GUTTA project FINAL EVENT CROATIA

EU MRV

Monitoring, Reporting and Verification of CO_2 emissions from maritime transport

Opatija, 9th March 2022

EU MRV REGULATIONS:

- Regulation (EU) 2015/757 on the monitoring, reporting and verification of carbon dioxide (CO_2) emissions from maritime transport;
- Implementing Regulation (EU) 2016/1927 on templates for monitoring plans, emissions reports and documents of compliance pursuant to Regulation (EU) 2015/757;
- Implementing Regulation (EU) 2016/1928 on determination of cargo carried for categories of ships other than passenger, ro-ro and container ships pursuant to Regulation (EU) 2015/757;
- Delegated Regulation (EU) 2016/2072 on the verification activities and accreditation of verifiers pursuant to Regulation (EU) 2015/757.

Regulation (EU) 2015/757

- This Regulation applies to ships above 5000 gross tonnage (GT) regardless of ship's flag in respect of CO_2 emissions released during their EU voyages.
- EU voyages means:
  - all voyages departed from non-EU ports of call to an EU port of call
  - all voyages departed from EU ports of call to non-EU ports of call
  - all voyages between EU ports of call
- EU port of call means the port under the jurisdiction of an EU Member State
- CO_2 emissions released within EU port of call (ship at berth) are also monitored, and indicated separately in the report.

