
EU MRV:

MONITORING, REPORTING AND VERIFICATION OF
CARBON DIOXIDE EMISSIONS FROM MARITIME TRANSPORT



EU MRV:

MONITORING, REPORTING AND VERIFICATION OF CARBON DIOXIDE EMISSIONS FROM MARITIME TRANSPORT

OVERVIEW

The Third IMO Greenhouse Gas Study 2014¹ points out that for the period 2007–2012 international shipping, on average accounted for 2.6% of annual global CO₂ emissions. Shipping's contribution to greenhouse gas (GHG) emissions is coming under increasing scrutiny at IMO and on regional levels. Most notable of the regional initiatives is the actions of the European Union (EU).

On 1 July 2015, [EU Regulation 2015/757](#) concerning monitoring, reporting and verifying (MRV) CO₂ emissions came into effect and includes three key deadlines for ship operators of large ships (above 5000GT) trading to, from and between EU ports:

- By **31 August 2017** - submit to the verifiers a monitoring plan, indicating the method chosen to monitor and report CO₂ emissions and other relevant information.
- From **1 January 2018** - monitor CO₂ emissions and other relevant information on a per-voyage basis using the agreed monitoring plan.
- By **30 April of each year, beginning in 2019** - submit to the Commission and to the authorities of the Flag States concerned an emissions report which has been judged as satisfactory by a competent, independent verifier.

Companies shall, for each of their ships:

- Determine the CO₂ emissions in accordance with any of the methods set out in **Annex I** of the Regulation, and
- Monitor other relevant information (distance sailed, time spent at sea, cargo carried) in accordance with the rules set out in **Annex II** of the Regulation.

Furthermore companies shall use standardized monitoring plans (MPs) based on templates and shall submit emissions reports (ERs) using automated systems and electronic templates.

To pave the way for the implementation of the MRV Regulation, the European Commission adopted:

- **Delegated acts** to amend the methods set out in Annex I and the rules set out in Annex II
- **Implementing acts** to determine the MPs and ERs templates, including the technical rules for their uniform application.

To ease this process, the EU Commission launched two sub-groups under the ESSF (European Sustainable Shipping Forum) with the overall objective of helping the Commission to prepare the above mentioned legal acts.

¹ [Third IMO Greenhouse Gas Study 2014](#)

IMPLEMENTING ACTS

Cargo Carried

The rules on the monitoring of cargo carried and other relevant information are laid down in Annex II to the Regulation. According to the [Implementing Regulation \(EU\) 2016/1928 “cargo carried”](#) for categories of ships other than passenger ships, ro-ro ships and container ships shall be determined as follows:

Vessel type	Parameter for reporting cargo carried
Oil tankers	Cargo mass on board
Chemical tankers	Cargo mass on board
LNG carriers	Volume of the cargo discharged
Gas carriers	Cargo mass on board
Bulk carriers	Cargo mass on board
General cargo ships	Deadweight carried for laden voyages; zero for ballast voyages
Refrigerated cargo ships	Cargo mass on board
Vehicle carriers	Cargo mass on board
Combination carriers	Cargo mass on board
Ro-pax ships	Number of passengers and cargo mass on board
Container/ro-ro cargo ships	Volume of the ro-ro cargo on board and number of TEUs multiplied by 38.3 m ³
Other ship types	Cargo mass on board

Monitoring Plan Template

Companies shall draw up the monitoring plan using the template set out in [Annex I of the Implementing Regulation \(EU\) 2016/1927](#). The monitoring plan:

- Should use the units for determining ‘cargo carried’ as specified above.
- Will need to differentiate between fuel consumption and CO₂ emissions data for freight and for passengers for ro-pax ships.
- Should allow for the monitoring and reporting of fuel consumption and CO₂ emitted on the basis of other voluntary criteria to better understand the average reported energy efficiency.
- Should indicate which procedures apply in a relevant manner to all ships under the company’s responsibility in order to make it easier to prepare monitoring plans for companies with several ships.
- Should refer to procedures or systems effectively implemented as part of companies existing management systems or quality, environmental/energy management standards, such as the ISM Code, the SEEMP, EN ISO 9001:2015, EN ISO 14001:2015 or EN ISO 50001:2011.
- Shall allow the use of default values for the level of uncertainty associated with fuel measurement method, in order to make monitoring easier.
- Should include a section dedicated to management information, particularly on the appropriate data management and control activities.

