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**POLLUTANT EMISSION REDUCTION FROM MARITIME TRANSPORT AND THE
SUSTAINABLE WATERBORNE TRANSPORT TOOLBOX**

Accompanying the document

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

**on the review of the implementation of Directive 1999/32/EC related to the
sulphur content of certain liquid fuels and on further pollutant emission
reduction from maritime transport**

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1. INTRODUCTION

1.1. THE CONTEXT

At European Union level, certain rules on the sulphur content of marine fuel, laid down in the Annex VI -Regulations for the prevention of Air Pollution from Ships - of the International Maritime Organisation (IMO) MARPOL 73/78 Convention, have been incorporated in the EU Directive 2005/33/EC¹ amending Directive 1999/32/EC relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC.

In October 2008, MARPOL Annex VI was amended, introducing requirements for lower sulphur fuels globally, but also more stringent limits in the Emission Control Areas (ECAs)². In order to ensure regulatory consistency, the relevant EU legislation will be aligned with the latest IMO requirements. In addition, the alignment with the international standards will be accompanied at EU level by a set of dedicated measures, which are further elaborated in the present Staff Working Paper.

The European Commission's proposal for sulphur reduction in marine fuels is intended to be both flexible and neutral as regards the way in which compliance with the new limits can be achieved, leaving the choice of the most appropriate technology to the operators. Nevertheless, compliance needs to be achieved on time and at the scale required while minimising any possible unwanted collateral effects. To this end, a number of short-term accompanying measures are being considered by the Commission to seek solutions for minimising the compliance costs.

Furthermore, in order to assist the sector to achieve a broader set of sustainability criteria in the long run, a set of medium to long term measures are being contemplated -"a sustainable waterborne transport toolbox." These measures aim at promoting the use of green ship technology, alternative fuels, the development of adequate green transport infrastructure and superstructure, exploring possible funding instruments and implementing the results of research, development and innovation activities.

1.2. BACKGROUND

The proposed Directive amending Directive 1999/32/EC as regards the sulphur content of marine fuels introduces as of 1 January 2015 a new limit of 0.1% on the maximum allowable sulphur content of any fuel oil used on board ships within the European designated Sulphur Emission Control Areas (SECAs). The introduction of this new environmental standard is

¹ The Directive lays down the maximum permitted sulphur content of heavy fuel oil, gas oil and marine gas oil used in the EU. See in this context also Directive 98/70/EC relating to the quality of petrol and diesel fuels as amended. In addition to this, the EU legislation incorporates some additional requirements like the obligation for ships at berth or anchorage in EU ports to use fuels containing max. 0.1% sulphur by mass, and the obligation for passenger ships on regular service to or from EU ports to use fuels containing maximum sulphur content of 1.5%.

² European designated Emission Control Areas (ECAs) include the Baltic Sea, North Sea, and the English Channel, exclusively controlling SO_x thus they are called Sulphur (or sulphur oxides-SO_x) Emission Control Areas, or SECAs. Outside Europe, the 200 nautical miles zone around U.S. and Canada has been designated recently as the North American Emission Control Area, controlling both SO_x and NO_x from ships.

likely to entail changes of a technical and operational nature in the shipping business. The Commission services will further monitor possible impacts on shipping business, especially in the Short Sea Shipping (SSS) sector.

The revised Directive allows the use of equivalent compliance methods, which may be used instead of low sulphur content fuel, providing they are at least as effective in terms of emissions reduction. Thus, compliance using alternative methods such as exhaust gas cleaning system (scrubbers) could be applied. In addition, any other technology-based method that is verifiable and enforceable to limit SO_x emissions to a level equivalent to that prescribed by the Directive will be permitted. Accordingly, this allows using additional compliance methods such as alternative fuels like Liquefied Natural Gas (LNG) where appropriate.

Scrubbers remove the unwanted pollutants from the engine's exhaust gases and can achieve over 99% reduction as regards SO_x emission. LNG contains no sulphur, and has the added advantage of substantial reductions in CO₂, NO_x and particulate emissions.

However, both technologies have drawbacks, especially the need for adaptation of existing ships, a possible loss of cargo space, and in the case of LNG lack of adequate bunkering infrastructure and the need to minimise methane slippage.

