IMO's ongoing work on onboard carbon capture and storage (OCCS) systems

OCCS Technical Seminar – 11 September 2025

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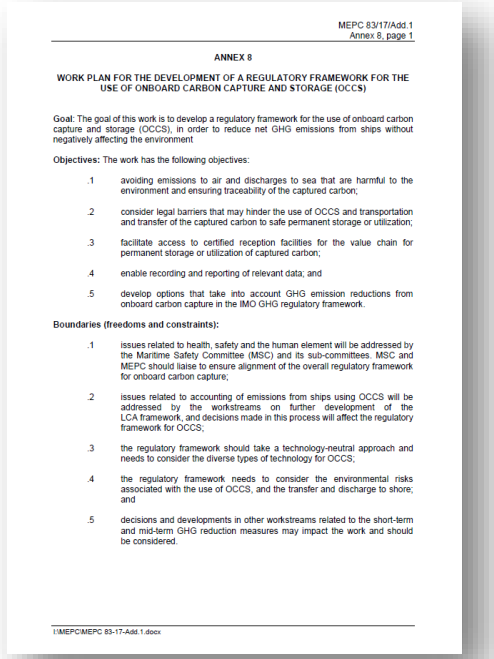
INTERNATIONAL MARITIME ORGANIZATION

Work plan for the development of a regulatory framework for the use of OCCS

- **Goal:** develop a **regulatory framework** for OCCS use, to **reduce net GHG emissions** from ships **without negatively affecting the environment**

- **Objectives**:
  - avoiding **emissions to air** and **discharges to sea** that are harmful to the environment and ensuring **traceability** of the captured carbon;
  - consider **legal barriers** that may hinder the OCCS **use** and **transportation** and **transfer** of captured carbon to safe permanent storage or utilization;
  - facilitate access to **certified reception facilities** for the value chain for permanent storage or utilization of captured carbon;
  - enable recording and reporting of relevant **data**; and
  - develop options that take into account GHG emission reductions from onboard carbon capture in the **IMO GHG regulatory framework**.



MEPC 83/17/Add.1
Annex 8, page 1

ANNEX 8

WORK PLAN FOR THE DEVELOPMENT OF A REGULATORY FRAMEWORK FOR THE USE OF ONBOARD CARBON CAPTURE AND STORAGE (OCCS)

Goal: The goal of this work is to develop a regulatory framework for the use of onboard carbon capture and storage (OCCS), in order to reduce net GHG emissions from ships without negatively affecting the environment

Objectives: The work has the following objectives:

.1 avoiding emissions to air and discharges to sea that are harmful to the environment and ensuring traceability of the captured carbon;

.2 consider legal barriers that may hinder the use of OCCS and transportation and transfer of the captured carbon to safe permanent storage or utilization;

.3 facilitate access to certified reception facilities for the value chain for permanent storage or utilization of captured carbon;

.4 enable recording and reporting of relevant data; and

.5 develop options that take into account GHG emission reductions from onboard carbon capture in the IMO GHG regulatory framework.

Boundaries (freedoms and constraints):

.1 issues related to health, safety and the human element will be addressed by the Maritime Safety Committee (MSC) and its sub-committees. MSC and MEPC should liaise to ensure alignment of the overall regulatory framework for onboard carbon capture;

.2 issues related to accounting of emissions from ships using OCCS will be addressed by the workstreams on further development of the LCA framework, and decisions made in this process will affect the regulatory framework for OCCS;

.3 the regulatory framework should take a technology-neutral approach and needs to consider the diverse types of technology for OCCS;

.4 the regulatory framework needs to consider the environmental risks associated with the use of OCCS, and the transfer and discharge to shore; and

.5 decisions and developments in other workstreams related to the short-term and mid-term GHG reduction measures may impact the work and should be considered.

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Approved by:
MEPC 83

Work completion:
2028

Work plan for the development of a regulatory framework for the use of OCCS

- **Boundaries:**
  - **CO_2 accounting** issues = LCA framework (but affects regulatory framework)
  - **Safety** aspects: MSC
  - Technology **neutrality**
  - Etc.
- **Tasks** identified in the OCCS work plan under each objective:
  - Identify the **environmental risks** of the different OCCS technologies
  - Review the status of **technological development** of onboard carbon capture applications
  - Facilitate access to **certified reception facilities** for the value chain for permanent storage or utilization of captured carbon
  - Develop **enforcement** provisions
  - Etc.

