MEDITERRANEAN ACTION PLAN (MAP)
REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE MEDITERRANEAN SEA (REMPEC)

DRAFT GUIDANCE DOCUMENT ON THE CONSISTENT IMPLEMENTATION OF THE 0.10% SULPHUR LIMIT UNDER MARPOL ANNEX VI IN THE MEDITERRANEAN SEA EMISSION CONTROL AREA FOR SULPHUR OXIDES AND PARTICULATE MATTER (MED SO_X ECA)

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List of abbreviations

CO_2	Carbon Dioxide
COP	Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols
BDN	Bunker Delivery Note
EAM	Emission Abatement Method
ECA	Emission Control Area
EEDI	Energy Efficiency Design Index
EGCS	Exhaust Gas Cleaning System
EMSA	European Maritime Safety Agency
ETM	EGCS Technical Manual “Scheme A or B” (ETM-A or B)
EU	European Union
FONAR	Fuel Oil Non-Availability Report
GEF	Global Environment Facility
GISIS	IMO’s Global Integrated Shipping Information System
GloMEEP	Global Maritime Energy Efficiency Partnerships Project
IAPP	International Air pollution Certificate
IEE	International Energy Efficiency
IMO	International Maritime Organization
MAP	Mediterranean Action Plan
MARPOL	International Convention for the Prevention of Pollution from Ships
MEPC	Maritime Environment Protection Committee
NO_X	Nitrogen Oxides
ODS	Ozone Depleting Substance
OMM	Onboard Monitoring Manual
PAH	Polycyclic Aromatic Hydrocarbons
pH	Potential of Hydrogen
PM	Particulate Matter
PSC	Port State Control
PSCO	Port State Control Officer
PSSA	Particularly Sensitive Sea Area
LSFO	Low Sulphur Fuel Oil
REMPEC	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea
RO	Recognised Organisation
SECC	SO_X Emissions Compliance Certificate
SECP	SO_X Emissions Compliance Plan
SEEMP	Ship Energy Efficiency Management Plan
SO_2	Sulphur Dioxide
SO_X	Sulphur Oxides
SOLAS	International Convention for the Safety of Life at Sea, 1974
THETIS	The Hybrid European Targeting and Inspection System
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VLSFO	Very Low Sulphur Fuel Oil
VOC	Volatile Organic Compound

1 INTRODUCTION

1.1 Background

1.1 The 79th Session of the International Maritime Organization (IMO)'s Marine Environment Protection Committee (MEPC 79) (London, UK, 12-16 December 2022) adopted the amendments to Annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL) concerning the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter (Med SO_X ECA). The expected date of entry into effective application of the Med SO_X ECA is 1 May 2025.

1.2 Objectives

1.2.1 The Guidance Document on the consistent implementation of the 0.10% sulphur limit under MARPOL Annex VI in the Med SO_X ECA is aimed at providing the necessary guidance to the Contracting Parties[1] to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (the "Barcelona Convention") with a view to:

.1 ensuring consistent acceptance of MARPOL Annex VI; and

.2 ensuring consistent implementation of the 0.10% m/m sulphur limit under MARPOL Annex VI in the Med SO_X ECA. This includes outlining the obligations of ship operators, port authorities, fuel suppliers, and other stakeholders in achieving compliance with the sulphur limit.

1.3 Structure

1.3.1 The guidance starts in Chapter 2 with addressing the relevant MARPOL Annex VI regulations. It underlines the requirements on SO_X and ECAs. It includes critical elements as regulations fuel changeover, required documentation, sampling and testing, equivalents and fuel availability. Chapter 3 focusses on the Med SO_X ECA. It underlines the background of the designation, the expected environmental benefits, area of application and entry into force.

1.3.2 Chapter 4 identifies the national actions to become a Party to MARPOL Annex VI, which are necessary to ensure consistent implementation of the 0.10% m/m sulphur limit under MARPOL Annex VI in the Med SO_X ECA. It underlines the IMO Procedure for Ratification and the need to incorporate the provisions in national legislation.

1.3.3 Chapter 5 focusses on the needed national domestic legislation and related actions as the designation of enforcement authorities, monitoring and reporting obligations. It underlines the importance capacity building, stakeholder and public awareness and international cooperation.

1.3.4 Chapter 6 focusses on enforcement provisions which require national action by an individual country in its capacity as a flag State and port State. It starts with the survey and certification by flag administrations. It then underlines the needed port State control and inspection actions. It discusses initial inspections, certification and other documentation, detailed inspections, non-compliance, and the sulphur inspection under regulations 14 and 18. It gives special attention to the use of Exhaust Gas Cleaning Systems (EGCS) and alternative fuels.

1.3.4 Chapter 7 addresses elements of preparation for the Med SO_X ECA by all stakeholders involved, as administrations, port States, shipowners, ports, fuel oil suppliers and environmental organisations.

1.3.5 This guidance ends with Chapter 8 on summary and conclusions as well as Chapter 9 on references.

[1] namely Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, the Syrian Arab Republic, Tunisia, Türkiye and the European Union (EU).

2 MARPOL ANNEX VI AND ITS SULPHUR REGULATION

2.1 Overview of MARPOL Annex VI

Aim of MARPOL Annex VI

2.1.1 In 1997, a Protocol was adopted by the IMO to amend the MARPOL Convention and a new Annex VI (Regulations for the prevention of air pollution from ships) was added.

2.1.2 MARPOL Annex VI seeks to minimise airborne emissions from ships (SO_X, NO_X, ODS, VOC shipboard incineration) and the carbon intensity of global shipping in order to annihilate its contribution to local and global air pollution and environmental problems.

2.1.3 MARPOL Annex VI entered into force on 19 May 2005 and since then it has been continuously evolving in line with the commitments that IMO Member States make within IMO to limit the harmful effects of air pollution and GHG emissions from international shipping on human health and the environment.

Application of MARPOL Annex VI

2.1.4 MARPOL Annex VI applies to all ships, except where expressly provided otherwise in several regulations. In contrast to the other Annexes to MARPOL, MARPOL Annex VI controls a range of different pollutant streams together with certain aspects related to ship operation which can themselves result in air pollution.

MARPOL Annex VI regulations

2.1.5 MARPOL Annex VI is comprised of regulations, appendices and the Technical Code on Control of emission of nitrogen oxides from marine diesel engines (NO_X Technical Code 2008) which are integral parts of the 1997 Protocol.

2.1.6 The controls within MARPOL Annex VI cover:

.1 ozone-depleting substances released from refrigeration and fire-fighting systems and equipment. Such substances are also contained in some types of insulation foams;

.2 nitrogen oxides from diesel engine combustion;

.3 sulphur oxides and particulate matter emissions from the combustion of fuel oils which contain sulphur;

.4 volatile organic compounds, the hydrocarbon vapours displaced from tanker cargo spaces;

.5 shipboard incineration;

.6 fuel oil quality in so far as it relates to a number of air quality issues; and

.7 energy efficiency for ships.

2.1.7 MARPOL Annex VI is divided into five chapters which, inter alia, contain general provisions which cover definitions, exceptions and exemptions, and equivalents (Chapter 1) and survey and certification and port State control obligations (Chapter 2).

2.1.8 Chapter 3 addresses more technical requirements for control of emissions from ships, such as the control of emissions from ozone-depleting substances, nitrogen oxides (NO_X), sulphur oxides (SO_X) and particulate matter; Emission Control Areas (ECAs) for NO_X as well as SO_X and particulate matter; shipboard incineration and reception facilities. Regulation 13 of Chapter 3 incorporates the NO_X Technical Code 2008.

2.1.9 Chapter 4 contains regulations on the carbon intensity of international shipping, such as the Attained Energy Efficiency Design Index, the Attained Energy Efficiency Existing Ship Index, the Ship Energy Efficiency Management Plan and collection and reporting of ship fuel consumption data. Chapter 5 deals with verification of compliance with the provisions of MARPOL Annex VI.

2.2 Parties to MARPOL Annex VI

2.2.1 In [April 2024], the IMO Secretariat published the newest status of IMO Conventions. MARPOL Annex VI has [105] Contracting States, the combined merchant fleets of which constitute approximately [96,81]% of the gross tonnage of the world's merchant fleet.

2.3 MARPOL Annex VI regulation 14 on Sulphur Oxides (SO_X) and Particulate Matter (PM)

General requirements

2.3.1 MARPOL Annex VI Regulation 14 is on Sulphur Oxides (SO_X) and Particulate Matter. The general requirements is that the sulphur content of any fuel oil used on board ships shall not exceed 0.50% m/m on and after 1 January 2020. This limit is lower than the previous limit of 3.5% m/m before 2020.

Emission Control Areas for SO_X

2.3.2 The requirements within Emission Control Areas is that for ships operating within an Emission Control Area, the sulphur content of fuel oil used on board ships shall not exceed 0.10% m/m on or after 2015.

2.3.3 An emission control area shall be any sea area, designated by the IMO. The ECAs under the regulation on SO_X and PM are:

.1 the Baltic Sea area;

.2 the North Sea area;

.3 the North American Emission Control Area;

.4 the United States Caribbean Sea Emission Control Area; and

.5 the Mediterranean Sea Emission Control Area.

2.3.4 The 81st Session of the IMO's Marine Environment Protection Committee (MEPC 81) (London, UK, 18-22 March 2024), considered and approved draft amendments to MARPOL Annex VI concerning the following two further ECAs, with a view to adoption at the 82nd Session of the IMO's Marine Environment Protection Committee (MEPC 82) (London, UK, 30 September-4 October 2024):

.1 the Canadian Arctic Emission Control Area; and

.2 the Norwegian Sea.

Fuel Changeover

2.3.5 Those ships using separate fuel oils to comply with the 0.10% m/m sulphur limit set out in paragraph 4 of this regulation and entering or leaving an emission control area shall carry a written procedure showing how the fuel oil changeover is to be done, allowing sufficient time for the fuel oil service system to be fully flushed of all fuel oils exceeding the applicable sulphur content of this regulation prior to entry into an emission control

2.3.6 The volume of low sulphur fuel oils in each tank as well as the date, time and position of the ship when any fuel oil changeover operation is completed prior to the entry into an emission control area or commenced after exit from such an area shall be recorded in such logbook or electronic record book as prescribed by the Administration.

Documentation of the sulphur content

2.3.7 The sulphur content of fuel oil referred to in this regulation shall be documented by its supplier. Fuel oil for combustion purposes delivered to and used on board shall be recorded by means of a bunker delivery note which shall contain at least the information specified in appendix V to MARPOL Annex VI.

Sampling and testing

2.3.8 If the competent authority of a Party to MARPOL Annex VI requires the in-use or onboard fuel oil sample to be analysed, it shall be done in accordance with the verification procedure set forth in Appendix VI of MARPOL Annex VI. For each ship sampling point(s) shall be fitted or designated for the purpose of taking representative samples of the fuel oil being used on board the ship taking into account guidelines developed by the IMO.

Exceptions, exemptions and equivalents

2.3.9 The provisions of MARPOL Annex VI apply to all ships, except where expressly provided otherwise, as outlined in detail in regulations 3 and 4.

2.3.10 It does not apply to any emission necessary for the purpose of securing the safety of a ship or saving life at sea. It does also not apply to any emission resulting from damage to a ship or its equipment.

2.3.11 The Administration of a Party to MARPOL Annex VI may, in co-operation with other Administrations as appropriate, issue an exemption from specific provisions of this Annex for a ship to conduct trials for the development of ship emission reduction and control technologies and engine design programs. Regulation 3 further outlines the conditions for such trials.

2.3.12 Regulation 4 outlines the provisions for equivalents. The Administration of a Party to MARPOL Annex VI may allow any fitting, material, appliance or apparatus to be fitted in a ship or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by this Annex if such fitting, material, appliance or apparatus or other procedures, alternative fuel oils, or compliance methods are at least as effective in terms of emissions reductions as that required by this Annex, including any of the standards set forth in regulations 14 on Sulphur Oxides (SO_X) and Particulate Matter.

2.3.13 This provision for equivalents is particularly relevant for the sulphur regulations, as exhaust gas cleaning systems (scrubbers) are considered as an alternative for fuel with stringent sulphur limits. The use of scrubbers or other alternative technologies are further outlined in the present document.

