



Climate Action

Reducing emissions from the shipping sector

While maritime transport plays an essential role in the EU economy and is one of the most energy-efficient modes of transport, it is also a large and growing source of greenhouse gas emissions. In 2018, global shipping emissions represented 1 076 million tonnes of CO₂, and were responsible for around 2.9% of global emissions caused by human activities.

Projections show that these emissions could increase by up to 130% of 2008 emissions [\[EN | ...\]](#) by 2050. If the climate change impact of shipping activities grows as projected, it will undermine the objectives of the [Paris Agreement \(/eu-action/international-action-climate-change/climate-negotiations/paris-agreement_en\)](#) [\[EN | ...\]](#): a global framework to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C.

At EU level, maritime transport represents 3 to 4% of the EU's total CO₂ emissions, or over [124 million tonnes of CO₂ in 2021 \(/document/download/e3ddb7a-c068-4f87-a7c2-e98d63e56cf0_en?filename=swd_2023_54_en.pdf\)](#) [\[EN | ...\]](#).

In order to significantly reduce greenhouse gas (GHG) emissions from international shipping, effective global measures are desirable. In July 2023 the International Maritime Organisation (IMO) made a step on this path committing to new targets for GHG emissions reductions and to develop and adopt in 2025 a basket of measure(s), delivering on these reduction targets. The next years to come will show which measures will be adopted and become applicable and whether they will commensurate with achieving these targets and the objectives of the Paris Agreement. The EU action to make sure maritime transport plays its part in achieving climate neutrality in Europe by 2050 is an essential step in incentivising the necessary reductions.

EU Action

Inclusion of maritime emissions in the EU Emissions Trading System (ETS)

In January 2024, the [EU's Emissions Trading System \(/eu-action/eu-emissions-trading-system-eu-ets_en\)](#) [\[EN | ...\]](#) (EU ETS) will be extended to cover CO₂ emissions from all large ships (of 5 000 gross tonnage and above) entering EU ports, regardless of the flag they fly.

The system covers:

- 50% of emissions from voyages starting or ending outside of the EU (allowing the third country to decide on appropriate action for the remaining share of emissions);
- 100% of emissions that occur between two EU ports and when ships are within EU ports.

The EU ETS covers CO₂ (carbon dioxide), CH₄ (methane) and N₂O (nitrous oxide) emissions, but the two latter only as from 2026.

Emissions from maritime transport are included in the overall ETS cap, which defines the maximum amount of greenhouse gases that can be emitted under the system. The cap is reduced over time to ensure that all ETS sectors contribute to the EU's climate objectives. This will incentivise energy efficiency, low-carbon solutions, and reductions of the price difference between alternative fuels and traditional maritime fuels.

The system builds on the provisions in place for other EU ETS sectors, as well as the recently revised [EU Monitoring, Reporting and Verification Regulation \(https://eur-lex.europa.eu/eli/reg/2023/957\)](https://eur-lex.europa.eu/eli/reg/2023/957) for maritime transport ('MRV Maritime Regulation').

In practice, shipping companies have to purchase and surrender (use) EU ETS emission allowances for each tonne of reported CO₂ (or CO₂ equivalent) emissions in the scope of the EU ETS system. It is the role of administering authorities of EU Member States to ensure compliance using similar rules as for the other ETS sectors.

To ensure a smooth transition, shipping companies only have to surrender allowances for a portion of their emissions during an initial phase-in period:

- 2025: for 40% of their emissions reported in 2024;
- 2026: for 70% of their emissions reported in 2025;
- 2027 onwards: for 100% of their reported emissions.

A reporting and review clause is included to monitor the implementation of the rules applicable to the maritime sector and to take into account relevant developments in the International Maritime Organisation (IMO).

