



Position Paper on Onboard Carbon Capture and Storage

Main Recommendations

ECSA calls on the Commission to:

- Provide legal clarity on CO₂ classification and harmonise EU legislation with IMO instruments to enable OCCS deployment.
- Integrate OCCS into the EU Industrial Carbon Management Strategy.
- Incentivise port infrastructure investments, align EU policies with IMO guidelines, and establish robust CO₂ monitoring frameworks to advance OCCS and support investments in the sector.

Introduction

The European 'Fit for 55' package and the historic IMO agreement on a greenhouse gas (GHG) strategy have set clear targets for shipping, making its energy transition not a question of 'if' but a question of 'how'. European shipowners are committed to contributing to the EU's goal of becoming the first carbon-neutral continent by 2050.

Onboard Carbon Capture and Storage (OCCS) is one of the solutions to achieve the EU climate goals and to reduce shipping carbon emissions. This technology will contribute to meet the EU and IMO climate objectives and has the potential to accelerate the production of renewable fuels. The revised GHG reduction targets and implementation timelines will affect to a great extent the compliance requirements for the existing fleet. While maintaining a technology neutrality approach and considering the diverse types of technology for OCCS, using onboard carbon capture technologies provides flexibility solutions for both the new-built and the existing fleet in the transition of shipping to decarbonisation, taking into account the characteristics and limitations of different ship types. Promoting "drop-in" fuel alternatives that can be used by ships with minimal or no conversions of marine internal combustion engines and infrastructure is crucial.

This position paper therefore outlines ECSA's position on OCCS and proposes regulatory recommendations to support its deployment in the EU and globally through the IMO. It is accompanied by another ECSA position paper on Carbon Capture, Utilisation and Storage (CCUS).



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Legal clarification on CO₂ classifications and harmonisation of EU legislation with IMO instruments

Captured CO₂ can in some cases be considered as a commodity and in other cases as a waste product. The Basel Convention restricts the transboundary movement of hazardous waste and other waste at an international level. Although CO₂ is not explicitly listed as a waste product in the Basel Convention, there must be a clear consensus on its categorisation under this regime. Legal certainty is necessary to exclude captured CO₂ from the waste scope of the Basel Convention, in particular captured and chemically bound CO₂. Similarly, while CO₂ captured onboard a ship is not currently included as a waste product under MARPOL, there is a grey area on whether it would fall under the MARPOL provisions. IMO's Intersessional Working Group is considering several proposals related to the OCCS technology and how its regulation could be accommodated within IMO's current regulatory framework. **Progress on this matter at IMO would therefore clarify this legal framework, and IMO should be recognised as the primary body that regulates shipping aspects of OCCS to ensure a uniform and robust regulatory framework.** This clarity will ensure proper management, transport, storage, and utilisation preventing legal ambiguities that could hinder the deployment of OCCS on vessels.

Shipowners are essential in the cross-border transport of CO₂ for geological storage and utilisation within the EU/EEA. **To streamline this process, a single market for CO₂ transport must be established, replacing the current reliance on bilateral agreements under resolution LP.5(14) to the London Protocol¹.** In this respect, there is significant benefit for the parties to the London Protocol that have not yet ratified the 2009 amendment (i.e. resolution LP.3(4)) to do so at the earliest opportunity, thereby enabling much wider scale transboundary movement of CO₂ for purposes of sequestration. Finally, the European Commission should continue to support the IMO's regulatory developments on OCCS and integrate future IMO provisions into the EU framework. **Harmonising EU and IMO regulations will create a clear pathway for OCCS implementation, facilitating its adoption and contributing towards global GHG reduction targets.**

Integration of OCCS in the EU Industrial Carbon Management Strategy

OCCS should be an important component of the EU Industrial Carbon Management Strategy, published in February 2024. While land-based applications are explicitly mentioned, OCCS is not reflected in detail. Therefore, **ECSA calls for an expansion of the EU Industrial Carbon Management Strategy from land-based applications to shipboard applications.** OCCS is also expected to be

¹ [International Maritime Organisation \(IMO\) Resolution LP.5\(14\)](#)



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included in the FuelEU Maritime Regulation after its revision in 2026. Therefore, **European shipowners advocate for strategic infrastructure planning at EU level to support the development and deployment of OCCS in the maritime sector, including a robust certification and chain of custody scheme as well as ambitious and well-coordinated policies at national level.** This entails developing an infrastructure capable of handling large volumes of captured CO₂, intended for sequestration as well as chemically bound CO₂, including port reception and storage facilities and the hinterland supply chain.

Infrastructure and guidelines on OCCS to ensure investments

There is a need to stimulate and incentivise investments in port infrastructure to prepare for shipboard applications. **The greatest challenge is shore-based processing and relates to the lack of scalable infrastructure to receive and sustainably manage CO₂ captured on commercial ships. In parallel, it is important to develop operational and safety provisions for ships equipped with OCCS technology to encourage investment in this field.** The IMO's development of operational and safety guidelines for ships using OCCS, in alignment with existing regulations such as the International Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Pollution from Ships (MARPOL), would encourage such investment in OCCS. Additionally, classifications societies need to update their rules for ships with OCCS technology onboard.

Moreover, the standardised development of port reception and storage facilities, interfaces as well as rules and regulations should be aligned with IMO's work. This integration will enhance the EU's efforts to reduce GHG emissions and foster innovation in shipping. The IMO's work on OCCS will be key to the technology adoption and will ensure its contribution to GHG reduction targets on a global scale. The EU policy framework should thus be aligned with any of the upcoming IMO standards regarding OCCS.

Requirements for the characterisation of the CO₂ captured onboard a ship, including chemically bound forms of CO₂, should also be developed.

Different geological storage sites have individual specifications for acceptable CO₂. Port reception facilities will need to meet these specifications when CO₂ is offloaded from ships and ahead of its transport to storage sites. These specifications are currently not achievable for CO₂ produced by combustion engine onboard ships. The specification needs to be revised and standardised to align with the actual requirements of the sequestration process. Additionally, technology and infrastructure for purifying CO₂ must also be developed, preferably onshore, to create synergies and minimise additional energy demand onboard. Requirements for chemically bound CO₂ and in general CO₂ for utilisation shall also be considered. **The use of carbon capture technology onboard ships should take into account GHG emission reductions from onboard carbon**



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capture in the relevant IMO GHG regulatory framework, including EEDI, EEXI, CII, and the mid-term measures.

It is essential to recognise that **OCCS could extend the asset life of existing vessels where conversion to zero-carbon fuels is cost-prohibitive. Therefore, OCCS should be considered of strategic importance to the industry and adequate funding support should be provided to further develop it.** It must be ensured that existing and new ships are given equal opportunities through technology neutrality and provided access to suitable fuels. Therefore, while new ships will be able to exploit the new fuels and technologies in the longer term, the solution for the existing fleet in the foreseeable future is the availability of “drop-in” marine fuels and OCCS.

Finally, **the IMO should develop detailed guidelines for monitoring, reporting, and verifying captured carbon so the European Commission can align efforts with the IMO.** Unambiguous guidelines will enhance the credibility of OCCS as a means of mitigating GHG emissions. The IMO and the European Commission should also create guidelines for the transparency, traceability, and certification of carbon storage and utilisation. These guidelines will ensure effective tracking from capture to storage, while supporting regulatory compliance and transparency.

Contact

Anaëlle Boudry

Senior Policy Advisor for Climate & Environment
European Community Shipowners' Associations (ECSA)

anaelle.boudry@ecsa.eu

+32 2 510 61 25