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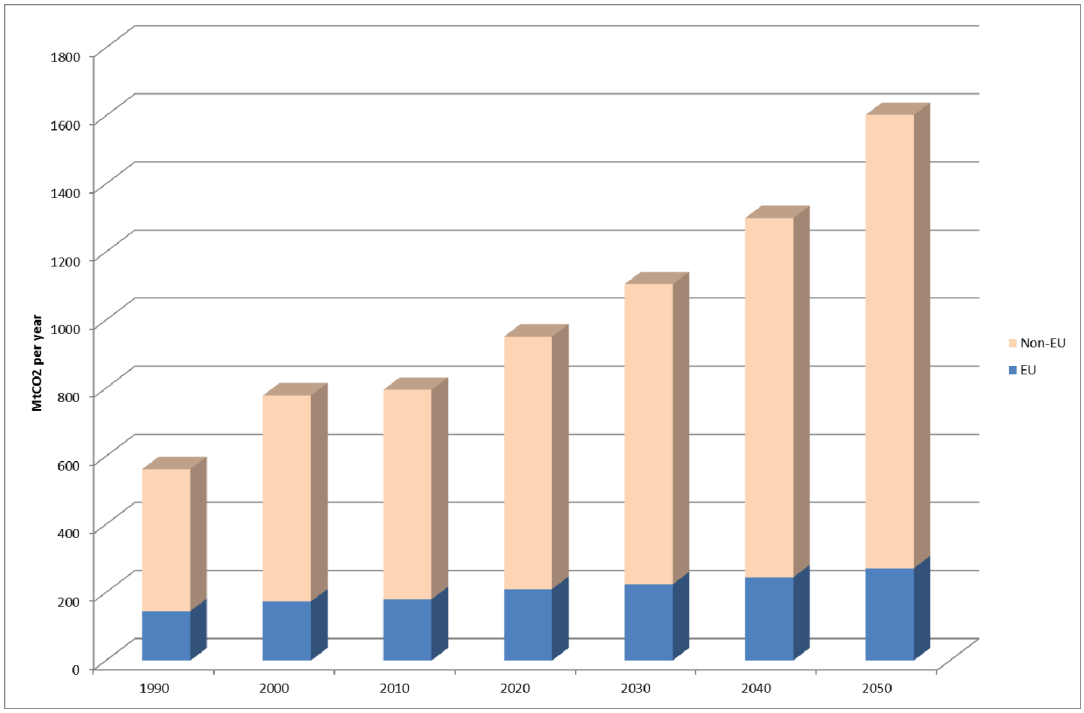
# COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

## Integrating maritime transport emissions in the EU's greenhouse gas reduction policies

## 1. THE NEED TO ACT ON MARITIME GREENHOUSE GAS (GHG) EMISSIONS NOW

The EU supports ambitious international action to address climate change. Multilateralism and broad based cooperation continue to be central for EU's climate policy. Consistent with this international narrative the EU has implemented policies to facilitate its own transition to a low carbon economy. The EU's 2008 Climate and Energy Package is arguably the most comprehensive regulatory framework globally. It comprises of different policy measures designed to facilitate the transition and has come to inspire action by our partner countries. Taking timely economy wide action remains a top priority of the EU in fighting climate change.

At the EU level, international maritime transport remains the only transport mode not included in the EU's GHG emissions reduction commitment. GHG emissions from shipping account today for 4% of the EU GHG emissions. At the same time, GHG emissions from shipping are expected to increase significantly in the future. According to the impact assessment accompanying this Communication[1], the $CO_2$ emissions from maritime transport related to the EU, i.e. emissions related to intra-EU routes, incoming and outgoing voyages, increased by +48% between 1990 and 2008. In line with the growth projections of world trade, EU-related emissions from shipping are expected to increase further by 51% by 2050 compared to 2010-levels (+86% by 2050 compared to 1990-levels) despite the adoption of minimum ship efficiency standards for new ships by the International Maritime Organisation (IMO) in 2011[2].