2.4 MARPOL Annex VI regulation 18 on fuel oil availability and quality

Fuel Oil Non-Availability Report (FONAR)

2.4.1 Regulation 18.2.1 of MARPOL Annex VI provides that in the event compliant fuel oil cannot be obtained, a Party to MARPOL Annex VI can request evidence outlining the attempts made to obtain the compliant fuel oil, including attempts made to local alternative sources. Regulations 18.2.4 and 18.2.5 then require that the ship notifies its Administration and the competent authority of the port of destination on the inability to obtain compliant fuel oil, with the Party to MARPOL Annex VI to notify IMO of the non-availability. This notification is commonly referred to as a Fuel Oil Non-Availability Report (FONAR). Further guidance is provided in Resolution MEPC.320(74).

MARPOL Annex VI regulation 18 on fuel oil availability and quality

2.4.2 Each Party shall take all reasonable steps to promote the availability of fuel oils inform the IMO of the availability of compliant fuel oils in its ports and terminals.

2.4.3 If a ship is found by a Party to MARPOL Annex VI not to be in compliance with the standards for compliant fuel oils set forth in MARPOL Annex VI, regulation 18 gives the further steps that the Party to MARPOL Annex VI and the shipowner should follow. These will be further discussed in Chapter 6.

2.4.4 On fuel oil quality, regulation 18 prescribes in detail the required fuel oil standards. Some important regulations are that

.1 fuel oil for combustion purposes delivered to and used on board ships shall be blends of hydrocarbons derived from petroleum;

.2 shall be free from inorganic acid; and

.3 shall not include any added substance or chemical waste that jeopardises the safety of ships or adversely affects the performance of the machinery or is harmful to personnel.

2.4.5 For each ship details of fuel oil for combustion purposes delivered to and used on board shall be recorded by means of a bunker delivery note. This note shall contain at least the information specified in appendix V to MARPOL Annex VI. This Annex. 6 The bunker delivery note shall be kept on board the ship in such a place as to be readily available for inspection at all reasonable times. It shall be retained for a period of three years after the fuel oil has been delivered on board. The competent authority of a Party to MARPOL Annex VI may inspect the bunker delivery notes.

3 THE MED SO_X ECA UNDER MARPOL ANNEX VI

3.1 Background of the designation

3.1.1 In December 2021, the Twenty-second Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols (COP 22) adopted Decision IG.25/14 on the Designation of the Mediterranean Sea, as a whole, as an Emission Control Area for Sulphur Oxides (Med SO_X ECA) pursuant to MARPOL Annex VI.

3.1.2 Subsequently, France, on behalf of the Contracting Parties to the Barcelona Convention as well as the Member States of the European Union (EU) and the European Commission, submitted the joint and coordinated proposal on the designation of the Med SO_X ECA on 4 February 2022 to the 78th session of the IMO's Marine Environment Protection Committee (MEPC 78) (London, UK, 6-10 June 2022), which endorsed the proposal and approved the related draft amendments to MARPOL Annex VI.

3.1.3 The 79th Session of the IMO's Marine Environment Protection Committee (MEPC 79) (London, UK, 12-16 December 2022) adopted the amendments to MARPOL Annex VI concerning the Med SO_X ECA, with an expected date of entry into effective application on 1 May 2025.

3.2 Key objectives and goals

3.2.1 The designation of the Med SO_X ECA is necessary to protect public health and the environment in the Mediterranean Sea, regional waters and coastlines, and in the communities of the Mediterranean coastal States by reducing exposure to harmful levels of air pollution resulting from those emissions.

3.2.2 The Med SO_X ECA provides additional needed benefits beyond those provided by the implementation of the global fuel quality standards, notably the 0.50% m/m global sulphur limit. It has a demonstrated effect on the prevention, reduction and control of emissions of sulphur oxides and particulate matter from ships. Moreover, the Med SO_X ECA will result in significant reductions in ambient levels of air pollution in the Mediterranean Sea, as a whole, and in the Mediterranean coastal States, which will achieve substantial benefits to human health and the environment.

3.3 Countries and area of application

3.3.1 All Mediterranean coastal States are part of the Med SO_X ECA. These countries are: Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, the Syrian Arab Republic, Tunisia and Türkiye.

3.3.2 The area of the Med SO_X ECA is within the geographic area described in article 1.1 of the Barcelona Convention, which is hereinafter referred to as the Mediterranean Sea area. The waters of the Med SO_X ECA involve the twenty-two (22) Contracting Parties to the Barcelona Convention, namely Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, the Syrian Arab Republic, Tunisia, Türkiye and the EU.

3.3.3 The Med SO_X ECA includes all waters bounded by the coasts of Europe, Africa and Asia, and is described by the following coordinates:

.1 the western entrance to the Straits of Gibraltar, defined as a line joining the extremities of Cape Trafalgar, Spain (36°11'.00 N, 6°02'.00 W) and Cape Spartel, Morocco (35°48'.00 N, 5°55'.00 W);

.2 the Strait of Canakkale, defined as a line joining Mehmetcik Burnu (40°03'N, 26°11'E) and Kumkale Burnu (40°01'.00 N, 26°12'.00 E); and

.3 the northern entrance to the Suez Canal excluding the area enclosed by geodesic lines connecting points 1-4 with the following coordinates:

Point	Latitude	Longitude
1	31˚29’.00 N	32°16’.00 E
2	31˚29’.00 N	32°28’.48 E
3	31˚14’.00 N	32°32’.62 E
4	31˚14’.00 N	32°16’.00 E

3.4 Costs and benefits of the Med SO_X ECA

3.4.1 The designation of the Med SO_X ECA aims at safeguarding public health, the environment, and communities in the Mediterranean region. The designation of the Med SO_X ECA provides additional needed benefits beyond those provided by the implementation of the global fuel quality standards, notably the 0.50% m/m global sulphur limit, pursuant to MARPOL Annex VI.

3.4.2 MEPC 78 noted that the Technical Group on the Designation of Special Areas under MARPOL determined that the Med SO_X ECA satisfied the criteria set forth in section 3 of Appendix III of MARPOL Annex VI. Amongst others, it was assessed that emissions from ships operating in the Med SO_X ECA were contributing to ambient concentrations of air pollution or to adverse environmental impacts.

3.4.3 The changes in shipping costs associated with the Med SO_X ECA were found to be modest, on the order of $0.16 to $1.31 per tonne of cargo, depending on the length of the vessel transit in the Mediterranean Sea (Plan Bleu, 2022). There was no evidence found in this analysis that the change in marine freight rate associated with the Med SO_X ECA would come close to the break-even ratio, meaning that no evidence was found for the Med SO_X ECA fuel price to signal mode shift or route diversion. Furthermore, per tonne-km price changes associated with the Med SO_X ECA were found to be small and unlikely to pose a competitive disadvantage to ports in the Mediterranean Sea area. Any changes in purchasing power for citizens in the Mediterranean region, including those in remote and island locations, were found to be minor[2].

3.4.3 The burden on international shipping was found to be small compared to the improvements in air quality, the reductions in premature mortality and health incidences associated with this air pollution, and the other benefits to the environment resulting from the designation of the Med SO_X ECA[3].

3.5 Fuel availability

3.5.1 Sufficient refinery capacity and production exists to meet fleet demand for 0.10% m/m fuel under the Med SO_X ECA (REMPEC, 2021). Available supply is sufficient to meet demand, even considering a range of estimates and growth rates for fleet fuel use[4].

3.6 Entry into force

3.6.1 MEPC 79 adopted Resolution MEPC.361(79) on amendments to MARPOL Annex VI concerning the Med SO_X ECA. The adopted amendments were agreed on 1 November 2023, as no objections were communicated to the IMO Secretary-General, as provided for in article 16(2)(f)(iii) of the Convention. The amendments shall enter into force on 1 May 2024, in accordance with article 16(2)(g)(ii) of the Convention. The expected date of entry into effective application of the 0.10% m/m limit of the sulphur content of any fuel oil used on board ships in the Med SO_X ECA is 1 May 2025.

[2] Plan Bleu (2022). Market responses and distribution of costs related to the possible designation of the Mediterranean Sea, as a whole, as an Emission Control Area for Sulphur Oxides (Med SO_X ECA). Technical Report, prepared in cooperation with REMPEC and MED POL.
[3] IMO (2022). MEPC 78/11. Proposal to Designate the Mediterranean Sea, as a whole, as an Emission Control Area for Sulphur Oxides. London, UK: International Maritime Organization.
[4] REMPEC/WG.50/INF.9.

4 PREREQUISITE: RATIFICATION OF MARPOL ANNEX VI

4.1 The necessity of ratifying MARPOL Annex VI

4.1.1 For a consistent implementation of the 0.10% m/m sulphur limit under MARPOL Annex VI in the Med SO_X ECA, it is essential that all Mediterranean coastal States become a Party to MARPOL Annex VI. That is underlined both by the Contracting Parties to the Barcelona Convention as well as by the IMO.

4.1.2 The Contracting Parties to the Barcelona Convention decided in the COP 22 Decision IG.25/14 to: "*Urge the Contracting Parties [to the Barcelona Convention] to ratify and effectively implement MARPOL Annex VI, as soon as possible, if they have not yet done so, at least by the date of entering into force of the Med SO_X ECA, to the extent possible*".

4.1.3 MEPC 79 approved Resolution MEPC.361(79) with the invitation: "*Invites coastal States of the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter to ratify and effectively implement MARPOL Annex VI, as soon as possible, if they have not yet done so, at least by the date of entry into force of the said amendments*".

4.1.4 When the Med SO_X ECA was approved, 15 Contracting Parties to the Barcelona Convention were party to MARPOL Annex VI: Albania, Croatia, Cyprus, France, Greece, Italy, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, the Syrian Arab Republic, Tunisia and Türkiye. Algeria, Bosnia and Herzegovina, Egypt, Israel, Lebanon and Libya have not yet ratified MARPOL Annex VI.

4.2 The IMO Procedure for Ratification of MARPOL Annex VI

4.2.1 Article 5 of the 1997 Protocol states that only Parties to MARPOL may become Parties to the 1997 Protocol and claim the rights and privileges granted by MARPOL Annex VI. Thus, if a Contracting Party to the Barcelona Convention wishes to accede to MARPOL Annex VI, but is not yet a Party to MARPOL, it will also have to accede to MARPOL and at least its obligatory Annexes as well.

4.2.2 Ratification of MARPOL Annex VI needs an official acceptance by a country to become a Party thereto. The IMO Secretary-General serves as the depositary of MARPOL Annex VI. Ratification, acceptance, approval or accession shall be effected by the deposit of an instrument to that effect with the IMO Secretary-General. The entry into force date for the provisions of the Protocol is three months after the date of deposit of the instrument of accession. The IMO Secretary-General shall inform all IMO Member States which have signed the present Convention or acceded to it of any signature or of the deposit of any new instrument of ratification, acceptance, approval or accession and the date of its deposit.

4.3 Legislative, policy and infrastructure preparation

4.3.1 According to the rules of international treaty law, every treaty in force is binding upon the Parties thereto and must be performed by them in good faith, and a Party thereto "may not invoke the provisions of its internal law as justification for its failure to perform a treaty ". Similarly, article 1(1) of MARPOL requires the Parties thereto to "undertake to give effect of the provisions of the present Convention and those Annexes thereto by which they are bound…". Acceding to the 1997 Protocol without incorporating the provisions into domestic legislation would thus amount to a breach of article 1 of MARPOL.

4.3.2 Contracting Parties to the Barcelona Convention may find it useful to develop a national policy framework related to addressing air emissions from the shipping industry that ties in with other, broader, policies related to air emissions (including greenhouse gases) or energy efficiency. Contracting Parties to the Barcelona Convention may find it useful to use the templates that are set out in the following guides developed within the framework of the Global Environment Facility (GEF)-United Nations Development Programme (UNDP)-IMO Global Maritime Energy Efficiency Partnerships (GloMEEP) Project:

.1 Ship Emissions Toolkit, Guide No.1: Rapid assessment of ship emissions in the national context; and

.2 Ship Emissions Toolkit, Guide No.3: Development of a national ship emissions reduction strategy.

4.3.3 Contracting Parties to the Barcelona Convention should ensure that ports have adequate infrastructure to support the implementation of MARPOL Annex VI, such as reception facilities and equipment for sampling and testing fuel oil quality. This may also include the installation of shore power facilities (cold ironing) to allow vessels to connect to onshore power sources and reduce emissions while at berth. Additionally, Contracting Parties to the Barcelona Convention may invest in emissions monitoring equipment and pollution control technologies to assess and mitigate air quality impacts.

