

Marpol Annex VI and Relevant EU legislation on air pollution from ships

1

Safemed III training on Marpol Annex VI

Roel Hoenders

Contents – air pollution

- 1. Air pollution - Introduction**
- 2. International applicable requirements: Marpol Convention Annex VI**
 - general
 - obligations for the Parties to the Annex VI
- 3. EU policy on ship emissions**
- 4. EU applicable requirements – Directive 2012/33 as regards sulphur contents of marine fuel**
 - general
 - obligations for the EU Member States
- 5. European Sustainable Shipping Forum**

2

Air pollution - Introduction

- What are we talking about?
- Sulphur dioxide (SO₂), particulate matter (PM), nitrogen (NO_x) from shipping



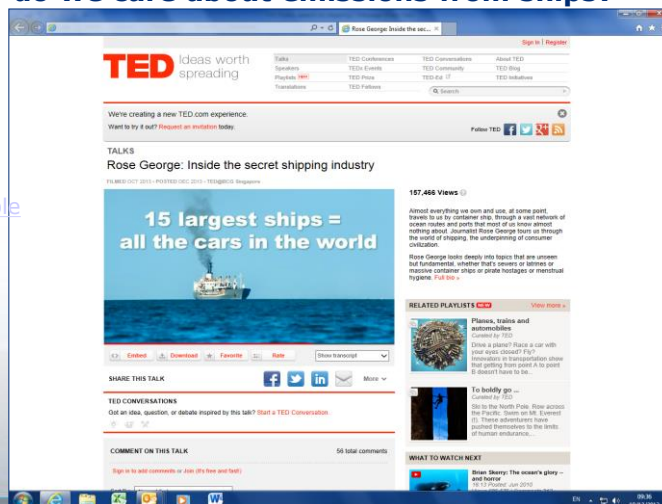
3

Air pollution - Introduction

- Why do we care about emissions from ships?

Debatable but
recommendable
to watch...

As of: 7min10



The screenshot shows a TED talk page for Rose George's talk 'Inside the secret shipping industry'. The main headline reads '15 largest ships = all the cars in the world'. The page includes a video player, a list of TED Conversations, and a list of related playlists. The talk has 157,466 views and 56 total comments.

4

Air pollution - Introduction

- **Why do we care about emissions from ships?**
 - Ship emissions affect **human health** and **cause acidification** and **eutrophication**:



Acidification

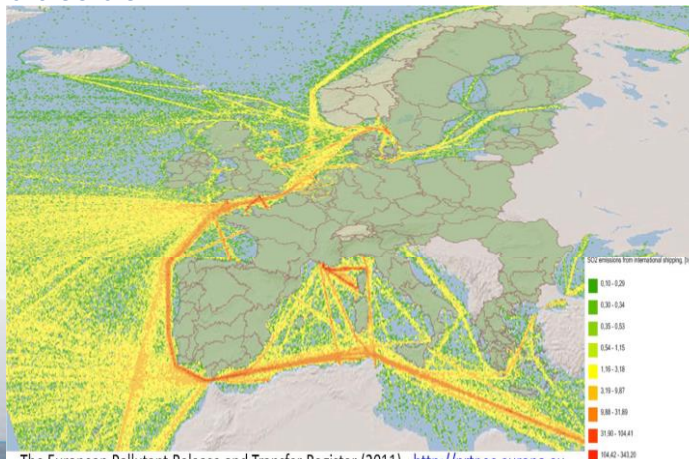


Eutrophication

5

Air pollution – Introduction

- **Why do we care about emissions from ships?**
 - Proximity of emissions: **90% of ship emissions in the North Sea occur within 90 km of the shore**

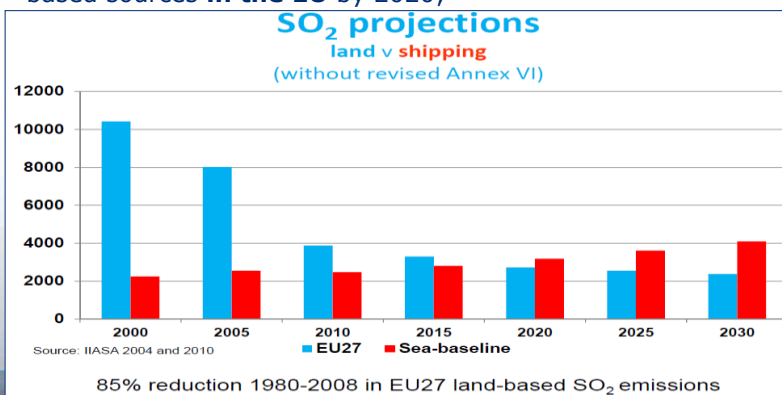


The European Pollutant Release and Transfer Register (2011) - <http://prtr.ec.europa.eu>

