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**COMMISSION STAFF WORKING DOCUMENT**  
**EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT**

*Accompanying the document*

**Proposal for a Regulation of the European Parliament and of the Council on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport and amending Regulation (EU) N° 525/2013**

{ COM(2013) 480 final }  
{ SWD(2013) 237 final }

# COMMISSION STAFF WORKING DOCUMENT

## EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

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#### **Proposal for a Regulation of the European Parliament and of the Council on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport and amending Regulation (EU) N° 525/2013**

### **1. PROBLEM DEFINITION**

The EU is strongly committed to achieve the climate objective of limiting global average temperature increase to less than 2 degrees Celsius above pre-industrial levels. To this end, one of the headline targets of the Europe 2020 Strategy for smart, sustainable and inclusive growth<sup>1</sup> is to reduce greenhouse gas (GHG) emissions by at least 20% compared to 1990 levels or by 30%, if the conditions are right<sup>2</sup>. According to this EU's climate and energy legislation<sup>3</sup>, all sectors of the economy should contribute to achieving these emission reductions, including international maritime shipping. International shipping is the only sector and transport mode so far not covered at the EU level by the emission reduction target.

Despite the improvement of the energy efficiency of ships, including the improvement of energy efficiency introduced by the implementation of the Energy Efficiency Design Index (EEDI)<sup>4</sup>, the absolute EU GHG emissions from maritime transport are expected to further increase. The CO<sub>2</sub> emissions related to European maritime transport activities (including intra EU routes, incoming journeys to the EU and outgoing journeys from the EU) are expected to reach 210 Mt CO<sub>2</sub> in 2020 (+8% compared to 2005), 223 Mt CO<sub>2</sub> in 2030 (+15% compared to 2005) and 271 Mt CO<sub>2</sub> in 2050 (+39% compared to 2005)<sup>5</sup>.

GHG emissions of maritime transport are directly related to the fuel consumption and fuel can be considered up to 33 to 63% of ship's operational costs<sup>6</sup>. Consequently, the constant increase of fuel prices over recent years should have triggered the adoption of technological means to increase of the energy efficiency of ships and ultimately to a decrease of GHG emissions compared to a business as usual scenario.

However, recent research<sup>7</sup> has identified CO<sub>2</sub> reduction measures in the maritime transport sector that are not being implemented. The total cost of many of these measures is negative – i.e. they deliver more fuel savings than the investment costs required. They are not implemented in part due to market barriers. The key barriers identified are (i) lack of information, (ii) split of incentives and (iii) access to finance. Consequently, even if fuel price is in principle a key driver to encourage emission reductions, it cannot deliver the full potential of emissions reductions in the shipping sector. At the same time, any policy that triggers CO<sub>2</sub> emissions reduction triggers important fuel savings.

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<sup>1</sup> COM(2011) 21, see: <http://ec.europa.eu/resource-efficient-europe>

<sup>2</sup> COM(2010)2020, 3.3.2010

<sup>3</sup> Effort sharing decision N° 406/2009/EC recital 2 and the EU ETS Directive 2009/29/EC recital 3

<sup>4</sup> The EEDI adopted by the IMO in July 2011, sets technical standards for improving the energy efficiency of certain categories of new ships.

<sup>5</sup> Ricardo-AEA Technology and others, 2013

<sup>6</sup> Ricardo-AEA Technology and others, 2013

<sup>7</sup> International Maritime Organisation (IMO) 2009, CE Delft 2009, Det Norske Veritas (DNV) 2010

Even if the market barriers are removed, the EU-related CO<sub>2</sub> emissions of maritime transport are still expected to grow. Indeed, the main driver of the CO<sub>2</sub> emissions growth is the growth of world trade.

## **2. OBJECTIVES**

International maritime transport is expected to contribute to reaching the objective outlined in the EU 2020 Strategy and its flagship initiatives. More precisely, it should achieve the Commission's Transport White Paper specific target of a reduction in EU CO<sub>2</sub> emissions from maritime bunker fuels by 40% (if feasible 50%) by 2050 compared to 2005 levels.

Moreover, under the EU 2020 objectives, the European Council<sup>8</sup> has identified that action against climate change will bring opportunities for growth and employment through building expertise in eco-efficient technologies. The policy objectives therefore promote technological development, supporting continued innovation in the EU maritime-related industries.