4.3.4 A flag State has an obligation to ensure that its ships of 400 gross tonnes and above are issued with an International Air Pollution Prevention (IAPP) certificate (regulation 8), an International Energy Efficiency (IEE) certificate (regulation 6.4) and carry on board a Ship Energy Efficiency Management Plan (SEEMP) (regulation 22), while new ships as defined under regulation 2.23 will be obliged to meet the prescribed Energy Efficiency Design Index (EEDI).

4.4 Benefits of acceptance of MARPOL Annex VI

4.4.1 Becoming a Party to MARPOL Annex VI demonstrates a commitment to protecting the marine environment and reducing air pollution from ships.

4.4.2 By ratifying MARPOL Annex VI, Contracting Parties to the Barcelona Convention commit to reducing air pollution from ships by limiting emissions of sulphur oxides (SO_X), nitrogen oxides (NO_X), and particulate matter. This contributes to the protection of human health and the environment, including mitigating the impact of acid rain, smog, and respiratory diseases.

4.4.3 Acceptance of MARPOL Annex VI demonstrates the commitment of a Contracting Party to the Barcelona Convention to adhering to international standards for maritime environmental protection. It enhances the reputation of the Contracting Party to the Barcelona Convention as a responsible member of the global maritime community and fosters positive relationships with other Contracting Parties to the Barcelona Convention, international organisations, stakeholders, etc. It may bring various economic benefits for Contracting Parties to the Barcelona Convention, including access to international funding and assistance programs aimed at fostering sustainable maritime practices as well as potentially attracting investment (multiplier effect).

5 NATIONAL DOMESTIC LEGISLATION

5.1 Incorporation of MARPOL Annex VI into national law

5.1.1 As discussed earlier, it is important that Contracting Parties to the Barcelona Convention that wish to accede to the treaty be prepared to give full and complete effect to the 1997 Protocol by incorporating its provisions into national legislation. It will be necessary to consider whether there is existing enabling legislation which gives the power through which MARPOL Annex VI may be integrated into the national legal system. Furthermore they should evaluate if existing legislation supports the implementation and enforcement. Incorporation into national law differs from one Contracting Party to the Barcelona Convention to another, depending on their legal system.

5.1.2 The legal department of the lead Ministry, or the Ministry of Justice (notably in relation to provisions leading to potential sanctions or fines) would provide advice on which provisions of MARPOL Annex VI should be given effect through enabling legislation and which ones can be incorporated in regulations. As a general rule, issues tend to require enabling legislation if there are significant new policy or fundamental changes to existing policy, amendments to Acts of Parliament, or provisions creating offences which impose criminal penalties. On the other hand, matters of a detailed technical nature or which may be subject to change on a frequent basis may best be placed in subordinate legislation.

5.1.3 Further detailed analysis of the domestic legislation can be found in the Ship Emissions Toolkit, Guide No.2: Incorporation of MARPOL Annex VI into national law, developed within the framework of the GEF-UNDP-IMO GloMEEP Project.

5.2 Relevant IMO resolutions, Guidelines and unified interpretations

5.2.1 MARPOL Annex VI is continuously evolving in line with the commitments that IMO Member States make within IMO to limit the harmful effects of air pollution and GHG emissions from international shipping on human health and the environment. The latest formal decisions to change the sulphur regulations are Resolutions:

.1 MEPC.362(79): Amendments to MARPOL Annex VI (Regional reception facilities within Arctic waters, information to be included in the bunker delivery note (BDN) and information to be submitted to the IMO Ship Fuel Oil Consumption database);

.2 MEPC.361(79): Amendments to MARPOL Annex VI (Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter);

.3 MEPC.340(77) and its corrigendum[5]: 2021 Guidelines for exhaust gas cleaning systems (2021 EGCS Guidelines);

.4 MEPC.328(76): Amendments to MARPOL Annex VI (2021 Revised MARPOL Annex VI);

.5 MEPC.326(75): 2020 Guidelines for monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships;

.6 MEPC.321(74) and its corrigendum[6]: 2019 Guidelines for port State control under MARPOL Annex VI Chapter 3 (2019 PSC Guidelines);

.7 MEPC.320(74) and its corrigendum[7]: 2019 Guidelines for consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI;

[5] MEPC 77/16/Add.1/Corr.1.
[6] MEPC 74/18/Add.1/Corr.1.
[7] MEPC 74/18/Add.1/Corr.1.

.8 MEPC.305(73): Prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship;

.9 MEPC.182(59): 2009 Guidelines for the sampling of fuel oil for determination of compliance with the revised MARPOL Annex VI; and

.10 A. 1155(32): Procedures for port State control, 2021.

5.2.2 The aim of IMO circulars is to disseminate information, provide guidance, and communicate decisions to IMO Member States. For sulphur, the following circulars are relevant:

.1 MEPC.1/Circ.889: 2020 Guidelines for on board sampling of fuel oil intended to be used or carried for use on board a ship;

.2 MEPC.1/Circ.883/Rev.1: Guidance on indication of ongoing compliance in the case of the failure of a single monitoring instrument, and recommended actions to take if the exhaust gas cleaning system (EGCS) fails to meet the provisions of the EGCS Guidelines;

.3 MEPC.1/Circ.882: Early application of the verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8);

.4 MEPC.1/Circ.881: Guidance for port State control on contingency measures for addressing non-compliant fuel oil;

.5 MEPC.1/Circ.878: Guidance on the development of a ship implementation plan for the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI;

.6 MEPC.1/Circ.875: Guidance on best practice for fuel oil purchasers/users for assuring the quality of fuel oil used on board ships;

.7 MEPC.1/Circ.875/Add.1: Guidance on best practice for fuel oil suppliers for assuring the quality of fuel oil delivered to ships;

.8 MEPC.1/Circ.864/Rev.1: 2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships; and

.9 MEPC.1/Circ.795/Rev.8: Unified interpretations to MARPOL Annex VI; and

.10 MSC-MEPC.5/Circ.15: Delivery of compliant fuel oil by suppliers.

5.3 Designation of enforcement authorities

5.3.1 Once MARPOL Annex VI is incorporated into national laws, enforcement mechanisms are put in place to ensure compliance. This may involve inspections by port State control authorities, issuance of certificates of compliance, and penalties for non-compliance.

5.3.2 Enforcement mechanisms and associated penalties for non-compliance could include:

.1 fines;

.2 suspension of licenses;

.3 legal action depending on the severity of the violation;

.4 reporting non-compliance to the IMO’s Global Integrated Shipping Information System (GISIS);

.5 detaining ships, etc.

5.3.3 Surveys of ships as regards the enforcement of the provisions of this Annex shall be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organisations recognised by it. Such organisations shall comply with the guidelines adopted by the IMO.

5.4 Monitoring and Reporting

5.4.1 Regulations for monitoring and reporting on fuel are included in the 2019 Guidelines for consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI. The same regulations are valid for the 0.10% m/m sulphur limit in the Med SO_X ECA. However, this may require extra attention as the 0.10% m/m sulphur limit is stricter than the 0.50% m/m global sulphur limit, and more fuel switching or starting up alternative technologies may take place.

5.4.2 Designated authorities should, if deemed necessary, take a sample and test fuel oils from bunker barges or shore bunker terminals. Sampling of fuel oils in bunker barges or shore bunker terminals can be taken and tested in the same manner that the MARPOL delivered fuel oils are tested by the PSC. All possible efforts should be made to avoid a ship being unduly detained or delayed. If a sample is analysed, sample analysis of fuel oils should not unduly delay the operation, movement or departure of the ship.

5.4.3 If non-compliance, such as issuance of an incorrect BDN or a BDN without measurement of sulphur content, was found, the designated authorities should take appropriate corrective measures against the non-compliant supplier. In such case, the designated authorities should inform the IMO for transmission to the IMO Member States of the non-compliant supplier, in accordance with the regulation 18.9.6 of MARPOL Annex VI.

5.4.4 When a Party to MARPOL Annex VI finds a non-compliance of a ship or a fuel oil supplier, the information of the non-compliance should be reported to the MARPOL Annex VI module (regulation 11.4) of the IMO's GISIS.

5.4.5 Publication of information on non-compliant ships/fuel oil suppliers or a reporting scheme to IMO to be registered on centralised information platforms are proposed as elements of an effective enforcement strategy. Various PSC regimes have successfully used the publishing of information related to substandard ships/fuel suppliers as a deterrent to non-compliance. Port States also need to report detentions of ships to IMO which may affect the future PSC targeting of the ship. The IMO's GISIS database already makes available certain information related to non-compliances with the MARPOL Annex VI regulations.

5.4.6 The establishment of a list of suppliers is an obligation flowing from MARPOL Annex VI, Regulation 18.9. This list is a means of identifying the supplier involved in the event of any observed breaches. It is not intended to identify 'approved suppliers'.

5.5 Capacity building

5.5.1 Effective implementation also requires resources and the availability of sufficient personal with the appropriate expertise to assist in the development of the legislation and to discharge the various responsibilities[8].

[8] GEF-UNDP-IMO GloMEEP Project and IMarEST (2018). Ship Emissions Toolkit, Guide No.2: Incorporation of MARPOL Annex VI into national law.

5.5.2 To achieve this, proper training and other forms of technical assistance to build capacity will be necessary. The training should involve key ministries, institutions, agencies and personnel, including flag and port State control officers, legal experts, legislative drafters and maritime administrators, and focus on the development of functional experience and expertise with respect to the practical implementation of MARPOL Annex VI in general and the provisions of MARPOL Annex VI in particular.

5.6 Stakeholder and public awareness

5.6.1 Contracting Parties to the Barcelona Convention may undertake efforts to raise public awareness about the importance of complying with MARPOL Annex VI and its sulphur regulations as well as the environmental benefits of the measures. Stakeholder engagement activities could involve consulting with ports, shipowners, shipbuilding industry, environmental groups and other stakeholders to gather input, address concerns, and promote cooperation in implementing MARPOL Annex VI measures.

5.6.2 Forms for raising public awareness could include:

.1 tailored training programs that cover a range of topics, including regulatory requirements, monitoring and enforcement procedures, technological solutions, and compliance best practices;

.2 simulation exercises to provide hands-on experience and practical skills development for stakeholders; and

.3 incentives and recognition mechanisms to reward individuals and organisations.

5.6.3 Training sessions can provide stakeholders with detailed information about compliance requirements, regulations, and best practices. These sessions can cover various topics such as the required regulations, fuel standards, emission monitoring, reporting procedures, and enforcement mechanisms. Hands-on training, case studies, and interactive workshops can enhance understanding and encourage active participation.

5.6.4 Utilising diverse communication channels is essential for reaching and engaging stakeholders effectively. This can include traditional methods such as workshops, seminars, and conferences, as well as modern approaches like webinars, online forums and social media.

5.7 Learning from other ECAs

5.7.1 Learning from the experience from other ECAs such as the Baltic Sea area, the North Sea area, and the North American Emission Control Area, for instance by examining stakeholder engagement strategies implemented in these regions, can provide valuable insights for the Med SO_X ECA. Understanding how stakeholders cooperate and interact in these areas can help identify successful approaches and best practices that can be adapted and replicated in the Mediterranean region.

5.7.2 In the past, representatives from EU Member States and Canada met to discuss how to tackle sulphur emissions from commercial shipping. One such meetings was hosted by the Dutch Human Environment and Transport Inspectorate (Inspectie Leefomgeving en Transport, ILT) and discussions focused on harmonising the approach by the various relevant bodies to tackling sulphur emissions. Harmonisation of enforcement by the collaborating countries was considered necessary to prevent unfair competition and to promote compliance. In these meetings, the countries agreed to implement a harmonised system of monitoring and enforcement for the Baltic Sea area, the North Sea area and the English Channel area, making the most effective possible use of people and resources. Issues discussed by the countries included exchanging data on non-compliant vessels and exchanging experience in the use of remote sensing (for example sniffer drones and monitoring posts), developing calculation models for auditing fuel logbooks, setting up a harmonised system for sanctions, and organising an inspection data system.

5.8 International cooperation and coordination among Mediterranean coastal States and Stakeholders

5.8.1 Cooperation with other Contracting Parties to the Barcelona Convention and international organisations can support successful national implementation of MARPOL Annex VI. Contracting Parties to the Barcelona Convention may engage in information sharing and technical assistance. Participation in regional or international fora allows Contracting Parties to the Barcelona Convention to exchange experiences, coordinate actions, and harmonise approaches to implementation.

