

IOGP Europe input to the Call for Evidence on CO₂ market and infrastructure

Executive Summary

To meet the EU climate 2050 neutrality objective, a robust and interoperable CO₂ transport infrastructure is essential. The European Commission's forthcoming regulatory package on CO₂ markets and infrastructure presents a crucial opportunity to ensure a well-designed, investment-friendly framework that supports early deployment while laying the foundation for a stable, long-term CO₂ market.

This is particularly relevant in light of the Net-Zero Industry Act (NZIA) obligation to deliver at least 50 million tonnes per annum (Mtpa) of operational CO₂ injection capacity by 2030, where the establishment of an appropriate CO₂ transport regulatory framework will be essential to achieving this target. At the same time, careful consideration is needed to ensure that such measures do not prematurely shape or constrain the development of the market before it reaches full maturity.

This position paper outlines the key challenges to CO₂ infrastructure uptake and identifies core elements to be addressed in the regulatory framework. IOGP Europe calls for a **phased, flexible, and market-oriented approach, balancing early-stage public support with long-term private investment and avoiding rigid, unsuitable regulation at this nascent stage.**

Main recommendations:

- 1) Establish EU-level support mechanisms to lower the cost of capital, improve project bankability, and enable the emergence of a self-sustaining CO₂ market, including targeted de-risking instruments to mobilize private investment, and adapting and expanding EU funding instruments such as Connecting Europe Facility (CEF) and Innovation Fund that prioritize cluster-based approaches to deliver economies of scale.
- 2) Allow Member States discretion to implement tailored measures to reflect national market maturity, industrial structure, and regional circumstances, ensuring proportionate and effective outcomes.
- 3) Adopt a phased approach that evolves in line with market maturity, avoiding creating premature market structures that risk deterring investment for the nascent CO₂ market.
- 4) Design a legislative framework that differentiates transport and storage, recognizing their distinct risk profiles, and market dynamics, and type of investors.
- 5) Limit regulatory requirements in the early stages of the market, thereby fostering competition and preserving incentives for private investment.
- 6) Enable carbon capture and storage (CCS) deployment by streamlining permitting with enforceable deadlines, digital tools, and one-stop shops, while strengthening cross-border integration through mutual recognition of permits, joint planning, and carbon pricing alignment (e.g. EU-UK ETS).
- 7) In the short term, focus on developing high-level guidance for technical CO₂ standards while the markets ramp up, leaving CEN-CENELEC with the leading role in standards development.
- 8) Ensure grandfathering clauses to safeguard early investments and first movers, preventing delays from regulatory requirements (e.g. CO₂ specifications), unless clearly justified. It should also apply where national frameworks are already underway, ensuring EU rules build on existing progress and enable a coherent and proportionate regulatory transition.

A. Current status and key barriers to the uptake of CO₂ infrastructure

The development of CO₂ infrastructure in Europe is still in a nascent stage, with both market architecture and physical infrastructure yet to be built out. According to IOGP Europe's CCS map, 14.9 Mtpa of CO₂ injection capacity in Europe has so far reached Final Investment Decision (FID), of which 2,9 Mtpa of CO₂ injection capacity only is located in the EU. While the regulatory landscape may evolve as the market matures, at this stage, the priority is to adopt a balanced regulatory approach that supports growth rather than constraining it prematurely. In this context, we recommend carefully considering the following challenges:

i. Investment risks

Early-stage CO₂ transport infrastructure projects require substantial upfront investment while facing significant uncertainty over future revenue streams. This combination of high capital costs and an underdeveloped demand often deters private sector investment.

At this stage of market development, a lack of viable business cases, combined with high upfront costs and risk of underutilization deter private capital. **A persistent value gap for the CCUS chain remains, highlighting the need for additional funding and de-risking instruments from the EU and Member States.**

ii. Uneven network access

The CO₂ transport market in Europe is still at an early stage of development and remains characterized by some initial national and regional rules.¹

A key challenge is that many emitters are located in countries without access to geological storage sites or where national deployment is prohibited. As a result, they lack the necessary transport and storage infrastructure to decarbonize effectively. This creates an uneven playing field across Member States and undermines the principle of a fair and inclusive transition. Additionally, lengthy and uncertain permitting timelines exacerbate these challenges. Permitting processes can stretch over several years, creating a persistent misalignment with project investment cycles and slowing down project delivery even when projects have secured funding or reached FID. This lack of coherence elevates transaction costs, delays project delivery, and undermines the foundations of an internal market for CO₂ transport.