6

Air pollution - Introduction

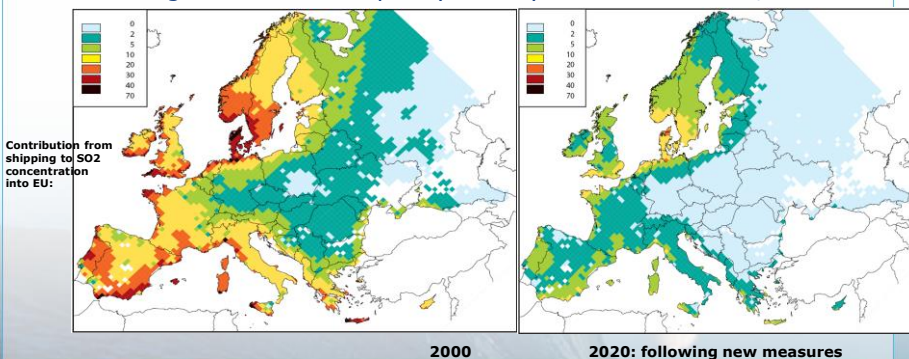
- Why do we care about emissions from ships?
- Emissions of SO₂ (and No_x) from maritime transport are expected to **exceed total emissions** of these pollutants from all land-based sources **in the EU** by 2020;



7

Air pollution - Introduction

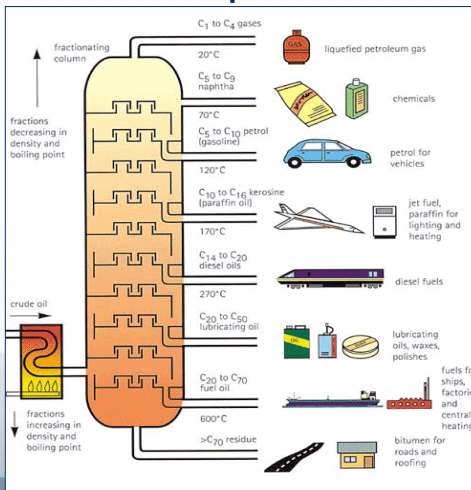
- Why do we care about emissions from ships?
- Emissions from ships are transported over considerable distances, affecting also inland air quality far beyond coastal areas;



Air pollution - Introduction

- **Why do we care about emissions from ships?**

- **Fuel quality:** intensity and emission factors
- NB: Sulphur content in the EU for cars is 0,001%

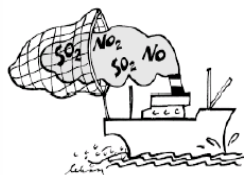


9

1. International applicable requirements: Marpol Convention Annex VI

General:

- Adopted in 1997
- Seeks to minimize airborne emissions from ships exhaust gases including shipboard incineration (SO_x, NO_x, ODS, VOC, EEDI)
- Annex VI entered into force on **19/05/2005**.
- A **revised Annex VI** with tighter emissions limits was adopted in Oct. 2008 and entered into force on **1 July 2010**.
- Objective of new Annex VI requirements is to minimize the **environmental** and **health risks** of air pollution from ships.
- **72** of IMO's 170 MS have ratified Annex VI
- **24 EU MS** ratified (+ Turkey, Montenegro)

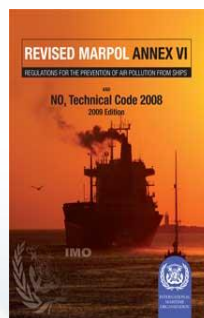


10

2. International applicable requirements: Marpol Convention Annex VI

Application of Marpol Annex VI:

- In general, applies to all ships of 400 GT and above, and to all fixed and floating drilling rigs and other platforms.
- Sets limits on SO_x and NO_x emissions (through the mandatory NO_x technical code) from ships exhausts
- Prohibits deliberate emissions of ODS (including halons and CFCs) and new installations containing ODS.
- Prohibits the incineration on board ships of certain products such as contaminated packaging materials and PCBs.



11

2. International applicable requirements: Marpol Convention Annex VI

Marpol Annex VI and sulphur

- The new **global sulphur in fuel cap** from 1/1/2012 is **3.50%** and reduced progressively to **0.50 %**, effective from 1 January 2020 (*or 2025 - depending on a IMO review of fuel availability: MEPC 66 established a Correspondence Group to look into the methodology for assessing availability*)
- Revised Annex VI also introduced '**emission control areas**' (ECAs)
- The limits of sulphur in fuel applicable in **ECAs** for SO_x and particulate matter were reduced to **1.00%** from 1 July 2010 + being further reduced to **0.10 %**, effective from **1 January 2015**.
- Alternatively, ships must fit an exhaust gas cleaning system or use any other technological method to limit SO_x emissions.

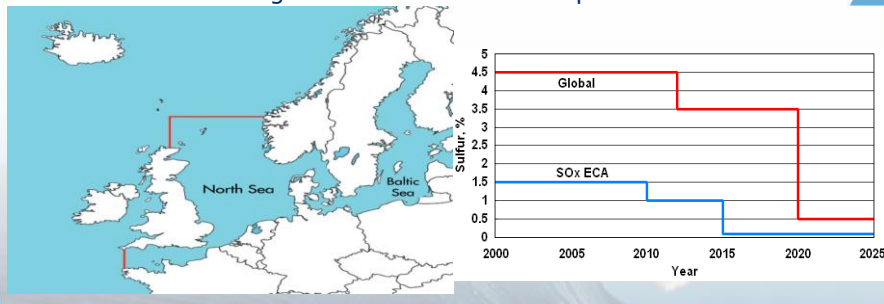
12

2. International applicable requirements: Marpol Convention Annex VI

Marpol Annex VI and sulphur

- Currently there are **2 IMO Annex VI ECAs in Europe**: the Baltic (2006) and North Sea ECA (including the Channel – 2007)
- ECAs are designated by IMO following a proposal of the involved countries and through an amendment of Marpol Annex VI.