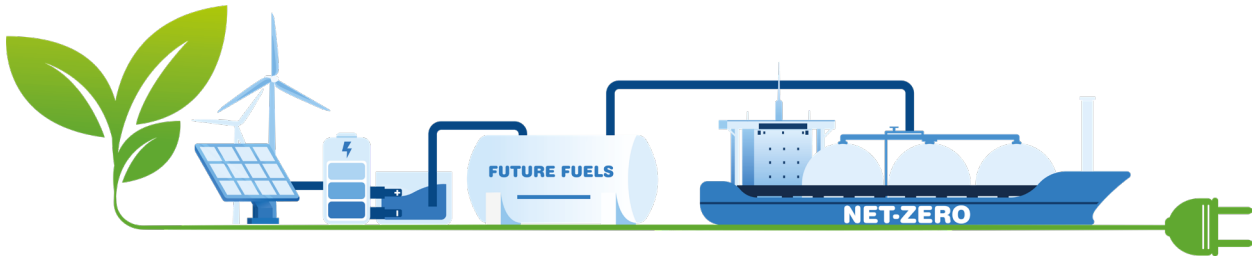
Correspondence Group (coordination: Norway)
Implementation of the OCCS work plan: currently developing **draft guidelines on testing, survey and certification on OCCS** including development of provisions to minimize emissions/discharge of substances that are harmful to the environment
Reporting to MEPC 84 (Spring 2026)

Draft work plan to prepare for the entry into force of the IMO Net-Zero Framework (MEPC/ES.2/3)

	2025	2026		2027	2028	
Work streams	**MEPC/ES.2/ ISWG-GHG 20 (Autumn)**	**MEPC 84 (Spring)**	**MEPC 85 (Autumn)**	**MEPC 86 (Summer)**	**MEPC 87 (Spring)**	**MEPC 88 (Autumn)**
Development of a regulatory framework for the use of onboard carbon capture and storage (OCCS)						
Development of a regulatory framework for the use of onboard carbon capture and storage (OCCS) in accordance with the Work plan approved by MEPC 83 (MEPC 83/17/Add.1, annex 8)		*Avoiding emissions to air and discharges to sea that are harmful to the environment and ensuring traceability of the captured carbon*				
		Consideration and development of guidelines on testing, survey, and certification of OCCS	Adoption of guidelines	*Develop provisions for enforcement*		
			Consideration of legal barriers that may hinder the use of OCCS and transportation and transfer of the captured carbon to safe permanent storage or utilization			
			Facilitate access to certified reception facilities for the value chain for permanent storage or utilization of captured carbon			
			Enable recording and reporting of relevant data			
			Develop options that take into account GHG emission reductions from onboard carbon capture in the IMO GHG regulatory framework			

Accounting of CO_2 captured on board ships

- **2024 LCA Guidelines:** emission credit from carbon capture and storage where capture of CO_2 occurs onboard ($\mathbf{e_{occs}}$) is reflected in the Tank-to-Wake emissions formula.
  - This should properly account for the emissions avoided through the capture and sequestration of emitted CO_2. From the emission credit, all the emissions resulting from the process of capturing, and transporting the CO_2 up to the final storage (including the emissions related to the injection, etc.) need to be deducted.
- The **GESAMP-LCA WG**, an independent expert group undertaking a scientific review of the IMO LCA framework is currently working on developing the accounting methodology for carbon capture and storage (CCS) and OCCS including the development of flowcharts of carbon sources and sinks to avoid double counting.



GESAMP
Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection

Safety requirements for OCCS systems

- **MSC 110** developed a list of alternative fuels and new technologies and identified barriers and gaps in IMO instruments that impede the safe use of these fuels and technologies (MSC 110/WP.9)
- MSC 110 instructed CCC to give high priority, starting at **CCC 12** (September 2026), to address **OCCS-related gaps and barriers** and develop safety requirements for OCCS systems on ships.
  - E.g. clarifying how the captured carbon is classified, (e.g. waste, cargo or overboard discharge)
  - Consider whether amendments to the IMDG Code are needed for the storage and transport of CO2 resulting from OCCS systems

NAVIGATING THE FUTURE: SAFETY FIRST!

The Future Fuels and Technology (FFT) Project

Provide **technical analysis** and the **latest data** to support **evidence-based decision making**

Support the implementation of the **2023 IMO GHG Strategy**

Workstream 1
Technical analysis

Global studies and research to support IMO's Member States decision making

Workstream 2
Online information Portal

Free and easy access to the latest information on maritime decarbonization

Workstream 3
Outreach and communication

Technical seminars on alternative marine fuels and technologies and promotion of the 2023 IMO GHG Strategy

Thank you.

International Maritime Organization

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