Furthermore, the current regulatory uncertainty inhibits the mobilization of long-term capital. Infrastructure investments of this scale and duration require clear, consistent, and predictable rules throughout the asset lifecycle. Frequent or ad-hoc regulatory changes significantly increase the perceived risk of investment, impeding financial closeness and eroding confidence in the sector's long-term viability.

iii. Cross-border alignment

The deployment of CO₂ transport infrastructure at scale necessarily involves cross-border coordination, given the geographical mismatch between CO₂ sources and suitable storage sites, particularly offshore in the North Sea. Industrial clusters often depend on access to storage capacity in other Member States or third countries, including key strategic partners such as Norway and the UK. However, due to legal and regulatory discrepancies between EU and non-EU countries, such cross-border projects face substantial legal, technical, and administrative obstacles.

Although the cross-border dimension is well recognized, the **EU framework still lacks structured mechanisms for joint planning and alignment. This leaves a critical gap in the creation of an integrated European CO₂ network.**

B. Short-term measures for the CO₂ markets and transport regulatory framework

To address the challenges highlighted above, IOGP Europe proposes that the European Commission, as a priority, focus on short-term objectives that support the development of the CO₂ markets and infrastructure, and consider the following topics under the upcoming regulatory framework:

1. De-risking investment and supporting markets

Overcoming investment barriers to CO₂ transport and storage infrastructure requires a mix of targeted de-risking instruments, stronger coordination, and more effective use of existing EU funding mechanisms. Support must be put in place to reduce the cost of capital, make projects bankable, and create conditions for a self-sustaining market.

¹ For example, the Flemish CO₂ Decree (29 March 2024) and the Walloon CO₂ Transport Decree (12 July 2024) in Belgium



In an embryonic market, regulation should be designed to support and de-risk investment. This means allowing investors in CO₂ transport infrastructure to recover costs through a tariff structured to enable the market to take off and scale effectively. In this context, fees from third-party negotiated infrastructure use, exemptions from national rules such as regulated third-party access (rTPA) and regulated tariffs (rTariffs), can potentially offer higher returns and greater flexibility and therefore be more attractive to investors. This approach may accelerate market development, particularly in contexts where multiple projects are emerging and competition is present, and where agreements across the value chain can be reached.

Regulation should also take into account the local circumstances, including the specific needs for infrastructure in the country/region, potential investors, and the circumstances of the investment.

While funding instruments are welcomed, their impact might be limited in case resources are fragmented across regions and long timeframes. **To maximize effectiveness, support should be deployed in a coordinated way, for example, by funding several emitters in the same area at the same time.** This orchestration allows emitters to share infrastructure, creates sufficient volumes to justify large-scale networks, and helps mitigate investment risk in the early stages.

To accelerate deployment, **targeted de-risking instruments that enhance project bankability and attract private capital must be implemented.** A well-designed mix of tools is essential to reduce the cost of capital and support the transition from concept to commercial operation. Several mechanisms can play a critical role in this process:

- **Carbon Contracts for Difference (CCfDs)** provide revenue certainty by guaranteeing a stable price for CO₂ storage or abatement over a defined period, shielding projects from carbon market volatility.
- **Guarantee funds for transport and storage infrastructure (e.g. loans guarantees)**, to mitigate key risks inherent in first-of-a-kind infrastructure serving a market not yet mature, such as CO₂ volumes risk
- **Public-private partnerships (PPPs)** should play a central role in financing transport infrastructure, particularly in the early stages when infrastructure must be built ahead of demand. Public support can ensure networks are dimensioned for future growth, not just short-term volumes.
- **EU ETS revenues** should be strategically allocated to CO₂ transport and storage infrastructure. Earmarking auction proceeds for physical networks and digital systems would close funding gaps and ensure that polluter-pays revenues directly support decarbonization goals.

Significant impact would come from directing EU and national support towards coordinated, cluster-based approaches that can de-risk several projects in the same area, which already benefit from sharing the same infrastructure. Such orchestration would provide the critical mass needed for efficient infrastructure deployment, mitigate the risk of stranded or underutilized assets, and accelerate the development of a viable CO₂ market.