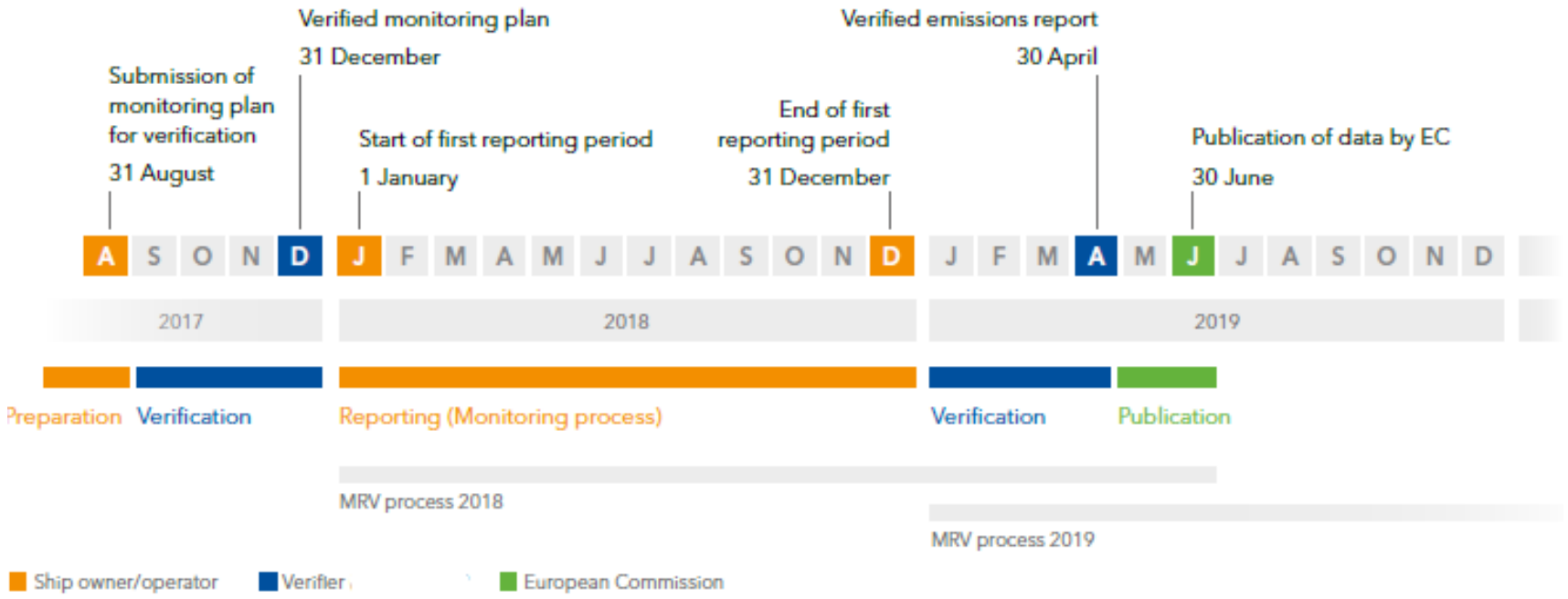
Regulation (EU) 2015/757

- This Regulation lays down rules for the accurate monitoring, reporting and verification of CO_2 emissions and of other relevant information from ships arriving at, within or departing from ports under the jurisdiction of a Member State, in order to promote the reduction of CO_2 emissions from maritime transport in a cost effective manner.
- This Regulation entered into force on 1st July 2015.
- Monitoring the fuel consumed and other relevant data collection during voyage took place on a per voyage basis or on per an annual basis, started from 1st January 2018.
- Annexes I and II to Regulation (EU) 2015/757 have been amended by Annex of Regulation (EU) 2016/2071.

Regulation (EU) 2015/757

- 2019 onwards – by 30th April of each year, submit a verified emissions report to the European Commission (EC) and relevant flag state.
- Submission of the reports shall be done electronically using a central database (THETIS), managed by the European Maritime Safety Agency (EMSA). The database can be found at Web link https://mrv.emsa.europa.eu
- By 30th June of the year following the end of a reporting period, ships shall carry on board a valid Document of Compliance issued by verifier upon satisfactory verification of CO_2 emissions report.
- The aggregated ship CO_2 emissions for the reporting period of one (1) year are published by the EU Commission by 30th June next year.

Regulation (EU) 2015/757 - Timeline



Note: To allow sufficient time for the CRS to perform the verification, and to company to update the ER (if required), we strongly urge companies (our clients) to submit the emission reports to CRS as soon as possible, preferably not later than 30th March in year.

Croatian Register of Shipping

Regulation (EU) 2015/757

- Non-compliance with the provisions of this Regulation should result in the application of penalties. Member States should lay down rules on those penalties. Those penalties should be effective, proportionate and dissuasive).

- In the case of ship having failed to comply with monitoring and reporting requirements for two (2) or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance, these ships may be expelled from EU port of call. Such a measure should be applied in such a way as to allow the situation of non-compliance to be rectified within a reasonable period of time.

Regulation (EU) 2015/757 – ANNEXES I, II and III

- **ANNEX I** of this Regulation defines methods for monitoring CO_2 emissions:
  - Calculation of CO_2 emissions
  - Methods for determining CO_2 emissions
- **ANNEX II** of this Regulation defines monitoring of other relevant information:
  - Monitoring on a per voyage bases
  - Monitoring on a an annual bases
- **ANNEX III** of this Regulation defines elements to be taken into account for the delegated acts provided for:
  - Verification procedures
  - Accreditation of verifiers

Regulation (EU) 2015/757 – Monitoring on a per-voyage basis

- Based on the monitoring plan assessed for each ship companies shall monitor the following parameters:
  - port of departure and port of arrival including the date and hour of departure and arrival using Greenwich Mean Time (GMT/UTC);
  - amount and emission factor [t-CO_2 / t-Fuel] for each type of fuel consumed in total;
  - CO_2 emitted [m tonnes];
  - distance travelled [n miles];
  - time spent at sea [hours];
  - cargo carried [m tonnes];
  - transport work [m tonnes × n miles].
- Companies may also monitor information relating to the ship's ice class and to navigation through ice, where applicable.

Regulation (EU) 2015/757 – Monitoring on a per-voyage basis

- CO_2 will be monitored with reference to the following emissions sources on board:
  - Main engines;
  - Auxiliary engines;
  - Gas turbines;
  - Boilers;
  - Inert gas generator

- Calculation of CO_2 emissions
  - For the purposes of calculating CO_2 emissions companies shall apply the following formula:

Fuel consumption × emission factor

Regulation (EU) 2015/757 – Monitoring on a per-voyage basis

- The following default values for emission factors for fuels used on board shall be applied:

Type of fuel	Reference	Emission factor (t-CO_2/t-fuel)
1. Diesel/Gas oil	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

Regulation (EU) 2015/757 – Monitoring on a per-voyage basis

- As part of the monitoring plan, companies will be able to choose one or more of the following four methods for monitoring fuel consumption in each monitored combustion source:
  - **Method A** – use of bunker delivery notes (BDNs) and periodic stocktakes of fuel tanks (except forthose vessels where cargo is used as fuel);
  - **Method B** – bunker fuel-tank monitoring;
  - **Method C** – flow meters (including a gas meter for LNG carriers) for applicable combustion processes;
  - **Method D** – direct emission measurements
- A combination of these methods would improve the accuracy of the CO_2 emissions measurement for a given combustion source and is permitted.