The draft monitoring plan template consists of six parts (A to F) as follows:

Part A Record of Revisions	
Part B Basic data	Identification of the ship: Company information; Emission sources/fuel types; Emission factors; and Procedures, systems and responsibilities
Part C Activity data	Exemptions; Fuel consumed; List of voyages; Distance travelled; Cargo carried and Number of passengers; and Time spent at sea
Part D Data gaps	Estimated gaps for fuel consumed; distance travelled; cargo carried and time spent at sea.
Part E Management processes	Periodic reviews of Monitoring plan; IT management; Data validity; Corrections and corrective activities; Outsourced activities; and Documentation
Part F Further information	Definitions and abbreviations

Emission Report Template

For the purposes of submitting the emissions report, companies shall use the electronic version of the template available in the THETIS MRV automated Union information system operated by the European Maritime Safety Agency. The electronic version of the template of the emissions report shall contain the information set out in [Annex II of the Implementing Regulation \(EU\) 2016/1927](#). The draft emission report template consists of four parts (A to D) as follows:

Relevant Part	Title
Part A	Data identifying the ship and the company
Part B	Identification of verifier
Part C	Monitoring methods and level of uncertainty
Part D	Annual results: Fuel consumed and CO ₂ emitted; Distance travelled, time spent at sea and transport work; and Energy efficiency

DELEGATED ACTS

Monitoring Methods

Companies shall select one of the following four monitoring methods:

1. the use of Bunker Fuel Delivery Notes (BDNs) and periodic stocktakes of fuel tanks
2. bunker fuel tank monitoring on-board
3. flow meters for applicable combustion processes
4. direct CO₂ emission measurements.

The [Delegated Regulation \(EU\) 2016/2071](#) is intended to update Annexes I and II as follows:

- I. It now extends that possibility to companies using monitoring methods A and C to determine actual density on the basis of the density measured in a test analysis conducted by an accredited fuel laboratory, in line with ISO standard 3675:19984
- II. it lays down the emission factors to be used by monitoring methods A, B and C in accordance with IMO Resolution MEPC 245 (66):

Type of fuel	Reference	Emission factor (t-CO ₂ /t-fuel)
1 Diesel/Gas	ISO 8217 Grades DMX through DMB	3,206
2 Light fuel oil (LFO)	ISO 8217 Grades RMA through RMD	3,151
3 Heavy fuel oil (HFO)	ISO 8217 Grades RME through RMK	3,114
4 Liquefied petroleum gas (LPG)	Propane	3,000
	Butane	3,030
5 Liquefied natural gas (LNG)		2,750
6 Methanol		1,375
7 Ethanol		1,913

Appropriate emission factors shall be applied for biofuels, alternative non-fossil fuels and other fuels for which no default values are specified.

- III. It requires 'time spent at sea' and 'distance travelled' to be calculated on a 'berth-to-berth' basis providing a harmonised approach to the exact starting and ending point of voyages.
- IV. It provides for the actual mass of cargo to be used as an additional option to determine cargo weight for ro-ro ships, as provided for in the IMO MEPC.1/Circ.684 and EN 16258 (2012).

Verification and Accreditation

The [Delegated Regulation \(EU\) 2016/2072](#) sets harmonized rules for the assessment of monitoring plans, the verification of emissions reports and the issuance of documents of compliance by verifiers clearly defining the verifiers' responsibilities and activities. It consists of five chapters (I to V) as follows:

- Chapter I (General provisions)
- Chapter II (Verification activities)
 - Section 1 (Assessment of monitoring plans)
 - Section 2 (Verification of emissions reports)
- Chapter III (Requirements of verifiers)
- Chapter IV (Accreditation of verifiers)
- Chapter V (Requirements of National accreditation bodies)

National accreditation bodies shall set up and manage a database which shall be publicly available and contain, at least, the following information:

- a. the name, accreditation number and address of each verifier accredited by that national accreditation body;
- b. the Member States in which each verifier is carrying out verification, if applicable;
- c. the date on which the accreditation was granted and its expiry date;
- d. information on administrative measures imposed on the verifier.

Next Steps

Based on the ESSF Plenary decision as adopted on 28 June 2016, the “Shipping MRV Monitoring subgroup” and the “Shipping MRV Verification & Accreditation sub-group” will continue their work so as to cover the elaboration of further guidance on a number of monitoring, verification and accreditation “grey” areas. The main deliverables will be a second report of the subgroups including recommendations for guidance/ best practices and the results of the analysis on IMO relevance to be delivered to the ESSF Plenary session to be held in June 2017.

ABS Assistance

ABS is able to support by:

- Assessing the monitoring plan. In doing so, we will verify that the appropriate monitoring plan template is used and that all information as required by the EU MRV Regulations is provided. We will confirm the information in the plan accurately describes the emissions sources and measurement equipment installed on the ship. In addition, we will communicate any recommendations for improvement which are identified.
- Verifying the emissions report is prepared in conformance with the accepted monitoring plan.

In addition, ship operators can use the Nautical Systems Vessel Performance tool to report data subject to regulatory compliance. This includes reporting on the CO₂ emissions required by the EU MRV requirements.

Please contact your local ABS office for scheduling the assistance or send your request to EnvironmentalPerformance@eagle.org or MRVABSGreece@eagle.org.

WORLD HEADQUARTERS

16855 Northchase Drive
Houston, TX 77060 USA

P 1-281-877-5800

F 1-281-877-5803

ABS-WorldHQ@eagle.org

www.eagle.org

© 2017 American Bureau of Shipping.
All rights reserved.

