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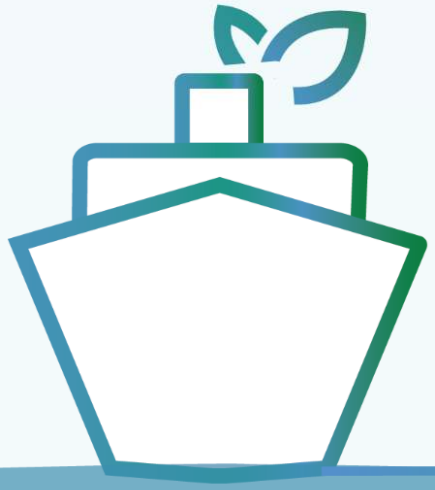

European Maritime Transport Environmental Report

EMTER 2025 –

13 May 2025

Georgios Chrostofi Head of Capacicy Building Unit (EMSA)

What is EMTER?

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EMTER is a stock-taking exercise providing a baseline

It is a factual report

It focuses on the EU dimension with a global perspective

Objectives of EMTER 2025

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Provide a knowledge-based assessment of the maritime sector's environmental footprint

Support the European Green Deal, Fit For 55 package, and decarbonisation transition process

Identify data and information gaps and R&D priorities

Update on the regulatory monitoring framework

Maritime transport sector

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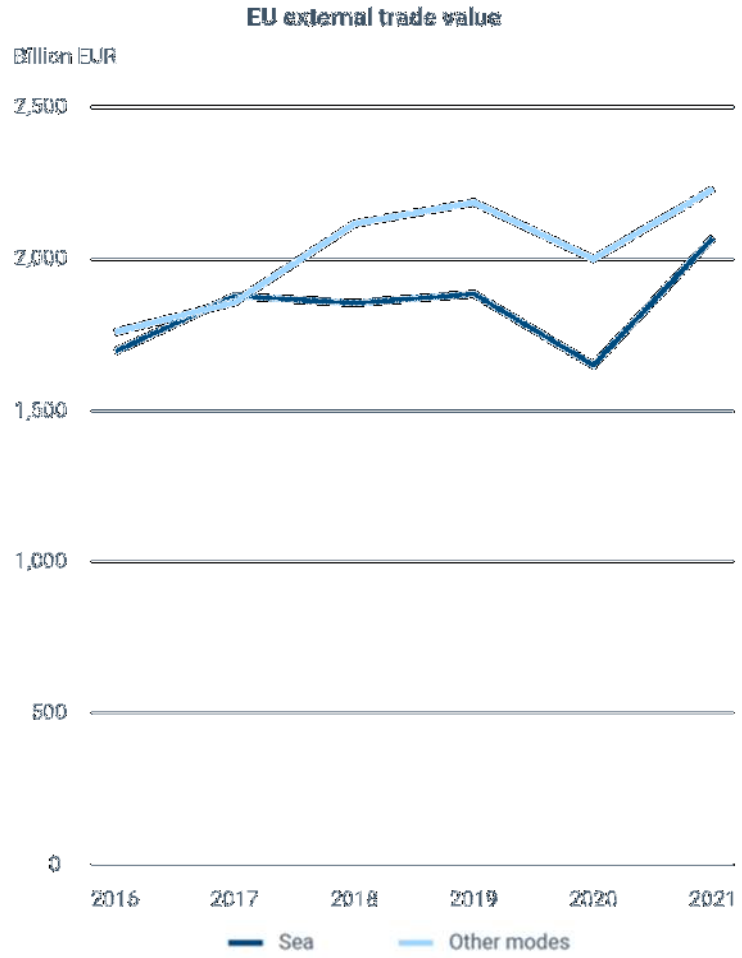
- **Trade**:
  - **74%** of EU imports and exports
- **Economy**:
  - **Maritime** Gross Value Added (GVA) 2021 = **€44.3 billion**
  - **Ports** GVA **€29.5 billion**
- **Employment Trends**:
  - 2022: **292,000** persons in **maritime** & **410,000** in **ports** sector
- **Decline in fishing fleet**:
  - **72,500 vessels** registered in **2022**



Source: EC, Statistical Pocketbooks 2017 to 2022, Section 2.1 (EC, 2022)

Greenhouse Gases (CO_2)

