 2023 marking a milestone for the CCS industry, since it became the first operational full value chain CCS project in Europe. More specifically CO ₂ was captured at the INEOS Oxide site (chemical industry) in Antwerp, Belgium, shipped cross border and stored permanently 1800 meters below the seabed, at the Danish Nini West field (depleted oil field) in the southern North Sea. Following its successful demonstration phase, the full scale deployment of Greensand project is anticipated by 2025 with a CO ₂ storage capacity of 8 Mtpa.	Wintershall Dea, INEOS Oil, Energy Cluster Denmark, Blue Water Shipping, SpotLight, Danish Technological Institute, Welltec, Semco maritime, Maersk Drilling, GEUS, Geelmuyden Kiese, Ramboll, Aker Carbon Capture, Resen Waves, Magseis Fairfield, ESVAGT, DTU, Wind Power Lab, DHI, Dan-Unity CO ₂ , University of Southampton, National Oceanography Centre, EUDP, Schlumberger New Energy	In operation	If successful, the pilot would lead to full-scale CO ₂ storage in the Nini West field by 2025	1.5	8	Offshore - Depleted Oil & Gas Field (Nini West), Danish North Sea
		Bifrost									
	Project of Common Interest	Expansion date: 2032									
	3	Stenlille demo CO₂-storage	Storage	Not applicable	The Stenlille aquifer (which is also used for gas storage) does not have a large CO ₂ storage capacity. However, the project offers low-risk and an easily accessible CO ₂ -storage option. In 2023 the FID is expected. This project could store 0.5 Mtpa CO ₂ by 2025.	GEUS, Gas Storage Denmark	Advanced Development	2025	0.5	Expansion is not possible	Onshore - Saline Aquifer (Stenlille)

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Denmark	4	Norne	Transport Storage	Not applicable	Project Norne is a cross-border CO ₂ transportation and storage project that aims to build dedicated onshore pipelines and a maritime network (LCO ₂ ship receiving facilities at Port of Aalborg and Port of Kalundborg) in order to receive CO ₂ from Denmark and other countries for permanent storage into two separate onshore storage facilities (Gassum structure via Project Fyrkat and Havnsø structure via Project Trelleborg).	Fidelis New Energy, Ross Energy	In Planning	2026	2.3	18.7	Onshore – Saline Aquifers (Gassum & Havnsø Structures)
		Project of Common Interest									
	5	Ruby	Storage	Not applicable	Ruby project aims to establish an onshore CO ₂ storage site on the south coast of Lolland island near Rødby town. Liquefied CO ₂ will be shipped from several countries to a floating intermediate storage of CO ₂ , before it is injected and permanently stored onshore at Rødby Formation.	CarbonCuts, BlueNord	In Planning	2027	1	5-10	Onshore – Saline Aquifer (Rødby Formation)
France	1	Pycasso	Transport Storage	Not applicable	Pycasso stands for PYrenean Carbon Abolition through Sustainable Sequestration Operations. PYCASSO project investigates the opportunity to decarbonise the heavy industry located onshore South West France and North Spain through the establishment of a large CCUS hub. The project aims to take advantage of the large depleted gas fields of the area which have been producing the last 60 years and it aspires to transport and store from 1 up to 2.5 Mtpa of CO ₂ from 2030 to 2034 and another additional 3.4 Mtpa as of 2035.	Avenia, CAPBP, Teréga, Schlumberger, Lafarge, Repsol, UPPA, BRGM, IFPEN, Sofresid, Geostock, SNAM	In Planning	2030	1	5.9	Onshore – Depleted Oil & Gas Field (Lacq Gas Field), South West of France
		Project of Common Interest									
Greece	1	Prinos CCS		Not applicable	The project aims to convert the mature Prinos oilfield in Greece into a CO ₂ storage facility. If approved by the Greek government, the project would be the first of its kind in the Mediterranean region. The Prinos oil field could provide permanent storage of CO ₂ captured from local emission sources (up to 150 km away) and piped to the facility. For the more distant emission sources, CO ₂ could be liquified and shipped to an intermediate storage facility onshore (Sigma Site), before being injected for offshore storage to Prinos oilfield.	Energean	Early Development	2026	1	3	Offshore - Semi Depleted Prinos Oil Field & Saline Aquifer, North Aegean Sea
		Project of Common Interest									
Hungary	1	MOL-Hungary CCS Project	Transport Storage	Not applicable	The project aims to implement: 1) transport of captured CO ₂ to an existing MOL gas production site via a new onshore dedicated CO ₂ pipeline; 2) suspension of 24 hydrocarbon production wells and the drilling of up to 8 new CO ₂ injection wells, together with 8 new injector lines, associated well sites and CO ₂ distribution system; 3) permanent geological storage of 0.7 MTCO ₂ / year.	MOL Group	Concept Generation Phase	No data	0.7	No expansion planned	Onshore - Depleted Oil Gas Field