13



2. International applicable requirements: Marpol Convention Annex VI

Marpol Annex VI and sulphur

- Additional ECA's in the future???

14



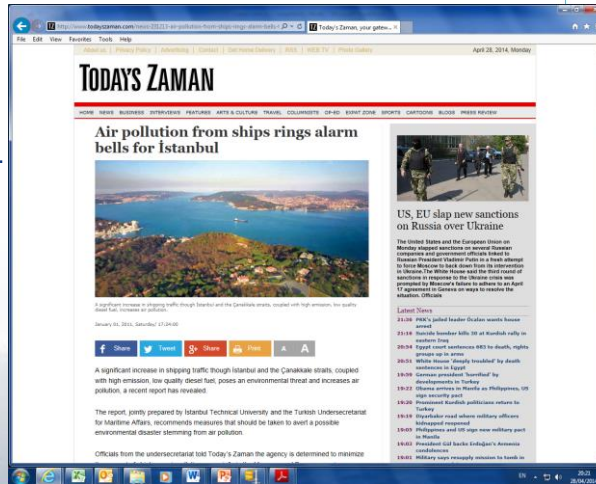
2. International applicable requirements: Marpol Convention Annex VI

Future SECA's??

Air pollution from shipping traffic passing through İstanbul had increased 10,000-fold in comparison to vehicular pollution.

Around 10,000 oil tankers travel the Sea of Marmara each year.

"A large oil tanker's capacity to contaminate the air is as high as that of approximately 40,000 to 45,000 vehicles."



2. International applicable requirements: Marpol Convention Annex VI

Obligations for Parties to the Annex VI related to air pollution:

- Reg. 18: Promote the **availability of compliant fuel oil** and inform IMO of the availability in its ports and terminals
- Reg. 17: Ensure provision of **adequate reception facilities** for (equipment containing) ODS and exhaust gas cleaning residues from cleaning system (e.g. scrubber sludge)
- Reg. 5 + 6: Issue **survey, certificate (Int. Air Pollution Prevention Certification - IAPPC)** for ships of 400 GT complying with engine and emission requirements.
- Reg. 10: **Port state control** on operational requirements (essential procedures relating to prevention of air pollution from ships), on-board **bunker delivery notes + representative sample of the fuel oil** (fuel sampling)

2. International applicable requirements: Marpol Convention Annex VI

Port State Control scope:

- Defined by MARPOL and IMO guideline for inspection
- PSC Instruction for Paris MOU States
- Referenced in PSC Directive for EU States
- Any detail of inspection is driven by the need for **CLEAR GROUNDS**

17

No	Path	Title
1	RESOLUTIONs / A	Res.A.1052(27) : PROCEDURES FOR PORT STATE CONTROL, 2011
2	RESOLUTIONs / P	Res.MEPC.181(59) : 2009 GUIDELINES FOR PORT STATE CONTROL UNDER THE REVISED MARPOL ANNEX VI
3	Consolidated Editi	Appendix 18 : List of Instruments relevant to port State control procedures
4	MARPOL 2011 Am	Reg. 10 : Port State Control on Operational Requirements