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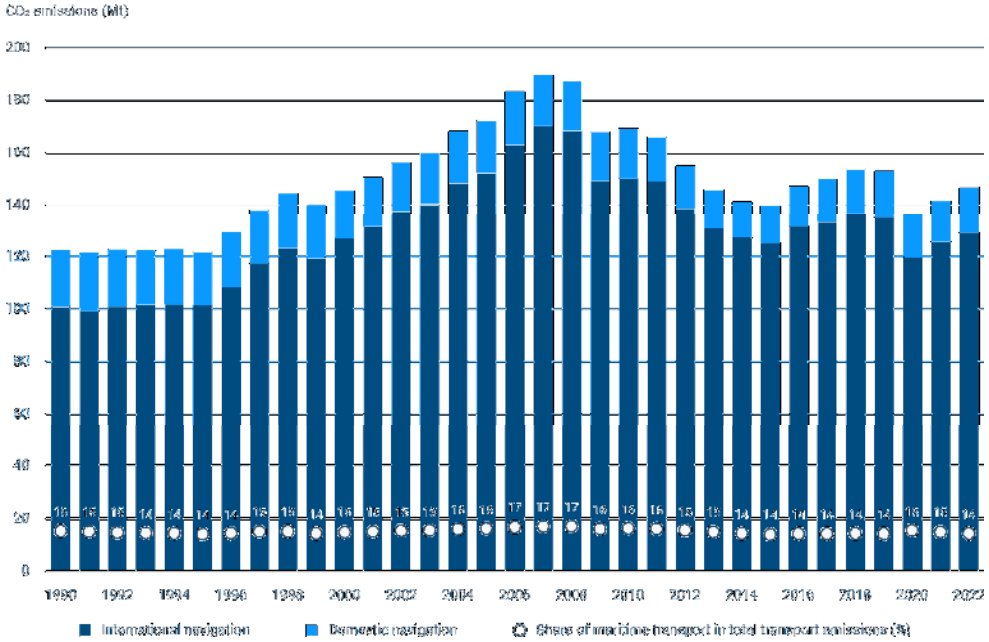
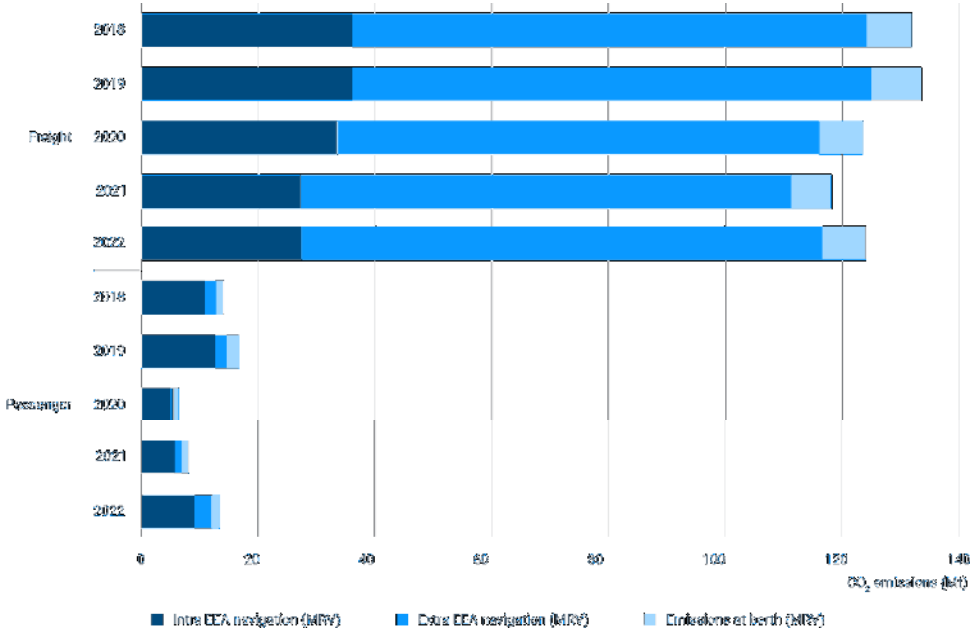
- **Maritime transport in 2022**
  - **3-4%** of all **EU CO_2 emissions**
  - **14.2%** of **CO_2 emissions from EU transport** sector
- **MRV regulation and EMSA systems** monitor trends in **CO_2 emissions**
  - **137.5 Mtonnes in 2022**, returning to pre-pandemic levels.
- In 2023 **Fishing Vessels** are estimated to have contributed **2% of CO_2 emissions in the EU** and **1.3% globally**.



CO_2 emissions from the maritime sector (Gg) and their share in total transport emissions (%) between 1990 and 2021 in EU-27.

Source: UNFCCC (EEA, 2022c).



Distribution of CO_2 emissions from freight and passenger vessels (Gg) between 2018 and 2022 in the EEA (2021 onwards without UK).

Source: EMSA, THETIS-MRV.

Greenhouse Gases (CH_4)