5.8.2 Contracting Parties to the Barcelona Convention may encourage and support research and development efforts aimed at advancing technologies for reducing air emissions from ships. They may collaborate with academic institutions and research organisations to fund and promote innovative solutions for sustainable maritime transportation.

5.8.3 Activity 1.4.2 ("*Support the ratification and effective implementation of MARPOL Annex VI, facilitating the entry into effect of the Mediterranean Sea Emission Control Area for Sulphur Oxides and Particulate Matter (Med SO_X ECA), and explore the possible designation of the Mediterranean Sea Emission Control Area for Nitrogen Oxides (Med NO_X ECA) pursuant to MARPOL Annex VI*") of the Programme of Work and Budget of the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP) for 2024-2025[9], adopted by the Twenty-third Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols (COP 23), can facilitate joint enforcement efforts to address common challenges and promote best practices.

[9] Decision IG.26/14.

6 VERIFICATION ISSUES AND CONTROL MECHANISM ACTIONS

6.1 Survey and certification by Flag Administrations

General / Inspection and legislation

6.1.1 As a flag State (or 'Administration'), the government will exercise regulatory control over its ships through approvals and surveys. This role may also be delegated to Recognised Organisations (ROs). Flag States should take all necessary steps to secure compliance by ships which fly their flag. Where surveys and approvals are delegated to ROs, the Administration should regulate such authorisation in accordance with the established standards.

Specifics to MARPOL Annex VI

6.1.2 Chapter 2 of MARPOL Annex VI regulates the surveys and certification and means of control. Ships of 400 gross tonnage and above, and fixed and floating drilling rigs and other platforms are required to be surveyed and issued with certificates in accordance with regulation 5.1. MARPOL Annex VI applies to all ships, but surveys and certificates are not required for ships below 400 gross tonnage. This regulation requires an Administration to establish appropriate measures for such ships.

6.1.3 Regulation 6 provides the legal basis for the issuance of the IAPP Certificate and the IEE certificate. The certificates are issued after the surveys required under Regulation 5 have been successfully completed. The amendments to MARPOL Annex VI concerning data collection system for fuel oil consumption of ships, adopted by Resolution MEPC.278(70) inserted additional provisions which require the issuance of a Statement of Compliance related to fuel oil consumption to ships which are required to implement the data collection system.

6.2 Port State Control

6.2.1 Port State Control (PSC) is a maritime regulatory programme aimed at ensuring that ships entering the ports of a particular country comply with international safety, security, and environmental standards. The primary objective of PSC is to identify and rectify deficiencies in ships and their equipment to enhance maritime safety and prevent substandard vessels from operating.

6.2.2 In order to provide basic guidance on the conduct of PSC inspections for compliance with MARPOL Annex VI and afford consistency in the conduct of these inspections, the recognition of deficiencies and the application of control procedures, the following two guidelines for PSC are available: the Procedures for port State control, 2021, as set out in the Annex to Resolution A. 1155(32), and the 2019 PSC Guidelines, as set out in the Annex to Resolution MEPC.321(74) and its corrigendum[10].

6.2.3 Under the provisions of the relevant conventions the Administration (i.e. the Government of the flag State) is responsible for promulgating laws and regulations and for taking all other steps which may be necessary to give the relevant conventions full and complete effect so as to ensure that, from the point of view of safety of life and pollution prevention, a ship is fit for the service for which it is intended and seafarers are qualified and fit for their duties.

6.2.4 No more favourable treatment is to be given to the ships of countries which are not Party to the relevant convention. All Parties should, as a matter of principle, apply these Procedures to ships of non-Parties in order to ensure that equivalent surveys and inspections are conducted, and an equivalent level of safety and protection of the marine environment is ensured.

[10] MEPC 74/18/Add.1/Corr.1.

Important definitions

6.2.5 Clear grounds: Evidence that the ship, its equipment, or its crew do not correspond substantially with the requirements of the relevant conventions or that the master or crew members are not familiar with essential shipboard procedures relating to the safety of ships or the prevention of pollution.

6.2.6 Deficiency: A condition found not to be in compliance with the requirements of the relevant convention.

6.2.7 Detention: Intervention action taken by the port State when the condition of the ship or its crew does not correspond substantially with the relevant conventions to ensure that the ship will not sail until it can proceed to sea without presenting a danger to the ship or persons on board, or without presenting an unreasonable threat of harm to the marine environment, whether or not such action will affect the normal schedule of the departure of the ship.

Initial inspection within the Med SO_X ECA

6.2.8 When a ship enters the Med SO_X ECA, it may be subject to an initial inspection by PSC to ensure compliance with the stricter sulphur content limits within that designated region. As a preliminary check, the validity of the IAPP certificate should be confirmed by verifying that the Certificate is properly completed and signed and that required surveys have been performed.

6.2.9 When a ship is inspected in a port within the Med SO_X ECA, the PSCO should establish, through examining the Supplement to the IAPP certificate, how the ship is equipped for the prevention of air pollution and look at:

.1 evidence of fuel oil delivered to and used on board with a sulphur content of not more than 0.10% m/m through the BDNs and appropriate onboard records including records of bunkering operations as set out in the Oil Record Book Part 1 (regulation VI/18.5 and VI/14.4); and

.2 for those ships using separate fuel oils for compliance with regulation VI/14, evidence of a written procedure (in a working language or languages understood by the crew) and records of changeover to fuel oil with a sulphur content of not more than 0.10% m/m before entering the Med SO_X ECA such that compliant fuel was being used while sailing in the entire Med SO_X ECA as required in regulation VI/14.6.

6.2.10 If the PSCO has clear grounds for carrying out a more detailed inspection, the master should be immediately informed of these grounds and advised that, if so desired, the master may contact the Administration or, as appropriate, the RO responsible for issuing the certificate and invite their presence on board.

Initial inspection outside the Med SO_X ECA

6.2.11 When a ship is inspected in a port outside the Med SO_X ECA, the PSCO will look to the same documentation and evidence as during inspections in ports inside the Med SO_X ECA. The PSCO should in particular look at:

.1 evidence that the sulphur content of the fuel oil is in accordance with regulation VI/14.1[11] through the BDNs and appropriate onboard records including records of bunkering operations as set out in the Oil Record Book Part 1 (regulation VI/18.5 and VI/14.4); and

[11] Resolution MEPC.305(73) *Prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship* is not applicable to fuel oil carried as cargo or for ships fitted with an approved equivalent means of compliance.

.2 evidence of a written procedure (in a working language or languages understood by the crew) and records of changeover from fuel oil with a sulphur content of not more than 0.10% m/m after leaving the Med SO_X ECA such that compliant fuel was being used while sailing in the entire Med SO_X ECA.

Outcome of initial inspection

6.2.12 If the certificates and documents are valid and appropriate and, after an inspection of the ship to check that the overall condition of the ship meets generally accepted international rules and standards, the PSCO's general impressions and observations on board confirm a good standard of maintenance, the inspection should be considered satisfactorily concluded.

6.2.13 If, however, the PSCO's general impressions or observations on board give "clear grounds" for believing that the condition of the ship or its equipment do not correspond substantially with the particulars of the certificates or the documents, the PSCO should proceed to a more detailed inspection.

6.2.14 "Clear grounds" to conduct a more detailed sulphur inspection include:

.1 evidence that certificates / documents required by MARPOL Annex VI are missing or clearly invalid;

.2 the absence / presence or malfunctioning of equipment or arrangements specified in the certificates or documents;

.3 evidence from the PSCO's general impressions or observations that serious deficiencies exist in the equipment or arrangements specified in the certificates or documents;

.4 information or evidence that the master or crew are not familiar with essential shipboard operations relating to the prevention of air pollution, or that such operations have not been carried out;

.5 evidence of inconsistency between information in the bunker delivery note and paragraph 2.3[12] of the Supplement to the IAPP certificate;

.6 evidence that an equivalent means has not been used as required; or

.7 evidence, for example by fuel calculators, that the quantity of bunkered compliant fuel oil is inconsistent with the ship's voyage plan; and

.8 receipt of a report or complaint containing information that the ship appears to be non-compliant including but not limited to information from remote sensing surveillance of SO_X emissions or portable fuel oil sulphur content measurement devices indicating that a ship appears to use non-compliant fuel while in operation/underway.

Certification and other documentation

6.2.15 Concerning MARPOL Annex VI various certificates and documents are required. In related to sulphur, at least the following documents should be checked.

.1 the written procedures covering fuel oil changeover operations (in a working language or languages understood by the crew) where separate fuel oils are used in order to achieve compliance (regulation VI/14.6);

.2 the approved documentation relating to exceptions and/or exemptions granted under regulation VI/3;

[12] Sulphur oxides (SO_X) and particulate matter (regulation 14)

.3 the approved documentation (SECC[13] where issued, ETM, OMM, SECP) and relating to any installed exhaust gas cleaning system (EGCS) or equivalent means, to reduce SO_X emissions (regulation VI/4);

.4 EGCS monitoring records, checking they have been retained and show compliance. Additionally, checking that the EGCS Record Book including nitrate discharge data and performance records, or approved alternative, has been duly maintained;

.5 the bunker delivery notes (BDNs) and representative samples or records thereof (regulation VI/18);

.6 any notification to the ship's flag Administration issued by the master or officer in charge of the bunker operation together with any available commercial documentation relevant to non-compliant bunker delivery, regulation VI/18.2;

.7 if the ship has not been able to obtain compliant fuel oil, the notification to the ship's flag Administration and the competent authority of the relevant port of destination as set out in the appendix; and

.8 the ship has, no later than 1 June of each following year, the Statement of Compliance – Fuel Oil Consumption Reporting.

6.2.16 In the case where the bunker delivery note or the representative sample as required by regulation VI/18 presented to the ship are not in compliance with the relevant requirements (the BDN is set out in appendix V of MARPOL Annex VI), the master or officer in charge of the bunker operation may have documented that through a notification to the ship's flag Administration with copies to the port authority under whose jurisdiction the ship did not receive the required documentation pursuant to the bunkering operation and to the bunker deliverer.

6.2.17 In addition, if the BDN shows compliant fuel, but the master has independent test results of the fuel oil sample taken by the ship during the bunkering which indicates non-compliance, the master may have documented that through a notification to the ship's flag Administration with copies to the competent authority of the relevant port of destination, the Administration under whose jurisdiction the bunker deliverer is located and to the bunker deliverer.

6.2.18 In all cases, a copy may be retained on board the ship, together with any available commercial documentation, for the subsequent scrutiny of port State control.

Initial inspection on ships equipped with equivalent means of SO_X compliance

6.2.19 Equivalent means of compliance in the context of sulphur oxide (SO_X) emissions regulations typically refers to alternative methods or technologies that ships can use to meet the sulphur content requirements outlined in MARPOL Annex VI. On ships equipped with equivalent means of compliance on SO_X the PSCO will look at:

.1 evidence that the ship has received an appropriate approval for any installed equivalent means (approved, under trial or being commissioned);

.2 evidence that the ship is using an equivalent means, as identified on the Supplement of the IAPP certificate, for fuel oil combustion units on board or that compliant fuel oil is used in equipment not so covered; and

[13] SECC - SO_X Emissions Compliance Certificate, ETM - EGCS Technical Manual for Scheme A or B, OMM - Onboard Monitoring Manual, SECP - SO_X Emissions Compliance Plan

.3 BDNs on board[14] which indicate that the fuel oil is intended to be used in combination with an equivalent means of SO_X compliance or the ship is subject to a relevant exemption to conduct trials for SO_X emission reduction and control technology research.

6.2.20 In the case where an EGCS is not in compliance with the relevant requirements for other than transitory periods and isolated spikes in the recorded output, the master or officer in charge may have documented that through a notification to the ship's flag Administration with copies to the competent authority of the relevant port of destination, and present those corrective actions taken in order to rectify the situation in accordance with the guidance given in the EGCS Technical Manual. If a malfunction occurs in the instrumentation for the monitoring of emission to air or the monitoring of washwater discharge to sea, the ship may have alternative documentation demonstrating compliance.

Outcome of initial inspection

6.2.21 If the certificates and documents are valid and appropriate and, after an inspection of the ship to check that the overall condition of the ship meets generally accepted international rules and standards, the PSCO's general impressions and observations on board confirm a good standard of maintenance, the inspection should be considered satisfactorily concluded.