Regulation (EU) 2015/757 – Monitoring on a per-voyage basis

- The company shall be exempt from the obligation to monitor the information referred on a per-voyage basis in respect of a specified ship, if:
  - all of the ship's voyages during the reporting period either start from or end at a EU port; and
  - the ship, according to its schedule, performs more than 300 voyages during the reporting period

Regulation (EU) 2015/757 – Monitoring on an annual basis

- In addition to per-voyage reporting regulation further requires monitoring on an annual basis.
- Based on the monitoring plan assessed for each ship and for each calendar year, companies shall monitor the following parameters:
  - amount and emission factor [t-CO_2 / t-Fuel] for each type of fuel consumed in total;
  - total aggregated CO_2 emitted [m tonnes];
  - aggregated CO_2 emissions from all voyages between EU ports [m tonnes]
  - aggregated CO_2 emissions from all voyages from EU ports [m tonnes]
  - aggregated CO_2 emissions from all voyages to EU ports [m tonnes]
  - CO_2 emissions which occurred within EU ports [m tonnes]
  - total distance travelled [n miles];
  - cargo carried [m tonnes];
  - total transport work [m tonnes × n miles];
  - average energy efficiency

Regulation (EU) 2015/757 – Monitoring on an annual basis

- Average energy efficiency shall be monitored by using at least four indicators:
  - fuel consumption per distance,
  - fuel consumption per transport work,
  - CO_2 emissions per distance, and
  - CO_2 emissions per transport work
- Companies may also monitor information relating to the ship's ice class and to navigation through ice, where applicable.

Implementing Regulation (EU) 2016/1927

- This Regulation lays down templates and technical rules for the submission of monitoring plans, emissions reports and documents of compliance pursuant to Regulation (EU) 2015/757:
  - template of the monitoring plan
  - electronic template of the emissions report
  - electronic template of document of compliance

Implementing Regulation (EU) 2016/1928

- This Regulation lays down rules specifying the parameters applicable to the determination of cargo carried for various categories of ships other than passenger ships, ro-ro ships and container ships for the purposes of monitoring of other relevant information on a per-voyage basis pursuant to Article 9(1) of Regulation (EU) 2015/757:

SHIP TYPE	DEFINITION	CARGO PARAMETER
Passenger ship	"Passenger ship" means a ship that carries more than twelve passengers but not cargo.	No. of passengers (as defined in MRV Reg. 2016/757, Annex II, § A.1.[d])
Container ship	"Container ship" means a ship designed exclusively for the carriage of containers in holds and on deck.	Mass (as defined in MRV Reg. 2016/757, Annex II, § A.1.[f])
Oil tanker	"Oil tanker" means a ship constructed or adapted primarily to carry oil in bulk in its cargo spaces. Note that this definition does not include combination carriers, NLS tankers or gas tankers.	Mass
Chemical tanker	"Chemical tanker" means a ship constructed or adapted for the carriage in bulk of any liquid product listed in chapter 17 of the International Bulk Chemical Code (a chemical tanker) or a ship constructed or adapted to carry a cargo of noxious liquid substances in bulk (an NLS tanker).	Mass

Delegated Regulation (EU) 2016/1928

SHIP TYPE	DEFINITION	CARGO PARAMETER
LNG carrier	"LNG carrier" means a tanker for the bulk carriage of liquefied natural gas (LNG) (primarily methane) in independently insulated tanks. Liquefaction is achieved at temperatures down to -163°C.	Volume (and its aggregation of part loads)
Gas carrier	"Gas carrier" means a tanker for the bulk carriage of liquefied gases other than LNG.	Mass
Bulk carrier	"Bulk carrier" means a ship which is intended primarily to carry dry cargo in bulk, including such types as ore carriers as defined in SOLAS chapter XII, regulation 1, but excluding combination carriers.	Mass
Combination carrier	"Combination carrier" means a ship designed to load 100% dead weight with both liquid and dry cargo in bulk.	Mass
General cargo ship	"General cargo ship" means a ship with a multi-deck or single-deck hull designed primarily for the carriage of general cargo.	DWT carried (as defined in MRV implementing act, without fuel on board)