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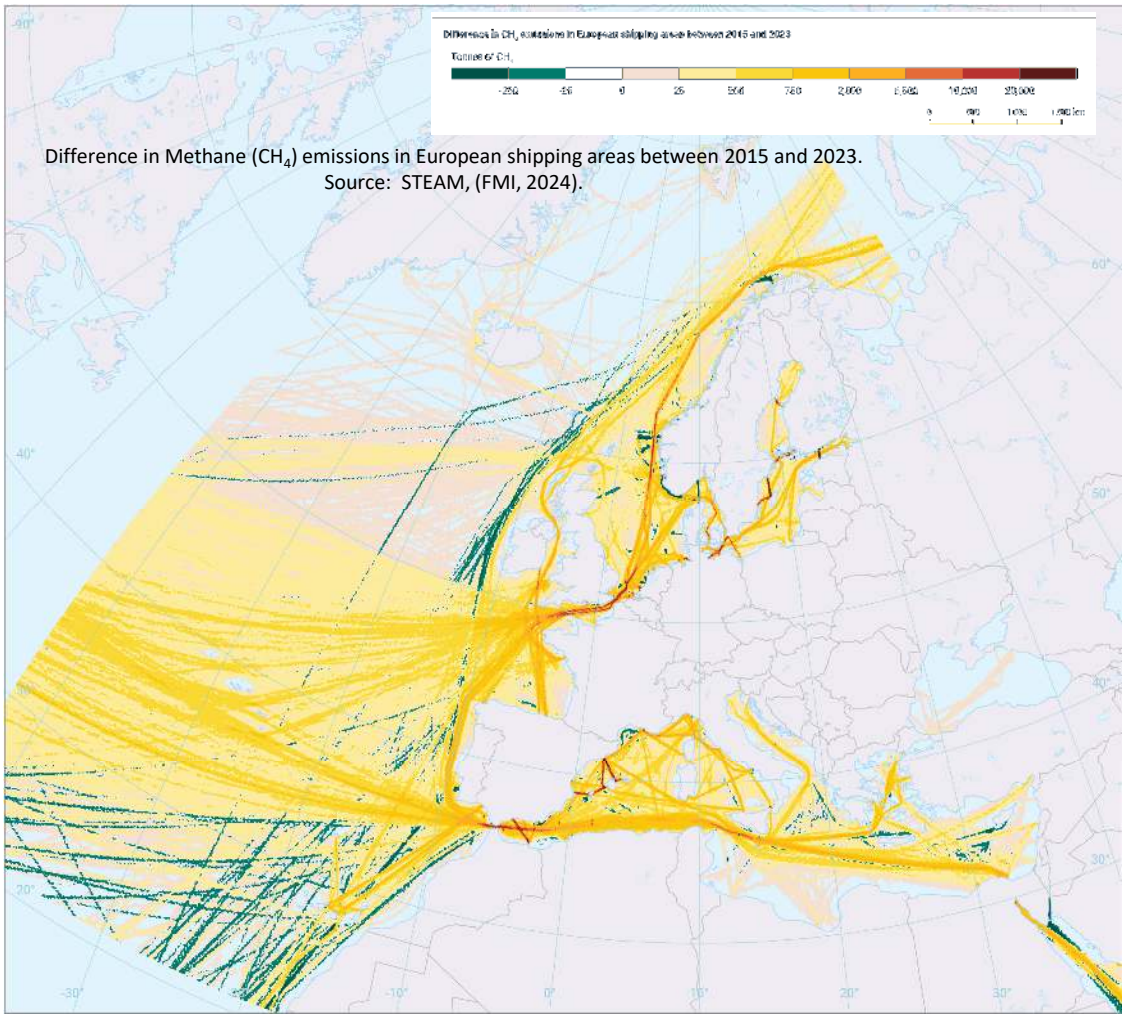
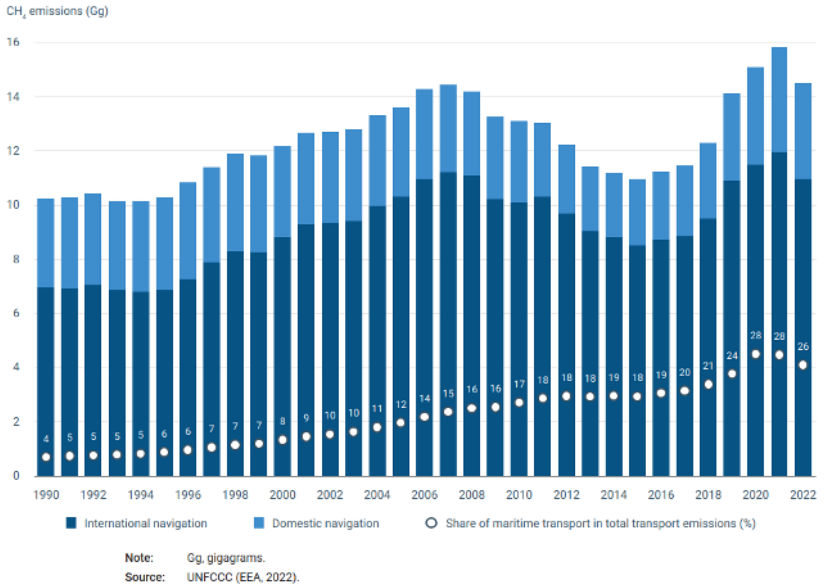


Difference in Methane (CH_4) emissions in European shipping areas between 2015 and 2023.
Source: STEAM, (FMI, 2024).

- **Maritime accounts for 26% share** of all **EU Methane (CH_4) transport emissions**.
- **Methane (CH_4) emissions from shipping** have increased **2 to 5 times** from **2015 to 2023**.
- The increase in **Methane (CH_4) emissions** is possibly linked to the **greater of use of LNG as fuel** in shipping.



Note: Gg, gigagrams.
Source: UNFCCC (EEA, 2022).

CH_4 emissions from the maritime sector and their share in total transport emissions (%) in the EU-27