*Estimated CO2 emissions from maritime transport (EU related[3][4] and globally[5], considering EEDI)*

1 *Reference to IA*
2 AEA Technology and others, 2013
3 EU related means CO2 emitted on routes from the last port of call to an EU port and from an EU port to the next port of call, including emissions within EU ports.
4 AEA Technology and others, 2013
5 Lloyds Register and DNV, 2012

At global level, emissions from maritime transport accounts today for 3% of the global emissions, but are expected to represent 5% of the global emissions in 2050[6], due to expected growth of the world economy and associated transport demand. This increase is expected to happen despite the availability of operational measures and existing technologies to reduce the specific energy consumption and CO2 emissions of ships by up to 75%[7].

Shipping is an essential link in the global supply chain and it is a key sector for the EU economy. While shipping may still be comparatively less polluting than other modes of transport, technological advances elsewhere, overdependence on oil, and a strong call from public opinion not only for CO2 emissions reductions but also for reductions in pollutants (SOx, NOx, particles) and of the broader environmental footprint (ballast water, waste separation) make a clear case for shipping not to stand idle. IMO and industry are actively engaged but uptake of new technologies and operational measures remains uneven. Encouraging further efficiency and sustainability in the shipping sector through reduced fuel cost and better serving customers' expectations will maintain its competitiveness: at global level by ensuring the functioning of trade links, and at EU level through continuous quality leadership.

***The case for action – Recent developments in the sector***

In the shipping sector, CO2 emissions relate to fuel consumed. Reducing CO2 emissions means reducing fuel consumption which in turn results in savings in fuel costs. As long as the efficiency investments required can be covered by the resulting fuel savings, the sector can earn money while addressing climate change. Such savings are highly relevant in today's context.

Fuel prices have been erratic in the last years. They doubled between 2002 and 2005, then tripled between 2005 and 2007, and fallen back to the 2005-level in 2008 just to double again between 2008 and 2010[8]. Prices of heavy fuel oil are now around $650/t, i.e. 8 times more than the average 1990 prices, and they are still expected to increase. Improvements in fuel efficiency have been observed in many segments of the shipping sector only since 2009 when the global economic crisis significantly reduced the profit margin of the sector.

Several recent studies[9] have identified significant emission reduction potential for shipping through a range of technical and operational measures, which mainly aim to improve the energy efficiency of ships. With expected increase in future fuel prices, most of these technical or operational measures are cost-efficient. The impact assessment carried out in the context of this Communication identified progressively increasing savings potential in the cost of fuel that add cumulatively up to € 56 billion between 2015 and 2030[10].

Research shows that the uptake of these cost-efficient measures is often blocked by a diverse range of market barriers, including a lack of reliable information, as well as technical and market failures[11]. Technical barriers occur when ship-owners lack the confidence in the ability of a solution to meet the cost reduction promised or to perform in the marine environment. Market failure can be triggered, typically by split incentives in the sector i.e. the party paying for the investment in an efficiency measure is not the beneficiary of the associated fuel

6 Estimated CO2 emission reduction from introduction of mandatory technical and operational energy efficiency measures for ships. Study carried out by Lloyd's Register and DNV for IMO in 2011 and 4th IPCC Assessment Report

7 Second IMO GHG study 2009

8 Vivid Economics

9 Second IMO GHG study 2009, CE Delft and others 2009, DNV 2010, Ricardo-AEA and others 2012

10 discounted at 10% per year

11 Maddox Consulting, 2012

savings, or by lack of access to private finance to invest in to low-carbon technologies. Overcoming these market barriers would provide significant scope for encouraging the uptake of cost effective measures without compromising profitability.