6.2.22 If, however, the PSCO's general impressions or observations on board give clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificates or the documents, the PSCO should proceed to a more detailed inspection.

6.2.23 "Clear grounds" in relation to sulphur are as follows:

.1 evidence that certificates and/or documents required by MARPOL Annex VI are missing or clearly invalid;

.2 evidence from the PSCO's general impressions or observations that serious deficiencies exist in the equipment or arrangements specified in the certificates or documents;

.3 evidence of inconsistency between information in the bunker delivery note and paragraph 2.3 of the Supplement to the IAPP certificate;

.4 evidence that an equivalent means has not been used as required; or

.5 evidence, for example by fuel calculators, that the quantity of bunkered compliant fuel oil is inconsistent with the ship's voyage plan; and

.6 receipt of a report or complaint containing information that the ship appears to be non-compliant including but not limited to information from remote sensing surveillance of SO_X emissions or portable fuel oil sulphur content measurement devices indicating that a ship appears to use non-compliant fuel while in operation/under way.

More detailed inspections

6.2.24 In case the PSCO's general impression or observation give clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars or the documents the PSCO should proceed to a more detailed inspection.

6.2.25 In that case the PSCO should check and verify whether fuel oil complies with the provisions of regulation VI/14 taking into account Appendix VI[15] of MARPOL Annex VI.

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[14] Resolution MEPC.305(73) *Prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship* is not applicable to fuel oil carried as cargo or for ships fitted with an approved equivalent means of compliance.

[15] Verification procedures for a MARPOL Annex VI fuel sample.

6.2.26 The PSCO should pay attention to the record required in regulation VI/14.6 for those ships using separate fuel oils in order to identify the sulphur content of fuel oil used by the ship depending on the area of trade, or that other equivalent approved means have been applied as required, the fuel oil consumed in and outside the Med SO_X ECA, and that there is enough fuel in compliance with regulation VI/14 to reach the next port destination.

6.2.27 Where EGCS is used, the PSCO should check that it has been installed and operated, together with its monitoring systems, in accordance with the associated approved documentation according to the survey procedures as established in the OMM[16].

6.2.28 If the ship is equipped with an EGCS as an equivalent means of SO_X compliance, the PSCO should verify that the system is properly functioning, is in operation, there are continuous-monitoring systems with tamper-proof data recording and processing devices, if applicable, and the records demonstrate the necessary compliance when set against the limits given in the approved documentation and applies to relevant fuel combustion units on board. Checking can include but is not limited to emissions ratio, pH, Polycyclic Aromatic Hydrocarbons (PAH), turbidity readings as limit values given in ETM-A or ETM-B and operation parameters as listed in the system documentation.

Fuel oil sulphur limits and corresponding Emission Ratio limit values

Fuel oil sulphur content (% m/m)	**Emission ratio SO_2 (ppm) / CO_2 (% v/v)**
0.50	21.7
0.10	4.3

Note: The use of the above Emission Ratio limit values is only applicable when using petroleum-derived distillate or residual fuel oils. See appendix 2 for the assumptions and rationale which form the basis of the Emission Ratio method.

6.2.29 If there are clear grounds as defined in paragraph 6.2.23 above, the PSCO may examine operational or reporting procedures by confirming that:

.1 the master or crew are familiar with fuel oil bunkering procedures in connection to the respective bunker delivery notes and onboard records including the Oil Record Book Part 1 (regulations VI/18.5 and VI/14.4) and retained samples as required by regulation VI/18;

.2 the master or crew are familiar with the correct operation of an EGCS or other equivalent means on board together with any applicable monitoring and recording, and record-keeping requirements; and

.3 the master or crew are familiar and have undertaken the necessary fuel oil changeover procedures, or equivalent, associated with demonstrating compliance within the Med SO_X ECA.

Non-compliance and detainable deficiencies

6.2.30 In exercising his/her functions, the PSCO should use professional judgment to determine whether to detain the ship until any noted deficiencies are corrected or to allow it to sail with certain deficiencies which do not pose an unreasonable threat of harm under the scope of MARPOL Annex VI provided they will be timely addressed.

6.2.31 In order to assist the PSCO there follows a list of deficiencies, which are considered, taking into account the provisions of regulation VI/3, to be of such a serious nature that they may warrant the detention of the ship involved:

[16] Onboard Monitoring Manual.

.1 absence of valid certificates or Technical files and or absence of a valid Statement of compliance (Fuel oil Consumption Reporting) in relation to sulphur.

.2 on ships not equipped with equivalent means of SO_X compliance, based on the methodology of sample analysis in accordance with Appendix VI[17] of MARPOL Annex VI, the sulphur content of any fuel oil being used or carried for use on board exceeds the applicable limit required by regulation VI/14. If the master claims that it was not possible to bunker compliant fuel oil, the PSCO should take into account the provisions of regulation VI/18.2.

.3 on ships equipped with equivalent means of SO_X compliance, absence of an appropriate approval for the equivalent means, which applies to relevant fuel combustion units on board. With regard to combustion units not connected to an EGCS, the sulphur content of any fuel oil being used on these combustion units exceeds the limits stipulated in regulation VI/14, taking into account the provisions of regulation VI/18.2.

.4 non-compliance with the relevant requirements while operating within the Med SO_X ECA.

.5 the master or crew are not familiar with essential procedures regarding the operation of air pollution prevention equipment or reporting requirements as defined in the paragraphs above.

Inspections of ships of non-Parties to MARPOL Annex VI and other ships not required to carry the IAPP certificate

6.2.32 As this category of ships is not provided with the IAPP certificate, the PSCO should judge whether the condition of the ship and its equipment satisfies the requirements set out in Chapter 3 of MARPOL Annex VI. In this respect, the PSCO should take into account that, in accordance with article 5(4) of MARPOL, no more favourable treatment is to be given to ships of non-Parties.

6.2.33 In all other respects the PSCO should be guided by the procedures for ships referred to in Chapter 2 of the Procedures for port State Control, 2021, as set out in the Annex to Resolution A. 1155(32), and should be satisfied that the ship and crew do not present a danger to those on board or an unreasonable threat of harm to the marine environment.

6.2.34 If the ship has a form of certification other than the IAPP certificate, the PSCO may take such documentation into account in the evaluation of the ship (e.g. a document submitted by a RO).

Non-availability of compliant fuel oil claimed

6.2.35 In case non-availability of compliant fuel oil is claimed the master/owner must present a record of actions taken to attempt to bunker compliant fuel oil and provide evidence:

.1 of attempts to purchase compliant fuel oil in accordance with its voyage plan;

.2 if the fuel oil was not made available where expected, that attempts were made to locate alternative sources for such fuel oil; and

.3 that despite best efforts to obtain compliant fuel oil no such fuel oil was made available for purchase.

6.2.36 The ship should not be required to deviate from its intended voyage or to unduly delay the voyage in order to achieve compliance.

[17] Amendments to MARPOL VI, Appendix VI, Verification procedures for a MARPOL Annex VI fuel oil sample.

6.2.37 The master/owner may provide evidence as below to support their claim (not exhaustive):

.1 a copy (or description) of the ship's voyage plan, including the ship's port of origin and port of destination;

.2 the time the ship first received notice it would be conducting a voyage involving transit/arrival in the port and the ship's location when it first received such notice;

.3 a description of the actions taken to attempt to achieve compliance, including a description of all attempts that were made to locate alternative sources of compliant fuel oil, and a description of the reason why compliant fuel was not available (e.g. compliant fuel oil was not available at ports on the "intended voyage", fuel oil supply disruptions at port);

.4 the cost of compliant fuel is not considered to be a valid basis for claiming non-availability of fuel;

.5 names and addresses of the fuel oil suppliers contacted and the dates on which contact was made;

.6 in cases of fuel oil supply disruption, the name of the port at which the ship was scheduled to receive compliant fuel oil and the name of the fuel supplier that is reporting the non-availability of compliant fuel oil;

.7 the availability of compliant fuel oil at the next port of call and plans to obtain that fuel oil; and

.8 if applicable, identification and description of any operational constraints that prevented use of compliant fuel oil, e.g. with respect to viscosity or other fuel oil parameters.

6.2.38 If, despite best efforts, it was not possible to procure compliant fuel oil the master/owner must notify the port State control authorities in the port of arrival and the flag Administration (regulation VI/18.2.4).

Selecting ships for inspection

6.2.39 The selection of ships for inspection, particularly by port State control (PSC) authorities, involves various factors aimed at identifying vessels that may pose risks to safety, security, or environmental protection.

6.2.40 Relevant information about the ships in port may be obtained from e.g. The Hybrid European Targeting and Inspection System (THETIS), IMO's GISIS and other sources. This may include information on, for example, ship particulars last and next port of call, arrival and departure times, port stay duration, ship stores in relation to marine fuels and whether marine fuels for on-board combustion will be delivered to the ship during the call in port. IMO's GISIS also provides additional relevant information on compliant fuel oil unavailability. This may be relevant for instance to identify the number of non-availability of compliant fuel oil reports (FONARs) submitted by a particular ship including where the unavailability occurred. It also provides information on cases where fuel oil suppliers have failed to meet the requirements (Letters of Protest). Furthermore, additional information about EAMs[18] and equipment fitted on board ships and associated certificates.

[18] Emission Abatement Method

Targeting

6.2.41 Based on the ships in port and their related information, a ship may be selected for a sulphur inspection. This decision may be based random or on risk-based methods developed at national level and on specific alerts on individual ships in e.g. THETIS. The selection process may follow the following sequence regarding the ships in port:

.1 identify whether there is any alert Information regarding alerts on ships received from third parties.

.2 identify whether there have been any previous sulphur inspections.

.3 apply any risk-based method developed at national level or targeting parameters. Prioritisation of individual ships for inspection may be based on risk-based methods developed at national level, including the use and outcome of remote sensing and other available technologies.

.4 identify whether bunkering operations are scheduled. A ship scheduled for bunkering might be also selected for a sulphur inspection. In such a case, it may be appropriate to board the ship just before the delivery will take place to verify the sampling method used during delivery of the marine fuels and the eventual analysis of the samples in relation to the bunker delivery notes supplied to the ship.

And on board:

.5 where the PSCO decided to take fuel samples he may start with a physical examination of the fuel such as colour, temperature, viscosity etc.

.6 for a first impression the use of handheld testing devices is also possible.

.7 in order to take action against the ship only samples tested by laboratories based on IMO Guidelines are valid. Reference to the early application of the verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8), as set out in the Annex to MEPC.1/Circ.882, should be made.

6.2.42 Remote sensing using sniffer systems on shore involves the use of specialised equipment to detect and monitor air pollution emissions from ships, typically from a distance. These systems, often deployed in port areas or coastal regions, employ various technologies to measure pollutants emitted by vessels, including sulphur oxides (SO_X), nitrogen oxides (NO_X), particulate matter (PM), and other harmful substances.

6.2.43 Remote sensing systems deployed on drones or planes offer valuable tools for monitoring air pollution and conducting surveillance over large areas. These systems utilise various sensors and imaging technologies to collect data on air quality, emissions, and other environmental parameters. Both remote sensing systems may be used in order to target suspected non-compliance ships and select them for inspection.

6.3 Control by other designated authorities

6.3.1 Besides the PSCOs, other inspectors may be involved in sulphur inspections. The authorities could designate specialised sulphur inspectors and use designated laboratory for the sulphur analyses. Important is to have the results of the analyses within a few hours in order not to delay the ship.

6.3.2 In addition MARPOL Annex VI Regulation 18 about fuel oil availability and quality stipulates an obligation to regulate fuel oil suppliers within the jurisdiction of the Party to MARPOL Annex VI through the competent authorities thereof. This agency need not be the maritime administration; it could be an entity within the ministry responsible for energy which has general responsibility for the regulation of fuel oil quality.

Control on Fuel suppliers

6.3.3 The establishment of a list of suppliers is an obligation flowing from MARPOL Annex VI, Regulation 18.9. This stipulates that a list of fuel suppliers must be maintained. The regulations also include obligations on the part of fuel oil suppliers which are required to document the sulphur content of the fuel oil.

6.3.4 Ships are also required to record the details of the fuel oil delivered to and used on board in a Bunker Delivery Note (BDN). The BDN is to be provided to the ship by the local fuel oil supplier and that the BDN contains at least the information specified in Appendix V of MARPOL Annex VI.