Delegated Regulation (EU) 2016/1928

SHIP TYPE	DEFINITION	CARGO PARAMETER
Refrigerated cargo ship	"Refrigerated cargo carrier" means a ship designed exclusively for the carriage of refrigerated cargoes in holds.	Mass
Vehicle carrier	"Vehicle carrier" means a multi-deck, roll-on roll-off cargo ship designed for the carriage of empty cars and trucks.	Mass (actual mass or as units occupied multiplied by default values for their weight)
Ro-ro ship	"Ro-ro ship" means a ship designed for the carriage of roll-on roll-off cargo transportation units or with roll-on roll-off cargo spaces.	In essence: Mass no. of cargo units (trucks, cars, etc.) or lane-metres multiplied by default values for their weight (Annex B, EN 16258 [2012])
Ro-pax ship	"Ro-pax ship" means a passenger ship with roll-on roll-off cargo space.	1. No. of passengers and 2. Mass
Container / ro-ro cargo ship	"Container/ro-ro cargo ship" means a hybrid of a container ship and a ro-ro cargo ship in independent sections.	Volume (occupied deck area multiplied by deck height and added by container volume)
Other ship types	"Other ship types" mean ships not covered by any of the above definitions which fall under the scope of the regulation.	Mass or DWT carried

Delegating Regulation (EU) 2016/2072

- This Regulation lays down provisions concerning the assessment of monitoring plans and verification of emissions reports. It also lays down requirements in terms of competences and procedures:
  - general provisions
  - verification activities
  - requirements for verifiers

- This Regulation lays down rules on accreditation and supervision of verifiers by national accreditation bodies pursuant to Regulation (EC) No 765/2008:
  - accreditation of verifiers
  - requirements for national accreditation bodies

REPORTING - Information to be provided to verifier

- Before the start of the verification of the emissions report, companies shall provide the verifier with the following:
  - a list of voyages carried out by the ship during the reporting period;
  - a copy of the emissions report from the previous year where appropriate, if the verifier did not carry out the verification for that report;
  - a copy of the monitoring plan or plans applied, including evidence of the conclusions from the assessment carried by an accredited verifier, where appropriate;
  - copies of the ship's official logbook and of the oil record book (if separate);
  - copies of bunkering documents;
  - copies of documents containing information on the number of passengers transported and the amount of cargo carried, distance travelled and time spent at sea for the ship's voyages during the reporting period.

REPORTING - Information to be provided to verifier

- Additionally, and if applicable on the basis of the monitoring method applied, verifiers may ask the company to provide:
  - an overview of the IT landscape showing the data-flow for the relevant ship;
  - evidence of the maintenance and accuracy/uncertainty of measurement equipment/flow meters (e.g. calibration certificates);
  - an extract of fuel consumption activity data from flow meters;
  - copies of evidence of fuel tank meter reading;
  - an extract of activity data from direct emissions measurement systems;
  - any other information relevant to the verification of the emissions report (like noon-reports and montly reports with fuel bunker data, fuel levels in the tanks, running hours of each emission source and fuel consumption)