As no single de-risking mechanism can address the challenges across Europe, the European Commission should also consider complementary schemes in addition to those highlighted above. Such solutions should be designed with sufficient flexibility to be applied on a project-by-project basis, reflecting the specific risk profiles and investment needs of individual projects. At the same time, **Member States should be granted the ability to introduce tailored measures that account for their market maturity and regional circumstances.**

Additionally, public co-financing of research and development for storage site exploration, onshore and offshore, remains equally important to expand capacity, lower risks, and create a more predictable investment environment.

Finally, **existing funding mechanisms such as the Connecting Europe Facility (CEF) and the Innovation Fund should be adapted to better support CCUS projects.** This means streamlining application procedures, broadening eligibility, and prioritizing coordinated, cluster-based projects that can ultimately deliver economies of scale.

2. Access to the network

Regulation must learn from past experiences in the energy sector and be adapted to market realities. In particular, it is critical to **avoid prematurely imposing rigid market structures that could deter early investment**, similar to what happened with the hydrogen framework. In fact, both hydrogen and CO₂ markets are nascent markets and require a **phased and market-aligned approach**² to unbundling, which can support early deployment while laying the foundation for open access and competition as the market matures.

² Instead, gas market related legislation was established after the gas market consolidation, allowing for a more stringent framework.

This is essential to preserve investment incentives while promoting transparency and open access as the market matures. Crucially, regulatory **treatment should distinguish between transport and storage segments, reflecting their different market dynamics and risk profiles.**

A regulatory framework must be fit-for-purpose, considering market conditions. **A one-size-fits-all regulatory approach would be inappropriate:** any regulatory framework should distinguish between transport and storage functions, reflecting their different market dynamics, risk and investors profiles.

2.1 Storage

The EU should actively promote multimodal CO₂ transport solutions (e.g. shipping, rail and barges) to ensure that all emitters have access to storage sites in the most efficient way. Shipping, in particular, offers flexibility and scalability, and exhibits characteristics of a competitive market. Regarding CO₂ storage, 53 storage projects have already been announced in Europe, including the EU, UK, and Norway. This gives a clear indication that there will be a sufficient number of independent storage service providers, without dominant players. Storage operators will have to compete against each other, leading to cost-efficient market-driven solutions for customers seeking to store their CO₂. Entry barriers are low: there is a large potential for CO₂ storage across the EU, enabling locations to be operated by different companies. Permits are being granted already in a number of countries. This could be further improved by taking measures to speed up permitting.

However, this dynamic is primarily visible in Northern Europe, where most announced storage projects are concentrated. In contrast, Southern Europe currently lacks a comparable level of development, and competition among storage providers is not yet evident. The reduced competition in this region and the need to ensure access to decarbonization services for all industrial emitters make a regulated model more suitable. Such a model should include guarantee mechanisms and risk mitigation tools, as described in the previous paragraphs.

2.2 Transport

Regarding transport, the call for evidence states that CO₂ pipeline infrastructure is likely to have the characteristics of a natural monopoly. However, this does not consider that pipelines will be competing with shipping solutions for offshore transport. Various pipeline and shipping solutions have been announced by multiple market parties in numerous countries.³ This indicates that there will be competition in offshore CO₂ transport. For onshore transport, CO₂ can be transported via various modalities, but the degree of competition will depend on the location of the emitter (e.g. proximity to rivers or railways).

As the CO₂ market is still in a nascent phase, significant uncertainties remain about how the market will develop and whether competition will fully develop. In that context, a phased regulatory approach should be put in place. **In the short term, regulation should be 'light touch' and allow competition to take place and to provide investment incentives and de-risking mechanisms where needed.** Competition law already provides a safeguard, as any abuse of a dominant position is forbidden. An evaluation should be carried out to assess the level of competition and to determine if and what form additional regulation is warranted, ensuring that any future EU framework is informed by practical experience gained during the CCS industry's early build-up.

3. Permitting

The framework must treat permitting as a critical enabler of the energy transition, supported by legally enforceable time limits, simplified procedures, and fit-for-purpose regimes for CO₂ infrastructure. This includes cluster-level permitting for shared networks and a streamlined approach for cross-border projects. Greater clarity and alignment across EU legislation are also essential to reduce litigation risks and procedural duplication.

³ JRC Highlights Report 2024: <https://publications.jrc.ec.europa.eu/repository/handle/JRC141578>

Permitting timelines for trans-European energy infrastructure currently average five to seven years.⁴ To address this, **permitting procedures systems must be modernized through digitalization, risk-based assessment models, and one-stop shops at the national level should be introduced.** These reforms will ensure transparency, improve coordination, and accelerate the rollout of CO₂ infrastructure while maintaining high environmental standards. The adoption of 'tacit approval' mechanisms, where appropriate, can further improve time discipline and accountability within permitting processes, reducing the risk of legal challenge and project delays that have plagued key European projects.