Air Pollution

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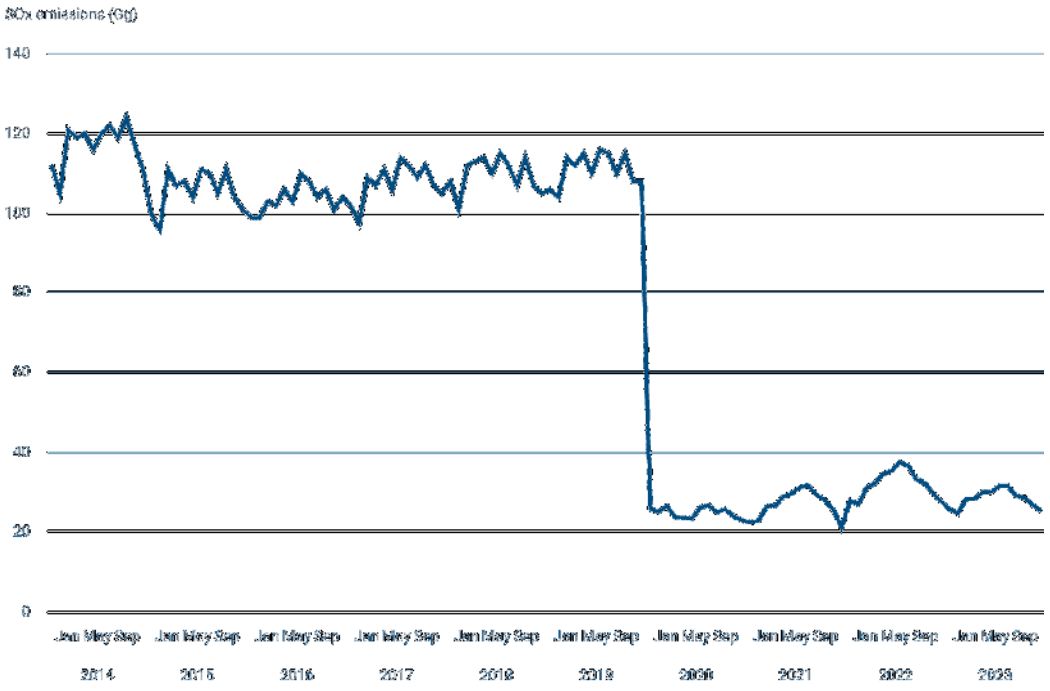
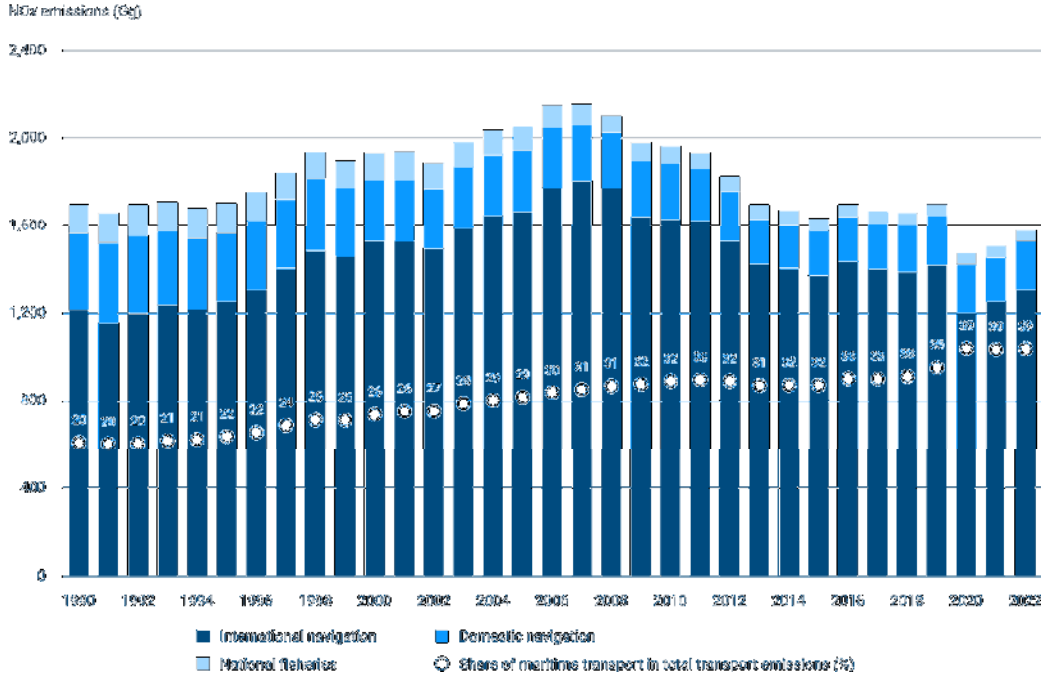
- **Significant reduction in SOx emissions, increase in NOx**.
- Difference in the **emissions reduction** are also related to a more gradual application of **NOx standards**.
- **SECA in the Mediterranean Sea** from 1 May **2025**, and **SECA/NECA in the North-East Atlantic Ocean** possibly in **2027**.



SOx emissions for EU, 2014-2023.
Source: STEAM (FMI, 2024).



NOx emissions from the maritime sector (Gg) and their share in total transport emissions (%) between 1990 and 2022 in the EU-27.
Source: LRTAP, (2024).

Oil Spills

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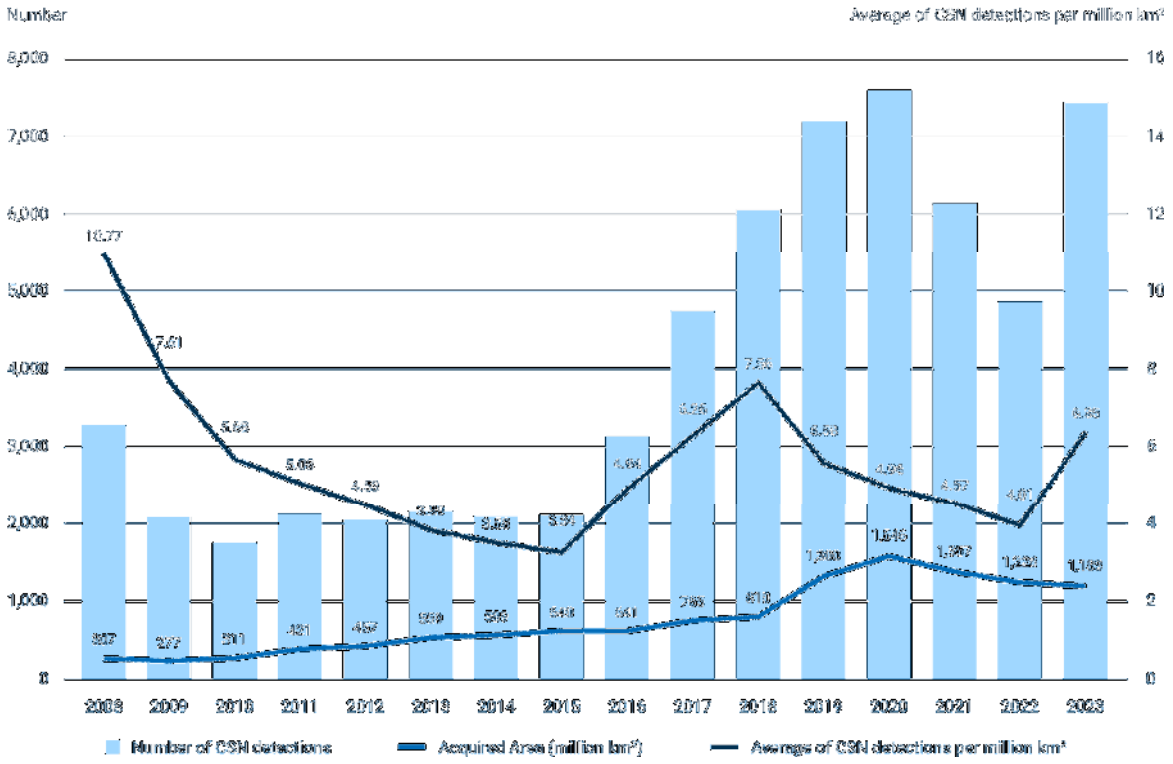
- **CleanSeaNet data** shows a higher incidence of potential **oil spills** in the **North Sea** and **Mediterranean Sea** compared to other areas.