## 2. INTERNATIONAL PROGRESS

IMO started working on the reduction of GHG in 1997 based on the principles of no-more-favourable-treatment and non-discrimination enshrined in MARPOL and other IMO Conventions. The adoption of amendments to the Annex VI of MARPOL[12] for the prevention of air pollution from ships (the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP)) in July 2011 constitutes important progress. These measures, and in particular the EEDI, are expected to deliver significant reduced emissions increase compared to frozen-technology scenarios (by 23% by 2030 according to the IMO 2011 study). However, as confirmed by the 59th Marine Environment Protection Committee (MEPC) of the IMO[13], further action needs to be taken.

Despite difficult discussions on market-based measures to reduce GHG emissions from ships in the IMO, recent positive developments in discussing a more gradual way forward, including on enhancing efficiency measures put forward by the United States of America[14], have won backing among many States. The Commission is actively engaged in these developments as they could provide new opportunities to agree on efficiency standards for existing ships leading to emission reductions and which could be later developed towards market-based measures (MBMs). As first step, a robust monitoring, reporting and verification (MRV) of emissions is foreseen. The EU is working closely with the US, Japan, Australia, Canada, Russia, Korea and others on the development of these efficiency standards and of a global MRV scheme.

The IMO recognised that to achieve necessary reductions, MBMs will also be needed in addition to the technical and operational measures, which are discussed under different items of the MEPC agenda. The Commission regards MBMs as cost-effective means as they provide the necessary flexibility to the shipping sector. But discussions require time to mature, especially considering that several complementary options are under consideration at the IMO. In particular, since its 63rd sessions in 2012 the MEPC failed in delivering terms of reference for a study assessing the impacts of proposed MBMs[15].

The EU has a strong preference for a global approach led by the IMO, as the most appropriate international forum to regulate emissions from shipping. Despite the slow pace of the IMO discussions to date and the urgency to act to prevent negative consequences for the climate, the EU will continue to engage in the international developments to reduce GHG emissions from ships. It will continuously monitor progress and consider future actions in the context of the UNFCCC agreement in 2015 and the deliberations at the IMO.

## 3. INCLUSION OF MARITIME GREENHOUSE GAS EMISSIONS IN THE EU'S REDUCTION COMMITMENT: A GRADUAL APPROACH

The Union's climate and shipping policy reinforces the commitment to global action ensuring effective "across the board" emissions reductions (particularly since shipping related

12 MARPOL Annex VI is related to air pollution from ships

13 Report from 59th MEPC meeting, paragraph 4.92

14 MEPC 65/4/19

15 4 instruments are under consideration: ETS, GHG Fund, Port State Levy and Efficiency Incentive Scheme (EIS).

emissions are expected to grow stronger in non-European regions) while at the same time maintaining a global level playing field for the shipping industry.

The recent US initiative in the IMO provides the ground for an effective stepwise approach addressing GHG emissions of the shipping sector. In line with that, the EU foresees a gradual approach of the inclusion of maritime GHG emissions in its commitments.

For the inclusion of maritime GHG emissions in the EU's reduction commitment, the gradual approach consisting of three subsequent steps can be considered:

1. Implementing a system for MRV of emissions
2. Definition of reduction targets for the maritime transport sector
3. Application of a market based measure (MBM).

A robust MRV system is the foundation for implementation of any measure reducing GHG emissions of ships at EU or global level and facilitates results based monitoring of progress. Therefore, its implementation is useful, even without an MBM in place.

Lack of awareness about costs, benefits and return on investment regarding already available technologies seem to hinder the introduction of such technologies on a larger scale. This kind of information could provide useful insights into the performance of individual ships, their associated operational costs and potential resale value for the benefit of ship-owners, who would be better equipped to take decisions on major investments and to obtain the corresponding finance.

According to the results of the Impact Assessment, the implementation of MRV provides – to some extent – environmental and economic benefits of up to 2% reductions in annual GHG emissions and of up to € 1.2 billion annual net savings for the sector in 2030 due to reduced fuel bills. The predicted fuel cost savings are expected to outweigh the costs for monitoring and reporting. An MRV system could also increase the pressure for the removal of other market barriers, such as split of incentive between ship owners and operators, by providing clarity on energy efficiency, emissions sources and abatement potential.

