



SHIP EMISSIONS TOOLKIT

GUIDE | Incorporation of MARPOL Annex VI into
NO. 02 | national law



Ship Emissions Toolkit

Guide No.2: Incorporation of MARPOL Annex VI into national law



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GloMEEP Project Coordination Unit
International Maritime Organization
4 Albert Embankment
London SE1 7SR
United Kingdom

and

Institute of Marine Engineering, Science and Technology (IMarEST)
1 Birdcage Walk
London SW1H 9JJ
United Kingdom

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Cover Design by Viktoria Heisig, viktoriaheisig.com

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The GloMEEP Project is a cooperative initiative of the Global Environment Facility (GEF), the United Nations Development Programme (UNDP) and the International Maritime Organization (IMO) to assist developing countries in the uptake and implementation of energy efficiency measures for shipping, with the aim of reducing greenhouse gas emissions and preventing air pollution from ships. For more information, please visit <http://glomeep.imo.org>.

The Institute of Marine Engineering, Science and Technology (IMarEST) is the first institute to bring together marine engineers, scientists and technologists into one international multi-disciplinary professional body. IMarEST is the largest marine organisation of its kind with a worldwide membership based in over 120 countries. For more information, please visit <https://www.imarest.org>.

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List of abbreviations

ADB	Asian Development Bank
AHEWG-TT	Ad Hoc Expert Working Group on Facilitation of Transfer of Technology for Ships
AIS	Automatic Identification System
CO ₂	Carbon Dioxide
CH ₄	Methane
DWT	Dead Weight Tonnes
EBRD	European Bank for Reconstruction and Development
ECA	Emission Control Area
EEDI	Energy Efficiency Design Index
EEOI	Energy Efficiency Operational Indicator
EIB	European Investment Bank
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GloMEEP	Global Maritime Energy Efficiency Partnerships Project
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
HFO	Heavy Fuel Oil
IADB	Inter-American Development Bank
IAPP Certificate	International Air Pollution Prevention Certificate
IEE Certificate	International Energy Efficiency Certificate
IMarEST	Institute of Marine Engineering, Science and Technology
IMO	International Maritime Organization
INDC	Intended Nationally Determined Contribution
ITCP	Integrated Technical Cooperation Programme
LNG	Liquefied Natural Gas
LPCs	Lead Pilot Countries
LPIR	Legal, Policy and Institutional Reforms
LRTAP Convention	1979 Geneva Convention on Long-Range Transboundary Air Pollution
MARPOL Convention	International Convention for the Prevention of Pollution from Ships
MDO	Marine Diesel Oil
MEPC	Marine Environment Protection Committee
MOU	Memorandum of Understanding
MTCCs	Maritime Technology Cooperation Centres

NAMA	Nationally Appropriate Mitigation Action
NDC	Nationally Determined Contribution
NGO	Non-governmental organisation
NMVOCS	Non-Methane Volatile Organic Compounds
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NSERS	National Ship Emissions Reduction Strategy
O ₃	Ozone
ODS	Ozone-depleting Substances
PM	Particulate Matter
PSC	Port State Control
SEEMP	Ship Energy Efficiency Management Plan
SIDS	Small Island Developing States
SO ₂	Sulphur Dioxide
SO ₃	Sulphur Trioxide
SO ₄	Sulphate
SO _x	Sulphur Oxides
STCW	Standards Of Training, Certification & Watchkeeping
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UV	Ultraviolet
VAT	Value-Added Tax
VOCs	Volatile Organic Compounds
WMU	World Maritime University

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For further information please contact:

GloMEEP Project Coordination Unit

Marine Environment Division
International Maritime Organization
4 Albert Embankment
London SE1 7SR
United Kingdom
Web: <http://glomeep.imo.org>

IMarEST

1 Birdcage Walk
London SW1H 9JJ
United Kingdom
Web: <http://www.imarest.org>

Preface

Maritime transport is essential to the global economy, providing the most cost-effective means of transporting bulk goods over great distances compared to road or rail. Over 80% of the volume of international trade in goods – including everything from food and fuel to construction materials, chemicals and household items – is carried by sea, with more than 90,000 commercial ships sailing the world’s oceans, with a combined tonnage of 1.86 billion dead weight tonnes (UNCTAD, 2017). World trade and maritime transport are fundamental to sustaining economic growth and spreading prosperity throughout the world, thereby fulfilling a critical social as well as an economic function.

However, the sheer scale of the international shipping industry in comparison to other modes of transport means that overall emissions from ships remain a concern, having negative impacts on local port and coastal air quality and hence on human health, and contributing to regional acidification and global climate change. According to the Third IMO GHG Study 2014, maritime transport emits around 1 billion tonnes of carbon dioxide annually and is responsible for approximately 3% of global greenhouse gas emissions from fuel combustion. Shipping is forecast to grow as international trade grows. According to projections, by 2050, depending on future economic growth and energy developments, greenhouse gas emissions from shipping may increase by between 50% and 250%. Annually, international shipping is also responsible for approximately 13% and 12% of global nitrogen oxides (NO_x) and sulphur oxides (SO_x) emissions respectively.

For decades, IMO has exercised strong and decisive leadership in creating the legal and technical framework within which shipping has become progressively cleaner and safer, while continuing to provide the world with a cost-effective way to transport the goods and commodities that underpin the global economy and sustain global society. Efforts to reduce air emissions from ships took a major step forward in 1997, with the adoption of the 1997 Protocol to the International Convention for the Prevention of Pollution from Ships, known as MARPOL Annex VI, which currently regulates air emissions from 96.6% of the world’s shipping tonnage. MARPOL Annex VI establishes limits on NO_x emissions and requires the use of fuel with low sulphur content, thus protecting people’s health and the environment by reducing ground-level ozone-producing pollution, which can cause smog and aggravate asthma.

IMO also adopted amendments to MARPOL Annex VI, which entered into force on 1 January 2013, and made technical and operational energy efficiency measures mandatory for all ships of 400 GT and above. In April 2018, the IMO adopted resolution MEPC.304(72), Initial IMO Strategy on reduction of GHG emissions from ships, that confirms IMO’s commitment to reducing GHG emissions from international shipping and, as a matter of urgency, to phasing them out as soon as possible in this century. The Initial Strategy envisages for the first time a reduction in total GHG emissions from international shipping and calls for a reduction in total annual GHG emissions by at least 50% by 2050 compared to 2008, while, at the same time, pursuing efforts towards phasing them out.

Purpose of the Ship Emissions Toolkit

The *Ship Emissions Toolkit* provides a structured framework as well as decision support tools for evaluating emissions reduction opportunities in maritime transport. It offers guidance to countries seeking to develop and strengthen national policy and regulatory frameworks related to the prevention of air pollution and the reduction of greenhouse gas (GHG) emissions from ships.

This toolkit includes three practical guides. While these three individual guides are separate documents and can be used independently, they are complementary and in large parts based on each other:

Guide No.1 – Rapid assessment of ship emissions in the national context: offers guidance for conducting a rapid assessment and generating both quantitative and qualitative information about a country's maritime emissions status at the time of analysis.

Guide No.2 – Incorporation of MARPOL Annex VI into national law: provides useful information for policy makers and legislators in countries preparing for accession to the 1997 Protocol or for contracting Parties to the 1997 Protocol which have not yet developed the legal framework to implement the regulations in MARPOL Annex VI in the domestic legislation.

Guide No.3 – Development of a national ship emissions reduction strategy: supports countries in developing a national ship emissions reduction strategy that can guide potential policy and investments options.

Each guide provides links to tools that assist the user in collecting and analysing relevant information and data, and presents assessment techniques to support development of a national ship emissions reduction strategy and related implementation plans. Many of these tools include references to websites where more detailed manuals, guidelines, references, studies and presentations can be found.

The *Ship Emissions Toolkit* is drafted wider in the sense that it not only considers emissions from international shipping but also encourages the user to assess emissions from and identify emissions reduction opportunities for the domestic fleet. It may well be the case that domestic shipping represents the largest source of emissions in certain countries, and/or becomes the proving ground for low- or zero-carbon technologies that can subsequently be adopted by international shipping.

The objective of this toolkit is to support the development of a policy framework to guide near- and long-term emissions reductions in the shipping sector. By no means does this toolkit aim to promote any kind of unilateral or regional actions that conflict with the multilateral legislation mechanism under the framework of IMO. Instead, this toolkit provides guidance to interested countries seeking to take effective actions to achieve ship emissions reductions without promoting specific emissions reduction measures or technologies.

Furthermore, the toolkit recognises that ships and ports are intrinsically connected and as such also provides links to the *Port Emissions Toolkit* that has also been developed within the framework of the GloMEEP Project and aims to support countries in the quantification of emissions in ports and the development and implementation of a port emissions reduction strategy.

While the toolkit has been developed to support developing countries in particular (including through the Maritime Technology Cooperation Centres (MTCC) that have been established under the Global MTCC Network (GMN) Project, see document MEPC 73/13/3, and other technical cooperation activities implemented

by IMO under its Integrated Technical Cooperation Programme (ITCP), see document MEPC 73/13), it can provide guidance to any country seeking to improve the environmental performance of its maritime shipping sector with regard to emissions. It is intended primarily for use by staff of maritime administrations. However, it is expected to be useful to other government officials and policy makers, investors, developers, local community leaders and international development assistance agencies involved in activities designed to address emissions reductions from ships.

This toolkit has been used and tested by the 10 GloMEEP Lead Pilot Countries. Using the guides as a basis, each GloMEEP country has developed a rapid assessment and drafted a national ship emissions reduction strategy. Those GloMEEP countries that have not yet acceded to the 1997 Protocol or incorporated MARPOL Annex VI into national law have also undertaken a detailed legal assessment and drafted national legislation to domesticate MARPOL Annex VI.

In finalising development of this toolkit the GloMEEP countries' valuable feedback and questions have been incorporated as best as possible. Lessons learned and best practices that were identified over the course of the GloMEEP Project, have also been included.

The *Ship Emissions Toolkit* includes three individual practical guides as follows:

Guide No.1: Rapid assessment of ship emissions in the national context

This guide presents a framework for conducting a rapid assessment and generating information on a country's maritime shipping profile and environmental performance related to emissions from ships. It provides guidance on how to gather and analyse relevant information quickly; the data collection and analysis should not take more than four weeks.

The guide recommends the collection of both quantitative and qualitative information, and provides a rapid assessment template to help users arrive at an overview of a country's maritime emissions situation that can provide a foundation for the development and implementation of a national ship emissions reduction strategy. Developing a rapid assessment will help to answer the following questions:

- 1 Which maritime sectors currently play the most important role for the country and why?
- 2 Which sectors, if any, could play a more important role and thereby contribute more to the country's economy in the future? How could these sectors be promoted?
- 3 How is the country's maritime industry expected to develop by 2050 and what impact will those developments have on the country? Which opportunities do these developments bring?
- 4 Who are the most important stakeholders, why are they important and how could they contribute to the reduction of maritime emissions?
- 5 Which fleet component(s), or hybrid thereof, seem to be most relevant for the country and why?
- 6 What are the emissions of the most relevant fleet component(s) and how are they likely to develop? How could these developments be influenced and emissions be reduced?



Furthermore, the rapid assessment findings will be important in order to monitor and report progress in relation to the implementation and effectiveness of a national ship emissions reduction strategy.

