



COREu

CO₂ routes across Europe

Coordinated by SINTEF ER, Norway



Co-funded by
the European Union

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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.

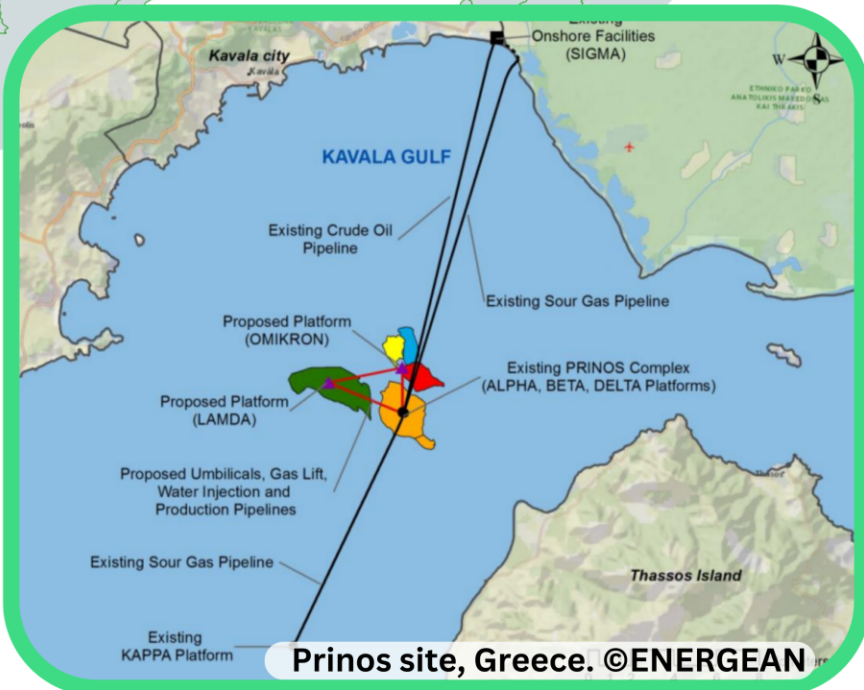
Demonstrations

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



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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