The EU's approach is designed to actively contribute to an agreement on global measures to reduce GHG emissions from ships in the IMO (see section 1). It also allows for informed discussions in Europe on MBMs and reduction targets for the sector. Consistency will have to be ensured with the development of 2030 climate change and energy policy framework. MRV will also provide robust and comparable data to set emission reduction targets and to assess the progress of maritime transport towards a low carbon economy. In case of successful introduction of comparable policies at IMO level, the EU MRV proposal can be integrated into a generalised MRV system.

### 3.1. Implementing robust and harmonised monitoring and reporting rules

The main objective of a system for MRV is to provide reliable data on GHG emissions from maritime transport. The implementation of a global MRV system should be a priority in IMO negotiations.

CO2 emissions in the shipping sector simply relates to the amount and type of fuel consumed. Fuel consumption is already available for almost all ships. Regulation 18 of MARPOL Annex V already makes compulsory the availability of bunker delivery notes[16] for ships engaged in international transport over 400 GT. So, the global fuel consumption of a ship is already monitored.

[16] The bunker delivery note includes the name and IMO number of the ship receiving the fuel, the port of bunkering, the marine bunker supplier contact information, fuel quantity and density.

However, the reporting and verification process still need to be established. The reliability and the accessibility of the information are key to ensure adequate information all over the supply chain about the carbon performance of the shipping sector. Setting adequate reporting and verification process will require technical work to ensure a limited administrative burden on ship-owners, ship-managers and Flag States, while providing a high accuracy and transparency of the information available.

In a longer term an integrated approach to monitoring, addressing all air emissions, including SOx, NOx and PM, would provide the necessary clarity for policy-makers to make informed and consistent decisions across all pollutants, and for stakeholders to smoothly implement the new requirements. In particular, a review of the MRV scheme could be carried out at a later stage.

The current Commission proposal is for a fuel consumption based MRV scheme to be started at regional level, with the aim of serving as an example for a global scheme, pointing out the difficulties and best practices. The proposed EU's MRV system feeds into the discussions at the IMO, with the aim of speeding up the IMO process. In case of a successful move to a comparable MRV at global level, the regional system will be aligned with it, as appropriate.

*Case example: European experiences on fuel cost savings through monitoring and reporting*

Several ship-owners and ship-operators operating different types of vessels (e.g. bulk carriers, container vessels…) have already successfully implemented their own MRV systems. Using electronic data collection tools, most existing information on ship performance is gathered and checked by a third party. Thanks to these systems, some companies already reduced their GHG emissions up to 25% compared to 2007. Furthermore, such tools have also contributed to rethink general monitoring processes, saving time of crews and operators for high value tasks. For example, a company said that 45% of time is now spent on performance optimisation instead of 5% before the implementation of the MRV system.

The primary objective of the EU climate policy is to reduce GHG emissions, regardless if they are reduced through energy efficiency improvement or fuel switch. However, to align with the on-going discussion in the IMO, the proposed EU MRV regulation will initially include a range of energy efficiency parameters. In case of later consensus on the use and definition of these parameters, the currently proposed list should be adjusted accordingly.

The proposed MRV system will not impose a specific methodology for monitoring the CO2 emissions, as long as the selected methodology and its uncertainties are reported. This approach allows ship-owners and ship-managers to build on existing practises. Such a measure can be introduced without jeopardising the objectives to cover the widely predominant share of GHG emissions from maritime transport by limiting the application of MRV rules to large ships of at least 5000 GT.

### 3.2. Setting intermediary reduction targets for the maritime transport sector

In December 2010, Parties of United Nations Framework Convention on Climate Change (UNFCCC) recognized that global warming must not exceed the temperatures experienced before the industrial revolution by more than 2˚ C[17]. This is vital if the irreversible negative consequences of human interference with the climate system are to be limited. This long-term goal requires global GHG emissions to be reduced by at least 50% below 1990 levels by 2050[18].