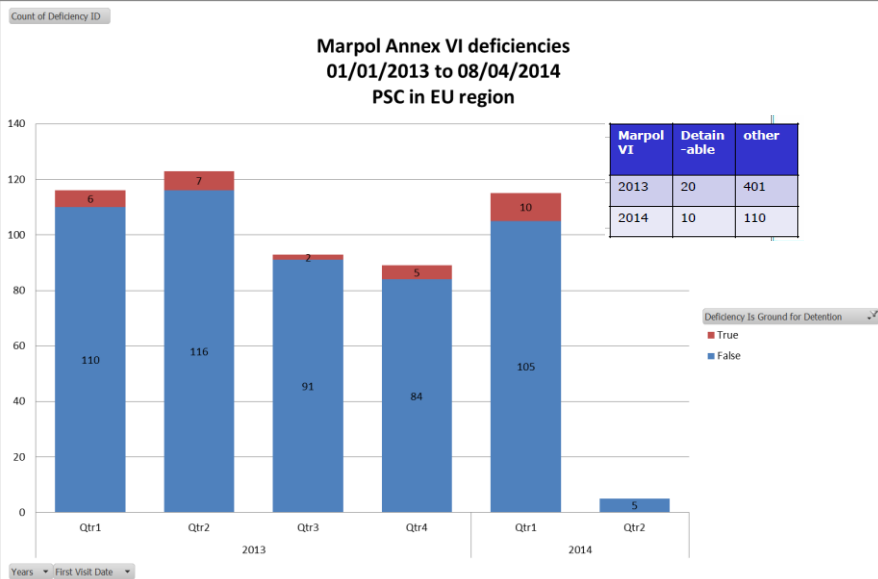
Paris MoU Marpol Annex VI deficiencies

Item Code

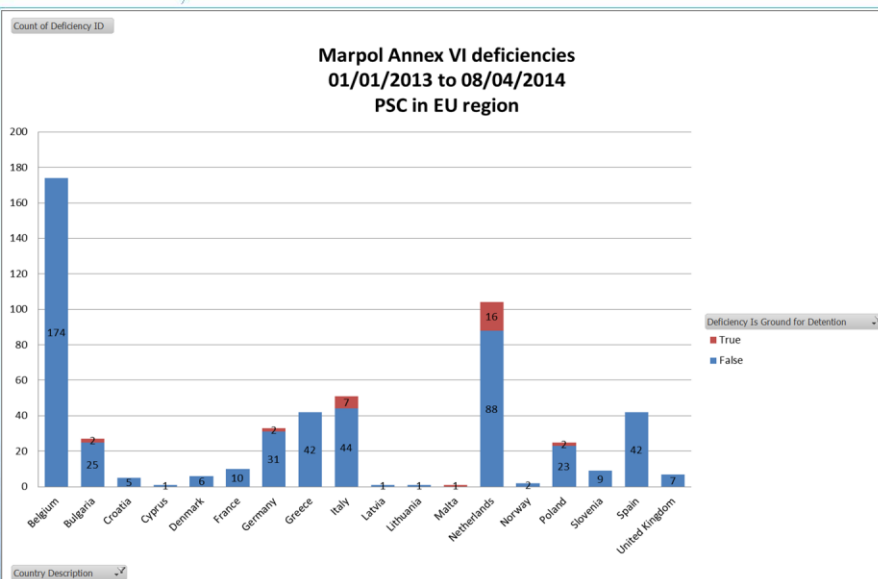
Label

14601	Technical files and if applicable, monitoring manual
14602	Record book of engine parameters
14603	Approval for exhaust gas cleaning system
14604	Bunker delivery notes
14605	Type approval certificate of incinerator
14606	Diesel engine relating to air pollution control
14607	Quality of fuel oil
14608	Incinerator incl. operations and operating manual
14609	Volatile organic compounds in tankers
14610	Operational procedures for engines or equipment
14611	Ozone-depleting substances
14612	Other MARPOL Annex VI
14613	Approved method
14614	Sulphur oxides

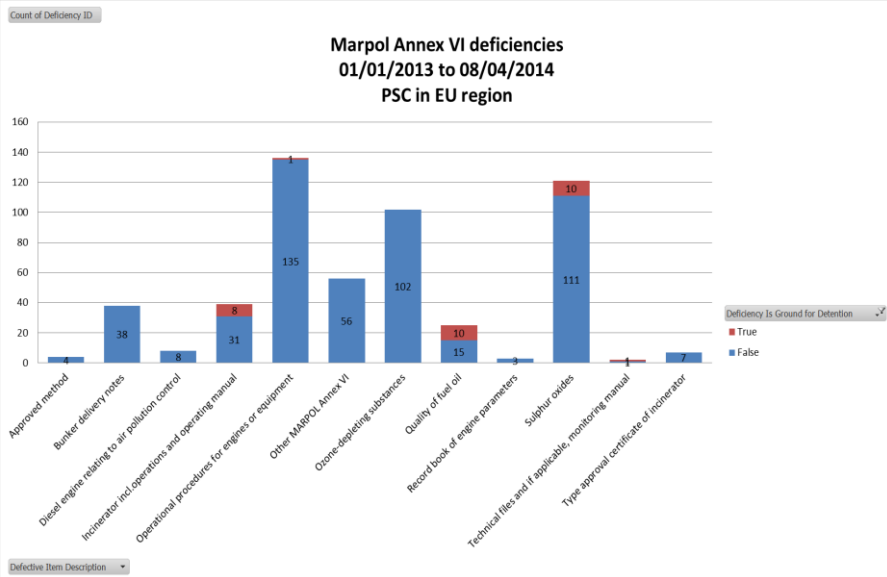
18



19



20



21

https://portal.emsa.europa.eu/web/thetis/inspections

THETIS - Inspections

Home Current detentions Preventions of operation Refusal of access **Inspections** Calculators Company Performance

Search

IMO Number: Classification Society: ALL Type of inspection: ALL

Name: RO performing statutory work: ALL Port State:

Flag: Egypt ISM company number: Port of inspection:

Type: ALL Period: To: Result: ☐ Detention ☐ Prevention of operation ☐ Refusal of access (Ban)

Gross Tonnage: Inspection regime: ☒ Port State Control ☐ RO-RO Ferries And High Speed Passenger Craft (Ropax)