Furthermore, due to the global nature of the maritime sector, international regulation is always preferred. Therefore, another important specific objective for the EU is to develop regional policies that can support the International Maritime Organisation (IMO) process or/and that can take forward action to reduce maritime emissions within the EU and globally.

## **3. ANALYSIS OF SUBSIDIARITY**

Action at the EU level could significantly reduce CO<sub>2</sub> emissions from global maritime transport. CO<sub>2</sub> emissions related to journeys from and to EU ports represented 180 Mt CO<sub>2</sub> in 2010, i.e. around 1/5<sup>th</sup> of global maritime emissions<sup>9</sup>. This covers intra-EU journeys, journeys from EU ports to the first port of call outside the EU and journeys from the last port of call outside the EU to the first EU-port.

Acting at the EU level will be more efficient than acting at the Member State level because of the strong European dimension of shipping with 90% of calls in EU Member State ports are from ships coming from or going to a port located in another EU Member State. Furthermore, acting at the EU level could avoid competitive distortion in the internal market by ensuring equal environmental constraints on ships calling into EU ports.

Finally acting at the EU level will ensure that the information provided on greenhouse gas emissions is harmonised at EU level, contributing to the removal of the market barrier on lack of information.

## **4. POLICY OPTIONS**

### **4.1. Choice of policy options**

As an EU proposal aims to be a precursor of an international regulation, it is important to build on policy options presented in international fora. The policy options assessed are therefore built on existing proposal in the IMO.

In light of international developments and although this analysis looks at a range of measures including MBMs, Vice-President Kallas and Commissioner Hedegaard announced on 1<sup>st</sup> October 2012 a stepwise approach for the implementation of EU measures. This first step will be the monitoring and reporting of CO<sub>2</sub> emissions from international maritime transport. Accordingly, the impact of the monitoring and reporting of CO<sub>2</sub> emissions has been

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<sup>8</sup> Conclusion of the European Council (17 June 2010), EUCO 13/10

<sup>9</sup> Based on 2007 figures.

considered as an independent policy measure, despite the fact that such scheme is a prerequisite for any policy option.

## **4.2. Description of the policy options assessed**

### *4.2.1. Option 1: Baseline scenario*

This option only considers existing policies and legal instruments. As a consequence, this option is not expected to remove any market barriers. This option does not take into account the current possibility for the Member States to include activities or installations (i.e. ships or ports) into the EU-ETS, according to Article 24 of Directive 2003/87/EC. None of the Member States has used this option so far.

### *4.2.2. Option 2: Monitoring, reporting and verification of emissions based on fuel consumption*

Monitoring, reporting and verification (MRV) of emissions based on fuel consumption will ensure accurate information of the CO<sub>2</sub> emissions performance of a ship. Therefore, it will address the market barrier related to lack of information. However, it will not address the market failures associated with the split of incentives and the access to finance. Under this option, the MRV is done by ships, based on their fuel consumption. The CO<sub>2</sub> emissions are made publicly available to incentivise the improvement of energy efficiency.

### *4.2.3. Option 3: Levy on emissions*

#### 4.2.3.1. Sub-option 3a: Levy on bunker fuel sales

This option is based on the existing monitoring, reporting and verification of emissions based on fuel sales<sup>10</sup>. The carbon constraint is set through the payment of a contribution to a fund (in €tCO<sub>2</sub>). Any recycling of revenues would be under the responsibility of the Member States collecting the levy. If this is the case, these revenues could in theory be used to remove the market barrier related to access to finance.

#### 4.2.3.2. Sub-option 3b: Tax on emissions from fuel consumed

This option would address two market barriers: lack of information and split incentives. In principle, the generated revenues go to the national budget. However, Member States could in theory also set up other instruments/interventions in order to remove the market barriers where access to finance is concerned. In this case only, this option could address all the market barriers. The MRV of emissions is done by ships, based on their fuel consumption (as for option 2). The carbon constraint is set through the payment of a tax due for every tonne of CO<sub>2</sub> emitted to incentivise emissions reductions.