4. International cooperation

Unlocking the potential of cross-border CCS is critically dependent on strengthened international cooperation. Due to the uneven distribution of suitable geological storage sites across Europe, the ability to transport CO₂ across borders, particularly to offshore storage facilities, is not just a technical necessity but a strategic enabler for meeting the EU's climate targets in a cost-effective and equitable manner. **The facilitation of cross-border CO₂ transport and storage is an essential pillar of a functioning, scalable European CCS market.**

The EU regulatory framework should explicitly enable and encourage cross-border CO₂ transport between Member States. Removing legal and administrative barriers to transnational CO₂ flows is essential for building a truly integrated carbon management market across Europe.

A key aspect in this context is the London Protocol. The 2009 amendment was designed to provide legal certainty for cross-border CO₂ transport by offshore pipeline and ship, but it requires ratification by two-thirds of its 54 contracting parties. With only a small number of countries having ratified it so far, progress is unlikely in the near term, and projects will continue to depend on bilateral agreements. To reduce fragmentation, it would be preferable for such **agreements to be coordinated centrally at the EU level**, rather than individually negotiated with each country hosting storage sites. In parallel, the EU should clarify the application of the Helsinki Convention to CO₂ storage under the Baltic Sea, thereby removing legal uncertainty and ensuring a level playing field with projects in the North Sea.

Equally important is **the alignment of carbon pricing frameworks, particularly the linking of the EU and UK ETS**, to ensure that market incentives are coherent and mutually reinforcing across jurisdictions. Without such alignment, emitters may face regulatory and financial barriers to accessing the most suitable storage options, undermining the economic efficiency and climate effectiveness of cross-border CCS deployment.

C. Long-term measures for the CO₂ markets and transport regulatory framework

Additional areas should be taken up in the EU legislative framework only once CO₂ markets have reached a sufficient level of maturity. At that stage, and in light of potential future challenges, further measures could be considered to support the gradual development of an integrated EU-wide market:

1. Infrastructure planning

The development of an interconnected, efficient, and future-ready CO₂ transport network requires coordinated infrastructure planning at both national and transnational levels. Effective planning must anticipate future demand for transport and storage, identify geographic mismatches between emissions sources and available storage capacity, and ensure system readiness for cross-border flows. This includes accounting for emerging industrial clusters, shipping corridors, and intermodal transport nodes, as well as prioritizing resilience and flexibility in network design.

The current EU framework lacks structured mechanisms to support joint planning and regulatory alignment between Member States. To address this, **regional coordination should be strengthened through the development of joint infrastructure blueprints, mutual recognition of permits, and cross-border cooperation tools, drawing inspiration from existing models in the electricity and gas sectors.**

⁴ EIB Investment Report 2024/2025: <https://www.eib.org/en/publications/20240354-investment-report-2024>

Member States on both sides of transport corridors should be required to engage in coordinated scenario development and infrastructure mapping. These regional infrastructure blueprints would help identify shared priorities, interconnection points, and synchronized project timelines.

The legal framework should also **support mutual recognition of permits and approvals that have been granted by national authorities**, including environmental assessments and storage approvals, in order to reduce administrative burdens and prevent regulatory duplication. In parallel, **the European Commission should facilitate the creation of regional coordination platforms**, involving Member States, third countries (e.g. Norway, UK), regulators, and stakeholders, **to coordinate the identification, development, and rollout of strategic cross-border corridors**. These **corridors**, especially those **linking to mature storage sites** in countries like Norway, **should be prioritized as Projects of Common or Mutual Interest (PCIs/PMIs) under the TEN-E framework**.

To facilitate the planning and reduce costs, **CO₂ infrastructure planning should be integrated with the planning of other energy vectors**, such as electricity, hydrogen, and gas. This would support co-located infrastructure, shared permitting procedures, and harmonized investment cycles.