Guide No.2: Incorporation of MARPOL Annex VI into national law

This guide is a useful tool for States interested in acceding to the 1997 Protocol or for contracting Parties to the 1997 Protocol which have not yet developed the legal framework to implement the regulations in MARPOL Annex VI, and in particular Chapter 4 on energy efficiency for ships, in the domestic legislation.

The guide recommends undertaking a detailed assessment of a country's existing policies, strategies, legislation and other measures that address emissions from ships. This legal and policy assessment will provide important information for the development of a national ship emissions reduction strategy.

If, as part of the strategy development process (see Guide No.3), it is identified that further action needs to be taken to implement and give full effect to MARPOL Annex VI, this guide outlines the steps States need to take at the national level in order to implement the provisions of MARPOL Annex VI and, in particular, the regulations on energy efficiency for ships, taking into account the particular legal system of the country.

The guide addresses the substantive provisions of MARPOL Annex VI, i.e. the provisions which require national action by an individual country in its capacity as a flag State and port State.

The guide also includes a brief review of the legal, policy and institutional arrangements in the 10 GloMEEP Lead Pilot Countries with regard to MARPOL Annex VI.



Guide No.3: Development of a national ship emissions reduction strategy

The findings generated by methodologically working through the rapid assessment guide (Guide No.1) and the legal guide (Guide No.2) can inform the process of developing a national ship emissions reduction strategy.

While MARPOL Annex VI and other international policies, regulations and strategies exist, they are by their nature often generic, in the sense that they are designed to apply as broadly as possible. They thus need to be operationalised within a national context, giving consideration to local, national and regional environmental, legal, institutional or other issues. Thus the purpose of a national ship emissions reduction strategy is two-fold; on the one hand it can support transposing and implementing international requirements in a national context and, on the other hand, it can support the achievement of international goals and targets through complementary national action.



For example, the development of a strategy could mobilise a broad range of national stakeholders to get involved in ship emissions reduction efforts, including those in shipping-related sectors that may not necessarily be covered by IMO Conventions, and thereby bring in new ideas, experience, capabilities and resources. Countries could also, through a targeted strategy, encourage and mobilise resources for research, development and deployment of low-emissions technologies and fuels at a national level, or from international donors. Through sharing research findings, best practices and lessons learned with the wider maritime community, countries could promote the global uptake of these technologies and fuels. These and other activities could facilitate the step change needed to significantly reduce ship emissions, achieve the IMO's aims and commitments, and thereby contribute to global air pollution and GHG mitigation efforts.

In addition, a national ship emissions reduction strategy could help countries realise benefits not directly associated with reducing ship emissions, such as reduced health care costs, job creation in new sectors, creation of new business and investment opportunities, decreased energy dependency, and so forth. The strategy development and implementation process also has the potential to strengthen national institutional and technical capacity and transfer knowledge to sectoral organisations. It can also support countries coordinate among sectors and institutions that currently work in isolation from each other, and allow decision makers to identify synergies among emissions reduction sectoral plans. Furthermore, sending a credible signal regarding future plans to reduce ship emissions can stimulate investment and international support for mitigation activities, promote technological innovation, and engage the private sector.

This guide therefore provides information on the crucial planning, development and implementation phases involved in the creation of such a strategy. The guide also includes a template with recommended elements a national ship emissions reduction strategy could include, as well as information suggested for inclusion in each part of the strategy.

1 Background

1.1 Introduction

The Torrey Canyon accident in 1968 prompted a new discussion on ship safety and the protection of the marine environment leading to a decision to develop a comprehensive instrument regarding pollution prevention from ships. The instrument, referred to as the International Convention for the Prevention of Pollution from Ships, was signed at a diplomatic conference in 1973. The shortened name of that Convention was MARPOL 73. The Convention would enter into force 12 months after the date on which not less than 15 States, the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world merchant shipping, have become parties to it.

After the Amoco Cadiz accident off the coast of Brittany in 1977, it was felt that certain shortcomings in MARPOL 73 should be rectified and a Protocol to the MARPOL 73 Convention was agreed by the International Conference on Tanker Safety and Pollution Prevention (TSPP) in February 1978. At the time of the TSPP conference, the MARPOL 73 Convention had not yet entered into force and could therefore not be amended. To keep it as one Convention it was decided that this Protocol should embrace MARPOL 73. The Convention, as modified by the Protocol of 1978, was known as MARPOL 73/78.

The concern over air pollution from ships was triggered by a growing general awareness that the marine industry should not remain outside the growing worldwide trend to control air pollution sources. This concern resulted in the addition of Annex VI (“Regulations for the prevention of air pollution from ships”), covering a range of air pollutants, which was adopted at a diplomatic conference by means of the 1997 Protocol to the Convention. Annex VI became part of the Convention when the 1997 Protocol entered into force in May 2005.

After the adoption of the 1997 Protocol it was decided not to add “97” to MARPOL 73/78 but to refer to the Convention just as MARPOL, without any reference to a year. This guide reflects this decision.

The 1997 Protocol and MARPOL Annex VI

To become a Party to MARPOL Annex VI, the government of a country (State) must formally accede to the 1997 Protocol. For the purposes of this document, however, when referring to incorporation of its regulations into national legislation, the reference will be to the incorporation of the provisions of MARPOL Annex VI.

Countries may currently be at very different stages of implementation of MARPOL Annex VI. Some countries may not yet have acceded to the 1997 Protocol, but are intending to do so. Other countries may have already ratified or acceded to the 1997 Protocol, but not yet incorporated the regulations of MARPOL Annex VI into national legislation. And, finally, other countries may have already incorporated the regulations of MARPOL Annex VI into national legislation, but will need to amend their existing legislation to incorporate the provisions of Chapter 4 (Regulations on energy efficiency for ships). This guide provides guidance for all three cases.

National legislation

In this guide, the term ‘national legislation’ is used to refer to the different types of national legal instrument a country needs to put into place to incorporate the regulations of MARPOL Annex VI for domestic purposes. In some cases, an Act of Parliament, Congress, Legislative Assembly, or other legislative body will be required. In other cases, the legislative authority exists and does not need to be amended, but regulations need to be introduced or amended. Which instrument is required will be determined by the legal branch of the government. Following the adoption of the national legislation, the national implementing legislation should also be communicated to IMO.

The obligations agreed by the Parties to MARPOL in the articles and regulations relating to different types of ship-generated pollution are contained in six Annexes: prevention of oil pollution (Annex I); pollution from noxious liquid substances carried in bulk (Annex II); pollution from packaged goods (Annex III); pollution from sewage; (Annex IV) pollution from garbage (Annex V); and air pollution from ships (Annex VI).

While Annexes I to V are part of the 1973 MARPOL Convention either as an obligatory annex to the Convention (Annexes I and II) or as optional annexes (Annexes III, IV and V), Annex VI is an entirely new annex. Article 3 of the 1997 Protocol links Annex VI to the MARPOL Convention. Article 6 provides both the specific entry into force conditions of the Protocol and, for those States which agree to be bound by its provisions after the entry into force date, the date when the obligation enters into force for them, which is three months after the date of deposit of the instrument of accession. The other articles have the same meaning as the corresponding articles previously mentioned.

1.2 Overview of Annex VI

Annex VI applies to all ships, except where expressly provided otherwise in several regulations. In contrast to the other MARPOL Annexes, Annex VI controls a range of different pollutant streams together with certain aspects related to ship operation which can themselves result in air pollution. Air pollution does not have the direct cause and effect associated with, for example, an oil spill incident. Rather, it is the cumulative effect from shipping in general which contributes to the overall air quality encountered by populations at large and which affects human health (e.g. respiratory and cardio-vascular diseases), the natural environment (e.g. acidification and eutrophication) and buildings and materials (e.g. corrosion and decay), directly impacting coastal areas but due to the atmospheric movement of air pollution also areas at considerable distance from the point of discharge and therefore remote from the sea.

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.

The controls within Annex VI cover:

- ozone-depleting substances released from refrigeration and fire-fighting systems and equipment. Such substances are also contained in some types of insulation foams;
- nitrogen oxides from diesel engine combustion;
- sulphur oxides and particulate matter emissions from the combustion of fuel oils which contain sulphur;
- volatile organic compounds, the hydrocarbon vapours displaced from tanker cargo spaces;
- shipboard incineration;
- fuel oil quality in so far as it relates to a number of air quality issues; and
- energy efficiency for ships.

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). Chapter 3 addresses more technical requirements, such as the control of emissions from ozone-depleting substances, nitrogen oxides (NO_x), sulphur oxides (SO_x) and particulate matter; emission control areas for NO_x and SO_x and particulate matter; shipboard incineration and reception facilities. Regulation 13 of Chapter 3 incorporates the NO_x Technical Code 2008. Chapter 4 of the Annex contains the energy efficiency regulations, as well as regulations for a data collection system, while Chapter 5 deals with verification of compliance with the provisions of the Annex. Table 1 below outlines the main provisions of Annex VI.

Table 1: Regulations and appendices comprising MARPOL Annex VI

Chapter 1 – General	
Regulation 1	Application
Regulation 2	Definitions
Regulation 3	Exceptions and Exemptions
Regulation 4	Equivalents

Chapter 2 – Survey, certification and means of control	
Regulation 5	Surveys
Regulation 6	Issue or endorsement of Certificates and Statements of Compliance related to fuel oil consumption reporting
Regulation 7	Issue of a Certificate by another Party
Regulation 8	Form of Certificate
Regulation 9	Duration and validity of Certificate
Regulation 10	Port State control on operational requirements
Regulation 11	Detection of violations and enforcement
Chapter 3 – Requirements for control of emissions from ships	
Regulation 12	Ozone-depleting substances
Regulation 13	Nitrogen oxides (NO _x)
Regulation 14	Sulphur oxides (SO _x) and particulate matter
Regulation 15	Volatile organic compounds (VOCs)
Regulation 16	Shipboard incineration
Regulation 17	Reception facilities
Regulation 18	Fuel oil availability and quality
Chapter 4 – Regulations on energy efficiency for ships	
Regulation 19	Application
Regulation 20	Attained EEDI
Regulation 21	Required EEDI
Regulation 22	SEEMP
Regulation 22A	Collection and reporting of ship fuel oil consumption data
Regulation 23	Promotion of technical cooperation and transfer of technology relating to the improvement of energy efficiency of ships
Chapter 5 – Verification of compliance with the provisions of this annex	
Regulation 24	Application
Regulation 25	Verification of Compliance
Appendices	
Appendix I	Form of the International Air Pollution Prevention (IAPP) Certificate (regulation 8)
Appendix II	Test cycles and weighting factors (regulation 13)
Appendix III	Criteria and procedures for the designation of emission control areas (regulations 13.6 and 14.3)
Appendix IV	Type approval and operating limits for shipboard incinerators (regulation 16)
Appendix V	Information to be included in the bunker delivery note (regulation 18.5)
Appendix VI	Fuel verification procedure for MARPOL Annex VI fuel oil samples (regulation 18.8.2)
Appendix VII	Emission control areas (regulations 13.6 and 14.3)
Appendix VIII	Form of International Energy Efficiency (IEE) Certificate
Appendix IX	Information to be submitted to the IMO Ship Fuel Oil Consumption Database
Appendix X	Form of Statement of Compliance – Fuel Oil Consumption Reporting

Chapter 4 of MARPOL Annex VI contains six regulations dealing with energy efficiency for ships and applies to all ships of 400 gross tonnage and above. Ships engaged solely in voyages in waters under the jurisdiction of the flag State are excluded from the scope of application of the chapter. However, each Party should ensure, by the adoption of appropriate measures, that such ships are constructed and operate in a manner consistent with the requirements of Chapter 4, so far as is reasonable and practicable.