6.3.5 Regulation 18.9 also requires the Party to MARPOL Annex VI to ensure that it designates an appropriate authority or agency to carry out the registration and control of fuel oil suppliers and:

.1 require local suppliers to provide the bunker delivery note and sample as required by this regulation, certified by the fuel oil supplier that the fuel oil meets the requirements of regulations 14 and 18 of this Annex;

.2 require local suppliers to retain a copy of the bunker delivery note for at least three years for inspection and verification by the port State as necessary;

.3 take action as appropriate against fuel oil suppliers that have been found to deliver fuel oil that does not comply with that stated on the bunker delivery note;

.4 inform the Administration of any ship receiving fuel oil found to be non-compliant with the requirements of regulation 14 or 18 of this Annex; and

.5 inform the IMO for circulation to Parties and IMO Member States of all cases where fuel oil suppliers have failed to meet the requirements specified in regulations 14 or 18 of this Annex.

6.3.6 In connection with port State inspections carried out by Parties, the Parties further undertake to inform the Party or non-Party under whose jurisdiction a bunker delivery note was issued of cases of delivery of non-compliant fuel oil, giving all relevant information; and ensure that remedial action as appropriate is taken to bring non-compliant fuel oil discovered into compliance.

6.3.7 Enforcement on fuel suppliers typically involves regulatory oversight and compliance measures to ensure that suppliers adhere to environmental, safety, and quality standards related to the production, distribution, and sale of fuel. Enforcement may involve testing fuel samples to verify compliance with specifications and taking action against suppliers selling substandard or adulterated fuel. Enforcement actions can range from warnings and fines to license revocation, criminal prosecution, and civil litigation, depending on the severity of the violation and the applicable laws and regulations.

6.4 Sulphur inspection under regulations 14 and 18

Fuel oil availability

6.4.1 In general the availability of fuel is not directed to ships, rather to fuel oil suppliers and their control by the appropriate authorities together with other regulatory aspects.

6.4.2 Regulation 18.2.1 of MARPOL Annex VI provides that in the event compliant fuel oil cannot be obtained, a Party to MARPOL Annex VI can request evidence outlining the attempts made to obtain the compliant fuel oil, including attempts made to local alternative sources. Regulations 18.2.4 and 18.2.5 then require that the ship notifies its Administration and the competent authority of the port of destination on the inability to obtain compliant fuel oil, with the Party to MARPOL Annex VI to notify IMO of the non-availability. This notification is commonly referred to as a FONAR. Appendix 1 to the 2019 Guidelines for consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI, as set out in Resolution MEPC.320(74) and its corrigendum[19], includes a template for FONAR.

6.4.3 The IMO's GISIS also provides additional relevant information on compliant fuel oil unavailability. This may be relevant for instance to identify the number of FONARs submitted by a particular ship including where the unavailability occurred. It also provides information on cases where fuel oil suppliers have failed to meet the requirements (Letters of Protest)14. Furthermore, additional information about EAMs and equipment fitted on board ships and associated certificates.

6.4.4 If carriage of high sulphur marine fuel oil for use is identified, it should be further checked whether the ship encountered a fuel availability problem. If that is the case, a FONAR notification regarding this should have been received from the ship prior arrival. Regarding this, the master or officer in charge of the bunker operation should have documented the non-availability through a FONAR notification to the ship's flag Administration and the competent authorities in the relevant ports of destination.

6.4.5 The ship shall not be required to deviate from its intended voyage or to delay unduly the voyage in order to achieve compliance. However, a FONAR is not an exemption, therefore the information provided by the master should be scrutinised and take action, as appropriate. In the case of insufficiently supported and/or repeated claims of non-availability, the PSCO may require additional documentation and substantiation of fuel oil non-availability claims. In relation to this, the following should be taken into account:

.1 ships/operators are expected to take into account logistical conditions and/or terminal/port policies when planning bunkering, including but not limited to having to change berth or anchor within a port or terminal in order to obtain compliant fuel.

.2 ships/operators are expected to prepare as far as reasonably practicable to be able to operate on compliant fuel oils. This could include, but is not limited to, fuel oils with different viscosity and different sulphur content not exceeding regulatory requirements (requiring different lube oils) as well as requiring heating and/or other treatment on board.

.3 cost of compliant fuel should not be considered as a valid basis for claiming non-availability of fuel.

6.4.6 In the case where the master claims that non-compliant fuels have been used due to damage sustained to the ship or its equipment, suitable evidence must be provided. The master must also prove that all reasonable measures were taken after the occurrence of the damage to prevent excessive emissions, the flag Administration and port State authorities were notified, and that measures have been taken as soon as possible to repair the damage.

6.4.7 In the case where the master claims that the fuel switch-over had to be delayed due to inclement weather or to maintain the safety of the ship, the master must be able to provide suitable evidence and should have informed the port before arrival.

6.4.8 If non-compliances are found during the sulphur inspection, any follow up or corrective actions should be taken in accordance with the national legislation in each Contracting Party to the Barcelona Convention.

[19] MEPC 74/18/Add.1/Corr.1.

Fuel Oil Quality

6.4.9 Requirements of fuel quality on board ships may be found in the provisions in regulation 18 of MARPOL Annex VI. The International Convention for the Safety of Life at Sea (SOLAS), 1974 covers issues such as flashpoint (SOLAS regulation II- 2/4.2.1).

6.4.10 Apart from the requirements in MARPOL Annex VI and SOLAS, VLSFO is required to meet ISO standard 8217 as well as ISO Publicly Available Specification (PAS) 23263, providing guidance as to the application of the existing ISO 8217 marine fuel standard to 0.50% m/m sulphur limit compliant fuel oils. These measures and standards are designed to ensure ships' safety and the protection of the marine environment and oceans.

Fuel change over and sampling

6.4.11 Considering that most of the ships today run at high sulphur fuel oil, changing over of fuel at the right time is very important. Moreover, looking at today's economic condition of the industry, it's imperative to change over the fuel from high to low sulphur at the correct time as an early changeover will lead to loss of low sulphur oil, which is quite expensive, whereas a delay in the changeover procedure will lead to violation of MARPOL Annex VI.

6.4.12 Also, most of the ships today are equipped with one service tank and one (maybe two) settling tanks, which can result in the mixing of two different grades of oils while performing a changing-over of fuel.

6.4.13 In order to prevent the use of high sulphur fuel in the Med SO_X ECA and to show compliance for PSC a Logbook for Fuel oil change over records must be maintained. The volume of low sulphur fuel oils in each tank, as well as the date, time, and position of the ship when any fuel oil change-over operation has been completed prior to the entry into the Med SO_X ECA or commenced after exit from such an area, should be recorded in such logbook as prescribed by the flag Administration of the ship. In the absence of specific requirements from the flag Administration about the dedicated logbook the recording may be included in other logbooks (e.g. the Engine Room Logbook or the Oil Record Book).

6.4.14 Studying these documents should allow the PSCO to gain an understanding of whether the operations on the vessel match up with the operational plans on-board and whether the vessel has met the requirements of MARPOL Annex VI. As part of the sulphur inspections, the PSC officer should also check the:

.1 correct completion of ships logbooks, including fuel-changeover operations; and

.2 recording of the time of any fuel-changeover operation in the ships logbooks at berth.

6.4.15 Besides the Logbook ships should also have a written procedure for fuel oil change over. Ships using separate fuel oils to comply with the SO_X emission requirements whilst entering or leaving the Med SO_X ECA, should carry a written procedure describing how the fuel oil change-over is to be achieved. To comply with the SO_X emission requirements, the procedure should foresee allowing sufficient time for the fuel oil service system to be fully flushed of all fuel oils exceeding the new applicable sulphur content, prior to entry into the Med SO_X ECA, in order to avoid any contamination.

6.4.16 Fuel oil change-over presents some challenges requiring the crew's attention and experience, for instance, to variables such as risk of thermal shock to injection components, low viscosity of the distillate fuel oil to avoid fuel pump failure or seizure, or risk of incompatibility between the fuel oils that may clog filters.

Tank plans and piping diagrams

6.4.17 Studying these plans and diagrams might help PSCOs to understand whether the fuel changeover has been undertaken properly, especially when used in conjunction with the fuel logs and bunker delivery notes. In addition, the capacity plan, tank sounding tables book or the stability information book may as well provide useful information. Plans and piping diagrams should be updated in case of changes to the ship or the equipment.

Records of fuel oil changeovers when entering/leaving the Med SO_X ECA

6.4.18 Recording fuel changes when entering or leaving the Med SO_X ECA is crucial for compliance and monitoring purposes. These records include at least the following details according to Regulation 14.6:

.1 the volume of low-sulphur fuel oils in each tank;

.2 the date;

.3 the time; and

.4 the position of the ship.

6.4.19 It is the responsibility of the shipowner to ensure that it can be established that the fuel oil being burned whilst traveling within the Med SO_X ECA has a net sulphur content below 0.10% m/m (i.e. that enough time has been allowed for the fuel oil service system to be fully flushed of all fuels with a sulphur content of over 0.10% m/m on changeover, prior to entry into the Med SO_X ECA).

6.4.20 If separate fuel oil/storage tank systems are installed for fuels with a sulphur content below and above 0.10% m/m, respectively, changeover from one fuel to the other, including flushing time, may be relatively simple and quick.

Sampling during bunkering

6.4.21 Taking fuel samples during bunkering is a standard practice to ensure the quality and compliance of the fuel being supplied to the vessel. Sampling during bunkering should be done in accordance with the 2009 Guidelines for the sampling of fuel oil for determination of compliance with the revised MARPOL Annex VI, as set out in the Annex to Resolution MEPC.182(59).

6.4.22 The fuel supplier seals the samples in the presence of a representative of the ship. Breaking makes them invalid. In case of a dispute on the fuel quality, the samples are of great importance. In case of disputes a fuel verification procedure is to be found in Appendix VI of MARPOL Annex VI.

6.4.23 The samples have to remain on board for at least twelve months. Problems may arise for certain ships like ferries, which often bunker. Exemptions may be granted conditionally to ships, which bunker frequently like ferries.

Sampling during inspections

6.4.24 In order to take fuel samples on ships selected for inspection, MEPC.1/Circ.889 applies. The guideline is to establish two agreed methods for sampling to know:

.1 in-use sample, defined as the sample of fuel oil in use on a ship. It can for example be drawn from the fuel oil line between the service tank and an auxiliary engine.

.2 on board sample, defined as the sample of fuel oil intended to be used or carried for use on board a ship. It is drawn directly or indirectly from fuel oil tanks.

6.4.25 The fitting or designating of sampling points is not applicable to a fuel oil system for low-flashpoint fuels (flashpoint <60°C). Also Part 2 of Appendix VI[20] of MARPOL Annex VI giving the verification procedure for the "in-use" and "on-board" samples is applicable.

6.4.26 To avoid ships being unjustly fined for marginal excess in sulphur content beyond their control, as opposed to the verification procedure in Part 1 for the MARPOL-delivered sample taken during bunkering, a 95% confidential interval has been given. This implies that a sulphur content of up to 0.53% and 0.11% may be accepted as compliant when testing the "in-use" and "on-board" samples.

6.4.27 Safety concerns in case of direct sampling from fuel oil tanks are:

.1 a normal fuel oil tank only has two openings, the manhole, for inspection when the tank is empty, and the sounding pipe. Fuel oil tanks on existing ships are not constructed with designated sampling points.

.2 the manhole should never be opened while there is fuel oil inside the tank. Fuel oils are stored at high temperatures, and it is consequently unsafe for the people taking the sample.

Abatement methods

6.4.28 Exhaust gas abatement systems, also known as exhaust gas cleaning systems or scrubbers, are devices installed on ships to reduce air pollution emissions from the exhaust gases produced by the engines. These systems primarily target the reduction of sulphur oxides (SO_X), nitrogen oxides (NO_X), particulate matter (PM), and other harmful pollutants emitted from marine engines.

6.4.29 Types of exhaust gas abatement systems are open loop scrubbers and closed loop scrubbers.

6.4.30 Open loop scrubbers utilise seawater as the scrubbing medium. Exhaust gases pass through seawater within the scrubber, where sulphur oxides are neutralised. The treated water is then discharged back into the sea. While effective, concerns have been raised regarding the environmental impact of discharging scrubber washwater into marine ecosystems.

6.4.31 Closed loop scrubbers circulate a specific liquid (usually freshwater with alkali additives) within a closed loop system. This liquid reacts with sulphur oxides in the exhaust gases, forming sulphate compounds. The system then treats and cleans the scrubbing liquid for reuse, minimising environmental impact.