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Iceland	1	Orca	Capture Transport Storage	Direct Air Capture	Climeworks' Orca plant is the world's first and largest Direct Air Capture and mineral storage plant. Orca plant was built in 15 months, has been in operation till Sept 2021 and has the capacity of capturing and storing 4.000 tons of CO ₂ per year. More specifically, the CO ₂ which is captured from the atmospheric air is mixed with water and injected into nearby basaltic rock-formations to be permanently turned into stone.	Climeworks, Carbfix	In operation	In operation	0.004	no data	Onshore - Basalt rock formations
	2	Silverstone	Capture Transport Storage	Power Production (Geothermal Energy)	The Silverstone project will apply Carbfix technology in a new CO ₂ -optimized capture plant at the Hellisheidi geothermal power plant in Iceland. More specifically, by 2025 with the addition of the Silverstone project (25.000 tCO ₂ /year) to the existent pilot scale CO ₂ capture facilities (12.000 tCO ₂ /year), 37.000 tCO ₂ /year will be captured, dissolved into the water and injected into basaltic formations for permanent mineral storage.	Carbfix, ON Power	In operation	2025	0.037	no data	Onshore - Basalt rock formations
		Project supported by EU Innovation Fund									
	3	Coda Terminal	Transport Storage	Not applicable	The Coda Terminal aspires to establish a cross-border CO ₂ transport and storage hub in Iceland. Liquefied CO ₂ carriers will import CO ₂ from several countries across North Europe starting from 2026 with 0,5 Mtpa. The terminal will be upgraded gradually with its capacity to reach 3Mtpa by 2031. The imported CO ₂ will be initially stored into onshore tanks at the premises of the terminal and then by using a network of CO ₂ pipelines and nearby injection wells, will be permanently stored into the basaltic bedrock.	Carbfix, Dan-Unity CO ₂ A/S	Early Development	2026	0.5	3	Onshore - Basalt rock formations
Project supported by EU Innovation Fund		Expansion date: 2031									
4	Mammoth	Capture Transport Storage	Direct Air Capture	Mammoth is a Direct Air Capture project which is currently under construction. The project will have a CO ₂ capture capacity of 36.000 tons per year. The CO ₂ captured will be mixed with water to be injected underground for mineral storage in the basaltic rocks.	Climeworks, Carbfix	Advanced Development	2024	0.036	no data	Onshore - Basalt rock formations	
Italy	1	Ravenna CCS (includes Callisto)	Capture Transport Storage	Cluster (multiple industrial sources)	The project involves the establishment of a CCUS hub in Ravenna with the perspective to capture CO ₂ from multiple industries in the Po Valley and store it offshore, in the depleted gas reservoirs of the Adriatic Sea. According to the plans, Phase 1 of the project will start in 2023 with an initial capacity of 0.025 Mtpa whereas Phase 2 of the project is scheduled for 2027 with a capacity of 4 Mtpa. The storage resource in the Adriatic Sea gives the project the possibility for subsequent development which will increase progressively its storage capacity to 12 Mtpa by 2034 and to 16 Mtpa by 2038.	ENI, Snam	Advanced Development	2024	0.025	4	Offshore - Depleted Gas Fields (off the coast of Ravenna), Adriatic Sea
		Project of Common Interest	Expansion date: 2027								