A requirement for ships to collect and report fuel oil consumption and other data entered into force on 1 March 2018.¹ Under the amendments, ships of 5,000 gross tonnage and above are required to collect, from 1 January 2019 onwards, consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for transport work. The aggregated data is reported to the flag State after the end of each calendar year and the flag State, having determined that the data has been reported in accordance with the requirements, issues a Statement of Compliance to the ship. Flag States are required to subsequently transfer this data to the IMO Ship Fuel Oil Consumption Database. IMO will be required to produce an annual report to MEPC, summarising the data collected.

Compliance with the relevant requirements of Annex VI is indicated by the issue of an International Air Pollution Prevention (IAPP) Certificate for ships of 400 gross tonnage and above, and for platforms and drilling rigs engaged in international voyages. Ships of 400 gross tonnage and above are required to be issued with an International Energy Efficiency (IEE) Certificate. For ships of less than 400 gross tonnage appropriate measures may be developed by an Administration in order to demonstrate the necessary compliance.

¹ Resolution MEPC.278(70).

2 Accession to the 1997 Protocol to MARPOL

2.1 Introduction

According to the rules of international treaty law, every treaty in force is binding upon the Parties and must be performed by them in good faith, and a Party “may not invoke the provisions of its internal law as justification for its failure to perform a treaty”.² Similarly, Article 1(1) of MARPOL requires the Parties to the Convention to “undertake to give effect of the provisions of the present Convention and those Annexes thereto by which they are bound...”

It is therefore important that States that wish to accede to the 1997 Protocol be prepared to give full and complete effect to the 1997 Protocol by incorporating its provisions into national legislation. Acceding to the 1997 Protocol without incorporating the provisions into domestic legislation would thus amount to a breach of Article 1 of MARPOL.

Article 5 of the 1997 Protocol states that only contracting Parties to MARPOL may become Parties to the 1997 Protocol³ and claim the rights and privileges granted by MARPOL Annex VI. States which did not sign the 1997 Protocol between the time it was adopted in 1997 and December 1998 when it remained open for signature, may only become a Party by depositing with the IMO an Instrument of Accession with the Secretary-General of the IMO acceding to the 1997 Protocol. Thus, if a State wishes to accede to the 1997 Protocol, but is not yet a Party to MARPOL, it will also have to accede to MARPOL and at least its obligatory Annexes as well.

In some States, accession (or signature) to a treaty means it automatically becomes binding as part of national law once the treaty comes into force for the State. No legislative action is required for implementation using this method although some formality such as publication in the national gazette might be necessary before it can have the force of law. In other States, national legislation incorporating the provisions of the treaty must be passed by the legislative branch of the government in order to give effect to it.⁴

The requirement for legislative action is dependent, however, on whether the treaty in question is self-executing, which is a matter for interpretation by the State.⁵ Where the treaty is not self-executing, domestic legislation would be needed to bring the treaty into effect. The 1997 Protocol is regulatory and not self-executing, and therefore some legislative action would be necessary irrespective of legal approach adopted by the State to give treaty instruments the force of law.

2.2 Assessment of impacts of implementing the 1997 Protocol

Before deciding to accede to the 1997 Protocol, the government must decide whether it is prepared to implement and enforce the provisions of MARPOL Annex VI. The benefits of acceding will have to be weighed against the resource requirements and budgetary implications for the government and industry. As part of the decision to accede to the 1997 Protocol, an assessment of these requirements should be undertaken. The assessment of the impact of the implementation of the 1997 Protocol should not only be limited to the development or amendment of legislation, but also include the resource and budgetary costs and environmental benefits associated with ensuring compliance.

² The Vienna Convention on the Law of Treaties, Article 27.

³ As of June 2018, there were 157 Parties to the MARPOL Convention and 89 Parties to MARPOL Annex VI.

⁴ See Proshanto K. Mukherjee, *Maritime Legislation*, Malmö: WMU Publications, 2002, p. 126.

⁵ *Ibid.*, p.128.

Governments may wish to become Parties to MARPOL Annex VI for a number of reasons, including:

- support for overall goals of the United Nations Convention on the Law of the Sea (UNCLOS), in particular article 212 (Pollution from or through the atmosphere);
- concerns over air quality, which affects the populations and land areas under their jurisdiction;
- marine environmental concerns for waters under their jurisdiction;
- concerns for the worldwide environment (including climate change);
- benefits to their shipowners (worldwide acceptance of ships);
- benefits to their ports (means of control of air pollution);
- image of the flag State (sustainable and aimed at innovation).

Governments may decide not to become Parties to MARPOL Annex VI or to delay incorporation of its provisions for a number of reasons, including:

- competing legislative priorities;
- absence of a national policy framework;
- resource and budgetary constraints for drafting the legislation or implementing it;
- complexity of the provisions of MARPOL Annex VI;
- lack of political will.

In many States, parliamentary approval must be obtained before the decision is made to become a Party to a treaty. Thus, absence of existing enabling legislation may be a significant impediment to the ability of the State to accede to the 1997 Protocol.

Accession and implementation will require the participation of the government of the State, those ministries responsible for maritime and legal aspects, shipowners, and port authorities. In order to help assess the implications of acceding to and implementing the 1997 Protocol, the government may wish to undertake an assessment of its shipping and related industries as well as its general environmental and energy policies. One template that could be used to undertake this assessment can be found in the *Ship Emissions Toolkit, Guide No.1: Rapid assessment of ship emissions in the national context*.

This assessment of current policies, strategies, action plans, legislation and other measures that address the control of emissions from ships and maritime energy efficiency in the country will help determine the ability of the State to accede to the 1997 Protocol and to fully implement provisions of MARPOL Annex VI. Given the cross sectorial nature of the ship air emissions regulations, the assessment can also help avoid any overlap or duplication of the legislative framework. In this context, domestic initiatives being undertaken with respect to environmental management, climate change, trade, energy, transport, ports and the shipping sector should be reviewed.

It is recommended that the assessment be conducted by an interagency body that has representation at an appropriate level of authority. Administrative and regulatory responsibilities associated with implementing MARPOL Annex VI may affect several government ministries and agencies, including Transport, Energy, Environment, Climate, Maritime Safety, Trade and National Planning and Development. The Ministry of Public Health may also play a key role in determining the impact of ship emissions on the health of the population as well as the health benefits that will accrue from the implementation of the air pollution prevention and energy efficiency regulatory framework. Stakeholders in the shipping industry and civil society should also be consulted. A single agency should be assigned the responsibility for coordinating the assessment and any related policy framework development.

When considering the impacts, a State should recognise that these will vary according to whether it is a flag State, a port State, or a coastal State. A review of MARPOL Annex VI in order to identify the flag, port and coastal State obligations should therefore be undertaken. Most States will be all three entities to varying degrees, but some will be large flag States, but have little in the way of port or coastal State responsibilities, while others will be large coastal States or have many ships calling at their ports, but have few vessels registered under their flag. Even if a flag State is not a Party to MARPOL Annex VI, it must consider whether its ships call at ports of

States that are Parties to MARPOL Annex VI. According to article 5(4) of MARPOL, under the principle of no more favourable treatment, its ships would be required to meet the requirements of MARPOL Annex VI when calling at those ports.

In addition, the 1997 Protocol should be reviewed in detail to determine how it fits within the scheme of existing international and regional treaties addressing emissions. The global and cross sectoral nature of air pollution has resulted in a plethora of international and regional treaties which will have to be examined and considered when determining the priorities of the State. The State may have obligations under other regional and international legal instruments addressing climate change, energy, air pollution or transport which have to be taken into consideration. General policies or legislation may have been developed on the reduction of ship emissions in keeping with the obligations of the State under an international or regional treaty, but which may be inconsistent with the general provisions of the 1997 Protocol. A list of relevant treaties can be found in the *Ship Emissions Toolkit, Guide No.3: Development of a national ship emissions reduction strategy*. However, the list in the guide is not exhaustive and a review of applicable bilateral treaties and arrangements with other States should also be examined.

As is the case for the implementation of other IMO Conventions, technical assistance may be requested from IMO in order to help with the assessment of the financial and other costs of becoming Party to the 1997 Protocol or giving it full effect in a country's policies and legislation.

2.3 States that are already Parties to the 1997 Protocol

Where a State has already ratified or acceded to the 1997 Protocol, but has not yet implemented the amendments to Annex VI (that is, Chapter 4), no further expression of its consent to be bound in the form of an acceptance or approval is required. Amendments to Annex VI come into force automatically for a Party to the 1997 Protocol by way of the tacit acceptance procedure, and the State is bound to give effect to the new provisions unless it objects during the tacit acceptance period.

However, it will still be helpful to undertake an assessment to determine whether the State is in a position to implement the new requirements in Chapter 4 and whether legislation already in place for MARPOL or MARPOL Annex VI (other than Chapter 4) can be amended or whether new legislation is needed. The assessment would also identify the potential resource requirements and budget implications for the relevant government departments and agencies.

The State may also need to review other major revisions which came into force in 2010, 2013 and 2015, to ensure they have been appropriately incorporated into national legislation as well. For States which have already incorporated the provisions of the 1997 Protocol but not the regulations in Chapter 4, it is recommended that the review not be limited to the Chapter 4, but also include all the provisions of MARPOL Annex VI, some of which have had consequential amendments as a result of the adoption of these regulations. Table 2 sets out the other chapters and regulations of MARPOL Annex VI where consequential amendments have occurred.

2.4 Accession

Once the decision is taken to accede to the 1997 Protocol, the instrument of accession must be prepared and deposited with the Secretary-General of the IMO. This instrument may only be signed by the head of State, the head of government, or minister for foreign affairs. In acceding, the government is indicating its acceptance and approval of the 1997 Protocol and its readiness to implement its requirements. The entry into force date for the provisions of the Protocol is three months after the date of deposit of the instrument of accession.

Table 2: *Consequential amendments to other chapters of MARPOL Annex VI*

Chapter 1 – General	
Regulation 1	Application
Regulation 2	Definitions
Regulation 3	Exceptions and Exemptions
Regulation 4	Equivalents
Chapter 2 – Survey, certification and means of control	
Regulation 5	Surveys
Regulation 6	Issue or endorsement of Certificates and Statements of Compliance related to fuel oil consumption reporting
Regulation 7	Issue of a Certificate by another Party
Regulation 8	Form of Certificates and Statements of Compliance related to fuel oil consumption reporting
Regulation 9	Duration and validity of Certificates and Statements of Compliance related to fuel oil consumption reporting
Regulation 10	Port State Control on operational requirements
Regulation 11	Detection of violations and enforcement

3 Development of National Legislation

3.1 Survey of existing legislation

Once the decision has been made to accede to the 1997 Protocol, its provisions must be incorporated 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. For example, there may already exist primary legislation to enact secondary legislation to control discharges of pollution into the sea, but this primary legislation may not have sufficient scope (e.g. only limited to discharges to the aquatic environment) to enact secondary legislation to control atmospheric emissions (air pollution) from ships. Thus, a survey of existing legislation (including any associated regulation) which may affect the full implementation of MARPOL Annex VI should be undertaken. Consideration could also be given to whether the legislation should be made more comprehensive to address other related policy areas, such as emissions from ports, broader energy efficiency goals, or to implement other related international or regional treaties. After the survey has been completed, a decision can be made as to whether existing legislation can be amended or whether new legislation is required. The survey should also identify whether compliance and enforcement mechanisms exist and, where they do, whether they need updating.