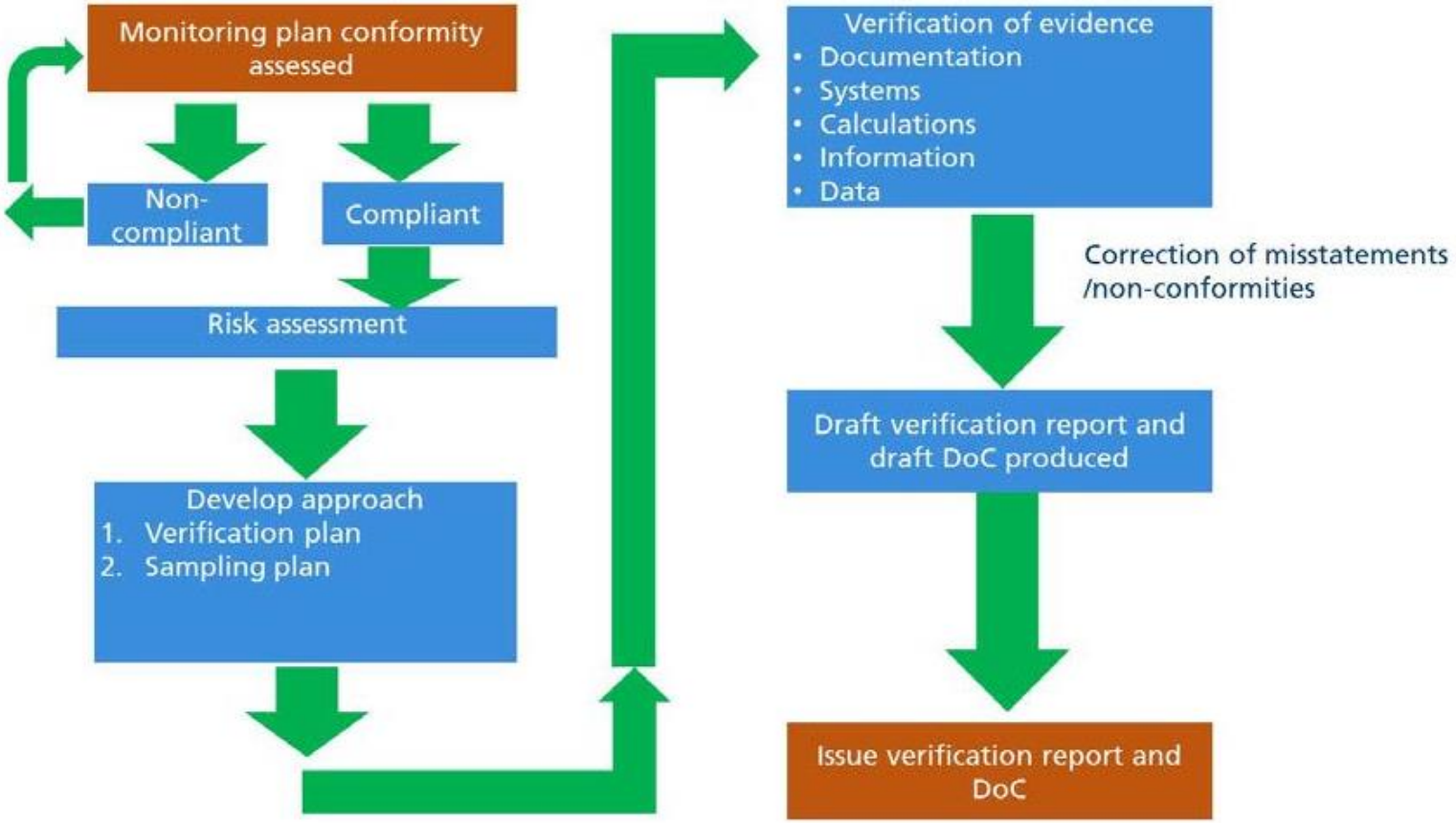
VERIFICATION - responsibilities

- **The verifier** is responsible to:
  - be accredited by a national accreditation body;
  - demonstrate their competence and their implementation of this to the accreditation body during a site visit to the company's head office and to a geographical location (accreditation will be for five years with an annual surveillance visit);
  - assess the conformity of the monitoring plan;
  - assess the annual emissions reports and verify that they are accurate and correct to a reasonable level of assurance;
  - emphasize inconsistencies and give an opportunity to correct them;
  - issue a verification report and DoC on the successful completion of the verification, and
  - inform the flag state and EC that the DoC has been issued (via THETIS database)

VERIFICATION - Responsibilities

- **The company** is responsible to:
  - demonstrate compliance with the monitoring plan;
  - demonstrate how they obtained, calculated and arrived at the final reporting information and data;
  - rectify and correct the misstatements and omissions (if any) found by the verifier, and;
  - keep the ship-specific DoC on board for future PSC checks;

VERIFICATION - Overview



VERIFICATION - Materiality level

- For the purpose of verifying, the materiality level shall be 5 % of the respective total reported for the following items in the reporting period:
  - fuel consumption data [m tonnes];
  - CO_2 emissions data [m tonnes];
  - distance travelled [n miles];
  - time spent at sea [hours];
  - cargo carried [m tonnes];
  - transport work [m tonnes × n miles].
- **'materiality level'** means the quantitative threshold or cut-off point above which the verifier considers misstatements, individually or taken together, to be material.