6.4.32 EGCS Exhaust Gas Cleaning Systems should comply with Resolution MEPC.184(59) or Resolution MEPC.259(68) or Resolution MEPC.340(77) and its corrigendum[21], taking into account the date of fabrication.

6.4.33 In these cases, there may be an approval for a period of trials under certain conditions. Therefore, as part of the verification the following documents and records should be considered:

.1 any supporting documents from the flag State referring to the approval of trial, if applicable:

- MED certification on EU flagged ships, or
- MARPOL Annex VI performance Scheme A or B, as applicable on non-EU flagged ships,

[20] Verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8).
[21] MEPC 77/16/Add.1/Corr.1.

.2 any supporting documents relating to the system approval (SO_X Emissions Compliance Certificate (SECC) for Scheme A EGCS – Technical Manual (ETM), Onboard Monitoring Manual (OMM), SO_X Emissions Compliance Plan (SECP)) any documentation referring to the type of fuel and its sulphur content allowed,

.3 appropriate records in the ship log books or evidence of continuous monitoring system (i.e. performance records for EGCSs approved in accordance with Scheme B), and

.4 bunker delivery notes.

6.4.34 On ships equipped with Scheme A EGCSs, the operation parameters are to be continuously monitored and recorded and daily spot checks of the emissions ratio SO_2 (ppm) / CO_2 (% v/v) should be recorded, if a continuous exhaust gas monitoring system is not fitted. On ships equipped with Scheme B EGCSs, the emissions ratio SO_2 (ppm) / CO_2 (% v/v) is to be continuously monitored and recorded and daily spot checks of the operation parameters are needed to verify proper operation of the EGC unit which should be recorded.

6.4.35 Concerning washwater discharges, pH, PAH, turbidity and nitrates appropriate limit values should be specified in the ETM-A or ETM-B and operation parameters listed in the system documentation. When the EGCS is operated in ports, harbours, or estuaries, the washwater monitoring and recording should be continuous. The values monitored and recorded should include pH, PAH, turbidity and temperature. In other areas the continuous monitoring and recording equipment should also be in operation, whenever the EGCS is in operation, except for short periods of maintenance and cleaning of the equipment.

6.4.36 Concerning the washwater residues generated by the EGCS, these should be delivered ashore to adequate reception facilities. Such residues should not be discharged to the sea or incinerated on board.

6.4.37 Each ship fitted with an EGC unit should record the storage and disposal of washwater residues in an EGC log, including the date, time and location of such storage and disposal. The EGC log may form a part of an existing logbook or electronic recording system as approved by the Administration.

6.4.38 It may also be relevant to verify if the EGCS works in open or close loop mode and if in the port of inspection there exist restrictions in the operation of the system. In this case, the EGCS must have been switched off and fuel change-over operations undertaken and recorded in the ships logbooks.

6.4.39 Reference should be made to the Guidance on indication of ongoing compliance in the case of the failure of a single monitoring instrument, and recommended actions to take if the EGCS fails to meet the provisions of the EGCS Guidelines, as set out in the Annex to MEPC.1/Circ.883/Rev.1, including the need for ships to have documented the notification to relevant authorities of system non-compliance.

Fuel oil sampling and analyses

6.4.40 Should the PSCO's observations, general impressions and on-board checks of documentation confirm the ship is meeting the requirements of MARPOL Annex VI, then the sulphur inspection should be finished. However, proof may be needed as to what fuel was, or is, being used at one particular time in order to among other cases:

.1 substantiate any non-compliances found during the document verifications,

.2 ascertain the sulphur content in cases of on-board fuel mixing or contamination, or

.3 comply with any established national frequency of sampling of marine fuels.

6.4.41 Depending on the case, the proof may be obtained through:

.1 sample collection and subsequent analysis of the fuel being supplied to the vessel,

.2 sampling of the fuel in the ship's fuel lines or in holding tanks, or

.3 analysis of the MARPOL representative samples, as appropriate.

6.4.42 In general, there are no means by which a ship could increase the sulphur content of a fuel oil on board the ship. In cases where the fuel oil actually in use is a mix of a number of different supplies, the resulting fuel oil will simply contain a directly proportional intermediate value of the sulphur content of each supply making the mix.

6.4.43 Therefore, it may be enough to analyse whether the fuel oils as supplied were compliant and thus test from their associated MARPOL sample in the following cases:

.1 on ships operating only within the Med SO_X ECA with only one sulphur grade of fuel oil on board, or

.2 on ships with two sulphur grades of fuel oil on board and being the outside Med SO_X ECA fuel oil (higher sulphur) which is being investigated.

6.4.44 In the case of a ship with two sulphur grades of fuel oil on board and being at berth or into the Med SO_X ECA, the case of fuel oil (lower sulphur) which is being investigated, divides into whether the:

.1 lower sulphur fuel oil as supplied to the ship was compliant, or

.2 the ship has properly managed the lower sulphur fuel oil while on board such that it has not been mixed or contaminated with the higher sulphur fuel oils.

6.4.45 In the above scenario, there may be a need to draw a sample from the fuel service system.

Analysis of the MARPOL representative samples

6.4.46 In the case of analysis of sealed bunker samples of marine fuel delivered on board, national legislation that implements MARPOL Annex VI should be followed in order to take possession of the fuel samples on board the ship for analysis purposes. In any case, the PSCO should provide the ship with an official receipt for each such sample in order that, as required by MARPOL Annex VI, the ship can maintain a complete record of those samples which can be shown at future inspections or surveys as required.

6.4.47 For each sealed bunker sample taken, the PSCO should note at that time the condition of the:

.1 seal applied, its marking and integrity, and

.2 applied label, the security of its attachment, and the conformity of details given thereon with the corresponding Bunker Delivery Note.

Sampling from the fuel service system[22]

6.4.48 PSCOs should take the on-board spot sample of marine fuel through a single or multiple spot sample at the location where a valve is fitted for the purpose of drawing a sample in the fuel service system, as indicated on the ship's fuel piping systems or arrangement plan and as approved by the flag Administration or RO acting on its behalf. In the absence of this location, the fuel sampling point shall be the location where a valve is fitted for the purpose of drawing a sample and shall fulfil all of the following conditions:

.1 be easily and safely accessible,

.2 take into account different fuel grades being used for the fuel-oil combustion machinery items;

.3 be downstream of the fuel in use from the service tank,

.4 be as close to the fuel inlet of the fuel-oil combustion item as feasible and safely possible taking into account the type of fuels, flowrate, temperature, and pressure behind the selected sampling point,

.5 be proposed by the ship's representative and accepted by the PSCO.

6.4.49 The PSCO should ensure that the spot sample is collected in a sampling container from which at least three sample bottles can be filled and are representative of the marine fuel being used. The sampling containers and sample bottles should be made of metal or a plastic suitable for the temperature of the fuel oil being sampled. Where the sampled oil is heated the sampling containers should either be fitted with handles or held within a second container. Directly following the collection, the primary sample should be thoroughly shaken and then used to fill three clean, sample bottles provided by the PSCO. Then, two bottles are to be taken ashore for analysis and the third one is to be retained on board the ship for a period of not less than 12 months from the date of collection. The PSCO should also ensure that the sample bottles are sealed and labelled with a unique means of identification applied in the presence of the ship's representative.

6.4.50 For a practical and quick responds handheld analysers could be used by the PSCO. Handheld analysers for sulphur in fuel provide a portable and convenient means of quickly determining the sulphur content of fuel samples. These devices are especially useful for onsite testing, such as during bunkering operations or fuel quality inspections. Results of handheld analysers are only an indication of (non)compliance. In case of non-compliance a laboratory test is necessary. The laboratory should have results within a few hours so there is time to take action against the ship if necessary.

Sampling and analysis from the fuel as being delivered

6.4.51 In the case of sampling of the marine fuel while being delivered to the ship, if the delivery takes place in the port, it should be verified that samples are being taken in accordance with the 2009 Guidelines for the sampling of fuel oil for determination of compliance with the revised MARPOL Annex VI, as set out in the Annex to Resolution MEPC.182(59). Moreover, the equipment as outlined in this Resolution should therefore be available to the persons in charge of the sampling process.

6.4.52 Contracting Parties to the Barcelona Convention should manage the verification procedure, and the laboratories responsible for the verification procedure, set forth in MARPOL Annex VI, should be fully accredited, preferably in accordance with ISO 17025 or an equivalent standard for the purpose of conducting the tests.

[22] 2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships, as set out in the Annex to MEPC.1/Circ.864/Rev.1.

Reporting findings of the sulphur inspection

6.4.53 Sulphur inspections should be reported in THETIS, for those Contracting Parties to the Barcelona Convention that have opted to use the system. Along with the outcome of the inspection, other ship specific information should be inserted in THETIS which could be of relevance for future inspections (e.g. ship's emission abatement methods, main and auxiliary engines rated power, fuel tanks information, etc.).

Data collection, analysis and reporting (Reg 27)

6.4.54 Each ship of 5,000 gross tonnage and above shall collect the data specified in appendix IX to this Annex, for that and each subsequent calendar year or portion thereof, as appropriate according to the methodology included in the SEEMP.

6.4.55 Except as provided for in paragraphs 4, 5 and 6 of this regulation, at the end of each calendar year, the ship shall aggregate the data collected in that calendar year or portion thereof, as appropriate.

6.4.56 The Administration shall ensure that the reported data noted in appendix IX to this Annex by its registered ships of 5,000 gross tonnage and above are transferred to the IMO Ship Fuel Oil Consumption Database via electronic communication and using a standardised format to be developed by the IMO not later than one month after issuing the Statements of Compliance of these ships.

Biofuels

6.4.57 The use of Biofuels, and mixtures of biofuels and marine fuels, should be in compliance local regulations as appropriate. The following documents and records should be verified as part of the verification:

.1 any supporting documentation from the flag State or a Classification Society referring to the use of those specific fuels,

.2 appropriate records in the ship log books, and

.3 where feasible any document including information on the type of fuel and amount supplied to the ship.

6.4.58 For the use of biofuels according to MARPOL Annex VI Regulation 18, see also Unified interpretations to MARPOL Annex VI set out in Section 13 (Application of regulation 18.3 for biofuel and synthetic fuel) of the Annex to MEPC.1/Circ.795/Rev.8.

Alternative fuels

6.4.59 In the case of alternative fuels, the following documents and records should be examined as part of the verification process:

.1 any supporting documentation from the flag State or a Classification Society referring to the use of those specific fuels,

.2 appropriate records in the ship log books, and

.3 where feasible any document including information on the type of fuel and amount supplied to the ship.

THETIS-Med

6.4.60 At the 19th Committee Meeting of the Mediterranean Memorandum of Understanding on Port State Control (Med MoU), the Committee decided positively to accept the proposal presented by the European Maritime Safety Agency (EMSA) to develop a new information system within the activities of the SAFEMED IV project for the Med MoU. Since then, EMSA has been involved to develop a tool to operate and function in support of the Med MoU Secretariat and the PSCOs of the Parties to the Med MoU (Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, Tunisia, Türkiye).

6.4.61 This new system, namely THETIS-Med, is a clone of the current system used by the EU Member States and the non-EU Parties to the Paris MoU, commonly known as THETIS which is already hosted in and managed by EMSA. However, THETIS-Med is fully customised and built to respond to the requirements, rules and procedures of the Med MoU.

6.4.62 THETIS-Med supports the Parties to the Med MoU in the execution of their obligations with respect to PSC inspections. In particular, THETIS-Med:

.1 assists them with targeting and selection of vessels for inspection through continuous profiling of seagoing ships;

.2 assists them by providing statistics on inspection results and performance;

.3 provides a system to support reporting of inspections by non-EU members to the Med MoU;

.4 provides a system to handle similar information from 2 EU members of the Paris MoU (Cyprus and Malta);

.5 provides the PSCOs a direct link from deficiencies to RuleCheck (EMSA tool and up to date Repository of Maritime Legislation); and

.6 provides the PSCOs with embedded links with other MoUs, ROs, EQUASIS, Rule Check, etc.

