



COREu

CO₂ routes across Europe

Coordinated by SINTEF ER, Norway



Co-funded by
the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101 136217



Goal and Objective



The COREu project seeks to create a **transnational infrastructure and logistics network** for Carbon Capture and Storage (CCS), linking CO₂ emitters with storage facilities throughout Europe. It aims to **reduce CO₂ emissions** by 6.8 million tons annually by 2035 and by 36 million tons annually by 2050.



Key facts about COREu



From January
2024 to
December 2027
(**4 years**)



Co-funded by the
European commission
with **29.3 M€** (total
budget 35.7 M€)



43 partners, including CO₂
emitters, technology
providers, gas transport
system operators,
transportation companies,
research institutes, and
universities.



Demonstration of **key technologies** in a CCS
value chain and support
for the development of
three new CCS routes in
Central-Eastern Europe



Main Objectives

-  Accelerate CCS deployment by demonstrating safe and effective CO₂ transport and storage.
-  Increase the TRL of the CCS technologies developed.
-  Define economically viable, societal-and environmentally-aware business models for a sustainable upscaling of the deployment of CCS.
-  Develop improved CO₂ stream specifications for the demo, facilitating open-access transport, by targeted analysis and experiments.
-  Provide experimental data, new methods and tools for safe design and risk assessment of CO₂ transport.
-  Provide experimental data and develop tools to de-risk and optimize CO₂ storage.
-  Support the deployment of multimodal, open-access CO₂ transport by experimental data, validated models and engineering design.
-  Facilitate the safe operations of, and enable revenues and credits allocation in, CO₂ transportation networks by advancing metering and analysis technologies.
-  Develop a standard methodology for strengthening social acceptance of CCS technologies.
-  Monitor, prevent and reduce the environmental impact of transport and storage deployment.
-  Contribute to create a positive momentum for CCS across EU, by mobilizing impacting stakeholders (beyond consortium) & offering an innovative setting for collaborative engagement, resulting in accelerated deployment of safe, sustainable and resilient CCS routes in Europe.





COREu Methodology

Advancement of CCS: Demonstrations across multiple geographies, including a full-chain demonstration in Greece.

Strategic Research: Accelerating CCS deployment, developing tools for safe design, operation, optimization, traceability, and risk mitigation.

Accelerated Route Development: Addressing technical, economic, and societal issues across Europe.

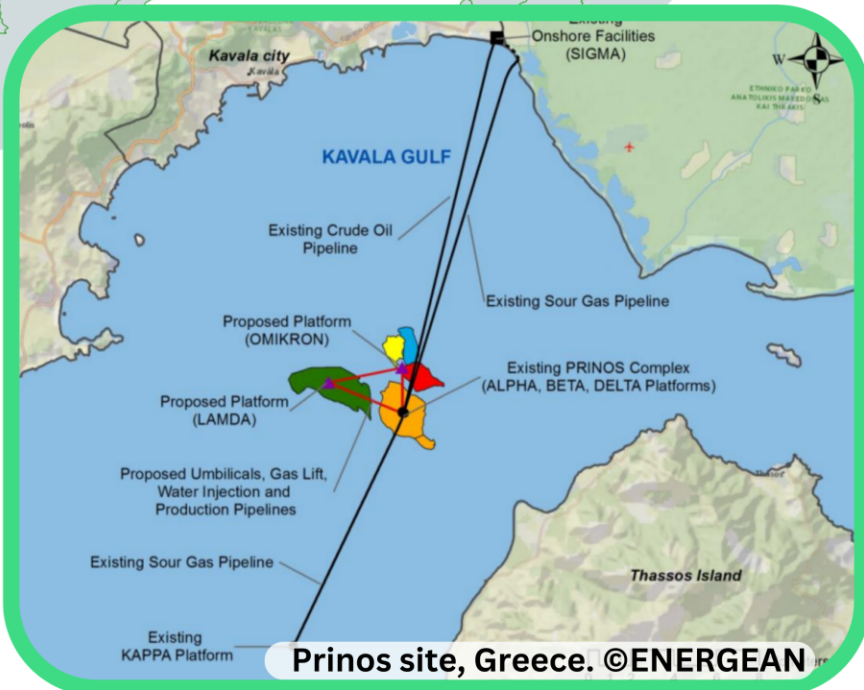
Demonstrations

Greece :

- ✔ CO₂ delivery to Prinos offshore storage site (using GVP* transport vessels).
- ✔ AUV*-based leakage monitoring system.
- ✔ Monitoring induced seismicity with subsea sensors.

Norway:

- ✔ Onshore test of innovative offloading solution by MacGregor.
- ✔ Storage suitability assessment.
- ✔ CO₂ pilot operations and leakage monitoring.
- ✔ Monitoring induced seismicity with subsea nodes.
- ✔ Upscaling to full-field development.





Strategic Research to accelerate CCS deployment



Research Lines:

- ✔ **CO₂ Composition and Impact:** Impurity specifications, process and thermodynamics analyses, corrosion tests.
- ✔ **Safe Design and Operation:** CO₂ dispersion experiments, pipeline network models, quantitative risk assessment.
- ✔ **Metering and Analysis :** Customization and demonstration of a CCS value chain monitoring tool.
- ✔ **Multimodal Transport and Operability:** Laboratory work on CO₂ behavior during transport.
- ✔ **De-risking and Optimizing Storage:** Techno-economic analyses, reuse of existing assets.

Accelerated route development across Europe



Full CCS value chain demonstration:

🌱 **Greece:** CO₂ delivery to Prinos using GVP* transport vessels

Three new routes in Central-East Europe:

🌱 **Czech Republic:** MND's storage structures and hub development.

🌱 **Poland:** LPB*'s offshore reservoir exploitation in the Baltic Sea.

🌱 **Ukraine:** UGV*'s CO₂ capture and transportation routes.

Long-term Assessments:

🌱 Carbon intensity, LCA, environmental impact, and risks.

🌱 Scenarios for cross-border CO₂ transport infrastructures.

* LPB-Lotos Petrobaltic SA

* UGV-UKRGASVYDOBUVANNTA JOINT STOCK COMPANY



Project innovations

1. Use of **GVP* Carbon Fibre Cylinders** to transport captured and compressed CO₂ by truck to the storage site.
2. Onshore demonstration of four system architectures to **transfer CO₂** from transport vessels in ships to the injection well.
3. **Induced seismicity monitoring system**: a wireless, battery-powered set of offshore sensors that can stay on the seabed for up to six months without recharging.
4. **CO₂-sniffing AUV**: this technology will be used to monitor potential leakage near the injection wells and along the CO₂ gas pipeline route.
5. **Open-source tool** for design and assessment of high-pressure pipelines to avoid running ductile fractures.
6. Enabling the assessment of the economic and safe **reuse of existing assets** such as pipelines, wells, and platforms.
7. **Well-reservoir flow coupling**.
8. **Metering and analysis of CO₂ streams** including the customisation and demonstration of a tool to monitor the whole CCS value chain.



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