Age: To: Number of deficiencies: ALL Duration of detention: ALL

Inspections

	IMO	Name	Flag	Type	Age	Date of inspection	Type of inspection	Port of inspection	Number of deficiencies	Result
Details	8318116	AL HUSSEIN	Egypt	Ro-Ro cargo	29	18/03/2014	More detailed inspection	France - Marseille (GPM)	8	Detention
Details	9309136	AL HURREYA 2	Egypt	Ro-Ro cargo	7	17/03/2014	More detailed inspection	France - Marseille (GPM)	2	Detention
Details	9164225	MAERSK AHRAM	Egypt	Container	16	25/02/2014	More detailed inspection	Cyprus - Limassol	0	
Details	8120911	MARIDIVE VIII	Egypt	Offshore supply	31	20/01/2014	More detailed inspection	Malta - Valletta	6	
Details	9107681	WADI ALARAB	Egypt	Bulk carrier	18	20/01/2014	Expanded inspection	Romania - Constanta	0	
Details	9079999	AMMAN	Egypt	Ro-Ro passenger ship	20	07/01/2014	More detailed inspection	Spain - Algeciras	1	

EN 2017 28/04/2014

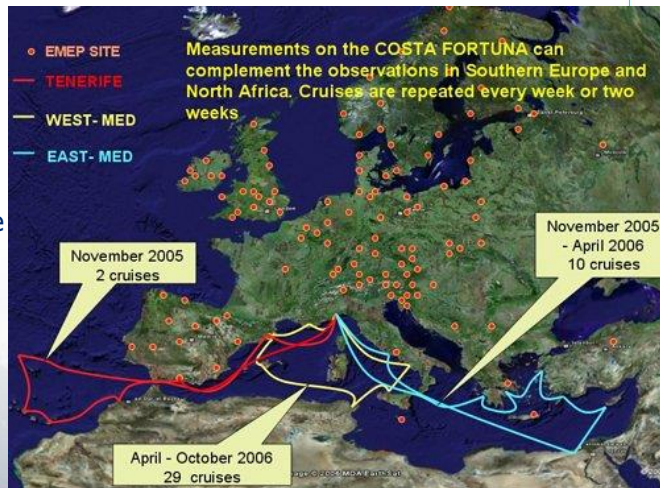
2. EU research project also covering Safemed beneficiaries

Objective:

Obtaining more data about air pollution at sea.

Defining the range of the pollution

Main focus on PM and ozone



2. EU research project also covering Safemed beneficiaries



JRC monitoring station at the top front of 'Costa Pacifica'.



24

- It has been calculated that 54% of the total sulphate aerosol column burden over the Mediterranean in summer originates from ship emissions (Marmer and Langmann, 2005).
- An intense ship traffic, is found along a route from the Strait of Gibraltar to the Suez Channel. The measurements show elevated levels of air pollutants in the vicinity of this route
- Emissions measurements in EU ports show an improvement following the 0,1% sulphur at berth requirement
- For more info: <http://ccaqu.jrc.ec.europa.eu/costa.php>

3. EU policy on ship emissions

2005 Thematic Strategy on Air Pollution:

Air pollutant emissions of SO₂ and NO_x from ships are a **serious concern**, as they are expected to exceed those of all land-based sources in the EU by 2020. **Further action is therefore needed to improve human health and the environment.**

EU Maritime Transport Strategy 2009-2018:

European Commission, EU Member States and EU maritime industry should work together towards the long term objective of 'zero-waste, zero-emission' maritime transport

EU 2011 White Paper:

The environmental record of shipping can and must be improved by both **technology** and **better fuels** and operations.



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

Strategic goals and recommendations for the EU's maritime transport policy until 2018

23 January 2009



ROADMAP TO A SINGLE EUROPEAN TRANSPORT AREA — TOWARDS A COMPETITIVE AND RESOURCE EFFICIENT TRANSPORT SYSTEM

25

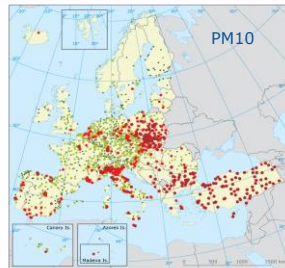
3. EU policy on ship emissions

New initiatives on improving air quality in the EU are being debated:

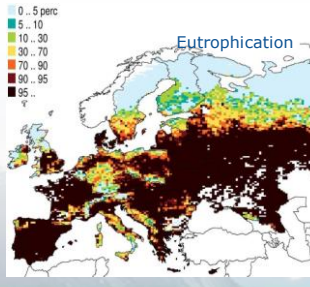
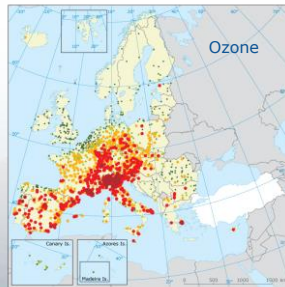
• **Commission's Clean Air Policy Package (incl. amending proposal for the National Emission Ceilings (NEC) Directive: mainly NO_x, PM):**

- Major health and environment impacts will remain; projections show:
 - **340.000** premature deaths per year due to **PM2.5** and **ozone**
 - 55% of EU ecosystems will be affected by eutrophication.
- **No** direct measures for shipping; flexibility left to Member States to achieve emission reductions in most **cost-efficient sectors**

26



Air quality problems remain



Source: Commission Impact Assessment (SWD(2013)531)
See also EEA Reports

Air quality problems remain

Premature deaths due to PM and ozone	Restricted activity days due to PM	Forest area exceeding acidification limits	Lake area exceeding acidification limits	Ecosystem area exceeding eutrophication limits	Natura 2000 areas exceeding eutrophication limits
406,000	569 Million	9%	25%	62%	71%

PM10 compliance	NO2 compliance	O3 attainment	PM10 population exposed above the limit value	NO2 population exposed above the limit value	O3 population exposed above the target value
68%	76%	65%	40%	6-12%	35%

Air Quality Standards	PM10	PM2.5	NO2	O3
EU	40	25	40	120
WHO	20	10	40	100

3. EU policy on ship emissions

Regardless the existing EU policy documents, the EU has to cooperate globally:

"In maritime, there is a need for a **global level playing field**. The EU should strive – **in cooperation with IMO** – for the universal application and enforcement of **high standards** of safety, security, **environmental protection** and working conditions, and for eliminating piracy."