#### 4.2.3.3. Sub-option 3c: Contribution-based compensation fund

This option would address all the market barriers. The MRV is done by ships, based on their fuel consumption (as for option 2). The carbon constraint is set through the payment of fixed a voluntary contribution (in €tCO<sub>2</sub>) to incentivise emissions reductions. It is common practice in the maritime sector to set funds to tackle environmental problems. A pan-EU fund could be set up and be in charge of the collection of contribution and revenue recycling. A prerequisite is for a complementary instrument (e.g. speed limits, etc.) to be set up to ensure the participation in the contribution-based compensation fund as the more attractive instrument for ships.<sup>11</sup>

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<sup>10</sup> Bunker fuels sales are reported by bunker fuel suppliers for taxation purposes

<sup>11</sup> This mechanism should be designed in such way that the contribution based compensation fund remains in practise the primary instrument.

#### 4.2.4. Option 4: Maritime emission trading scheme (ETS)

All the sub-options considered under the ETS would address market barriers relating to availability of information and split of incentives. In addition, an ETS with auctioning could address also the market barrier relating to access to finance, if adequate instruments/interventions are set up in order to remove this market barriers. The MRV of emissions is done by ships, based on their fuel consumption (as for option 2). The carbon constraint is set through the setting of a CO<sub>2</sub> emission reduction target.

When the allowances authorized to be surrendered are only new allowances created for the maritime sector, the system is called a closed system. Otherwise, it is considered as an open system. Allowances can also be granted for free or auctioned. These different sub-options are considered for the purpose of this impact assessment.

#### 4.2.5. Option 5: Target based compensation fund

This option would address all the market barriers. The MRV of emissions is done by ships, based on their fuel consumption (as for option 2). The entire fleet has to comply with an emission reduction target. For the purpose of this impact assessment, the target is assumed to be set up at the same level of a maritime emission trading system (option 4). Compliance is ensured by an obligation for a "compensation fund", representing the entire fleet, to surrender offsets to a competent authority according to the emissions of the maritime transport sector reported for the previous year. This "compensation fund" takes the responsibility for the emissions of all ships calling into EU ports. Each ship calling into an EU port has to be member of this fund.

## 5. ASSESSMENT OF IMPACTS

Even if the target is set up to 2050, the economic, environmental and social assessment has been done up to 2030 due to the uncertainties of the global economy on longer term.

### 5.1. Environmental impacts

All options analysed, except the baseline option, will deliver emission reductions (table 1, below).

Table 1: Emission reduction by 2030

	Emissions by 2030 (Mt CO <sub>2</sub> )	Compared to the baseline	Cumulative emissions reductions up to 2030 (Mt CO <sub>2</sub> )
Option 1 – Baseline	223.0	-	-
Option 2 – Monitoring based on fuel consumed	218.5	-2%	55.9
Option 3 – Levy on emissions			
3a - Levy on bunker fuel sales	217.0	-3%	40.1
3b - Tax on emissions from fuel consumed	186.8	-16%	335.4
3c - Contribution based compensation fund	186.8	-16%	335.4

Option 4 – Maritime ETS			
Closed ETS	175.7	-21%	377.1
Open ETS with free allocation	186.7	-16%	333.8
Open ETS with full auctioning	186.8	-16%	336.3
Option 5 – Target based compensation fund	186.8	-16%	336.3

Source: AEA Technology and others, 2012

The emission reduction delivered by the closed ETS (option 4a) is consistent with the Commission's White Paper on Transport target. The emission reductions delivered by open ETS options (4b and 4c) and the target based compensation fund (option 5) could also be consistent with Commission's White Paper on Transport target, if ship-owners and ship operators are purchasing out-of sector emission reductions that are supplied from an emission trading system where the emissions are capped. All other options fall short of delivering emissions reductions consistent with Commission's White Paper on Transport target.

## 5.2. Economic impacts

All of the analysed non-baseline policy options will deliver important fuel savings. Aside from the monitoring based on fuel consumed, the policy options would result in small additional capital and operational costs. Except for the levy on bunker fuel sales, these additional costs are compensated by the reduced fuel costs leading to significant total net savings of up to €2 billion until 2030 for the sector<sup>12</sup>.