- **Trends**:
  - **Decline of detected pollution incidents from** 2018 – 2022
  - **2022 – 2023: 58% increase**

- Detection of smaller possible oil spills on the sea's surface higher than ever before:
  - **62% < 2km2**
  - **87% < 7km2**

- **Increase** in detection of possible **oil spills** in 2023 thanks to **higher spatial resolution imagery**.



Histogram of CSN Oil spill detections according to areas classes (km2) 2020-2023.
Source: EMSA, CleanSeaNet (2024).

Discharge waters and contaminants

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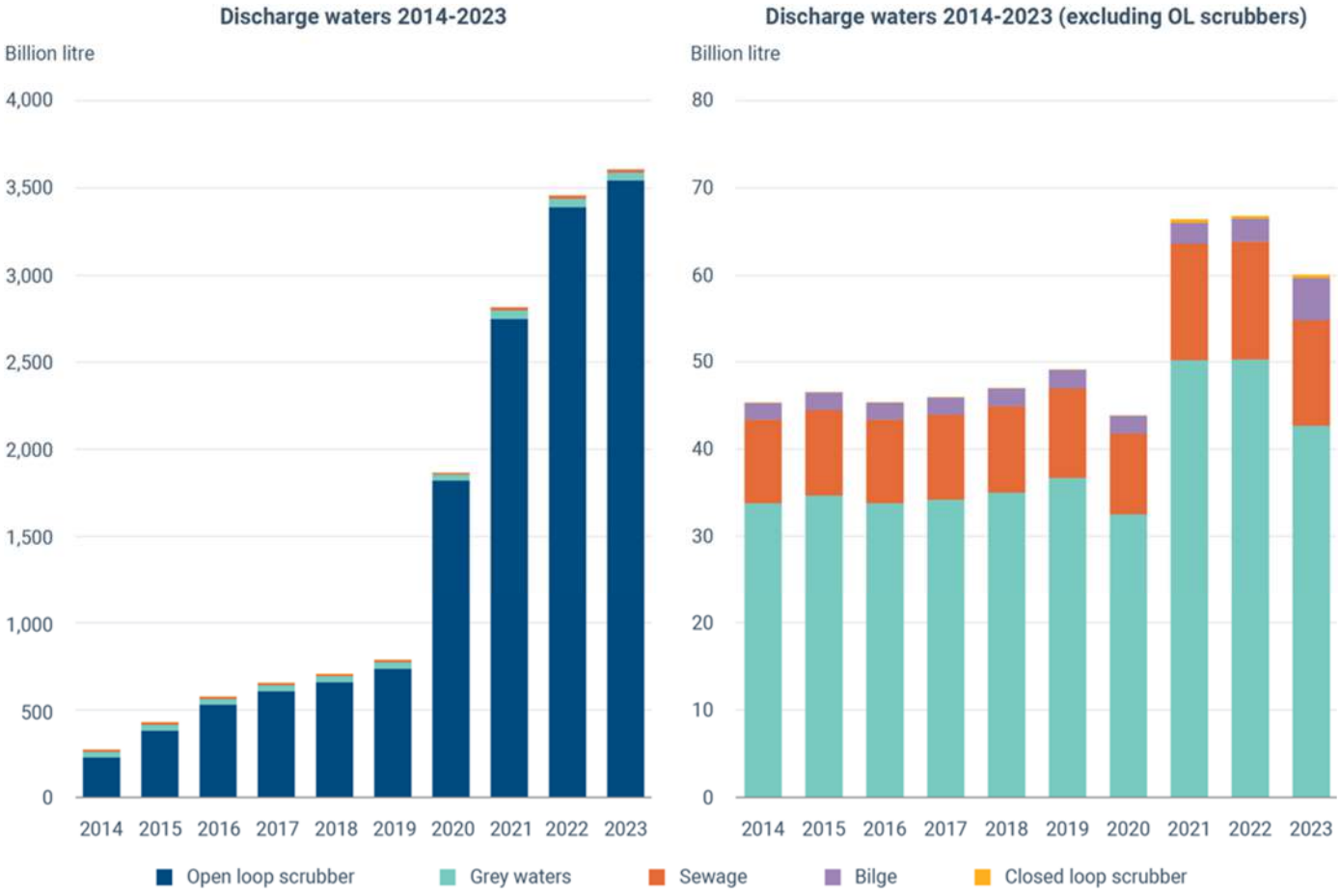
- **98% of the water discharges from ships** come from **open-loop scrubbers**. Of the remaining **2%, 75% come from grey waters**.
- A clear increase occurred from **2020**, following the application of the **IMO Global sulphur cap**.
- **Member States are restricting/banning** the discharge of **scrubber wash-waters**.