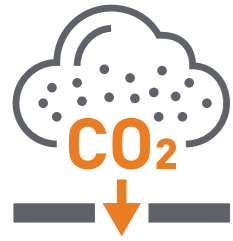
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The Netherlands	1	Porthos	Transport Storage	Not applicable	Porthos stands for Port of Rotterdam CO ₂ Transport Hub and Offshore Storage. The project intends to provide transport and storage infrastructure to energy intensive industries in the Port of Rotterdam and possibly at a later stage to industries in the Antwerp and North Rhine Westphalia areas. The project will link the CO ₂ Capture facilities and the existing OCAP pipeline with a new onshore pipeline which will drive the aggregated CO ₂ in a CO ₂ hub in the Port of Rotterdam and subsequently via an offshore pipeline in a depleted gas field 20 km off the coast for permanent storage.	Port Authority, Gasunie, EBN, Air Liquide, Air Products, ExxonMobil and Shell	Advanced Development	2026	2.5	no data	Offshore - Depleted Gas Fields (P18-2, P18-4 and P18-6), Dutch North Sea
		Project of Common Interest									
	2	Aramis	Transport Storage	Not applicable	Aramis project aspires to enable multiple energy intensive industries to store their captured CO ₂ emissions under the Dutch North Sea. For this purpose, a CO ₂ collection hub and an offshore pipeline with a 22 Mt/year transport capacity will be built to connect the port of Rotterdam with the depleted gas fields located 200 km off the coast. Industries will be able to connect with the CO ₂ collection hub either by onshore pipelines either by ships.	TotalEnergies, Shell, EBN, Gasunie	Early Development	2027	5	22	Offshore - Depleted Gas Field (L7) and potential Aquifers, Dutch North Sea
Project of Common Interest											
3	L10 CCS	Storage	Not applicable	L10 is a depleted gas field located in the Dutch North Sea, which started producing gas in 1976 and was still operational in 2021. Currently, it is being investigated the development of a large-scale Carbon Capture and Storage (CCS) project with a total storage capacity of 120-150 million tonnes of CO ₂ which implies injecting around 5 Mt / year. Phase 1 (2027) has a capacity of 5MTPA and the storage field in the L10 block will be connected to the Aramis CO ₂ pipeline. Phase 2 (2028) has a minimum capacity of 4MTPA, and its storage fields will be supplied via direct injection from vessels.	Neptune Energy, EBN Capital B.V., Rosewood Exploration Ltd., ExxonMobil	Early Development	2027	5	9	Offshore - Depleted Gas Fields (L10-A, L10-B and L10-E areas), Dutch North Sea	
							Expansion date: 2028				
Norway	1	Sleipner	Capture Transport Storage	Upstream Oil & Gas (Gas Processing)	Sleipner CCS project has been operational since 1996 and it is known as the world's first offshore CCS implementation. The produced natural gas at Sleipner area contains around 9% of CO ₂ and therefore the production is driven to a processing and CO ₂ removal platform (Sleipner T) where 2.800 tonnes of CO ₂ are separated and injected daily in the Utsira saline formation, 800m below the seabed. By the end of 2020 more than 19 Mt of CO ₂ have been injected and permanently stored. The project is the result of a tax on CO ₂ emissions which was introduced in Norway in 1991.	Equinor, ExxonMobil, Total	In operation	In operation since 1996	1	no data	Offshore - Saline Aquifer (Utsira Formation), Norwegian North Sea