VP COM Kallas IMO SG Sekimizu

(2011, EU Transport White Paper)

** SECAs have been designated by IMO and Marpol Annex VI was amended consequently. Still to be seen if the recent MEPC decisions regarding NECAs may affect EU policies...*

29

4. EU applicable requirements: the Sulphur Directive

The EU Sulphur Directive

- Sulphur content in heavy fuels and gas oil, including marine gas oil, in the EU already regulated since early 2000: **Directive 1999/32/EC**
- Amended by:
 - Directive 2005/33/EC
 - Directive 2012/33/EU
- Main objective of the revisions was **bringing EU legislation in line with the Marpol revisions** (1997 Annex VI protocol and 2008 changes)
- EU Directives need to be **transposed in the national legal framework of each Member State** and enforced correctly by national auth.
- In case of non-compliance by a Member State the European Commission can bring the matter to the European Court of Justice.



European Court of Justice (Luxembourg)

30

4. EU applicable requirements: the Sulphur Directive

Stricter EU requirements: Revised Sulphur Directive(2012/33/EU)

▪ Justification for more stringent requirements in the EU:

European Commission Legislative Impact Assessment (for EU 27):

- reducing the annual 50.000 premature deaths caused by burning high sulfur marine fuels
- € 15 to 34 billion of annual health benefits
- € 2.6 to 11 billion of costs for shipping industry to adapt
- Health benefits **outweigh** the costs for the shipping sector as a whole.

31

However, for an individual ship owner, costs of compliance with new sulphur requirements can amount to millions of Euros per year

4. EU applicable requirements: the Sulphur Directive

Directive 2005/33

- Focused more specifically on sulphur emissions from shipping.
- Introduced **SECAs** in EU legislation (incl. 1,5% of sulphur content)
- It also introduced:

- 0,1% sulphur in fuel requirement for **ships at berth** in EU ports
- 1,5% sulphur in fuel requirement for **ALL passenger ships in EU waters**
- Reference to alternative emission abatement technologies for ships
- More focus on credible implementation by ships through effective sampling and dissuasive penalties
- Coordination with enforcement based on international maritime law (Port State Control)
- EMSA to assist in monitoring the implementation



32

4. EU applicable requirements: the Sulphur Directive

2012 revision of the EU Sulphur Directive

Directive 2012/33/EC (amending Directive 1999/32/EC) of **Nov. 2012**:

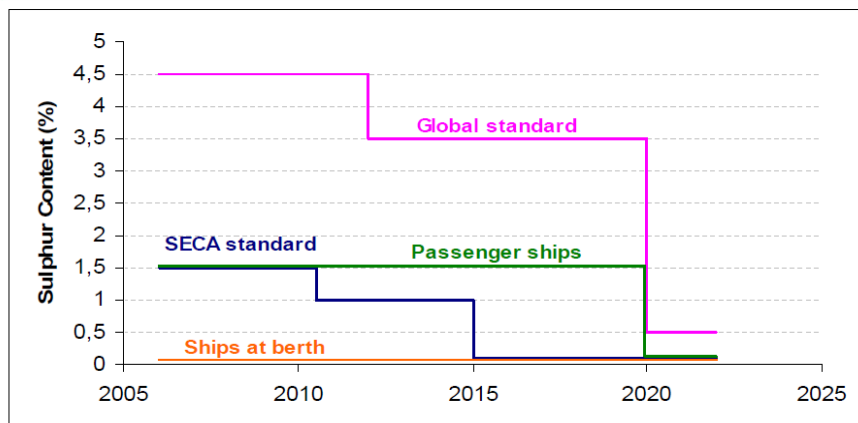
- Transposition by EU Member States needs to be done **by 18 June 2014**
- Brings sulphur limits in line with MARPOL Annex VI 2008 amendments
 - 1.00% until December 2014 and 0.10% as from January 2015 for **SECAs**
 - 3.5% as of June 2014 and **0,5% as of January 2020**
- 0,1% sulphur content for ships at berth and 1.5% for passenger ships maintained
- MARPOL Annex VI non-availability assessment and possible postponement of 2020 limits were **NOT** included in the revised Directive: **So 0,5% in all EU waters as of 2020!**
- MS should endeavour to ensure the availability of comply with the Directive
- Commission shall consider the potential for reducing air pollution as part of its general air quality policy