Source: STEAM (FMI, 2024).

Underwater Radiated Noise

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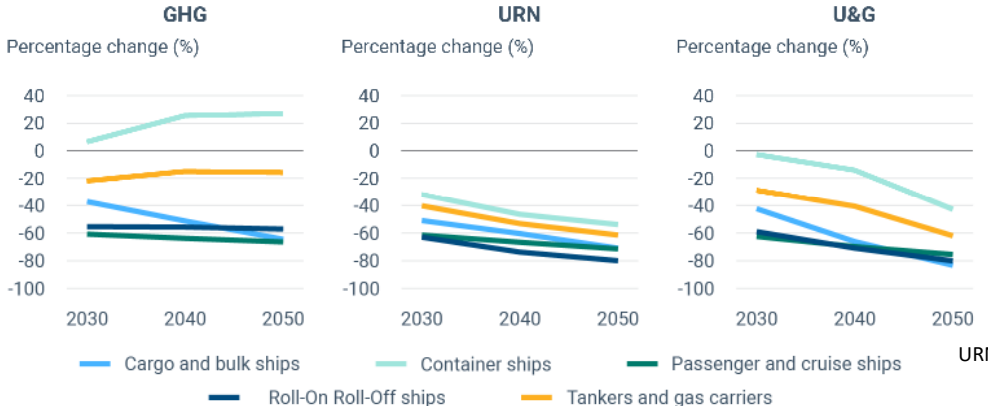
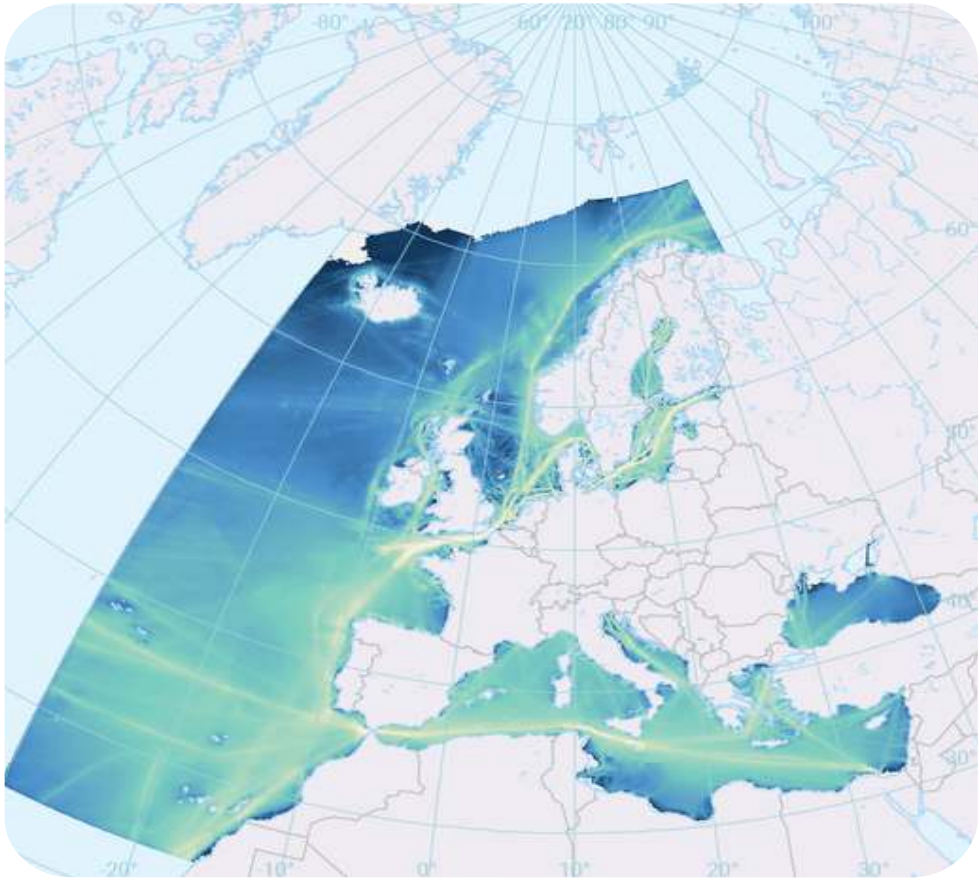
- **Effective monitoring of URN in EU waters** thanks to **EMSA NAVISON modelling. A state-of-the-art model** valid for the estimation of URN in all EU waters

- **Hindcast/nowcast**: Highest URN values in **English Channel, Gibraltar, Adriatic, Dardanelles**. Lowest in **N-E Atlantic Ocean and southern Mediterranean Sea**.

- **Foresight analysis**: Implementation of **technical and operational URN and GHG mitigation measures** may lead to as much as **70% reduction by 2050**.