It is important that the legislation permits the implementation of, or amendments to, MARPOL Annex VI and associated resolutions and recommendations so that changes in MARPOL Annex VI can be easily incorporated. How this is done in a State will depend on its legal tradition (for example, common law or civil law).

As the 1997 Protocol, including MARPOL Annex VI, will enter into force three months after the deposit of an instrument of accession, the implementing legislation should ideally enter into force not later than that time. Having regard to the various stages through which national legislation has to pass before entering into force, it is critical that the decisions relating to the incorporating legislation are made well in advance of depositing the instrument of accession. To ensure that this will be the case, the preparation of such legislation should be initiated well in advance of the accession to the Protocol.

The articles of MARPOL which apply to Annex VI must also be reviewed, to ensure they are already in legislation and to assess whether the legislative provisions need to be updated. These articles cover areas relating to Definitions (Article 2), Violation (Article 4), Undue delay to ships (Article 7), Communication of Information (Article 11) and Casualties to ships (Article 12). Some regulations in MARPOL Annex VI also make reference to certain Articles in MARPOL and therefore have to be read in conjunction with the Convention. For example, paragraphs 3 and 5 of regulation 10 of MARPOL Annex VI state that the procedures relating to port State control prescribed in Article 5 of the Convention shall apply.

The legislation incorporating MARPOL Annex VI (or the provisions of chapter 4 only, as appropriate) will therefore need to be drafted carefully to ensure that it is not inconsistent or in violation of the other provisions of the Convention. As noted above, under the tacit acceptance procedure, the amendments to Annex VI which added Chapter 4 apply to States which are Party to the Protocol. Those States are required to ensure that their existing legislation is amended to reflect the provisions of the new chapter and the consequential amendments in other sections of Annex VI.

While all chapters and appendices of MARPOL Annex VI contain mandatory requirements, only some of the appendices require legislation to give effect to their provisions. This is particularly true where the provisions are directed to the State itself. Obligations which relate to the 'Administration', 'Parties' or the 'Organization'

would, for instance, not be suitable for incorporation into legislation. Further, not all appendices are technical in nature. For example, Appendix III which deals with the criteria and procedures for the designation of emission control areas would not require legislative provisions for its implementation, but would have to be taken into consideration by a State which wished to establish an emission control area. A legal assessment will therefore be needed.

In the case of a State which only needs to implement Chapter 4 of MARPOL Annex VI, it may be that only amendments to existing legislation or regulations will be required.

The Manual on the practical implications of ratifying and implementing MARPOL 73/78 published by IMO (MARPOL – How to do it) can serve as a useful guide in developing or amending the necessary legislation to incorporate the provisions of the Convention and its related Annexes.

Also, Annex 1 of this guide provides a clause-by-clause analysis of MARPOL Annex VI, identifying those provisions which require national action by a country in its capacity as a flag State and port State.

3.2 Subordinate legislation

Implementing regulations or other subordinate legislation made under the enabling legislation will vary by State. The legal system of some States permits regulations to be made directly under the enabling legislation, following a determined procedure for drafting, consultation and entry into force. In other States, an ‘order’ approved by the government (for example, parliament, legislative assembly, or congress) is required to bring subsidiary legislation, such as regulations, into effect. The legislature may also decide to delegate its power to make laws in certain areas on particular matters to other persons and bodies in the form of delegated, subordinate or secondary legislation.⁶

For example, many common law jurisdictions, certain decisions of Cabinet known as Orders-in-Council are legislative instruments which are used to amend or otherwise vary the scope of legislation. They are therefore treated as subsidiary legislation. In other jurisdictions subsidiary legislation may include Orders, Rules or Directions exercisable by a Minister or by the head of the maritime administration, provided that authority for the exercise of that power has been given under an Act of Parliament.

Not all the provisions of MARPOL Annex VI are technical in nature. It is therefore necessary to determine which provisions would not need to be addressed in legislation and which might be addressed by policies and internal procedures.

3.3 Drafting the legislation

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.

In States where parliamentary approval is not required in order to become Party to an international treaty, the State may have become Party to MARPOL without any implementing legislation. Where this is the case, the provisions of Annex VI would be drafted along with the rest of the Convention and would be incorporated as part of the enabling legislation or as regulations made under the enabling legislation.

The structure of the MARPOL legislation will vary from jurisdiction to jurisdiction. In some cases, the legislation may be designed such that elements which are common to all the Annexes of MARPOL are placed in the same section. For example, requirements with respect to record books, management plans and other documents required to be carried by a ship would be found in the same section and not with provisions dealing with the specific Annex. Where this is the case, any amendment will be of a more substantive nature and careful review of the legislation and MARPOL Annex VI will be required prior to making the amendments.

⁶ See Proshanto K. Mukherjee, *Maritime Legislation*, Malmö: WMU Publications, 2002, p. 49.

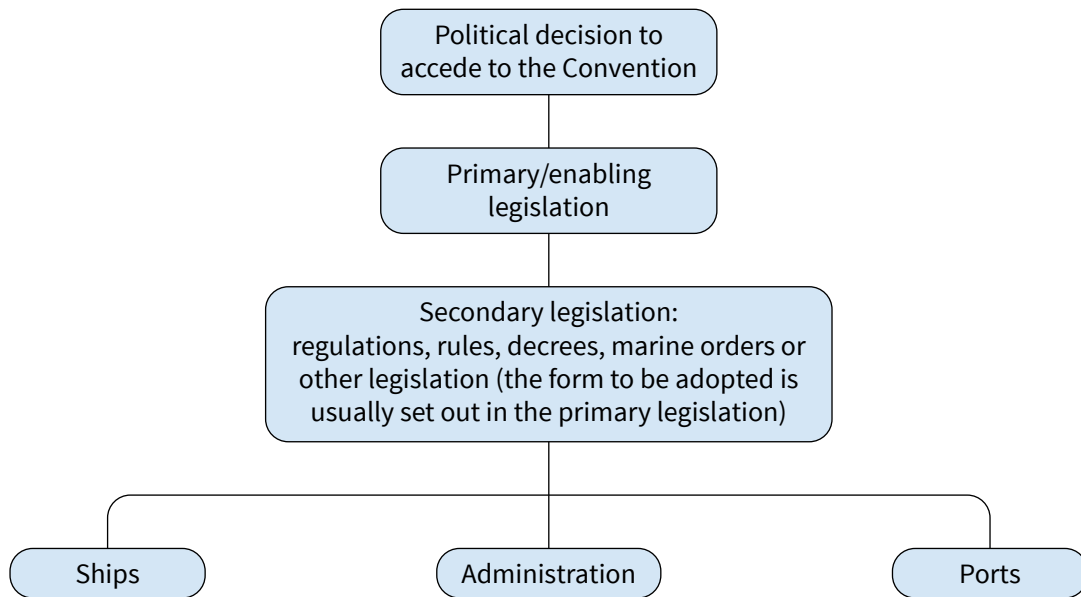


Figure 1: Steps to integrate MARPOL Annex VI into national legislation

The enabling legislation would need to be amended to incorporate the general provisions contained in Chapters 1 and 2 of MARPOL Annex VI.

Express authority could be provided in the legislation (if that power does not already exist) for the making of regulations, and the provisions of Chapters 3 and 4 of Annex VI could be promulgated as regulations. The relevant appendices would appear as schedules in the regulations, appropriately numbered.

Alternatively, all the chapters could be promulgated through subordinate legislation such as a set of regulations. This decision, however, depends on the results of the survey of the existing legislative framework and the identification of the appropriate legislative authority. In any case, the Appendices to Annex VI could appear as schedules to the regulations.

Where the existing legislation is not appropriate to promulgate the provisions of Annex VI, new enabling legislation incorporating the relevant provisions of the Annex would have to be drafted. Provision would be made in the legislation for the making of regulations to incorporate the technical provisions of the Annex and the relevant Appendices.

The text of the NO_x Technical Code 2008 need not be included in legislation but can be incorporated by reference in the 'Interpretation' or 'definition' section of the legislation.

3.4 Incorporating Chapter 4 of MARPOL Annex VI

Chapter 4 of MARPOL Annex VI is also regulatory in nature and will require legislation to implement the provisions. Where legislation has been used to implement MARPOL Annex VI, it is likely that the interpretation or 'definition' section of that legislation will have to be amended to introduce the new definitions of 'new ship', 'major conversion' and the description of the ship types.

The survey and certification requirements associated with the regulations in Chapter 4 related to the energy efficiency for ships include an initial survey leading to the issuance of the International Energy Efficiency (IEE) Certificate, a general or partial survey, after a major conversion of a ship and surveys which relate to the verification of the SEEMP on board the ship. Existing legislative provisions governing the conduct of surveys and issuance of certificates under Annex VI, whether they are under enabling or subsidiary legislation, would also need to be amended to incorporate the new survey requirements and the issuance and validity conditions of the IEE Certificate. This would be true for the regulations related to the certificate requirements for the data collection and reporting of fuel oil consumption.

In some States, the provisions relating to port State control are placed in a separate part of the legislation and may need to be amended to add the IEE Certificate as one of the certificates which will be subject to inspection.

Where the provisions of Annex VI have already been incorporated in regulations, the new provisions may be incorporated by an amendment to those regulations or by an Order in Council to that effect, without the need to amend enabling legislation.

3.5 Summary

Transforming an international treaty into national legislation is an exercise involving several steps. The principal steps may vary from State to State, but the general procedure starts with a political decision made by the executive arm of the government, such as the Cabinet, followed by the drafting of the legislation (or amendments to existing legislation) and its tabling in the Parliament. The legislation comes into operation when due notice is given to the public, which in common law jurisdictions is in the form of publication in the national gazette. If only regulations need to be amended, then the State's process for doing so will need to be followed.

4 Practical Implementation of MARPOL Annex VI

4.1 Introduction

For the purposes of this guide, the practical implementation of MARPOL Annex VI is presented as a separate step from the decision to accede to the 1997 Protocol and the incorporation of the provisions of MARPOL Annex VI into legislation. In practice, however, implementation considerations should have been assessed as part of the decision to accede to the 1997 Protocol and as part of the legislative survey undertaken for drafting legislation or amendments to existing legislation and regulation.

In particular, the government should assess how it will implement its flag State, port State and coastal State obligations under MARPOL Annex VI and the resources requirements needed to do so effectively. As discussed in Chapter 2 of this guide, the nature of legislative, regulatory, administrative and policy measures that will be required in order for a State to implement MARPOL Annex VI or subsequent amendments to it (such as Chapter 4) will depend on whether the State has significant flag, port and coastal interests.⁷

A series of guidelines have been developed by the IMO to assist Parties in the implementation of MARPOL Annex VI. The guidelines are neither mandatory instruments nor part of MARPOL Annex VI; however, they are key supporting documents which should be used to help create procedures and processes for full implementation of the regulations. Other relevant IMO resolutions, which relate to the implementation of MARPOL Annex VI, will also be useful in determining how to implement and enforce the various regulations of Annex VI.