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Norway	2	Longship (includes Northern Lights 1)	Capture Transport Storage	Cluster (multiple industrial sources)	The Longship CCS project plans to capture, transport and store 0.8 Mtpa of CO ₂ . The capture of CO ₂ will take place in two sites on the east coast of Norway (a cement factory and a waste to energy plant). The liquefied CO ₂ will be shipped for permanent storage at Aurora saline aquifer below the Norwegian North Sea. The Northern Lights project is part of the Longship CCS project and involves only the transport and storage part. The project has the vision to expand and receive additional volumes of CO ₂ from several capture sites in Norway or other countries (1.5Mtpa and then 5 Mtpa).	Equinor, Shell, TotalEnergies	Advanced Development	2024	1.5	Expansion through Northern Lights 2 project	Offshore - Saline Aquifer (Aurora), Norwegian North Sea
		Project of Mutual Interest									CO ₂ License: EL 001
		Northern Lights 2	Transport Storage	Not applicable	The Northern Lights project is part of the Longship CCS project and involves only the transport and storage part. Northern Lights 1 has a transport and storage capacity of 1.5 Mtpa by 2024. Northern Lights 2 intends to have a transport and storage capacity of 3.5 Mtpa by 2026, dependent on market demand.	Equinor, Shell, TotalEnergies	Early Development	2026	3.5	no data	Offshore - Saline Aquifer (Aurora), Norwegian North Sea
	3	Barents Blue (includes Polaris)	Capture Transport Storage	Fuel Production (Ammonia)	The Barents Blue project aspires to produce at large scale, blue ammonia (3000 ton/d) and blue hydrogen (600 ton/d) with the CO ₂ produced to be captured and permanently stored in the Polaris aquifer, at the Barents Sea. The annual output of ammonia will be 1 Mtpa whereas the annual CO ₂ injection rate will be 2 Mtpa. The necessary gas feed 2.8 MSm ³ /d will come from the gas fields of the Barents Sea.	Horisont Energi, Orlen (PGNIG Upstream Norway), Fertiberia	Early Development	2025	2	no data	Offshore - Saline Aquifer (Polaris), Barents Sea
		CO ₂ License: EXL 003									
4	Snøhvit	Capture Transport Storage	Fuel Production (Oil & Gas)	Snøhvit is an offshore gas field in Northern Norway, that supplies gas to the Melkøya LNG production facility. Since the produced natural gas contains 5-6% CO ₂ , it is separated and the CO ₂ is piped back to the Snøhvit field. There the CO ₂ is injected for permanent storage into the Tubaen saline formation at 2600m depth, beneath the gas production layers. The CCS project is the result of a tax on CO ₂ emissions which was introduced in Norway in 1991.	Equinor	In operation	In operation since 2008	0.7	no data	Offshore - Saline Aquifer (Tubaen), Barents Sea	
5	Smeaheia	Transport Storage	Not applicable	Smeaheia, is a prominent fault block located in the Norwegian North Sea which is identified as a possible CO ₂ storage site. Equinor (operator) has already submitted plans for the development of the field with a CO ₂ storage capacity of 20 Mtpa.	Equinor	In Planning	2028	5	20	Offshore - Saline Aquifer (Sognefjord), Norwegian North Sea	
							Expansion date: 2035			CO ₂ License: EXL 002	

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Norway	6	Trudvang	Transport Storage	Not applicable	The Trudvang project aims to receive liquified CO ₂ via shipping to an onshore terminal in the south-west of Norway and transport it via a purpose-built pipeline to the Norwegian North Sea (about 200 kilometres from the coast) for injection and permanent storage.	Neptune Energy, Sval and Storegga	In Planning	2029	9	no data	Offshore - Saline Aquifer (Utsira), Norwegian North Sea CO ₂ License: EXL 007
	7	Luna	Storage	Not applicable	Wintershall Dea and CapeOmega have been awarded the Luma license from the Norwegian Ministry of Petroleum and Energy, located at the North Sea, 120 km west of Bergen, which has an estimated CO ₂ injection capacity of 5 MtCO ₂ /year. In August 2023, TotalEnergies acquired the 40% participating interest held by CapeOmega.	Wintershall Dea, TotalEnergies	In Planning	2030	5	no data	Offshore - Saline Aquifer (Statfjord), Norwegian North Sea CO ₂ License: EXL 004
	8	Havstjerne	Storage	Not applicable	Wintershall Dea and Altera have been awarded the Havstjerne license from the Norwegian Ministry of Petroleum and Energy, located at the North Sea, 35 km southwest of Stavange which has an estimated CO ₂ injection capacity of 7 MtCO ₂ /year.	Wintershall Dea, Altera	Early Development	2028 Expansion date: 2030	3	8	Offshore - Saline Aquifer (Sandnes), Norwegian North Sea CO ₂ License: EXL 006
	9	Poseidon (NO)	Storage	Not applicable	Poseidon CCS license is found in the Norwegian North Sea, about 100 km off the Norwegian coast. In Mar 2023, Aker BP and OMV were awarded the Poseidon license and in Oct 2023 the acquisition of the 3D seismic data has been completed. According to the work program, FID is expected before May 2025. The Poseidon CCS project could potentially provide a storage injection capacity of more than 5 Mtpa of CO ₂ that will be captured mainly from industrial emitters in North-West Europe.	Aker BP, OMV	Early Development	2030	5 Mtpa	No data	Offshore - Norwegian North Sea CO ₂ License: EXL 005
UK	1	Acorn	Capture Transport Storage	Fuel Production (Hydrogen)	Acorn is a joint venture of companies which is considered to be the backbone of the Scottish Cluster. Acorn is working on three linked projects: Acorn Carbon Capture project that aims at the construction of a carbon capture plant for the decarbonisation of two St. Fergus Gas Terminals. Acorn Hydrogen project that aims at the construction of a Blue Hydrogen facility adjacent to the two St. Fergus Gas Terminals. Acorn Transport & Storage project that aims at the transportation of the captured CO ₂ for permanent storage under the North Sea using repurposed pipelines and ships.	Storegga, Shell, Harbour Energy and NSMP	Advanced Development	2024 Expansion date: 2030	0.8	5	Offshore - Depleted Gas Field (Goldeneye Field), British North Sea