Nevertheless, available studies report that both technologies could provide viable alternatives to the switch to low sulphur fuels and their expected payback time (relative to the cost of distillate fuels) could be relatively short for both of them. Also, LNG can already be considered perfectly suitable for ships trading on regular schedules, hence required to bunker in a limited number of ports.

Nevertheless, it is for shipowners to select the specific technology best suited for their individual fleets in order to achieve compliance with the new limits. It is expected that this would foster technical innovation in engine technology. The European Commission's legislative proposal is intended to be both flexible and neutral as regards the way in which compliance with the new limits can be achieved, leaving the choice of the most appropriate technology to the operators.

There is a need that competitiveness and sustainability are both considered equally important issues.

2. ACCOMPANYING MEASURES

2.1. Short term measures under the current EU policy framework and financial perspective

The main purpose of these existing short-term measures is to support compliance with the new environmental standard at the scale required, while minimising any possible unwanted collateral effects.

2.1.1. EU Instruments

2.1.1.1. TEN-T Work Programme 2011-Multi-Annual Programme for Motorways of the Sea

In 2011, the Work Programme for the development of Motorways of the Sea (MoS) within the Trans-European Transport Network (TEN-T) will continue to finance projects addressing

environmental issues and promoting the development of related green infrastructure and facilities. Implementation projects, pilot actions, and studies supporting the deployment of LNG or scrubber technologies or the promotion of shore-side electricity are among the priority actions of the TEN-T MoS work programme. For example, these may include the deployment of LNG and scrubber technologies, such as LNG stations and port reception facilities aiming at collecting the sludge produced by scrubbers. LNG bunkering vessels could also be funded as pilot projects. The allocated budget for the 2011 call for the TEN-T MoS has been increased from 30 to 70 million €

2.1.1.2. Marco Polo II – Work Programme 2011

The Marco Polo Work Programme for 2011 gives priority to supporting maritime services that implement innovative technologies, which significantly reduce polluting emissions from ships. Therefore, the use of low sulphur fuel, SO_x abatement technologies, and the use of alternative fuels like LNG will be selection criteria for Short Sea Shipping projects under the Call for 2011.

2.1.1.3. European Investment Bank's lending policy and instruments in support of sustainable shipping

At European level, possibilities for financing are already available for the sector through the lending of the European Investment Bank (EIB)³. Financing of shipping is part of the core business of the EIB's overall long term transport lending.

The EU shipping projects funded by the EIB are of various types and have been eligible in some particular cases under sustainable transport or regional development criteria. The Bank has for several decades financed shipping, such as the purchase of new, or more rarely the retrofitting of ships.

In line with the EU 2020 Strategy and the EU transport policy objectives and targets, the EIB will continue to provide financial support to the commercial shipping sector. Particular attention will be given to projects that better assist the sector to cope with the environmental challenges and encourage, in line with EU legislation, the development of clean technology, and increased fuel efficiency as well as more concentrated effort in the safe and environmentally efficient methods of phasing out older and less fuel efficient vessels. In addition, the Bank will continue supporting investment in Research, Development and Innovation in the shipping industry.

2.1.2. *Other measures*

2.1.2.1. State aid measures

Retrofitting existing vessels or ordering new generation greener vessels (for use of cleaner fuels or air pollution control devices) will entail substantial additional investment costs for ship operators. The financial burden of upgrading a fleet should in principle be borne by the ship-owners, since it is a normal operating expenditure required to stay in business. Member

³ The EIB has lent more than €120bn to the transport sector over the past decade. Out of the total, about 4% has been for maritime transport (ports and vessels). The annual EIB lending to shipbuilding has been approximately €300 million.

States may however decide to compensate for the net increased costs for the shipping industry to comply with the new EU standards by providing State aid under certain conditions.

Such State aid must comply with existing guidelines and regulations and, in principle, must present an incentive effect. When new EU standards are considered or adopted, Member States may in particular grant two categories of investment aid pursuant to and in accordance with the Guidelines on state aid for environmental protection⁴.

- In case of investments which take place before the adoption of new EU standards, Member States may grant investment aid enabling companies to go beyond existing EU standards.
- When new EU standards have been adopted, but are not yet into force, Member States may grant investment aid for early adaptation ahead of the entry into force of the new standards.