4.2 National policy framework

States 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. As a first step in the process, the government may find it useful to use the templates that have been developed in the other two GloMEEP guides in this series:

- The assessment of the current status of ship emissions control and energy efficiency measures in the State: *Ship Emissions Toolkit, Guide No.1: Rapid assessment of ship emissions in the national context.*
- The development of a policy framework: *Ship Emissions Toolkit, Guide No.3: Development of a national ship emissions reduction strategy.*

Ideally, the development of the national policy framework should be done as part of the assessment of the implications for the country of accession to the 1997 Protocol or for the incorporation of the provisions of MARPOL Annex VI into national legislation. Often, however, the decision to accede to the 1997 Protocol precedes the development of any policy framework. As a result, the development of an overarching policy framework often only takes place once the government undertakes to put in place the administrative arrangements to implement and enforce the regulations of MARPOL Annex VI.

The goals of the policy framework may differ from one State to another based on each one's particular requirements. Not all emissions from ships are generated from foreign ships engaged in international trade. Vessels engaged in domestic voyages, such as harbour tugs, ferries and fishing boats, are also sources of emissions. Ports can also be sources of air emissions, even if they are not covered by MARPOL Annex VI.

⁷ Guidance on the national implementation of the 1996 Protocol to the London Convention, 1972, <http://www.imo.org/en/OurWork/Environment/LCLP/Compliance/Documents/Guide%20to%20national%20impl%20English.pdf>

The government could decide to include addressing emissions from domestic vessels and from ports when developing its policy framework. Where a policy framework already exists, it may need to be updated to reflect the provisions of Chapter 4 of MARPOL Annex VI.

A well-defined implementation strategy will support the government in achieving its goals of reducing ship emissions and implementing energy efficiency measures for ships, while at the same time fulfilling other obligations under other international and regional agreements and national legislation. From the point of view of efficient implementation, it will be helpful to identify a lead ministry or agency with overall responsibility for the implementation of MARPOL Annex VI (and, if decided, related provisions). Any incremental resource needs should also be highlighted, as well as potential sources of funding. As with all policy development, it is important that the policy framework be well thought out with all the ramifications addressed and that it receive wide acceptance by the stakeholders.

Annex 2 of this guide briefly examines the existing legal, policy and institutional frameworks in the 10 GloMEEP Lead Pilot Countries. The synopsis reviews the systems of government, including the legislative power, to enter into treaties, as well as the status of the State in relation to the MARPOL Convention, the 1997 Protocol, and other related treaties.

4.3 Implementation of Chapter 4 of MARPOL Annex VI

Procedures may have been developed by a State that is Party to Annex VI, but which it has not updated to incorporate the regulations in Chapter 4. These procedures may be inadequate to meet the new obligations under Chapter 4.

For example, in the case of the data collection system which came into force 1 March 2018, new procedures will have to be put in place by flag States to facilitate the collection of data from the ships flying their flags and provide reports on the data to IMO.

Similarly, 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).

As noted above, States which are not Party to MARPOL Annex VI, but have internationally trading vessels flying their flag, need to establish procedures to comply with the provisions of Annex VI, including Chapter 4, to enable their ships to operate in the ports and waters of countries which are Parties to Annex VI.

4.4 Institutional framework for compliance and enforcement

States should develop a compliance monitoring and enforcement strategy and should take steps to improve and strengthen their capacities to implement the provisions of MARPOL Annex VI. The institutional framework for compliance and enforcement must be sufficiently robust to enable the State to achieve full compliance with MARPOL Annex VI, through effective compliance monitoring and enforcement.

The first task is to determine the agency or agencies that would be responsible for administering and enforcing the legislation giving effect to the provisions of Annex VI. Much of the international regulatory framework for ship emissions relates to transport and shipping for which the ministry responsible for shipping or maritime transport would have direct responsibility. Alternatively, responsibility could lie with port administration, customs, coast guard or national defence.

There is likely already a ministry or agency responsible for port State control for IMO instruments, including MARPOL, as well as for any flag State responsibilities, however small. In many States, the maritime administration is the agency within the ministry responsible for maritime transportation which is directly responsible for implementing IMO instruments. The maritime administration is often an autonomous or semi-autonomous entity within the government such as an authority, commission or agency, or a parastatal body such as a State-owned corporation with a statutory mandate to regulate and develop ports and/or shipping. Notwithstanding, the ministry of environment may have the overall responsibility for regulating atmospheric emissions from all different transport modes.

The Port Authority will also play a role together with various law enforcement agencies, such as the Coast Guard, the Marine Police and the Navy. The Port Authority as the regulator of port facilities may have responsibility for regulating or providing reception facilities for ozone-depleting substances.

Additionally, the transboundary nature of air pollution and the international nature of shipping mean that the consequences of air pollution can affect multiple jurisdictions. In many cases, the internationally trading ships which pose the greatest risk of pollution to coastal cities are foreign registered. The institutional framework needed to reduce ship emissions will therefore involve internal and external institutions and both public and private sector participation.

The institutional framework for compliance and enforcement of national air quality targets, climate change commitments, or energy efficiency in general may also be established in other sectors based on that State's fulfillment of its international and regional treaty obligations, such as the United Nations Framework Convention on Climate Change (UNFCCC) for greenhouse gas emissions. This may have resulted in a particular agency being tasked to take a lead role in guiding the implementation of environmental policies. This agency would normally be responsible for the environment or climate change and the mandate for this agency could be expanded to include emissions from the maritime sector.

Having regard to the multiplicity of agencies which will have some responsibility for implementation, interagency coordination will be critical. Where two agencies have joint responsibility for the enforcement of different aspects of the Annex, a memorandum of understanding could be negotiated which delineates their responsibilities. This memorandum should also be made public. The establishment of a sound coordinating mechanism is therefore important to ensuring that the institutional arrangements are effective in the implementation of the various obligations under Annex VI.

Consultations with the private sector on the institutional framework for compliance and enforcement of MARPOL Annex VI may highlight some deficiencies in the institutional framework which could unnecessarily increase the cost of compliance and serve as a barrier to the successful implementation of the State's flag and port State obligations.

For flag States with large ship registers that are a major source of revenue, the compliance and enforcement strategy will often be heavily influenced by the concerns of the shipowners. Whilst regulations may add to costs of shipowners, the requirement to demonstrate compliance with international regulations is paramount to enable ships to trade freely with other States especially those that are a Party to Annex VI. Notwithstanding this, governments and shipowners alike would also have to take into consideration the lower operating costs resulting from the reduction in fuel consumption which arise from the implementation of measures to reduce ship emissions.

Like any economic operator, shipowners will assess different ways to attain compliance with the requirements of Annex VI, taking into consideration costs (which can significantly differ in case of new-builds or retrofitting existing ships), second-hand value of their fleet, company image, etc.). Where the national goals for air emissions reductions are inconsistent with the regulations on energy efficiency for ships in Chapter 4, or make their operation in other ways uncompetitive, owners may consider reflagging to other ship registries.

4.5 Port State control

Port State obligations involve the inspection of foreign ships for compliance with MARPOL Annex VI, as well as the regulation of local suppliers of fuel and providers of reception facilities. These obligations will in large measure be discharged by the maritime administration, although in some countries they are shared with the agency with responsibility for air quality control.⁸

Port States must have in place measures to ensure compliance by foreign ships calling at its ports, including the power to detain where the ship does not carry valid certificates. Port State control procedures may not be robust, due to the small size of the maritime administration or the number and location of ports which receive international traffic, and may need resources to improve inspections.

⁸ For example, in the USA, the United States Coast Guard and the Environment Protection Agency jointly implement MARPOL Annex VI.

In carrying out port State responsibilities, the maritime administration should ensure that port State control inspections are only carried out by authorised and qualified port State control officers in accordance with the relevant guidelines adopted by the IMO.⁹ These guidelines set out the general circumstances governing initial inspections, more detailed inspections and detainable deficiencies in relation to, inter alia, the availability on board and validity of the IAPP Certificate, the Engine International Air Pollution Prevention Certificate (EIAPP Certificate) and Technical Files and compliance with the regulation of the pollutants addressed in Annex VI.

Surveys to verify compliance may be carried out by officers of the Administration or by nominated surveyors or recognised organisations and alleged violations must be investigated and prosecuted through appropriate sanctions provided for in the implementing legislation.

Annex VI also places obligations on the port State to promote the availability of compliant fuel oils in its ports and terminals. Steps should also be taken by the Administration under regulation 18 to develop a compliance monitoring and enforcement regime to maintain fuel oil quality. This includes establishing a list of local fuel oil suppliers, requiring them to provide a certified bunker delivery note and sample and the authority to take action against suppliers of non-compliant fuel. The State, however, may not have in place any mechanism to address the supply of the non-compliant fuel, such as independent testing laboratories as envisioned by the Annex.

Where a State has an emission control area, the coastal State responsibilities could in some cases be extended to its 200 nm Exclusive Economic Zone. Enforcing compliance by foreign registered ships through monitoring and surveillance will usually be carried out by the Coast Guard or Navy or other enforcement agency designated for the purpose. These efforts should, however, be coordinated with the maritime administration, the ministry of environment or the lead agency under the National Task Force to ensure that actions taken are consistent, properly authorised, and in accordance with the provisions of Annex VI.

The Administration should also establish or revise its processes to administer the port State control regime to take into account the requirements of Chapter 4 of MARPOL Annex VI. This would include revising the requirements relating to initial inspections and detainable deficiencies to include verification that a valid IEE Certificate and EEDI Technical File are on board, as well as for ships of 5,000 GT and above a Statement of Compliance for reporting on ship fuel oil consumption.

The industry stakeholders who own and operate ships, ports or repair facilities or refine and supply fuel to vessels or persons in the logistics and technology sectors will be directly impacted by the implementation of MARPOL Annex VI. Ineffective port State control and inadequate reception facilities, especially in countries which are heavily dependent on trade carried by foreign registered ships, will also significantly weaken the ability of the State to reduce the effects of ship emissions on its local population. Insufficient monitoring of the fuel oil suppliers could also have consequences for the ships using the bunkering facilities and the reputation of the bunker industry in general.

All enforcement agencies, whether acting in a port State or coastal State capacity, must be cognizant of the fact that any improper action taken by them such as unduly delaying or detaining a ship may lead to civil liability. Under Article 7 of the MARPOL Convention, in such circumstances a ship would be entitled to compensation for loss or damage suffered.

4.6 Flag State compliance responsibilities

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. Flag States should take all necessary steps to secure compliance by ships which fly their flag. Where surveys and approvals are delegated to recognised organisations, the Administration should regulate such authorisation in accordance with the established standards.¹⁰

⁹ Refer to the 2009 Guidelines for port State control under the revised MARPOL Annex VI (Resolution MEPC.181(59)).

¹⁰ See, for example, Code for Recognized Organizations (RO Code): Resolution MEPC.237(65) and Resolution MSC.349(92).

In some countries, ship surveyors who perform flag State surveys are also authorised to carry out port State inspections. In others, port State inspectors are not necessarily surveyors, but simply have the requisite training and background to carry out the inspection requirements of IMO Instruments. In either case, the individuals concerned must be fully conversant with their port State inspection duties as enforcers of the law.

The flag State will need to put in place a system to ensure that ships under a State's jurisdiction report the information on fuel oil consumption and other data required under regulation 22A of MARPOL Annex VI. The system should be not only robust and secure to maintain anonymity of the shipping company providing the data, but also be able to verify the accuracy of the data provided by the ship. This may require the allocation of additional human and financial resources. The absence of information technology to receive, manage and generate reports pursuant to the data collection system obligations may also compromise the ability of the State to meet its obligations under MARPOL Annex VI.