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UK	2	Caledonia Clean Energy	Capture Transport Storage	Power Production (Natural Gas)	The Caledonia Clean Energy project aims to the construction of a 1.3 GW natural gas-fired plant with the capacity to capture over 90% of the CO ₂ emitted. The existing Feeder 10 gas pipeline to St Fergus will be used for CO ₂ transport. Subsequently, CO ₂ will be transferred offshore for permanent storage under the North Sea or used for EOR. Both options are still under consideration.	Summit Power Group	Early Development	2025	3.1	no data	Offshore - Depleted Oil & Gas Fields & Saline Aquifer (Captain Sandstone), British North Sea
	3	Zero Carbon Humber	Capture Transport Storage	Cluster (multiple industrial sources)	Zero Carbon Humber is a joint venture of companies to which aspire to decarbonize East Coast cluster (wider Humber region) which is the most carbon intensive industrial cluster in UK. The project aims to enable hydrogen economy, large-scale carbon capture and bioenergy with carbon capture and storage (BECCS) that will result in the capture and store up to 8Mtpa of CO ₂ by 2030.	Associated British Ports (ABP), British Steel, Centrica Storage Ltd, Drax, Equinor, INEOS Acetyls, Mitsubishi Power, National Grid Ventures, px Group, SSE Thermal, Triton Power, Uniper, AMRC, Velocys	Advanced Development	2027 Expansion date: 2030	5	8	Offshore - Saline Aquifer (Endurance), British North Sea
	4	HyNet North West	Capture Transport Storage	Cluster (multiple industrial sources)	HyNet North West project aspires to decarbonise the North West Cluster. The project aims to develop the infrastructure for the production, distribution and storage of low carbon hydrogen along with the infrastructure for the capture, transport and permanent storage of the CO ₂ emissions coming from the industry. The captured CO ₂ will be stored at the depleted Hamilton gas field in Liverpool Bay.	Progressive Energy, Cadent, CF Fertilisers, Eni UK, Essar, Hanson, INOVYN (part of the INEOS Group) and the University of Chester.	Advanced Development	2026 Expansion date: 2030	0.8	10	Offshore - Depleted Gas Field (Hamilton), Liverpool Bay
	5	Net Zero Teeside	Capture Transport Storage	Cluster (multiple industrial sources)	Teeside industrial area is one of the biggest emitting regions in UK. Net Zero Teeside project aspires to establish an industrial decarbonised cluster. The aim is to build a new gas-fired power station with associated carbon capture plant and in parallel, to establish a CO ₂ gathering network from a range of industrial emitters in the Teeside area. The CO ₂ will be gathered to a central hub, compressed and sent for permanent storage, offshore at the Endurance aquifer in the Southern North Sea.	BP, Eni, Equinor, Shell, Total, Teeside Valley Authority, Suez, BOC, sembcorp, CF, Lotte Chemical, Nepic, UK BEIS	Advanced Development	2026	2	no data	Offshore - Saline Aquifer (Endurance), British North Sea
	6	South Wales Industrial Cluster	Capture Transport Storage	Cluster (multiple industrial sources)	Industries in the South Wales region produce 16Mtpa of CO ₂ . The South Wales Industrial Cluster which was formed in 2019, consists of major industries along the M4 corridor. Currently, two projects Cluster Plan and Deployment Project aim to shape the strategy for the decarbonization of the South Wales Industrial Cluster.	RWE, Progressive Energy, Cadent, Valero, Tata Steel, BOC, South Hook, Wales & West Utilities, Western Power Distribution, Rice, Flexis	In Planning	2025	no data	no data	Offshore - Depleted Oil & Gas Fields & Saline Aquifers, Celtic Sea and Bristol Channel