To this end, the following legal adaptation recommendations are suggested:

- **Amend the TEN-E Regulation (Regulation (EU) 2022/869)** to expand the scope of Projects of Common Interest (PCIs) **to explicitly include multi-modal CO₂ transport** corridors, encompassing pipeline networks, shipping routes, terminals, and intermodal infrastructure. These corridors should facilitate coordinated investments and access to permitting and financing benefits under the TEN-E framework.
- **Creating a new category of “CO₂ Corridors” under TEN-E, establishing a dedicated pillar for CO₂ infrastructure**, analogous to the existing “Hydrogen Corridors” category.
- **Aim for mutual recognition of permits for cross-border CO₂ infrastructure**, including environmental and technical approvals, and mandate cooperation on regional infrastructure planning through bilateral or multilateral agreements.

Finally, **introducing a system of certificates of origin** would maximize the use of CO₂ infrastructure while optimizing the costs and emissions of the logistics. Specifically, it would incentivize CO₂ captured at industrial sites to be used locally for synthetic fuel production, while enabling bioCO₂ to be stored elsewhere to meet biogenic input requirements.

2. Technical specifications and definitions

While a robust CO₂ transport and storage ecosystem will ultimately benefit from fit-for-purpose technical standards and certification frameworks that ensure interoperability across modalities and jurisdictions, safeguard operational safety, and support market integration, caution is needed in introducing them at this early stage of market development. **Standards must remain proportionate and flexible so as not to deter early projects.**

- **Requirements on CO₂ purity and quality should reflect the actual needs of storage and transport operations, rather than overly rigid or conservative specifications that could unnecessarily increase compression and conditioning costs, disproportionately affecting emitters and smaller operators.** Establishing a CO₂ specification involves balancing technical requirements to maintain system integrity, the needs of capture processes, and the commercial imperative for emitters to deliver cost-effective solutions. Since this balance depends on transport modality and system design, an optimal specification for one project may not be appropriate for another. **Early standards should, therefore, provide high-level guidance that ensures safe operations and interoperability, while leaving room for project and hub-level adaptations.**
- Flexibility should be put in place to allow adjustments where needed, especially to facilitate cross-border transport and to enable the emergence of a more liquid, competitive market. **More detailed specifications can evolve gradually as the market matures, operational experience is gained, and larger networks emerge. Grandfathering clauses should safeguard early investments and first movers, ensuring that new regulation does not apply to infrastructure that are already in Front-end engineering (FEED) phase or have taken Final Investment Decision (FID) prior to entry into force, unless clearly justified.** This principle should also apply where national frameworks are already underway, so that EU rules build on existing progress and enable a coherent and proportionate regulatory transition. At the same time, exemptions should also be possible for large new projects that would not proceed without such flexibility.

- **The European standardization body (CEN-CENELEC) should be in the lead through its technical working groups, to coordinate the development of technical standards for CO₂ composition, pressure, temperature, and monitoring protocols, ensuring consistency while leaving space for project/hub-level adaptations.** These standards should be developed transparently and in close consultation with industry and regulators to reflect operational realities and market needs.

In parallel, as the EU moves toward an integrated, cross-border carbon capture, utilization, and storage (CCUS) market, it is essential that the regulatory framework explicitly recognizes the diverse roles and modalities encompassed by CO₂ transport operators. **Definitions must reflect the multi-modal nature of future CO₂ value chains, extending beyond pipelines to include shipping and rail, and other modes.** This approach is essential for facilitating cross-border projects and ensuring access to storage sites in geographically diverse regions.

To support the development of a flexible, resilient, and interoperable CO₂ transport system, definitions should be established to clarify the different elements and actors, such as:

- **“CO₂ transport network”:** interconnected infrastructure for conveying carbon dioxide by barges, pipeline, ship, rail, vehicle, or other modalities, including associated terminals, ports, storage hubs, and interface facilities between transport modes.
- **“CO₂ transport operator”:** any natural or legal person undertaking the operation, maintenance, coordination, or expansion of one or more components within a CO₂ transport network, irrespective of the modality used.

Definitions should apply equally to captured CO₂ volumes produced from fossil fuels and biogenic sources. **Additionally, Annex I of the ETS Directive should be updated to explicitly list all eligible CO₂ transport modalities, including pipeline, ship, rail, and vehicle.** As stated in [IOGP Europe’s response to the Revision of EU ETS Public Consultation](#), **maintaining the current narrow definition risks distorting investment decisions and creating regulatory asymmetry.** Expanding ETS coverage under strict MRV and permanence rules would promote technology neutrality and accelerate the deployment of integrated carbon management networks. These definitions must be consistent across different legal documents to avoid legal fragmentation and ensure coherent implementation.