Table 2: Additional costs of policy options compared to the baseline, up to 2030, private discount rate (10%), negative figures express cost savings

Additional costs compared to the baseline up to 2030		Capital costs	Operational costs (excluding fuel costs)	Fuel costs	Carbon costs	Total costs
Monitoring based on fuel consumed	Value (€bn)	-	+0.6	-9.4	-	-8.8
	Percentage	-	+0.3%	-2.0%	-	-0.6%
Levy on bunker fuel sales	Value (€bn)	+2.5	+1.6	-4.8	+66.7	+66.0
	Percentage	+0.4%	+0.5%	-0.8%	-	+4.5%
Tax on emissions	Value (€bn)	+2.9	+0.03	-55.9	+26.1	-26.9
	Percentage	+0.5%	+0.01%	-9.6%	-	-1.8%
Contribution based compensation fund	Value (€bn)	+2.9	+0.03	-55.9	+26.1	-26.9
	Percentage	+0.5%	+0.01%	-9.6%	-	-1.8%

<sup>12</sup> Ricardo-AEA and others, 2013

Closed ETS	Value (€bn)	+8.4	+0.07	-55.8	-	-47.3
	Percentage	+1.4%	+0.02%	-9.6%	-	-3.3%
Open ETS with free allocations	Value (€bn)	+2.8	+0.12	-55.6	+0.7	-52.0
	Percentage	+0.4%	+0.04%	-9.5%	-	-3.6%
Open ETS with full auctioning	Value (€bn)	+3.0	+0.01	-56.0	+30.4	-22.6
	Percentage	+0.5%	+0.003%	-9.6%	-	-1.5%
Target based compensation fund	Value (€bn)	+3.0	+0.01	-56.0	+30.4	-22.6
	Percentage	+0.5%	+0.003%	-9.6%	-	-1.5%

Source: AEA Technology and others 2012

The administrative burden for ship operators and ship owners is very low (less than 1% of annual operational costs) independent of the option analysed.

Free movement of goods is unlikely to be affected. The modelling shows that, no policy option would lead to a decrease of the volume of goods traded within and outside the EU. An increase of freight rates is unlikely, but it may happen on specific routes. However, the assessment of eleven highly representative commodities (representing 58% of 2010 EU imports in value) shows that their prices are not affected by the possible increase of freight rates. Therefore, no significant impacts are expected on the EU economy.

Administrative costs for public authorities are expected to be rather low (below €8 million per year for the 27 Member States). These costs could be reduced if an EU central competent authority is in charge and if only ships above 5000 GT are covered by the regulation.

### 5.3. Social impacts

The monitoring based on fuel consumed (option 2) is not expected to deliver additional social impacts to the baseline scenario, whereas the levy on bunker fuel sales (option 3a) could lead to the closure of some bunker fuel suppliers in the EU, as the sales may be reduced up to 90%. All other options will not lead to a loss of jobs, but to a slight increase or decrease in employment relative to the baseline.

As all options deliver reductions in bunker fuel consumption and consequently reductions in NO<sub>x</sub>, SO<sub>x</sub> and PM, significant positive impacts can be expected on health.

## 6. COMPARISON OF OPTIONS

Considering the impact assessment guidelines and the 9 IMO principles for the design of market-based measures, the following criteria were developed to compare options: ability to remove market barriers, environmental effectiveness, vulnerability (exposure to/risk of evasion), enforceability, shipping competitiveness, competitiveness of the EU, stimulation of actions by others, including the IMO and consistency with the related EU policies.

As a conclusion and in accordance with the stepwise approach proposed by Vice-President Kallas and Commissioner Hedegaard, monitoring of fuel consumed (option 2) should be considered as the option that would be the necessary first step for other policy options leading to more substantial benefits in terms of economic, environmental and social impacts.

For the next steps following the implementation of the monitoring and reporting, it is clear that a levy on bunker fuel sales (option 3a) is not suitable for a regional measure due to the significant costs associated, the social impact and the risk of evasion. The other policy options address problem drivers<sup>13</sup> and achieve the environmental objective, although to a different degree. Any eventual decision regarding market based measures should be aligned with the option emerging from the relevant deliberations at the IMO.

## **7. MONITORING AND EVALUATION**

The core indicators to monitor and evaluate the progress made towards the reduction of GHG emissions from maritime transport are related to CO<sub>2</sub> emissions from maritime transport. Other indicators will also be considered to assess the overall impact of the EU legislation.

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<sup>13</sup> For the tax on emissions (option 2), the market barriers would only be removed if Member States were to set up instruments removing the market barrier related to access to finance.