4.7 Capacity building

Effective implementation also requires resources and the availability of sufficient personnel with the appropriate expertise to assist in the development of the legislation and to discharge the various responsibilities of the State. Furthermore, such personnel would support or directly represent their State at IMO during negotiations related to Annex VI.

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 Annex VI in general and the provisions of Annex VI in particular.

Strategic partnerships are also useful vehicles for cooperation aimed at capacity building. Each government should determine the level of expertise needed in terms of personnel to carry out various functions, including legal, administrative and enforcement tasks and devise a suitable plan of action for strengthening capacity in each sector. Strategic partnerships can be developed with the Maritime Technology Cooperation Centres (MTCCs) set up around the world following a joint EU-IMO programme, as well as local and regional universities and maritime training institutes. Strategic partnerships can also be developed with regional organisations set up under the cooperation framework between IMO and UN Environment in the context of the Regional Seas Programme, such as REMPEC in Malta and RAC/REMPEITC-Caribe in Curaçao.

The regional port State control MOUs also coordinate training activities and the development of procedures relating to the conduct of port State inspections. Capacity building can occur through cooperation with other Parties to MARPOL and MARPOL Annex VI in particular.

IMO has assisted developing countries in the implementation of IMO's regulations on energy efficiency for ships through its Integrated Technical Cooperation Programme (ITCP) and major projects such as the GEF-UNDP-IMO Global Maritime Energy Efficiency Partnerships (GloMEEP) Project and the Maritime Technology Cooperation Centres (MTCCs) Network (GMN Project).

Capacity building activities will require financial, technical and human resources and funding which can be provided internally or sought from various external sources, such as the Global Environment Facility (GEF), Global Climate Fund (GCF), development banks or individual countries. Partnerships with the local shipping industry and other private sector stakeholders who may stand to benefit from energy efficiency measures should also be explored.

5 Summary

As noted in Chapter 2, States will have a variety of reasons for acceding to the 1997 Protocol and thus becoming Parties to MARPOL Annex VI. This guide has provided an overview of the considerations a State needs to take into account in order to decide to accede to the 1997 Protocol and to give full effect to MARPOL Annex VI, including the regulations in Chapter 4.

In order to assess fully the implications of such a decision, it is recommended the State have a good understanding of its shipping industry before beginning the process of accession. The *Ship Emissions Toolkit, Guide No.1: Rapid assessment of ship emissions in the national context* provides a template and guidance on how to achieve this understanding.

The following is a summary of the general steps needed to incorporate MARPOL Annex VI into national law. Some of the actions may be undertaken simultaneously, depending on how the government chooses to organise its work.

- Conduct an assessment of existing policy, legal and institutional framework to determine the actions needed to accede to the 1997 Protocol or, where the State is already a Party to the Protocol, to incorporate amendments to MARPOL Annex VI into national legislation.
- Conduct a survey of existing legislation and identify any gaps that would be a barrier to accession or full implementation of the obligations under MARPOL Annex VI and devise appropriate changes to existing legislation.
- Prepare any enabling and subordinate legislation as may be required, for accession to the 1997 Protocol (if needed) and to incorporate the provisions of MARPOL Annex VI, including Chapter 4, into national legislation.
- Once the provisions have been incorporated, carry out practical implementation, through the establishment of appropriate compliance and enforcement mechanisms.
- Identify training and capacity building needs and tools and vehicles to address the needs, including technical cooperation.
- Provide for periodic review and updating of national legislation.

For all of these steps, consultations with stakeholders are strongly recommended. This could be done, for example, by holding national workshops or by using other, already established, consultation mechanisms.

In addition, States may choose to take advantage of the opportunity provided by the decision to accede to the 1997 Protocol to develop a broader national policy framework to address maritime air emissions in general, including those associated with port activities. Alternatively, a broader government policy to address air emissions from all sectors may have provided the impetus to include emissions from the maritime sector. This policy development may occur as part of the assessment undertaken for the decision on whether to accede or as a separate policy initiative. In either case, the *Ship Emissions Toolkit, Guide No.3: Development of a national ship emissions reduction strategy* offers guidance on how to develop such a policy framework and to relate it to broader government policies.

Annex 1

Clause by clause analysis of MARPOL Annex VI

Chapter 1 – General

Regulation 1 – Application

This regulation defines the scope of MARPOL Annex VI which generally extends to all ships except in special circumstances set out in several regulations of the Annex.

- This provision should be incorporated in national legislation.

Regulation 2 – Definitions

The key definitions that are used throughout the Annex are set out in this regulation.

- This provision should be incorporated in national legislation.
- Where Annex VI is incorporated in legislation addressing air emissions in general, and not as an amendment to existing legislation incorporating the MARPOL Convention, it is important that the definitions in Article 2 of the Convention in so far as they apply to Annex VI also be incorporated.
- Resolution MEPC.278(70) adopted on 28 October 2016 amended regulation 2 by adding definitions related to the data collection system (regulation 22A). These new definitions should also be included in the national legislation.

Regulation 3 – Exceptions and Exemptions

Regulation 3.1

The regulation sets out the scope of application of Annex VI and describes which emissions are not regulated by the Annex.

- This provision should be incorporated in national legislation.

Regulation 3.2

This regulation covers the granting of exemptions for ships participating in trials of emissions reduction and control technologies.

- This provision should be incorporated in national legislation, which should set out the conditions under which the exemptions will be granted. The legislation should explain how such exemptions are to be granted and the assessment of the conditions should be attached to those exemptions.
- Where, however, the State is not a flag State or involved in research and development related to ship emissions it may not be necessary to provide for this regulation in national legislation.
- Resolution MEPC.278(70) amended this regulation. These amendments should also be included in national legislation.

Regulation 3.3.1

This regulation covers certain exemptions applicable to seabed mineral activities.

- This provision need not be incorporated in national legislation unless the Party has some interest in seabed mining.

Regulation 3.3.2

This regulation addresses the use of hydrocarbons that are produced and used on site as fuel.

- This provision need not be incorporated in legislation implementing the MARPOL Convention, but could be incorporated in legislation addressing seabed mineral activities.

Regulation 4 – Equivalentents

This regulation deals with the approval of alternative equipment, fuel oils or alternative means of compliance where they achieve emissions reductions which are at least as effective as that required under Annex VI.

- This provision should be incorporated in national legislation.

Chapter 2 – Survey, certification and means of control

Regulation 5 – Surveys

Regulation 5.1

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 the regulation.

- This provision should be incorporated in national legislation.

Regulation 5.2

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.

- This provision should be incorporated in national legislation.

Regulation 5.3

Parties may delegate the conduct of surveys to which Annex VI applies to Recognised Organisations and should apply the IMO Guidelines for the authorisation of organisations acting on behalf of the Administration.

- This provision should be incorporated in national legislation.

Regulation 5.4

This regulation requires that ships to which Chapter 4 of Annex VI apply should comply with the surveys set out in this regulation.

- This provision should be incorporated in national legislation.
- The amendments to Annex VI adopted by Resolution MEPC.278(70) inserted additional provisions addressing surveys which implement the data collection system and these provisions should be included in national legislation.

Regulation 6 – Issue or endorsement of Certificates and Statements of Compliance related to fuel oil consumption reporting

This regulation provides the legal basis for the issuance of the International Air Pollution Prevention Certificate and the International Energy Efficiency Certificate. The certificates are issued after the surveys required under Regulation 5 have been successfully completed.

The amendments to Annex VI 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.

- This provision should be incorporated in national legislation.

Regulation 7 – Issue of a Certificate by another Party

The regulation allows a Party to the Annex to survey and issue certificates to the ship of another Party provided the ship complies with the requirements of the Annex.

- This provision should be incorporated in national legislation.

Regulation 8 – Form of Certificates and Statements of Compliance related to fuel oil consumption reporting

- This provision should be incorporated in national legislation and could be included as a schedule to the legislation.

Regulation 9 – Duration and validity of Certificates and Statements of Compliance related to fuel oil consumption reporting

The regulation establishes the duration of the International Air Pollution Prevention Certificate which shall not exceed five (5) years and the International Energy Efficiency Certificate which shall be valid for the life of the ship, save where it ceases to be valid in accordance with the Annex.

The amendments to Annex VI adopted by Resolution MEPC.278(70) introduced the Statement of Compliance, which shall be valid for the calendar year in which it is issued and for the first five months of the following calendar year.

- This provision should be incorporated in national legislation.

Regulation 10 – Port State control on operational requirements

This regulation allows a Party to inspect foreign ships which are in its ports or an offshore terminal under its jurisdiction to ensure compliance with the Annex.

The amendments to Annex VI adopted by Resolution MEPC.278(70) introduced the Statement of Compliance and requires that the Statement be subject to verification pursuant to a port State control inspection.

- This provision should be incorporated in national legislation.

Regulation 11 – Detection of violations and enforcement

This regulation provides additional powers for the exercise of port State control over ships in the ports or offshore terminals of a Party and for cooperation between Parties in the detection, investigation and reporting of alleged contraventions of the provisions of the Annex.

- This provision should be incorporated in national legislation; however, the obligation to cooperate with other Parties need not be placed in legislation but implemented through memoranda of cooperation or similar instruments.

Chapter 3 – Requirements for control of emissions from ships

Regulation 12 – Ozone-depleting substances

This regulation prohibits the deliberate emissions of ozone-depleting substances as well as installations containing ozone-depleting substances on ships depending on the date of construction.

The regulation also requires ships with systems or equipment containing ozone-depleting substances and which are required to have an IAPP Certificate to carry and maintain an Ozone-depleting substances Record Book.

- This provision should be incorporated in national legislation. A Party may also decide to regulate emissions arising from leaks of an ozone-depleting substance as provided for in Regulation 12.2.

Regulation 13 – Nitrogen oxides (NO_x)

Control requirements in relation to NO_x are contained in this regulation which apply to installed marine diesel engines. The regulation provides for three different levels of control, known as Tiers, which apply to a ship based on its construction date. The regulation also provides for Parties to introduce emission control areas for NO_x.

- This provision should be incorporated in national legislation. These regulations also provide that, under certain circumstances, relaxation from the NO_x certification requirements for certain specified domestic ships may be accepted. These instances should be addressed within the national legislation.
- Regulation 13.8 should be incorporated in national legislation to make mandatory the application of the NO_x Technical Code 2008 to survey and certification of applicable marine diesel engines.

Regulation 14 – Sulphur oxides (SO_x) and particulate matter

Measures governing the control of sulphur oxides and particulate matter emissions are set out in this regulation and apply to all fuels used on board a ship. Parties may establish Emission Control Areas (ECA) which have stricter limits for SO_x and particulate matter emissions than the general limits in the regulation, and the provisions should include requirements for ships to have written fuel oil changeover procedures and for changeovers to be recorded in a logbook.

- This provision should be incorporated in national legislation, except for regulations 14.2 and 14.8 to 14.10 which relate to functions to be undertaken by IMO and therefore not applicable as national regulations applying to ships.

Regulation 15 – Volatile organic compounds (VOCs)

This regulation is primarily applicable to tankers (in limited cases, also to gas carriers) and sets out the requirements for the control of Volatile Organic Compounds (VOCs) on tankers when they are in certain ports and terminals. Tankers to which the regulation applies and which carry crude oil are required to have on board and implement a VOC management plan approved by the Administration.

A Party may choose to apply controls only to certain ports or terminals under its jurisdiction. Where a Party designates ports or terminals within its jurisdiction as ones where VOC emissions are to be regulated, it shall ensure that vapour emission control systems are provided at those ports and terminals and that the systems are approved by the Party, taking account the relevant standards developed by the IMO.