In order to reduce the administrative burden in relation to SMEs, Member States may grant such investment aid without prior notification to the Commission, in accordance with the provisions of Commission Regulation (EC) N° 800/2008 of 6 August 2008 (General block exemption Regulation)⁵.

Financing of port reception facilities and LNG fuelling stations may be supported under the conditions laid down in the Guidelines on National Regional Aid for 2007-2013⁶

Innovation aid may be granted to shipbuilding, ship repair or ship conversion yards on the basis of the Framework on State aid to shipbuilding⁷ thus broadening the range of options available to ship-owners for complying with stricter environmental standards. This Framework will expire at the end 2011 and is currently being reviewed by the Commission.

It follows from the above that Member States have various options enabling them to support measures such as retrofitting air pollution control devices or marine engines on vessels ahead of the entry into force of the standards, or developing onshore infrastructure, such as for marine-LNG refuelling stations.

2.1.2.2. International dialogue and technical co-operation

Similar standards for all neighbouring States are necessary in order to avoid potential traffic flow shifts from European ports. In April 2011, Russia deposited the instruments of ratification of MARPOL Annex VI. The Commission services will use international dialogue, e.g. within the framework of the EU-Russia Common Spaces, or as appropriate within the Helsinki Commission and the Convention of long-range transboundary air pollution, so that all Baltic countries efficiently control the application of the legislation. In more general terms, the Commission has adopted the Communication "The EU and its neighbouring regions: A

⁴ OJ C82 of 1.4.2008, p.1.

⁵ OJ L 214 of 9.8.2008; p 3

⁶ OJ C54 of 4.3.2006, p13

⁷ OJ C 317 of 30.12.2003, p.11, and the Communication from the Commission concerning the prolongation of the Framework on State Aid to Shipbuilding, OJ C 173 of 8 July 2008, p.3.

renewed approach to transport cooperation"⁸, one aim of which will be to make transport with its neighbours more efficient and bring it closer to EU standards.

Technical co-operation, the exchange of knowledge, experiences and best practices on new emissions abatement technologies need to be stimulated with the support of the Commission services. Similarly, the use of alternative fuels, compliance monitoring, safety and cost aspects with third countries that have designated Emission Control Areas (ECAs) off their coasts, such as the United States of America also need to be promoted. The ultimate objective is to set up harmonised standards based on cost effectiveness assessment, which will permit to use vessels in all seas without technical hindrances.

2.2. Medium to long term measures to foster sustainable shipping -- A sustainable waterborne transport toolbox

In line with the 2011 Roadmap to a Single European Transport Area - White Paper on Competitive and Sustainable Transport System⁹, and the new TEN-T Guidelines and Policy – currently under preparation – the Commission is considering the adoption of medium to long term measures to foster sustainable and competitive shipping.

To this end, after further assessment and validation with the relevant stakeholders, the Commission services will elaborate a "sustainable waterborne transport toolbox" which could assist the sector to improve its environmental performance while maintaining its competitive position.

The sustainable waterborne transport toolbox describes measures along the following components: regulatory and non-regulatory measures, green ship technology and alternative fuels, adequate green infrastructure, economic and funding instruments, research and innovation, international cooperation, etc.

2.2.1. Regulatory measures

Creating the adequate EU regulatory framework is important not only in the context of transposing international emission reduction requirements, but also to facilitate the safe and secure implementation and use of green ship technologies and alternative fuels, as well as the development of the necessary standards. In this context, the Commission services are assessing whether a revision of the marine equipment directive¹⁰ is necessary and what the impacts of such a revision could be.

The absence of common rules for the distribution and bunkering of LNG to ships would need to be addressed. The Commission services, in co-operation with EMSA and other interested parties will assess whether the adoption of common EU-wide guidelines or standards are justified. They will closely monitor the environmental effects of the IMO's wash water criteria for exhaust gas cleaning systems to see whether further strengthening of the criteria by IMO would be justified in view of further practical experience.

⁸ COM(2011) 415 final

⁹ Commission White Paper – Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, COM(2011) 144 of 28.3.2011

¹⁰ Council Directive 96/98/EC of 20 December 1996 on marine equipment, OJ L 46 of 17.2.1997, p.25

2.2.2. *Non-regulatory measures*

The Commission services would undertake the development of a platform gathering the relevant public and private stakeholders that could facilitate technical dialogue, share of best practices and experiences and enhance the co-operation amongst all interested parties.