URN forecast scenarios Mitigation Performance for the Mediterranean Sea
Source: EMSA, NAVISON (2024)



2023 Sound pressure level maps for all ship types at 63 Hz.
Source: EMSA, NAVISON (2024).

Marine Litter and Passively Fished Waste

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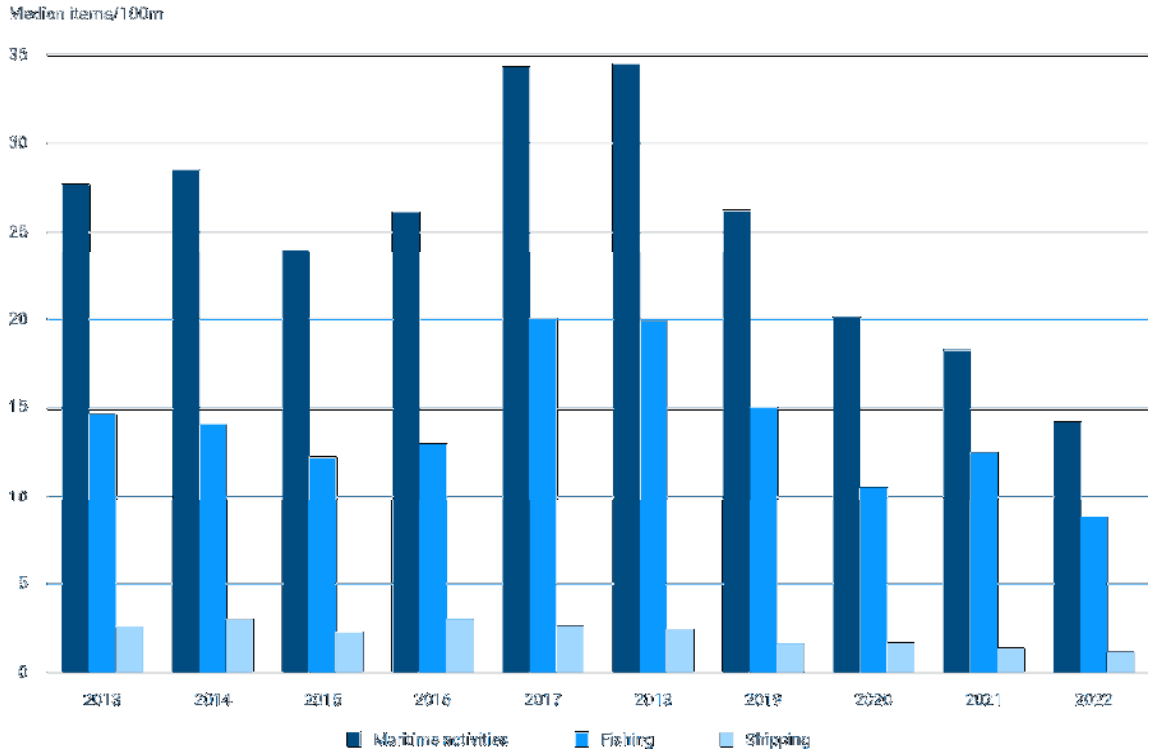
- **11.2% of marine litter** is estimated to be from **fisheries** and up to **1.8% from shipping**.
- In a decade, the abundance of **fisheries and shipping marine litter halved**.
- **Lost containers, pellet losses and microplastics from ship paints are** still challenging topics.
- Nearly **one-third of the reported passively fished waste** was classified as **plastics in 2022**.



Temporal distribution of litter items likely originating from maritime activities, 'shipping' and 'fisheries and mariculture', by year.
Source: EEA, 2024

Waste Reception at Ports

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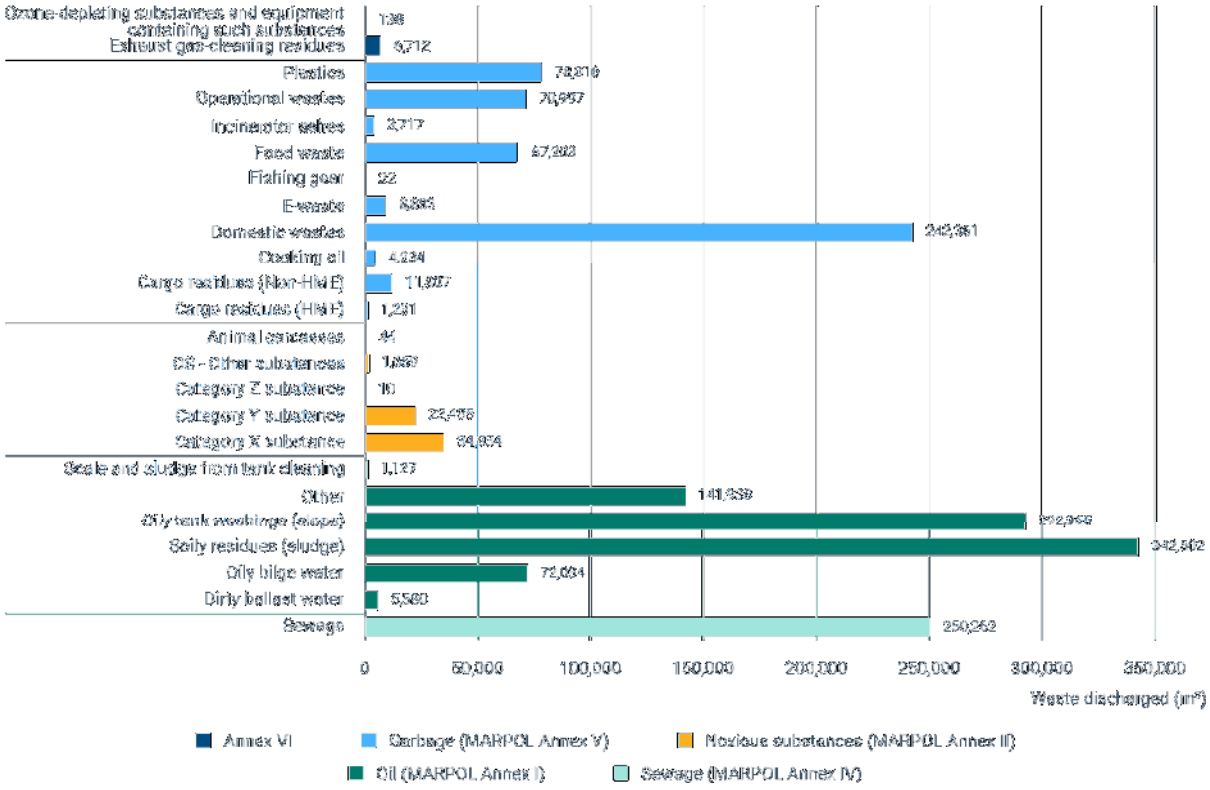
- **Waste receipts** notified electronically by Member States allow analysis of **garbage types** and amounts delivered at EU and EFTA ports by vessels..