Developed countries should reduce their emissions by 80 to 95% by 2050 compared to 1990 levels[19]. In the medium term, the EU has committed to reduce its GHG emissions by 20% below 1990 levels by 2020, and by 30% in the context of a global deal. This commitment forms part of one of the EU's five headline targets in the *Europe 2020 Strategy.*[20] The international maritime transport is the only industrial sector and transport mode not covered by legislation to deliver this reduction target. Additionally, both the European Council and the European Parliament have agreed that all sectors of the economy should contribute to reducing emissions[21]. For EU international maritime transport, the 2011 White Paper on Transport[22] established a reduction target of 40% (if feasible 50%) by 2050 compared to 2005.

At the global level however, a well-defined absolute emissions' reduction path by 2050 for maritime transport and intermediary targets for the period between 2020 and 2050 still need to be considered to ensure appropriate contribution of the sector to help meeting the 2˚ C target.

At the EU level, such discussions have to be mindful of the broader 2030 climate change and energy policy framework and should consider aspects such as the environmental effectiveness in particular regarding the cumulative $CO_2$ reductions, costs for the sector, the development of emissions after 2005, possible new efficiency standards adopted by the IMO as well as the availability and costs of today's and expected future abatement technologies. In setting such targets the specificity of maritime mitigation measures which result in no – or even negative – costs ('low hanging fruits'), as identified i.e. in the IMO Second GHG study 2009, should be borne in mind as they clearly speak in favour early action. Finally, the data collected through the MRV system should also form an integral part of such future decisions.

### 3.3. Effective and efficient market-based measures to reduce maritime GHG emissions

The impact assessment demonstrates that MBMs are effective and well suited means to achieve emission reductions from maritime transport while providing economic benefits to the sector as a result of the substantial fuel cost savings which are related to $CO_2$ emission reductions.

An MBM can effectively remove the market barriers, especially the split of incentives, e.g. by implementing the polluter-pays principle. A MBM has the potential to overcoming market barriers relating to the access to finance provided that potential revenues generated are channelled to ensure the support of private finance to the sector. Depending on the level of contribution or the target level, a MBM can create a strong incentive to achieve economy-wide absolute emission reductions in a cost effective way.

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17 Decision 1/CP.16 of the Conference of Parties to the UNFCCC (the "Cancún Agreements").

18 Based on the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

19 Conclusions of the European Council of 29/30.10 2009 and European Parliament Resolution of 4.2 2009 (2008/2105(INI)).

20 COM(2010) 2020 final.

21 Directive 2003/87/EC and Decision 406/2009/EC

22 COM(2011) 144 final

Looking from a regional context and taking into account the IMO discussions, the Impact Assessment identified three options out of the variants analysed as clearly the most promising MBMs to address GHG emissions of maritime transport, notably:

1. *A Contribution based compensation Fund* under which a voluntary contribution (in €/$tCO_2$) would be paid into the fund. The contribution would be dependent on the emissions by the ship covered by the regulation. This voluntary instrument can only be successfully implemented if a complementary instrument (e.g. speed limits, ETS, etc.) is set up and the fund participation is foreseen as a voluntary opt-out from the complementary instrument[23].

2. *A target based compensation fund* based on establishing a unique target for all ships covered by the regulation. A sector-wide entity[24] is taking over the responsibility for ensuring compliance with the target. Each ship covered by the regulation has to establish a contractual relationship with this entity to ensure the achievement of the target. The contractual agreement would require the payment of a membership fee, which supports investments in ship efficiency, as well as provisions in case of collective overshooting of the target.

3. *An Emissions Trading System (ETS),* which would mean each ship has to surrender allowances at the end of the compliance period corresponding to its emissions of the previous year.