7 STAKEHOLDERS' PREPARATION

7.1 Preparation by Administrations

7.1 The different elements of the preparation by Administrations were detailed in earlier chapters. In summary, they include the following:

.1 ratification of MARPOL Annex VI, the official acceptance by a country to become a Party thereto;

.2 incorporating the provisions of MARPOL Annex VI into national legislation;

.3 designation of enforcement authorities;

.4 issuance of certificates of compliance;

.5 penalties for non-compliance;

.6 implementation of regulations for monitoring and reporting;

.7 capacity building, training and technical assistance;

.8 raising stakeholder and public awareness; and

.9 participation in international cooperation and coordination among Mediterranean coastal States and stakeholders.

7.2 Preparation by port States

7.2.1 As discussed in chapter 6, parties should conduct inspections by the port State. Elements of these inspections include:

.1 initial inspection within the Med SO_X ECA;

.2 initial inspection outside the Med SO_X ECA;

.3 evaluation of outcome of the initial inspections;

.4 possible more detailed inspections;

.5 checking of certification documents;

.6 checking of EGCS monitoring records;

.7 checking of bunker delivery notes;

.8 evaluation of possible non-compliant documentation;

.9 actions on non-compliance and detainable deficiencies;

.10 selection of ships for inspection; and

.11 sulphur inspections.

7.3 Preparation by other designated authorities

7.3.1 Besides the PSCOs, other inspectors may be involved in sulphur inspections. The authorities could designate specialised sulphur inspectors and use designated laboratories for the sulphur analyses.

7.3.2 Also regulations about fuel oil availability and quality stipulates an obligation to regulate fuel oil suppliers through the competent authorities of the Party to MARPOL Annex VI. This agency need not be the maritime administration; it could be an entity within the ministry responsible for energy which has general responsibility for the regulation of fuel oil quality.

7.4 Preparation by Shipowners

7.4.1 Shipowners should make several steps to ensure compliance with the Med SO_X ECA. Preparing for the Med SO_X ECA involves several steps to ensure compliance with the regulatory requirements and streamline the impact on business operations. By following these steps, ship owners can effectively prepare for the Med SO_X ECA and demonstrate their commitment to regulatory compliance and showing responsibility for environmental issues.

7.4.2 Shipowners should familiarise themselves with all specific MARPOL Annex VI regulations related to the Med SO_X ECA. They should be updated on any amendments or changes to the regulations to ensure ongoing compliance. This also needs communication with relevant authorities, port officials, and industry stakeholders to stay informed about regulatory updates, enforcement practices, and industry developments related to the said regulations.

7.4.3 Shipowners may use parts of the Guidance on the development of a ship implementation plan for the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI set out in the Annex to MEPC.1/Circ.878.

7.4.4 Next is an evaluation of the operational status of their fleet. They should evaluate the compliance status of their fleet by reviewing the sulphur content of the fuels used and the emission control technologies installed on board. Evaluate if the ships meet the requirements of the MARPOL Annex VI regulations related to the Med SO_X ECA or if upgrades or modifications are necessary for compliance.

7.4.5 Shipowners should develop fuel management strategies to comply with the fuel sulphur content limits imposed by the regulations. This may involve switching to low-sulphur fuels that meet the requirements of the MARPOL Annex VI regulations related to the Med SO_X ECA or installing exhaust gas cleaning systems. They should consider investing in emission reduction technologies such as Exhaust Gas Cleaning Systems reduction (SCR) systems, or exhaust gas recirculation (EGR) systems to minimise SO_X emissions from your vessels.

7.4.6 Seafarers are the heart of the enterprise. Seafarers should be trained and made aware on the regulations, compliance requirements, and the required expertise in maintaining compliance with the Med SO_X ECA. Special attention should be given on training for possible fuel switch requirements or EGCS operations.

7.4.7 Fuel oil change-over presents some challenges requiring the crew’s attention and experience, for instance, to variables such as risk of thermal shock to injection components, low viscosity of the distillate fuel oil to avoid fuel pump failure or seizure, or risk of incompatibility between the fuel oils that may clog filters.

7.4.8 Ship owners should Implement monitoring and reporting procedures to track fuel sulphur content, emission levels, and compliance with the regulations. They should maintain accurate records of fuel purchases, emissions data, and compliance-related activities to demonstrate adherence to the requirements of the MARPOL Annex VI regulations related to the Med SO_X ECA during inspections or audits.

7.4.9 Ship owners should establish communication channels with relevant authorities, port officials, and industry stakeholders to stay informed about regulatory updates, enforcement practices, and industry developments related to SO_X emissions in the Med SO_X ECA. They could participate in industry forums, working groups, and other initiatives to share knowledge and best practices for compliance.

7.4.10 Shipowners should develop contingency plans to address potential problems, such as fuel availability issues, technical failures, or operational constraints. They could identify alternative compliance options and mitigation measures to minimise the impact on vessel operations and ensure continuity of service.

7.5 Preparation by ports

7.5.1 Ports should familiarise themselves with all specific MARPOL Annex VI regulations related to the Med SO_X ECA. This needs communication with relevant authorities, ship owners and industry stakeholders to stay informed about regulatory updates and industry developments to stay compliant with the said regulations.

7.5.2 Ports could upgrade port facilities to accommodate vessels using cleaner fuels or alternative technologies to comply with the MARPOL Annex VI regulations. This may involve installing shore power facilities, LNG bunkering stations, or exhaust gas cleaning systems.

7.5.3 Ports should evaluate adequate reception facilities for waste generated by ships, such as EGCS residues (scrubber sludge).

7.5.4 The availability of compliant fuels should be a priority for ports These should including low-sulphur fuel oil (LSFO) with a sulphur content of 0.10% m/m or less, as required by MARPOL Annex VI. Ports should work with fuel suppliers to coordinate fuel supply chains and prevent disruptions in fuel availability.

7.6 Preparation by fuel oil suppliers

7.6.1 Fuel oil suppliers may evaluate investing in new production facilities to produce fuel oils with a sulphur content of 0.10% m/m or less. This may involve further refining or blending technologies.

7.6.2 Fuel supplier should implement testing methods to ensure the compliance of fuel oils with MARPOL Annex VI specifications. They should conduct regular testing of fuel samples to verify sulphur content and other parameters specified in the regulation.

7.6.3 The establishment of a list of fuel suppliers is an obligation flowing from MARPOL Annex VI. Fuel oil suppliers must register with the relevant government authority to be included in this list if they deliver fuel to seagoing ships.

7.7 Other stakeholders

7.7.1 Environmental organisations advocate a reduction of air pollution and the protection of marine ecosystems in the Mediterranean region. They could raise awareness and engage in policy discussions to support the implementation of the MARPOL Annex VI regulations related to the Med SO_X ECA.

7.7.2 Industry associations and trade groups represent the interests of shipping companies, port operators, fuel suppliers, and other maritime stakeholders. They should familiarise themselves with the new requirements and promote collaboration and knowledge sharing.

7.7.3 Research institutions and academia contribute expertise, innovation, and scientific research to support the development and implementation of the MARPOL Annex VI regulations related to the Med SO_X ECA.

7.7.4 Local communities and civil society groups are stakeholders in the implementation of the MARPOL Annex VI regulations related to the Med SO_X ECA, as they may be affected by air pollution from maritime activities. These groups call for promoting clean air.

7.8 Mechanisms for consultation, feedback and collaboration

7.8.1 National and international consultation, feedback, and collaboration amongst all stakeholders is crucial to ensure the consistent implementation of the 0.10% m/m sulphur limit under MARPOL Annex VI in the Med SO_X ECA.

7.8.2 Consulting with various stakeholders, including shipping companies, port authorities, fuel suppliers, environmental agencies, and local communities, allows for a comprehensive understanding of their needs, concerns, and challenges related to compliance with the 0.10% m/m sulphur limit.

7.8.3 Stakeholder feedback helps identify potential barriers to compliance, such as limited availability of low-sulphur fuels, infrastructure constraints, or economic concerns. Consultation and collaboration efforts serve to raise awareness among stakeholders about the requirements and implications of the sulphur limit. Through educational initiatives, workshops, and information-sharing platforms, stakeholders can gain a better understanding of their roles and responsibilities in achieving compliance.

7.8.4 REMPEC has a role to play in this process. Indeed the objective of REMPEC is to contribute to preventing and reducing pollution from ships and combating pollution in case of emergency. In this respect, the mission of REMPEC is to assist the Contracting Parties to the Barcelona Convention in meeting their obligations under articles 4(1), 6 and 9 of the Barcelona Convention, the Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency (the "1976 Emergency Protocol") to the Barcelona Convention, the Protocol concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea (the "2002 Prevention and Emergency Protocol") to the Barcelona Convention, and implementing the Mediterranean Strategy for the Prevention of, Preparedness, and Response to Marine Pollution from Ships (2022-2031)[23] adopted by COP 22 in 2021.

[23] Decision IG.25/16.

8 SUMMARY AND CONCLUSIONS

8.1 Following agreement by the Contracting Parties to the Barcelona Convention, namely Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, the Syrian Arab Republic, Tunisia, Türkiye and the European Union, to designate the Med SO_X ECA at COP 22, the IMO adopted the necessary amendments to MARPOL Annex VI concerning the Med SO_X ECA, with an expected date of entry into effective application on 1 May 2025. COP 22 urged the Contracting Parties to the Barcelona Convention to ratify and effectively implement MARPOL Annex VI, as soon as possible, if they have not yet done so, at least by the date of entering into force of the Med SO_X ECA, to the extent possible.

8.2 The present document is aimed at providing the necessary guidance to Contracting Parties to the Barcelona Convention with a view to ensuring consistent acceptance of MARPOL Annex VI and consistent implementation of the 0.10% m/m sulphur limit under MARPOL Annex VI in the Med SO_X ECA.

8.3 For a consistent implementation of the 0.10% m/m sulphur limit under MARPOL Annex VI in the Med SO_X ECA, it is essential that all Contracting Parties to the Barcelona Convention become a Party to MARPOL Annex VI. Acceptance of MARPOL Annex VI by all Contracting Parties to the Barcelona Convention would demonstrate their commitment to adhering to international standards for maritime environmental protection.

8.4 The following general steps are identified for a Party to MARPOL Annex VI to ensure consistent acceptance thereof:

.1 follow the IMO procedure for Ratification of MARPOL Annex VI;

.2 identify national political actions needed to apply for ratification;

.3 conduct an assessment of the needed policy actions to incorporate MARPOL Annex VI into national legislation;

.4 ensure that ports have adequate infrastructure to support the implementation of MARPOL Annex VI;

.5 ensure in its capacity as a flag State that its ships are issued with the relevant certificates; and

.6 raise awareness among all stakeholders.

8.5 The following elements are identified to ensure consistent implementation of the 0.10% m/m sulphur limit under MARPOL Annex VI in the Med SO_X ECA:

.1 Contracting Parties to the Barcelona Convention should be prepared to incorporate the provisions in national legislation, taking into account relevant IMO resolutions, guidelines and unified interpretations.

.2 Contracting Parties to the Barcelona Convention should designate enforcement authorities and put in place enforcement mechanisms. They should follow the MARPOL Annex VI regulations for monitoring and reporting.

.3 Contracting Parties to the Barcelona Convention should identify capacity building and technical assistance required to build capacity.

.4 Contracting Parties to the Barcelona Convention should be engaged in stakeholder awareness, public awareness and international cooperation as they will support successful national implementation.

.5 Contracting Parties to the Barcelona Convention should identify the needed actions as a flag State to ensure that its ships are issued with the relevant certificates.

.6 Contracting Parties to the Barcelona Convention should identify the needed actions to ensure that the conduct of port State control inspections are in line with IMO resolutions and guidelines.

.7 Contracting Parties to the Barcelona Convention should give special attention to the correct functioning of EGCS and alternative fuels.

.8 Contracting Parties to the Barcelona Convention should facilitate the communication between port State authorities as it is crucial. By working together, port State authorities can strengthen enforcement efforts, deter non-compliance and avoid unnecessary duplications of sulphur inspections in different Contracting Parties to the Barcelona Convention.

.9 Contracting Parties to the Barcelona Convention should ensure that all stakeholders involved are prepared for their obligations and opportunities when the Med SO_X ECA is implemented. These stakeholders include the administration of a Contracting Party to the Barcelona Convention, port State authorities, other designated authorities, shipowners, ports, fuel suppliers, shipbuilders, environmental organisations, industry associations, research institutions and local communities.

.10 Contracting Parties to the Barcelona Convention should facilitate national and international consultation, feedback, and collaboration amongst all stakeholders as these are crucial to ensure the consistent implementation of the 0.10% m/m sulphur limit under MARPOL Annex VI in the Med SO_X ECA.

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