33



4. EU applicable requirements: the Sulphur Directive

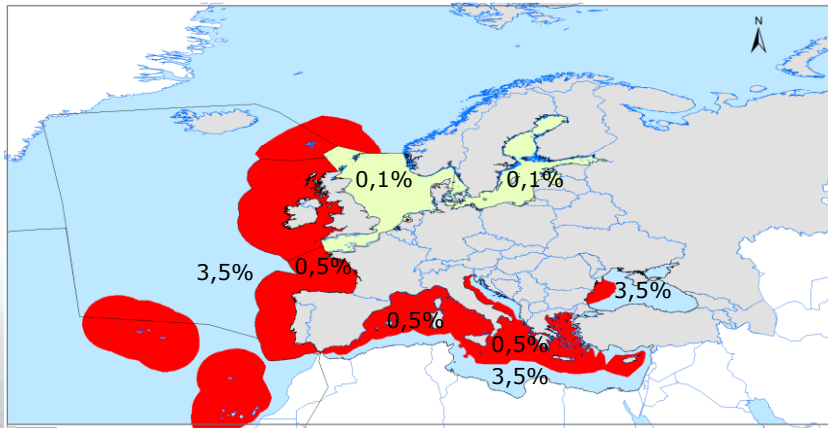
EU Sulphur limits



34

4. EU applicable requirements: the Sulphur Directive

- Possible landscape after 2020?



35

4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

This shall apply to all vessels of all flags, also coming from outside the EU, except:

- fuels used by warships and other vessels on military service.
- fuels in a vessel necessary for securing the safety of the ship or saving life at sea
- Use of fuels in a ship that is damaged, provided it will be repaired

36

Article 3a – Maximum sulphur content in marine fuel

•Member States shall ensure that **marine fuels** are NOT used within their territory if their sulphur content exceeds **3,5%** by mass, **EXCEPT** for fuels supplied to ships using emission abatement methods.

Art. 4b – Maximum sulphur content in gas oil

•Member States shall ensure that **marine gas oils** are NOT used within their territory if their sulphur content exceeds **0,10%** by mass.

4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

Article 4a

• Member States shall take **all necessary measures** to ensure that marine fuels are NOT used in the areas of their territorial seas, exclusive economic zones and pollution control zones if the sulphur content of those fuels by mass exceeds:

- 3,50% by mass as from 18 June 2014
- 0,50% as from 1 January 2020
- 1,50% for passenger ships operating on regular services to or from any Union port until 1 January 2020

• Member States shall require the correct completion of ships' logbooks, including fuel-changeover operations



37

4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

Article 4b – maximum sulphur content of marine fuels used by ships at berth in EU ports

• MS shall take all necessary measures to ensure that ships at berth in Union ports do not use marine fuels with a sulphur content exceeding **0,1% by mass for ships at berth:**

- As soon as possible after arrival at berth
- Does **not** apply:
 - less than 2 hours at berth (according published timetables)
 - when using of **shore-side electricity**



• See also Commission Recommendation on safe implementation of use of low sulphur fuel by ships at berth (21/12/2009)

38

4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

Availability – Art. 4a (5b)

- If a ship is found by a Member State not to be in compliance, the MS is entitled to require the ship to:
 - present a record of actions taken to attempt to achieve compliance
 - Provide evidence that it attempted to purchase marine fuel which complies with the Directive in accordance with its voyage plan, that attempts were made to locate alternative sources, but **despite best efforts no marine fuel which complies could be obtained.**
- A ship does not have to deviate from its intended voyage or delay the voyage to achieve compliance.
- A ship shall notify its flag State, and the competent authority of the relevant port of destination when it cannot purchase compliant marine fuel



39

4. EU applicable requirements: the Sulphur Directive

Member States shall also Art. 4a(6) (following Reg. 18 of Marpol):



Maintain a **register of local suppliers**



Ensure that sulphur content of all marine fuels sold in their territory is documented by the supplier on a bunker delivery note, accompanied by a sealed sample



Take action against marine fuel suppliers that have been found to deliver fuel that does not comply with the specification stated on the bunker delivery note.

40

4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

Article 4c – emission abatement methods

- MS shall allow the use of emission abatement methods by ships flying all flags in their ports, territorial seas, EEZ and pollution control zones, as an alternative to using marine fuels (**LNG as fuel, scrubber,...**)

41

Article 4f – financial measures

- MS may adopt financial measures in favour of operators affected by this Directive where such financial measures are in accordance with **State Aid** rules applicable and to be adopted in this area. (only Finland for the time being)



4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

Art. 6:

- Member States shall take all necessary measures to check by sampling that the sulphur content of fuels used is in compliance with the Directive.
- **Sampling** shall be carried out periodically with:
 - sufficient frequency,
 - in sufficient quantities, and,
 - in such a way that samples are representative of the fuel examined, and,
 - of the fuel being used by ships while in relevant sea areas, ports and inland waterways.
- Sample shall be analyzed **without undue delay**.
- Normally combined with MARPOL Annex VI enforcement

42



4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

Art. 6(1a)

The following means of sampling, analysis and inspection of marine fuel shall be used:

- Inspection of the ship's log book and bunker delivery notes
- And as appropriate, the following means of **sampling and analysis**:
 - while being delivered to ships in accordance with the IMO sampling guidelines, or
 - Contained in tanks, where technically and economically feasible, and in sealed in bunker samples on board ships.