VERIFICATION - Site visits

- The verifier shall carry out site visits for the purpose of gaining sufficient understanding of the company and the ship's monitoring and reporting system as described in the monitoring plan.
- The verifier shall determine the location or locations for the site visit on the basis of the results of the risk assessment and after taking into consideration the place where the critical mass of relevant data is stored;
- The verifier shall also determine the activities to be performed and the time needed for the site visit.
- The verifier may waive a site visit provided that one of the following conditions is fulfilled:
  - it has sufficient understanding of the ship's monitoring and reporting systems, including their existence, implementation and effective operation by the company;
  - the nature and level of complexity of the ship's monitoring and reporting system are such that a site visit is not required;
  - its ability to obtain and assess all requisite information remotely.

Misstatements in the emissions report and non-conformities

- **'misstatement'** means an omission, misrepresentation or error in the reported data, apart from the uncertainty permissible pursuant to Regulation (EU) 2015/757.
- **'material misstatement'** means a misstatement that, in the opinion of the verifier, individually or when taken together with other misstatements, exceeds the materiality level or could otherwise, have an impact on the total reported emissions or other relevant information;
- **'non-conformity'** means one of the following:
  - for the purpose of assessing a monitoring plan, that the plan does not fulfil requirements under Articles 6 and 7 of Regulation (EU) 2015/757 and Implementing Regulation (EU) 2016/1927;
  - for the purpose of verifying an emissions report, that the CO_2 emissions and other relevant information are not reported in line with the monitoring methodology described in a monitoring plan that an accredited verifier has assessed as satisfactory;
  - for the purpose of accreditation, any act or omission by the verifier that is contrary to requirements under Regulation (EU) 2015/757 and this Regulation
- **non-conformity and/or material misstatement make the emission report <u>not in compliance</u> with Regulation (EU) 2015/757.**

ANNUAL EMISSION REPORT – PUBLIC DATABASE

- This online database and downloadable spreadsheet are made available solely for the purpose of information in line with Article 21 of Regulation (EU) 2015/757, and can be found on Web link:

  https://mrv.emsa.europa.eu/#public/emission-report

- Total number of ships assessed for the year 2020:
  - 11838

- Total CO_2 emissions reported for the year 2020:
  - 127.313.333,34 [m tonnes]

EU MRV vs. IMO DCS - comparison

	EU MRV for CO_2 emissions	IMO DCS for fuel oil consumption
Entry into force	1 July 2015	1 March 2018
First monitoring period	Calendar year 2018	Calendar year 2019
Applies to	Ships of 5,000 GT and above on commercial voyages into, out of and between EU ports	Ships of 5,000 GT and above on international voyages
Monitoring plan	Yes – standardised template	Included in SEEMP
To be included in the reported data	• Fuel oil consumption • Direct CO_2 emissions measurement acceptable • Cargo monitoring • Distance travelled • Time at sea and in port • Transport work based on actual cargo • CO_2 emissions calculated/tabulated • Port of departure/arrival • Separate data to be collected for berthing and voyage	• Fuel oil consumption • Direct CO_2 emissions measurement not required • Design deadweight used as cargo proxy • Distance travelled • Hours underway

EU MRV vs. IMO DCS - comparison

	EU MRV for CO_2 emissions	IMO DCS for fuel oil consumption
Reports to	European Commission (EC)	Flag state (or authorised organisation)
Verification	Third-party independent accredited verifier to a materiality level of 5%	Flag state (or authorised organisation) No materiality level
Disclosure	Public	Confidential
Data reporting format	Standardised format for annual emissions report provided as set out in implementing act	Standardised format set out in Appendix 3 of the *2016 Guidelines for the Development of a SEEMP (MEPC.282(70))*
Reporting platform	EU THETIS MRV	Flag state (or recognized organization) reports to IMO database; individual ship data is kept confidential
Voluntary reporting	Yes, various data are voluntary	No

The reporting and verification included in the EU MRV regulation are more detailed than those required for the IMO DCS. There are similarities in the data required for submission.
The two schemes are expected to run almost in parallel for certain time.

THANK YOU FOR YOUR ATTENTION !

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