LOCATION	NO. ON MAP	PROJECT NAME	ELEMENTS OF CCS VALUE CHAIN COVERED	TYPE OF CAPTURE PROJECT	DESCRIPTION	PARTICIPANTS	STATUS OF THE PROJECT	PLANNED START OF OPERATIONS DATE	CO ₂ STORAGE INJECTION CAPACITY AT START DATE (MTPA)	CO ₂ STORAGE INJECTION CAPACITY AFTER EXPANSION (MTPA)	TYPE OF CO ₂ STORAGE
UK	7	Bacton Thames Net Zero initiative	Storage	Not applicable	The Bacton Thames Net Zero initiative aims at the conversion of the Hewett depleted gas field located on the Southern North Sea, to a CO ₂ Storage to be used for the decarbonisation of the industrial sector in the Bacton and Thames Estuary area (UK South East). It is estimated that the Hewett depleted gas field has a total storage capacity of 330Mt of CO ₂ .	ENI	In Planning	2027 Expansion date: 2030	6	10	Offshore - Depleted Gas Field (Hewett), British North Sea
	8	Poseidon (UK)	Transport Storage	Not applicable	The Poseidon project involves the transportation of CO ₂ (received from several industrial sources) from the Bacton terminal to the depleted Leman gas field via an offshore pipeline for permanent storage. The project will start operating in 2019 with 1.5 Mtpa injection capacity whereas it is foreseen to increase the injection capacity at 10 Mtpa by 2030 and ultimately at 40 Mtpa at latter stages.	Perenco UK, Carbon Catalyst Ltd (CCL)	In Planning	2029 Expansion date: 2030	1.5	10	Offshore - Depleted Gas Field (Leman gas field) & Saline Aquifers, British North Sea
	9	Viking CCS	Capture Transport Storage	Cluster (multiple industrial sources)	The Viking CCS Cluster involves: 1) CO ₂ capture from several industries in the Humber, Lincolnshire and Nottinghamshire regions, 2) CO ₂ transportation from the Theddlethorpe Gas Terminal via an existing offshore pipeline, 3) CO ₂ storage at the depleted Viking gas fields (North Sea). The Cluster is targeting to store 10 Mtpa by 2030, rising to 15 Mtpa by 2035.	Harbour Energy, bp, Phillips 66 Limited, VPI, Associated British Ports (ABP), West Burton Energy, RWE	In Planning	2030 Expansion date: 2035	10	15	Offshore - Depleted Gas Field (Viking field), British North Sea
	10	Orion	Transport Storage	Not applicable	The Orion project involves the transportation of CO ₂ (received from several industrial sources) from the Dimlington terminal to the depleted Amethyst gas field and to the West Sole field via offshore pipelines for permanent storage. The project will start operating in 2031 with 1 Mtpa injection capacity whereas it is foreseen to increase the injection capacity at 6 Mtpa at latter stages.	Perenco UK, Carbon Catalyst Ltd (CCL)	In Planning	2031 Expansion date: 2035	1	6	Offshore - Depleted Gas Field (Amethyst field and West Sole field), British North Sea
	11	Solent Cluster	Capture Transport Storage	Cluster (multiple industrial sources)	The Solent Cluster aims to the decarbonisation of the industries in the Solent area and to the sustainable fuel production creating carbon-free fuels for maritime and aviation industries. The Solent Cluster has the potential to capture, transport and store up to 10 Mtpa of CO ₂ .	ExxonMobil, Solent Local Enterprise Partnership, University of Southampton	In Planning	No data	No data	10	No data