-The reference method for **determining the sulphur content** is ISO method 8754 (2003) or PrEN ISO 14596 (2007)

-In order to determine whether fuel delivered to and used on board ships is compliant, the **fuel verification procedure** in Appendix VI to Annex VI of Marpol shall be used.



43

4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

Sampling and analysis

- Experience shows a need for **stronger monitoring** and **enforcement** regime to ensure proper implementation of the Directive:
 - Commission can adopt implementing acts concerning (Art. 6(1B)):
 - **Frequency of sampling**
 - **The sampling methods**
 - **The definition of a sample representative of the fuel examine**



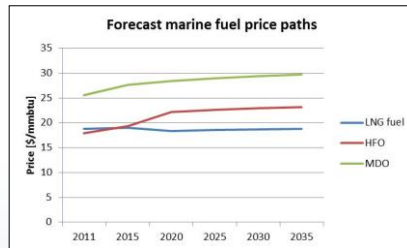
44

4. EU applicable requirements: the Sulphur Directive

	IFO: 1% sulphur		MGO: 0,1% sulphur	
	IFO380	IFO180	MDO	MGO
Singapore	612.50 ▲	633.00 ▲	895.50 ▲	905.50 ▲
Rotterdam	594.50 ▲	617.50 ▲	-	881.50 ▲
Houston	586.00 ▲	645.50 ▼	-	966.50 ▲
Fujairah	623.50 ▲	672.50 ▼	-	997.50 ▲
Los Angeles	594.50 ▼	625.00 ▲	-	997.50 ▼

Source: Bunkerworld – Monday 17 June 2013

Current price difference between 1% and 0,1% sulphur content: around **250 \$ p/tonne**



Source: DNV

Development of alternative and 'cheaper' marine fuels is driven by:

- 0,1 sulphur in marine fuel requirement in EU SECA's as of 1/1/2015 AND
- Premium of distillates

4. EU applicable requirements: the Sulphur Directive

Directive 2012/33/EC - Obligations for EU Member States:

Reporting – Art. 7

- Member States are required to provide the Commission a report on compliance with the Directive based on the **results of the sampling, analysis and inspections**.
- The Commission shall draw up a general report based on the results of the Member States reports.

• Experience with the Directive showed that reporting by MS proved **insufficient** for verification of compliance with the Directive due to the **lack of 'harmonised and sufficiently precise provisions'** on the content and the format of the MS's report:

- Commission may adopt **implementing acts** concerning the information to be included in the **report and format of the report**

5. European Sustainable Shipping Forum

- ❑ The European Commission published on 24.9.2013 a Decision on setting-up the group of experts on maritime transport sustainability: **The European Sustainable Shipping Forum (ESSF)**.
- ❑ The ESSF will advance a **cost-efficient and coherent implementation** of the provisions of the revised **Sulphur Directive**
- ❑ The ESSF **brings together Member States and maritime industry stakeholders** to jointly discuss challenges and solutions:

47



5. European Sustainable Shipping Forum

- ❑ Set-up for the period until 31/12/2015 (extension possible)
- ❑ Involvement of EMSA is mentioned in Commission Decision, ToR of the **Plenary**, and in the ToR of the **6 sub-groups**:

48

- | | |
|--------------------------|---|
| 1. LNG | |
| 2. Scrubbers | ► EMSA acts as secretariat and provides technical support |
| 3. Implementation | |
| 4. Financing | |
| 5. R&D | ► EMSA only acts as secretariat |
| 6. Competitiveness | |

5. European Sustainable Shipping Forum

- The ESSF Plenary met in November 2013 for the first time and agreed on the set-up of **6 sub-groups**:

1. **Sub-group on LNG**: create the framework conditions for the use of marine LNG as ship fuel
2. **Sub-group on scrubbers**: create the framework conditions for the use of scrubbing technology in shipping
3. **Sub-group on financing**: explore and evaluate all the available financing opportunities
4. **Sub-group on R&D**: coordinate research and development activities and encourage innovation
5. **Sub-group on Implementation issues of the Sulphur Directive**: provide guidance on the implementation of the Sulphur Directive
6. **Sub-group on Competitiveness**: assess and increase the competitiveness of EU Maritime transport

- All sub-groups have met a 1st time
 □ Next meeting of the Plenary: **26 June 2014**



49

5. European Sustainable Shipping Forum

- ESSF Calendar:

Plenary	Scrubbers	LNG	Implement.	R&D	Finance	Comp.
27/11/2013	12/12/2013	11/12/2013	13/12/2013	15/01/2014	14/01/2014	25/02/2014
26/06/2014	12/03/2014	14/03/2014	13/03/2014	15/05/2014	12/05/2014	13/05/2014
	02/07/2014	01/07/2014	03/07/2014			

- At the **next Plenary**, Member States and stakeholders should endorse the outcomes of the identified **work-packages** in the sub-groups:

- Recommendations for Commission guidance;
- Recommendations for submissions to IMO;
- Draft contents of Implementing acts; and,
- Conclusions, statements and results of studies.

- All information available on the Commission's **CIRCA website**

50

THANK YOU FOR YOUR ATTENTION,

roel.hoenders@emsa.europa.eu