- This provision should be incorporated in national legislation, except for regulation 15.4 which relates to functions to be undertaken by IMO and therefore not applicable as national regulations applying to ships.
- In relation to the reporting obligations under to the IMO under regulation 15.2, a Party may decide not to place this obligation in legislation, but to have administrative procedures to ensure that this obligation is met.

- Of note, regulation 15.3 requires that the approved vapour emission control systems be operated in a manner so as to avoid undue delay to ships. The legislation should place an obligation on the operator of the port or terminal to comply with the regulations with appropriate penalties for non compliance and the payment of compensation where undue delay is caused to a ship.

Regulation 16 – Shipboard incineration

This regulation applies to shipboard incineration and sets out certain prohibitions in relation to the substances that can be incinerated and the circumstances where incineration should not be undertaken in ports, harbours and estuaries and should generally be incorporated in national legislation.

Regulation 16.5

This regulation refers to other international instruments and to the development of alternative waste treatment process and hence is not therefore suitable as part of national regulations applying to ships.

Regulation 16.6.2

This regulation provides that, under the circumstances given, exclusion from the requirements for incinerator certification may be allowed. This case should be addressed within the national legislation.

Regulation 17 – Reception facilities

This regulation requires that the government of each Party undertakes to ensure the provision of reception facilities. This does not necessarily mean the government must provide the facility; a port authority or terminal operator could be required to provide the facilities. This regulation does not therefore necessarily need to be incorporated in national legislation incorporating MARPOL Annex VI.

The regulation is generally directed at ports and harbours, although there is scope to extend the requirements to include ship-recycling facilities.

Regulation 18 – Fuel oil availability and quality

This regulation places an obligation to regulate fuel oil suppliers within the jurisdiction of the Party through the competent authorities of the State.

- This provision should be incorporated in national legislation. The Party is required to identify the agency that will regulate fuel oil suppliers. 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.
- Regulation 18.1 which addresses the promotion of compliant fuel oil need not be addressed in national legislation.

Parties are required to take “all reasonable steps” to promote the availability of compliant fuel oil.

Obligations are also placed on Parties to take action against ships which do not use compliant fuel oil, while fuel oil delivered to and used on board ships should meet the standards laid down in regulation 18.3. The obligation to report instances of non-compliant fuel to other Parties and to take action when reports are received is also set out in the regulation.

The regulations also include obligations on the part of fuel oil suppliers which are required to document the sulphur content of the fuel oil.

Ships subject to regulations 5 and 6 of MARPOL Annex VI 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, as amended by Resolution MEPC.286(71).

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

- This provision should be incorporated in national legislation, except for regulation 18.1 which deals with the promotion of the availability of fuel.
- The provisions of Appendix V to MARPOL Annex VI are applicable when developing legislation as it sets out the information to be included in the Bunker Delivery Note.
- In relation to the implementation of regulation 18.9, a Party may decide that is not necessary to incorporate the obligation in merchant shipping legislation, but rather through legislation addressing fuel oil quality control or through administrative procedures. The provisions should require the fuel oil supplier to provide a BDN to a ship being supplied with fuel oil.

Chapter 4 – Regulations on energy efficiency for ships

Regulation 19 – Application

The energy efficiency regulations apply to all ships of 400 gross tonnage and above. The requirements do not apply to ships solely engaged in voyages in national waters or ships not propelled by mechanical means, platforms and drilling rigs. Ships which have diesel-electric propulsion, turbine propulsion or hybrid propulsion systems are excluded from the requirements of regulations 20 and 21. There are also limited exceptions in the initial years of implementation for ships for which the Administration may waive the requirement to comply with the Attained and Required Energy Efficiency Design Index (regulations 20 and 21). This is not applicable if the ship's building contract is placed or the keel is laid (or similar stage of construction) on or after 1 July 2017 or if the delivery is on or after 1 July 2019. Major conversion of a new or existing ship is treated in a similar manner. Details of any waivers are required to be communicated by the flag State administration to IMO for circulation to the Parties to the Protocol.

- This provision should be incorporated in national legislation.

Regulation 20 – Attained Energy Efficiency Design Index (EEDI)

The attained EEDI is to be calculated for new ships and new or existing ships (as defined in regulation 2) which have undergone a major conversion and is to be calculated taking into account the relevant guidelines developed by the IMO.

- This provision should be incorporated in national legislation.

Regulation 21 – Required EEDI

The regulation applies to new ships and new or existing ships (as defined in regulation 2) which have undergone a major conversion and establishes the method of determining the required EEDI.

- This provision should be incorporated in national legislation, except for regulation 21.6 which places an obligation on the IMO.

Regulation 22 – Ship Energy Efficiency Management Plan (SEEMP)

Both new and existing ships are required to keep on board a ship-specific Ship Energy Efficiency Management Plan (SEEMP). The SEEMP establishes a mechanism to improve energy efficiency using operational measures.

The SEEMP for ships of 5,000 gross tonnage and above shall include a description of the methodology that will be used to collect the data required by regulation 22A.1 and the processes that will be used to report the data. This requirement is to be implemented on or before 31 December 2018.¹¹

- This provision should be incorporated in national legislation.

¹¹ Amendments to include regulation 22A were adopted by resolution MEPC.278(70).

Regulation 22A – Collection and reporting of ship fuel oil consumption data

This regulation applies to every ship of 5,000 gross tonnage and above and places an obligation on the operator of the ship to collect data related to fuel oil consumption as specified in Appendix IX to Annex VI, for the calendar year 2019 and each subsequent calendar year or portion thereof, as appropriate, according to the methodology included in the SEEMP.

This data is required to be sent by the ship to the flag State Administration, which upon verification, will issue to the ship a Statement of Compliance related to fuel oil consumption reporting. The Party is obligated to transmit to the IMO Ship Fuel Oil Consumption Database the reported data on fuel oil consumption supplied to it by its registered ships within a month of the issuance to the Statement of Compliance.

- This provision should be incorporated in national legislation, except for regulations 22A.10, 22A.11 and 22A.12 which place obligations on the IMO.

Regulation 23 – Promotion of technical cooperation and transfer of technology relating to the improvement of energy efficiency of ships

- This provision need not be incorporated in national legislation.

Chapter 5 - Verification of compliance with the provisions of this Annex

- These provisions need not be incorporated in national legislation.

Appendices

Appendix I – Form of International Air Pollution Prevention (IAPP) Certificate (regulation 8):

This provision should be incorporated in national legislation.

Appendix II – Test cycles and weighting factors (regulation 13):

This provision need not be incorporated in national legislation.

Appendix III – Criteria and procedures for the designation of emission control areas (regulations 13.6 and 14.3):

This provision need not be incorporated in national legislation.

Appendix IV – Type approval and operating limits for shipboard incinerators (regulation 16):

This provision need not be incorporated in national legislation.

Appendix V – Information to be included in the bunker delivery note (regulation 18.5):

This provision should be incorporated in national legislation.

Appendix VI – Fuel verification procedure for MARPOL Annex VI fuel oil samples (regulation 18.8.2):

This provision should not be incorporated in national legislation.

Appendix VII – Emission control areas (regulations 13.6 and 14.3):

This provision should be incorporated in national legislation.

Appendix VIII – Form of International Energy Efficiency (IEE) Certificate:

This provision should be incorporated in national legislation.

Appendix IX – Information to be submitted to the IMO Ship Fuel Oil Consumption Database:

This provision should be incorporated in national legislation.

Appendix X – Form of Statement of Compliance – Fuel Oil Consumption Reporting:

This provision should be incorporated in national legislation.

Annex 2

Synopsis of LPIR Arrangements in GloMEEP Lead Pilot Countries

Introduction

This report briefly examines the existing legal, policy and institutional frameworks in the 10 GloMEEP Lead Pilot Countries. The synopsis reviews the systems of government, including the legislative power, to enter into treaties as well as the status of the State in relation to the MARPOL Convention, the 1997 Protocol, the UNFCCC, the Kyoto Protocol and the Paris Agreement.

The current legislative and administrative framework for implementing GHG/CO₂ emission targets under the UNFCCC and Kyoto Protocol as well as the 1997 Protocol are also reviewed.

Republic of Argentina

Argentina is a republic with a federal and representative system of government, comprising national and provincial governments. Executive power is exercised through the President and there is a bicameral National Congress which consists of the Senate and the House of Representatives and exercises legislative power.

Under the Constitution, the President has the power to participate in law making and to conclude and sign treaties, while the National Congress has the jurisdiction to approve or reject international agreements.

Argentina is a Party to UNCLOS and the MARPOL Convention; however, it has not yet acceded to the 1997 Protocol. However, a bill has been drafted and submitted with a view to implementing the 1997 Protocol including the revised Annex VI. Argentina is also a Party to the Vienna Convention for the Protection of the Ozone Layer, the Montreal Protocol, UNFCCC, UNCLOS, the Kyoto Protocol, the Stockholm Convention and the Paris Agreement.

Regarding the regulatory system, there coexist federal, provincial and municipal laws dealing with the protection of the environment and related matters. However, article 41 of the Constitution allows the Federal Government to pass laws establishing minimum standards that shall be observed by the provinces to promulgate their own rules, so that the latter are not inconsistent with the federal standards.

The Ministry of Environment and Sustainable Development was appointed technical focal point for the UNFCCC in 2008, as it is the national enforcement authority, and a National Climate Change Directorate was created within the above mentioned Ministry. Furthermore, an intra-governmental commission has been established to ensure all climate change issues are mainstreamed at the national level and all the related agencies of government are involved. Said Commission has recently been replaced by the National Cabinet on Climate Change (GNCC, as per its acronym in Spanish) within the orbit of the Head of the Cabinet of Ministers. The Air Quality Act (Law No. 20.284) provides for the protection of the environment and the air quality from air pollution sources; however, it does not address pollution from ships.

Prefectura Naval Argentina is the enforcement authority of the MARPOL Convention as well as the agency responsible for administering flag and port State control matters.

The People's Republic of China

China has a unified constitutional system with various levels of implementing authority. Legislation may be promulgated at three levels. First, laws may be enacted by the National People's Congress or its Standing Committee. Second, regulations may be promulgated by the State Council. Third, regulations and other provisions may be promulgated by various ministries, the Provincial People's Congress or local governments. Laws and regulations enacted by the National People's Congress or by the State Council are applicable nationwide.

China is a Party to the MARPOL Convention and the 1997 Protocol which came into force for the country in May 2000. China is also Party to the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and the Paris Agreement.

The China Maritime Safety Administration is the government authority falling within the Ministry of Transport, which is responsible for the discharge of China's flag, port and coastal State obligations.

Marine Environment Protection Law of the People's Republic of China addresses the protection of the marine environment of China from the primary sources of pollution. Vessel source pollution is addressed in Chapter V of the legislation, which effectively incorporates the MARPOL Convention.

The energy efficiency regulations have been incorporated into domestic law, which was gazetted in 2012.

Additionally, the Regulations for Statutory Survey of Sea-going Ships was amended to incorporate the new requirements of Annex VI. A set of technical guidelines have also been developed, which includes Guidelines for Verification of the Energy Efficiency Design Index (EEDI) of Ships and Guidelines for the Development of a Ship Energy Efficiency Management Plan (SEEMP).