Carbon Capture, and Storage

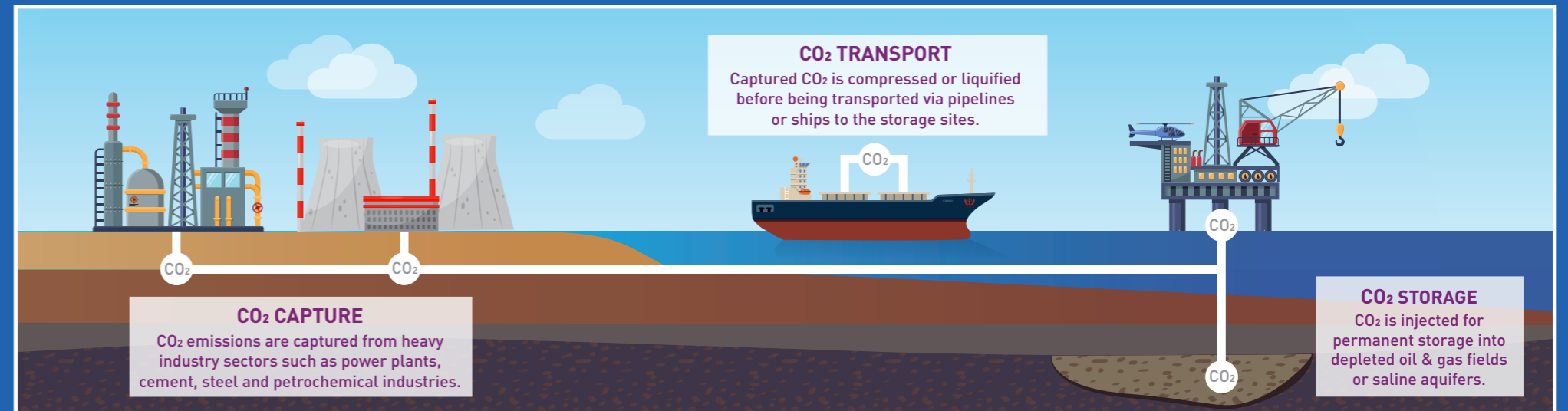
CCS is a set of technologies that enable the Capture, Transport and Storage of CO₂.

CCS is a proven and safe technology. CO₂ has been captured, transported and stored in Europe successfully since 1996 (Sleipner project, Norway).

It is a key technology for Europe to meet climate neutrality.

More CCS resources at iogpeurope.org

How it works The 3 segments of the CCS value chain



CCS be deployed at scale, often repurposing existing infrastructures

Where can CCS make a difference?



Decarbonisation of hard-to-abate industries

In the EU, steel, cement, chemical and refining sectors emit 37% of total CO₂ industrial emissions. CCS is one of the only technological options to enable emission reductions in hard-to-abate industries.



Energy transition

CCS can be applied to gas-fired power plants which provide flexibility to an electricity grid with a higher share of intermittent renewables.



Low carbon hydrogen production

Hydrogen production based on natural gas decarbonized with CCS is the most cost-effective. It can supply industrial sectors and decarbonize sectors which cannot be electrified such as aviation and maritime transport.



Negative emissions

Large scale negative emissions can be achieved when BioEnergy production is combined with CCS (BECCS) or when Direct Air Capture is combined with CCS (DACCS).

A European CO₂ storage ambition

IOGP Europe promotes an ambition on CO₂ storage injection capacity availability.



Ambition level of 0.5 to 1.0 GtCO₂ storage availability per year by 2050



Scope covering EU, EEA and the UK



Requires a comprehensive EU policy framework