These rules were adopted on 16 May 2023 and entered into force on 5 June 2023. You will find the legal texts below:

- [Amendments to the Regulation on the Monitoring, Reporting and Verification \(MRV\) for maritime transport \(Regulation \(EU\) 2015/757\) \(https://eur-lex.europa.eu/eli/reg/2023/957\)](https://eur-lex.europa.eu/eli/reg/2023/957)
- [Amendments to the ETS Directive \(Directive EC/2003/87/EC\) \(https://eur-lex.europa.eu/eli/dir/2023/959\)](https://eur-lex.europa.eu/eli/dir/2023/959)

Monitoring, reporting and verifying GHG emissions

Since 1 January 2018, large ships over 5 000 gross tonnage loading or unloading cargo or passengers at ports in the European Economic Area (EEA) must monitor and report related GHG emissions (currently only CO₂ emissions, but also nitrous oxide and methane emissions as of 1 January 2024) and other relevant information. Monitoring, reporting and verification (MRV) of information must be done in conformity with the 'MRV Maritime Regulation.

The MRV Maritime Regulation was conceived as a first step before the inclusion of these emissions within the scope of the EU Emissions Trading System. The MRV Maritime Regulation was [revised in 2023 \(https://eur-lex.europa.eu/eli/reg/2023/957\)](https://eur-lex.europa.eu/eli/reg/2023/957) in the light of the inclusion of maritime transport emissions within the scope of the EU ETS.

The MRV Maritime Regulation is complemented by four other legal acts:

- [Delegated Regulation \(EU\) 2016/2072 on the verification activities and accreditation of verifiers](https://eur-lex.europa.eu/eli/reg/2016/2072) EN | ●●●
- [Delegated Regulation \(EU\) 2016/2071 as regards the methods for monitoring carbon dioxide emissions and the rules for monitoring other relevant information](https://eur-lex.europa.eu/eli/reg/2016/2071) EN | ●●●
- [Implementing Regulation 2016/1927 on templates](https://eur-lex.europa.eu/eli/reg/2016/1927) EN | ●●●
- [Implementing Regulation 2016/1928 further defining cargo carried for some ship categories](https://eur-lex.europa.eu/eli/reg/2016/1928) EN | ●●●

Main obligations for companies eligible under the MRV Maritime Regulation:

- **Monitoring:** companies must – in line with their respective monitoring plans – monitor, for each of their ships, greenhouse gas emissions, fuel consumption and other parameters, such as distance travelled, time at sea and cargo carried on a per voyage basis, so as to gather annual data into an emissions report verified by an accredited MRV shipping verifier.
- **Emissions report:** by 30 April of each year (31 March as of 2025), companies must, through [THETIS MRV \(https://mrv.emsa.europa.eu/\)](https://mrv.emsa.europa.eu/), submit to the Commission and to the States in which those ships are registered ('flag States') a satisfactorily verified emissions report for each ship that has performed maritime transport activities in the European Economic Area in the previous reporting period (calendar year). As from 31 March 2025, emissions reports should also be submitted to the responsible administering authority through THETIS-MRV.
- **Document of compliance:** by 30 June of each year, companies must ensure that all their ships that have performed activities in the previous reporting period and are visiting ports in the European Economic Area carry on board a document of compliance. This might be subject to inspections by Member States' authorities.

Every year, the Commission publishes a report to inform the public about the greenhouse gas emissions and energy efficiency information of the monitored fleet. You can find the annual reports in our [Documentation \(#documentation\)](#) section below.

Delivering the European Green Deal with maritime transport

As part of the European Commission's legislative proposals to [deliver the European Green Deal \(https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en\)](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en) ^{EN | ●●●} - the 'Fit for 55' package - published on 14 July 2021, several proposals addressed maritime transport's climate impact, in addition to the extension of the EU ETS.