2.2.3. *Implementation of advanced green technology and alternative fuels*

The European industry has already developed a proven know-how in "green" shipping technologies, which could assist the shipping sector to improve its environmental performance.

The introduction of ships using alternative fuels could be a longer term solution for shipping. The introduction of LNG or other alternative fuels is more likely to happen with new constructions, without excluding retrofitting which is doubtless considerably more challenging and may require particularly refined solutions or substantial conversion of existing ships.

Dual-fuel-engines may also provide a solution. These designs would allow ships to use LNG or light fuel oil (LFO) in function of the suitability and the availability of refuelling.

The Commission services will analyse potential specific EU actions to promote the use of alternative fuels contributing also to the general EU effort to reduce GHG emissions from transport and optimise ship energy efficiency.

2.2.4. *Development of adequate green infrastructure and superstructure*

The use of alternative fuels requires investment in terminals, such as LNG filling stations for ships. Appropriate locations for developing safe and efficient bunker logistics need to be identified. The case for specific governmental support for the initial development of the necessary shore based infrastructure will be examined.

The Commission services would consider supporting the deployment of shore-based infrastructure for alternative fuels and bunker delivery logistics in the European Union. Accordingly, specific actions for the development of *inter alia* an EU LNG bunkering network or the installation of coastal stations will be studied.

Likewise, the use of shore-side electricity, where feasible, requires investment in onshore infrastructure as well as on board vessels. An exemption from the electricity tax as recently proposed by the Commission in its proposal for a revision of the Energy Taxation Directive 2003/96/EC¹¹ can be a first incentive to this end.

Given the budgetary constraints of the current TEN-T programme, which provides for relatively low co-funding rates, a better coordination with other funding opportunities needs to be explored, such as through Structural Funds (European Rural Development Fund and the Cohesion Fund), which allow for higher co-funding rates. In view of continued pressure on public sector budget resources, unlocking the potential of private finances is very important to support investment in green technologies and alternative fuels.

¹¹ COM(2011)169.

2.2.5. *Economic, financial instruments and funding instruments:*

In its Roadmap to a Single Transport Area¹², the Commission announced its intention to establish an enabling framework for the development of PPPs, and to participate in designing new financing instruments for the transport sector, such as the EU project bond initiative¹³.

Fair transportation pricing - Internalise the externalities to ensure that externalities such as air pollution damage are adequately reflected in the transport prices for all modes would be further considered. To this end, an initiative covering all modes of transport, to internalise in a co-ordinated and stepwise manner a greater level of external costs across the whole transport sector could be proposed.

In addition, the Commission services will explore ways to encourage a bottom-up approach in encouraging the industry and public sector to set-up and manage a fund – similar to the Norwegian NOx fund approach– by charging operators for emissions and then using the available funds for abatement technology, research etc.

2.2.6. *Research, Development and Innovation*

Moving towards low pollution and low carbon waterborne transport requires substantial research efforts. Furthermore, it is very important to optimise research and innovation activities and to ensure the timely deployment of their results. The Commission is preparing a Strategic Transport Technology Plan (STTP), which would address options for all transport modes, including waterborne transport. Furthermore, funding for European research and innovation relevant to this mode of transport should be part of future framework programmes, and industry-driven priorities should be reinforced, as supported by the Communication on Innovation Union¹⁴.

3. THE WAY FORWARD

The Commission services will pursue the necessary consultations and studies to propose the Sustainable Waterborne Transport Toolbox, formulating medium and long term measures, which would address from a broader perspective and in an integrated manner the environmental challenges the sector is confronted with. The Sustainable Waterborne Transport Toolbox will help collaborative efforts from all stakeholders in moving further towards a truly smart, sustainable and more competitive shipping sector that can support economic growth with minimised environmental impacts.

¹² Commission White Paper – Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, COM(2011) 144 of 28.3.2011

¹³ COM(2011) 144 of 28.3.2011, p.109

¹⁴ Europe 2020 Flagship Initiative Innovation Union, COM(2010) 546 final, of 6.10.2010