- Types of waste delivered (m³): **MARPOL Annex I (oily waste)**, **Annex V (garbage)**, **Annex IV (sewage)**, **Annex II (noxious liquid substances)**, and **Annex VI (EGCS residues)**.

- By analysing total waste from ships at **PRFs** in European ports, we identify **Rotterdam** as the top port in erms of reception of volumes, receiving **twice the volume** of the next four ports combined (**Antwerp-Bruges, Copenhagen, Amsterdam, and Trapani**).



Waste delivered in EU and EFTA Ports in 2023.
Source: THETIS-PRF (EMSA, 2024).
Disclaimer: not all countries reported waste receipts in 2022 and 2023 electronically and those that reported did it only for part of the disposal operations.

Climate Energy Solutions

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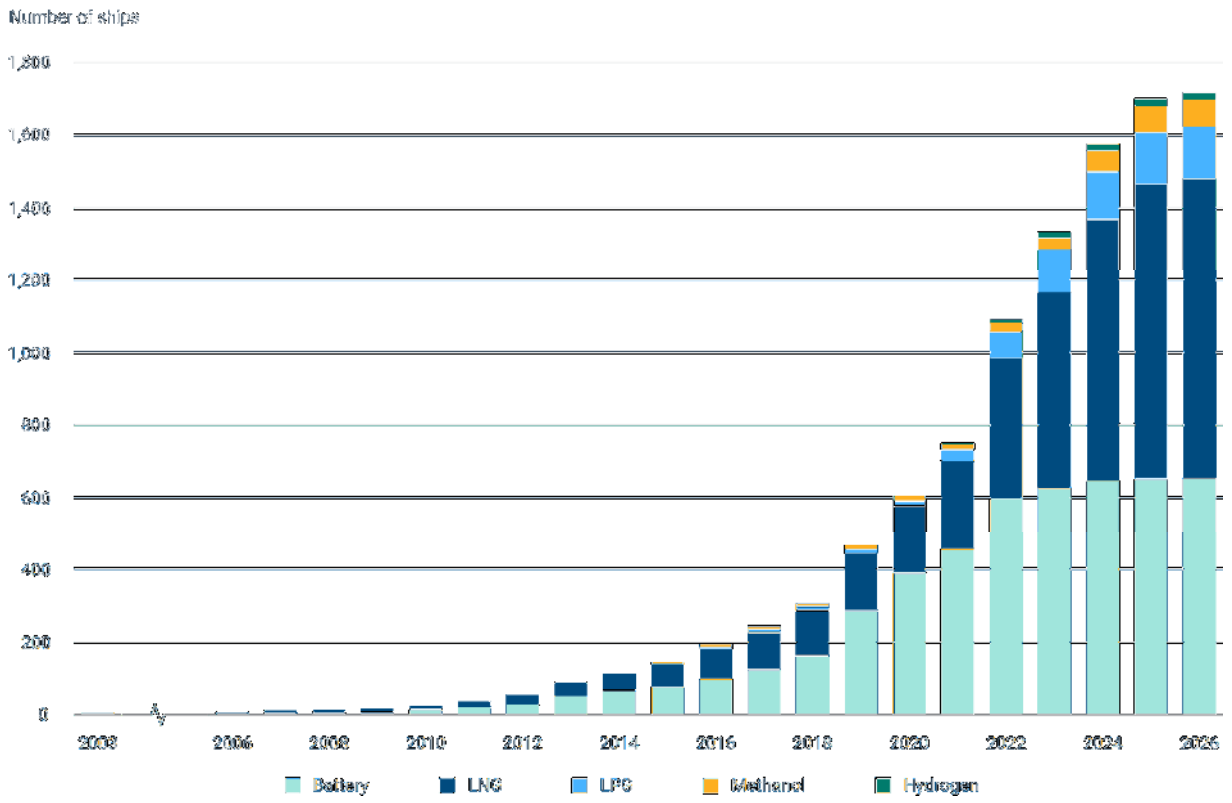
- **Clear GHG reduction regulatory framework**
  - ETS, FuelEU Maritime, AFIR, RED, ETD.
- **Sustainable alternative fuels and power for shipping**
  - Biofuels, methanol, hydrogen, synthetic fuels, ammonia, WPSs, batteries, fuel cells, nuclear, OPS.
- **Considerations on achieving sustainability:**
  - Limited biomass availability
  - Limited electrolyser capacity
  - Increasing OPS in ports



Alternative power solutions by number of ships in the EU (2003-2023) and forecast (2024-2026).
Source: EAFO, 2024.

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