This includes:

- A new FuelEU maritime Regulation to boost the demand for marine [renewable and low-carbon fuels \(https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0562\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0562) ^{EN | ●●●}, by setting a maximum limit on the greenhouse gas content of energy used by ships calling at European ports and by encouraging zero-emission technology at berth (where ships stay in ports), with a technology-neutral approach;
- Revising the [Directive on Deployment of Alternative Fuels Infrastructure \(https://transport.ec.europa.eu/transport-themes/clean-transport/alternative-fuels-sustainable-mobility-europe/alternative-fuels-infrastructure_en\)](https://transport.ec.europa.eu/transport-themes/clean-transport/alternative-fuels-sustainable-mobility-europe/alternative-fuels-infrastructure_en) ^{EN | ●●●}, which would set, among other benefits, mandatory targets for shore-side electricity supply at maritime and inland waterway ports;
- Accelerating the supply of renewables in the EU, through a [revision of the Renewable Energy Directive](#) ^{EN | ●●●} (RED), which increases the current EU target of at least 32% of renewable energy sources in the overall energy mix to at least 40% by 2030, with a focus on sectors where progress has been slower to date – including transport;
- [Revising the existing Energy Taxation Directive](#) ^{EN | ●●●} (ETD), which aims to align the taxation of energy products with the EU's climate objectives and remove outdated exemptions, such as those for the intra-EU maritime transport sector.

This basket of measures reflects the EU's goal to cut greenhouse gas emissions by addressing the various barriers to the decarbonisation of the shipping sector (technological barriers, economic barriers, etc.). The Commission aims to do that through two complementary angles: first, the improvement of energy efficiency (i.e. using less fuel) and, second, the greater use of renewable and low-carbon fuels (i.e. using cleaner fuels). These measures will allow the creation of a virtuous ecosystem for such cleaner fuels, as they will boost at the same time fuel demand, distribution, and supply.

Besides continuing to push for global action at the International Maritime Organisation (IMO), the Commission will continue supporting research and innovation towards the decarbonisation of maritime transport, in particular through [Horizon Europe](https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en) (https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en) EN | ●●● and the [Innovation Fund](https://eu-action/funding-climate-action/innovation-fund_en) ([/eu-action/funding-climate-action/innovation-fund_en](https://eu-action/funding-climate-action/innovation-fund_en)) EN | ●●●.

Global action

IMO Data Collection System

Following the adoption of the MRV Maritime Regulation in 2015, the IMO established an IMO Data Collection System.

The system requires owners of large ships (above 5 000 gross tonnage) engaged in international shipping to report information on fuel consumption of their ships to the flag States of those ships. The flag States then report aggregated data to the IMO, which must produce an annual summary report to the IMO Marine Environment Protection Committee.

The collection of fuel consumption data under the IMO Data Collection System started on 1 January 2019.

In February 2019, the European Commission made a [proposal](#) EN | ●●● to amend the MRV maritime Regulation to take appropriate account of the global data collection system, with the objective to streamline and reduce administrative effort for companies and administrations as possible.

2023 IMO greenhouse gas strategy

In July 2023, the IMO agreed to revise its initial greenhouse gas emissions reduction strategy.

The revised 2023 strategy sets a goal of net zero emissions from ships “by or around, i.e. close to, 2050”. This is a major increase in the level of ambition compared to the existing 2018 strategy, which aimed at reducing emissions from ships by just 50% in the same time horizon.


A trajectory has also been agreed with indicative checkpoints set at reducing GHG emissions from ships by at least 20% - striving for 30% - in 2030 and at least 70% - striving for 80% - in 2040, both in comparison to 2008 levels.

The strategy also sets an important target of at least 5% - striving for 10% - uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources by 2030.

These levels of ambition and indicative checkpoints take into account the lifecycle GHG emissions from marine fuels with the objective of reducing emissions within the boundaries of the energy system of international shipping.

The IMO reached consensus on the need to adopt additional GHG reduction measures by 2025 to reach the agreed targets. These measures should comprise a standard regulating the gradual reduction of the marine fuels' GHG intensity, and a maritime GHG emissions pricing mechanism. They will be developed on the basis of a comprehensive impact assessment ensuring that they effectively reduce emissions from the sector, while contributing to a level playing field and a fair and equitable transition leaving no one behind.