In this context, it is clear that the discussion on current IMO proposals and their complementarity have to be pursued. The precise design of any option would require further work and design decisions to be taken[25].The present proposal for an MRV is designed to be able to underpin any future efficiency standards as well as a future MBM, on the basis of the options currently discussed in the EU and at the IMO.

## 4. PARALLEL MEASURES TO REMOVE MARKET BARRIERS

In 2009, the Commission adopted strategic goals and recommendations for the EU maritime transport policy. The Commission outlined as a key priority development a comprehensive and coherent approach to reducing GHG emissions from international shipping. This is reinforced in the 2011 While Paper on Transport. As follow-up to the White Paper, the Commission is developing a strategic framework for transport research, innovation and deployment, for an integrated, efficient and environmentally friendly European transport system.

The Commission remains committed to consider how market barriers preventing the uptake of low carbon technologies can be appropriately addressed. Following discussions with the European Parliament, Member States, industry and civil society stakeholders, the Commission may prioritise areas for further analysis and future initiatives. In view of the global nature of the sector, such work would be closely linked with efforts in the IMO.

In particular, the IMO is considering the potential need and design of a fuel consumption standard as well as the possible development of a standard to measure hull and propeller

[23] This mechanism should be designed in such way that the contribution based compensation fund remains in practise the primary instrument. The Norwegian NOx fund is an example where a tax serves as such complementary instrument. So, it can be assumed that the use of alternative mechanisms will be marginal.

[24] Such as an association or a public body

[25] Decisions such as those on the entity to be in charge of the collection of revenues to be recycled in the sector, on ensuring wide-spread application, and on possible additional incentive mechanisms

performance. To this end, the Commission and the Member States should actively work within the IMO on these issues, and seek to extend the on-going standard development in order to cover other key technological solutions.

Reducing GHG emission of maritime transport relies to a significant degree on adequate land-based infrastructure. The Commission already supports the development of such infrastructure, for example for port electrification and alternative fuels such as LNG through financial incentives and regulatory measures[26]. Future initiatives should in particular take account of the need to jointly consider various emission types, for reasons of regulatory certainty as well as legal and operational efficiency.

Many energy efficient technological solutions for the maritime industry bear substantial upfront capital costs, which may be difficult to engage during the current economic climate. Innovative financing solutions – such an energy performance contracting - and use of the EU investment support facilities available from the European Investment Bank could provide useful tools to help ship-owners to shoulder the initial cost.

Finally, while many technologies are already available on the market, moving towards a low or even zero carbon maritime transport requires substantial research efforts in the long term. Under its flagship Framework Programme 7 (FP7), the Commission already provides substantial funding towards development and deployment of technologies aimed at reducing the fuel consumption and associated emissions of tomorrow's ships. The proposed Horizon 2020 framework[27] intends to continue and intensify these efforts.

## 5. CONCLUSIONS AND THE WAY FORWARD

The proposed gradual approach to address GHG emissions from ships with a robust MRV system as the first step is aligned with other measures proposed in the IMO context and take action to practical rather than theoretical level. This proposal will feed into the discussions at the IMO and can serve as a sample for a global scheme.

There is a clear need for all international partners to enter into serious discussions and prove their willingness to engage in the IMO process aimed at agreeing a global MBM and possible standards addressing the operational efficiency of the existing fleet. To be credible, this work must build on a robust global MRV scheme.

It is in the EU's interest to remain consistent with its climate policy objectives and the ambition set forth in this context. Accordingly, in the continued absence of an agreement the EU should pursue further measures to include maritime transport into the economy wide effort consistent with the Europe 2020 Strategy. The Commission invites the European Parliament, Member States and all stakeholders to discuss the open points identified in this Communication in view of possible future initiatives of the EU for addressing GHG emissions from maritime transport.

[26] COM(2013) 17 final, COM(2013) 18 final and SWD(2013) 4 final.
[27] COM(2011) 809 final