EU support to IMO energy efficiency project

The European Commission contributes €10 million in funding to an [EC-IMO energy efficiency project](#) 



As part of a 4-year project, Maritime Technology Cooperation Centres have been set up in 5 regions: Africa, Asia, the Caribbean, Latin America and the Pacific.

Through technical assistance and capacity-building, the centres promote the uptake of low carbon technologies and operations in maritime transport in less developed countries.

This will also support the implementation of the internationally agreed **energy efficiency rules and standards** – Energy Efficiency Design Index (EEDI) and Ship Energy Efficiency Management Plan (SEEMP).

Documentation

Click on the + signs for more information.

Strategy and legislation on maritime transport emissions

- 16/05/2023 - Regulation (EU) 2023/957 - [Amendments to the Regulation on the Monitoring, Reporting and Verification \(MRV\) for maritime transport \(Regulation \(EU\) 2015/757\)](#)
- 16/05/2023 - Directive (EU) 2023/959 - [Amendments to the ETS Directive \(Directive EC/2003/87/EC\)](#)
- 14/07/2021 - COM/2021/551 - [Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision \(EU\) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation \(EU\) 2015/757](#) EN | ...
 - SWD/2021/601 – Impact Assessment (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD:2021:0601:FIN>) EN | ...
 - SWD/2021/602 – Executive Summary of the Impact Assessment (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD:2021:0602:FIN>) EN | ...
- 04/02/2019 – COM (2019) 38 - [Proposal for amending Regulation \(EU\) 2015/757 in order to take appropriate account of the global data collection system for ship fuel oil consumption data](#)
 - SWD (2019) 10 – [Impact Assessment](#) EN | ...
 - SWD (2019) 11 – [Executive summary of the Impact Assessment](#) EN | ...
- 28/11/2016 - [Decision of the EEA joint committee no 215/2016 amending Annexes XIII \(Transport\) and XX \(Environment\) to the EEA Agreement](#) EN | ...
- 22/11/2016 - Delegated Regulation (EU) 2016/2071 - [Methods for monitoring carbon dioxide emissions and the rules for monitoring other relevant information](#) EN | ...
- 22/11/2016 - Delegated Regulation (EU) 2016/2072 - [Monitoring, reporting and verification of carbon dioxide emissions from maritime transport](#) EN | ...
- 04/11/2016 - Implementing Regulation(EU) 2016/1927 - [Templates for monitoring plans, emissions reports and documents of compliance pursuant to Regulation \(EU\) 2015/757](#) EN | ...
- 04/11/2016 - Implementing Regulation(EU) 2016/1928 - [Determination of cargo carried for categories of ships other than passenger, ro-ro and container ships pursuant to Regulation \(EU\) 2015/757](#) EN | ...
- 19/05/2015 - Regulation 2015/757- [Monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC](#) EN | ...
- 28/06/2013 - COM (2013) 479 - [Communication: Integrating maritime transport emissions in the EU's greenhouse gas reduction policies](#) EN | ...
- 28/06/2013 - COM (2013) 480 - [Proposal for a Regulation on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport](#) EN | ...
- 28/06/2013 – SWD (2013) 236 - [Executive summary of impact assessment](#) EN | ...
- 28/06/2013 – SWD (2013) 237 - [Impact assessment - Part 1](#) EN | ...
- 28/06/2013 – SWD (2013) 237 - [Impact assessment - Part 2](#) EN | ...

Brexit readiness

- 16/07/2020 - [Notice](#)
- 19/12/2018 - [CO₂ emissions reporting in maritime transport](#) EN | ...

MRV annual reports

- [2022 Annual Report on CO₂ Emissions from Maritime Transport \(/document/download/e3ddba7a-c068-4f87-a7c2-e98d63e56cf0_en?filename=swd_2023_54_en.pdf\)](#) EN | ... and summary ([/document/download/01688bd2-e5a5-48cd-97b7-415fb99666fa_en?filename=c_2023_1585_en.pdf](#)) EN |
- [2021 Annual Report on CO₂ Emissions from Maritime Transport \(/document/download/c376a89a-2a18-43da-bac4-ada1033b77d3_en?filename=swd_2022_214_en_0.pdf\)](#) EN | ... and summary ([/document/download/06c406a8-df93-4e38-b7ca-9a6929d5bddb_en?filename=c_2022_5759_en.pdf](#)) EN |
- [2020 Annual Report on CO₂ Emissions from Maritime Transport \(/document/download/3eb00f74-c7ba-4dd1-8ea6-18f6f135053e_en?filename=swd_2021_228_en.pdf\)](#) EN | ... and summary ([/document/download/8cd736dc-d508-408c-8cf7-9317048d1ff0_en?filename=c_2021_6022_en.pdf](#)) EN |
- [2019 Annual Report on CO₂ Emissions from Maritime Transport \(/document/download/cf4e64c6-c6ff-4ee4-97b7-30423562eaa0_en?filename=swd_2020_82_en.pdf\)](#) EN | ... and summary ([/document/download/676175fd-f8db-40fb-b37a-cc7323c680a2_en?filename=c_2020_3184_en.pdf](#)) EN |

Publications

- [Time for international action on CO₂ emissions from shipping](#) EN | ...

Guidance/best practices documents elaborated with MRV shipping experts

- [Preparation of monitoring plans by companies](#) EN | ...
- [Monitoring and reporting of fuel consumption, CO₂ emissions and other relevant parameters;](#) EN | ...
- [Assessment of monitoring plans by verifiers;](#) EN | ...
- [Backward assessment of monitoring plans;](#) EN | ...
- [Use of external ship tracking data by verifiers;](#) EN | ...
- [Materiality and sampling;](#) EN | ...
- [Verification of emissions reports by verifiers;](#) EN | ...
- [Recommendations for improvements issued by verifiers;](#) EN | ...
- [Assessment of verifiers by National Accreditation Bodies in order to issue an accreditation certificate;](#) EN | ...
- [Dealing with situations where the accreditation is suspended or withdrawn close to the planned issuing date of the Document of Compliance \(DOC\) by the verifier.](#) EN | ...

Studies

Click on the + signs for more information.

Studies

- 22/10/2021 - [Study on EU ETS for maritime transport and possible alternative options of combinations to reduce greenhouse gas emissions](#) EN | ●●●
- 02/08/2021 - [Study on assessment of possible global regulatory measures to reduce greenhouse gas emissions from international shipping](#) EN | ●●●
- 26/03/2019 - [A study to estimate the benefits of removing market barriers in the shipping sector](#)
- 08/06/2016 - [Study on potential impacts of design choice for monitoring, reporting and verification of CO₂ emissions from maritime transport](#) EN | ●●●
 - [Executive summary](#) EN | ●●●
 - [Working Paper Monitoring Methods](#) EN | ●●●
 - [Working Paper Cargo Parameters](#) EN | ●●●
 - [Issue Paper Cargo-ConRos & Reefers](#) EN | ●●●
 - [Working Paper Verification Accreditation](#) EN | ●●●
 - [Assessment of Impact Delegated Implementing Act](#) EN | ●●●
 - [Working Paper Monitoring Plan](#) EN | ●●●

FAQ

- [FAQ - Maritime transport in EU Emissions Trading System \(ETS\) \(*/eu-action/transport-emissions/reducing-emissions-shipping-sector/faq-maritime-transport-eu-emissions-trading-system-ets_en*\)](#) EN | ●●●
- [FAQ - Monitoring, reporting and verification of maritime transport emissions \(*/eu-action/transport-emissions/reducing-emissions-shipping-sector/faq-monitoring-reporting-and-verification-maritime-transport-emissions_en*\)](#) EN | ●●●