Regulations have also been passed which came into force on 1 April 2016, declaring certain inland waters as "domestic emission control areas" (DECAs) where ships have been required to use fuel with a sulphur content not exceeding 0.50%. The Maritime Safety Administration (MSA) has issued supporting guidelines on the implementation of the DECAs.

Certain provinces have passed their own legislation on the prevention of air pollution. The province of Shanghai for instance has passed the Municipal Regulation on Air Pollution Prevention, 2014.

In September 2013, the State Council issued a national Air Pollution Prevention Action Plan that serves as the guidance for national efforts to prevent and control air pollution. The Action Plan sets a road map for air pollution control in China. Additionally, the Ministry of Transport adopted a number of national policy initiatives which include the 13th Five Year Plan (2016-2020) on energy-saving and emission reduction for waterborne transportation, which established a roadmap and timetable for a low carbon approach and the "energy-saving and emission reduction projects for road and waterborne transport". Pursuant to these projects, a number of shipping companies have introduced technology and adopted operational Energy Efficiency Measures. After verification of their emission reduction efficiencies, the companies received government subsidies as reimbursements for their investments in energy efficiency measures.

A Ship and Port Pollution Prevention Special Action Plan (2015-2020) was also adopted, which aims to reduce sulphur and nitrogen oxide emissions in select ports by up to 65%.

A National Plan on Climate Change (2014-2020) has been developed and a National Coordination Committee on Climate Change (NCCCC), chaired by the National Development and Reform Commission (NDRC), is responsible for monitoring the implementation of China's obligations under the UNFCCC.

Georgia

Georgia is a parliamentary democracy with a semi-presidential system and a Civil Law legal system, with the President being Head of State and the Prime Minister being the Head of Executive Government. The Constitution provides for three branches of government, namely, the Executive, the Legislature and the Judiciary.

Legislation can be developed at the national, sub-national and local levels. However, legislation incorporating treaties has to be in the form of national level legislation. In relation to incorporation of treaties into domestic law, Article 6 of the Constitution states that international treaties and agreements to which Georgia is a State Party supersede domestic or national law.

Georgia is a Party to the MARPOL Convention, the UNFCCC, the Kyoto Protocol and the Paris Agreement. The country is not yet a Party to the 1997 Protocol.

The Maritime Transport Agency represents the National Maritime Authority of Georgia under the Ministry of Economy and Sustainable Development and is responsible for discharging the country's IMO flag and port State control obligations.

A National GHG Mitigation Strategy has been developed, which is administered by the Ministry of Environment Protection and Agriculture.

Republic of India

India has an English Common Law legal system and is a Federal Republic comprising a Central Government, the Union and State governments.

It has a parliamentary democracy which operates under the constitution of 1950. The Union Government has responsibility with respect to, inter alia, shipping and navigation, port quarantine measures, fisheries beyond territorial waters and those ports designated as Major Ports.

There is a bicameral Federal parliament comprised of the Rajya Sabha council of states (upper house) and the Lok Sabha or house of the people (lower house). In accordance with Article 73 of the Constitution, the Executive branch of Government is able to enter into treaties without parliamentary approval.

Maritime Transport is administered by the Ministry of Shipping, and the Directorate General of Shipping is the statutory maritime authority which established the Merchant Shipping Act 1958, with responsibility for the implementation of the MARPOL Convention in India.

India is Party to UNCLOS, the MARPOL Convention and the 1997 Protocol as well as the UNFCCC, the Kyoto Protocol and the Paris Agreement.

A number of circulars have been developed, which facilitate the implementation of India's flag and port State control obligations under MARPOL Annex VI. Circular No 9, 2012 which came into force in January 2014, sets out the requirements of Chapter 4 Energy Efficiency Measures. Other circulars address the regulation of bunker fuel quality and NO_x emissions standards for marine diesel engines.

There are several national ministries, including the Ministry of Environment and Forests, involved in marine environmental protection together with various state governments and state pollution boards.

The Ministry of Environment, Forests and Climate Change (MoEFCC) is the agency for climate change issues in India. A National Steering Committee, with members from various ministries/departments of the Government of India, oversees the implementation of the UNFCCC obligations.

The National Action Plan on Climate Change (NAPCC) has been prepared and is implemented through eight National Missions, including the National Mission for Enhanced Energy Efficiency (NMEEE). The primary purpose of the NMEEE is to strengthen the market for energy efficiency by creating a conducive regulatory and policy regime.

Jamaica

Jamaica is a parliamentary democracy and the form of government is known as a Constitutional Monarchy, with the Queen of England as the Head of State. She is represented by a Governor-General, appointed on the recommendation of the Prime Minister.

There are three branches of government, namely: the Executive, the Judiciary and the Legislature, with the Executive known as the Cabinet and being the highest decision making body. Having regard to the separation of powers, the Cabinet may also give instructions for the State to enter into treaties without the prior approval of Parliament. Parliament is therefore obliged to support the enactment of the enabling legislation to avoid default by the State of its treaty obligations. It is the practice, however, that the decision of Cabinet requires the incorporating legislation to be in place before the instrument of ratification or accession is submitted.

The Jamaican Parliament consists of the British Monarch and two Houses, namely, the House of Representatives and the Senate. The Parliament has exclusive authority for the promulgation of legislation, including laws dealing with pollution control and the implementation of the country's treaty obligations.

Jamaica is a Party to the MARPOL Convention, the 1997 Protocol, UNFCCC, the Kyoto Protocol and the Paris Agreement. No legislation has been passed to incorporate the MARPOL Convention or the 1997 Protocol. The Shipping Act, 1998, however, makes provision for the Minister of Government responsible for maritime transportation to pass regulations to implement marine pollution prevention treaties. The Shipping (Prevention of Pollution) Act has been drafted, and is also expected to incorporate the Convention and Protocol.

The Maritime Authority of Jamaica, established under the Shipping Act, 1998, is responsible for discharging Jamaica's flag and port State obligations under IMO instruments, including the MARPOL Convention, and will be the agency responsible for implementing Annex VI of the Convention.

A Climate Change Framework Policy for Jamaica was adopted in 2015 and is being implemented by the Ministry of Land Environment and Climate Change. A Climate Change Advisory Board (CCAB) which shall comprise representatives of the public and private sectors, academia and non-governmental organisations appointed by the Minister with portfolio responsibility for climate change is also being appointed to provide a platform for the exchange of scientific and technical information on climate change and related issues. A National Maritime Energy Efficiency Strategy has not yet been developed.

Malaysia

Malaysia has adopted the English Common Law legal system and the Constitution of Malaysia provides for a Federal system of government. The form of Government is a Constitutional Monarchy, with the law-making authority of the Federation divided into three branches, namely Legislature, the Judiciary and the Executive.

Legislative power is vested in a bicameral Parliament comprised of a House of Representatives and a House of Senate. There are also state laws, enacted by the state legislative assembly. Legislation related to shipping and international agreements is promulgated at the federal level.

Malaysia is a Party to UNCLOS, the MARPOL Convention and the 1997 Protocol. It is also Party to the UNFCCC, the Kyoto Protocol and the Paris Agreement.

The Ministry of Transport is responsible for the formulation and implementation of policies, strategies and programmes for public transportation, which covers land, aviation and maritime sectors, and the Marine Department of Malaysia is responsible for the enforcement of policies on pollution prevention from ships and for the implementation of international conventions, including the 1997 Protocol.

By way of Malaysia Shipping Notice 24/2011, the 1997 Protocol has been applied to the Malaysian flag ships and foreign ships operating in Malaysian waters. The Notice incorporates the complete text of Annex VI, including Chapter 4, dealing with the energy efficiency measures.

Two policies, namely, the National Policy on Climate Change and the National Green Technology Policy were formulated to guide the country in addressing climate change in an integrated manner.

The National Steering Committee on Climate Change was established to formulate and implement policies to address and adapt to climate change, and includes over seven ministries, with the Ministry of Natural Resources and Environment being the lead agency responsible for the implementation of the climate change policy.

Kingdom of Morocco

The Kingdom of Morocco is a Constitutional Monarchy with a bicameralism parliamentary system consisting of a Chamber of Representatives and a Chamber of Councillors. The executive power is vested in the Council of Ministers, chaired by the King, while the Council of Government is chaired by the head of Government. The latter deliberates on issues of policy as well as on draft legislation and international treaties and conventions before their submission to the council of ministers for adoption.

Treaties and conventions are ratified, on the initiative of the Executive, by means of laws voted in the parliament and promulgated by the King. The Moroccan legal system sets three conditions in order to implement an international convention:

- i) **Ratification** – The international conventions must be ratified.
- ii) **Publication** – The international conventions must be published in the official bulletin so as to be enforceable.
- iii) **Reciprocity** – The international convention must be also applied by the other signatory parties.

Furthermore, the 2011 Constitution recognised the superiority of treaties and conventions on provisions of the national law.

Morocco is Party to MARPOL Convention and has ratified the 1997 Protocol. So far, Morocco has focused its efforts on passing laws addressing in a general manner the preservation of the atmospheric environment, namely: the law on prevention of air pollution passed in 2003, the scope of which extends to transport sector including shipping, the law on renewable energies in 2010/2016, the law relating to energy efficiency (2011).

The Merchant Marine Directorate, which falls under the Ministry of Equipment and Transport, is the entity responsible for the formulation of policies on prevention of pollution from ships, control of commercial ships and leisure boats, and the general safety of shipping in Moroccan waters. The Ministry is also responsible for the regulation and development of ports. The Ocean Fisheries Department regulates fishing vessels and is responsible for the implementation of the legislation applying to that kind of vessel.

Republic of Panama

Panama has adopted a Civil Law legal system and the political system is referred to as a Constitutional Democracy. The Constitution provides for three branches of Government, namely: the Executive, the Legislature and the Judiciary. The legislature is unicameral, with an Assembly of Deputies which has the sole authority for passing legislation to incorporate international treaties.

Panama is a Party to the MARPOL Convention, the 1997 Protocol, UNFCCC, the Kyoto Protocol and the Paris Agreement.

The Maritime Authority of the Republic of Panama has general responsibility for implementing the country's obligations under various maritime treaties, while the Merchant Marine Directorate within the Panama Maritime Authority is specifically charged with the administration of the Panamanian Registry of ships, as well as matters relating to port State and flag State control.

The 1997 Protocol was incorporated in Law No. 30 of March 2003, while the NO_x Technical Code was adopted through the Resolution No. 106-OMI-37-DGMM. The revised Chapter 4 of Annex VI, which addresses regulations on energy efficiency, was adopted through Resolution No. 106-OMI-108-DGMM, of November 29, 2012. The Merchant Marine Circular No.257 related to the implementation of the Energy Efficiency Design Index was also published and serves as a guide to recognised organisations in the implementation of the revised Annex. Merchant Marine Circulars on the Control of Fuel Quality and Volatile Organic Compounds have also been published, as well as several amendments to MARPOL Annex VI which have been adopted over the years.

The National Environment Authority is responsible for implementing Panama's obligations under the UNFCCC, and the Government has prepared a National Climate Change Policy and a Climate Change Action Plan which will be administered by the National Climate Change Committee of Panama, an interagency body made up of government agencies and academia.

Republic of the Philippines

The Philippine legal system is a hybrid of Spanish Civil Law and American Common Law. The country has a Presidential system of Government and the Constitution establishes three branches of government, namely, the Executive, the Legislature and the Judiciary. The Executive branch of government is headed by the President.

The primary law-making arm of the Government is the Legislature (Congress), which consists of a Senate and a House of Representatives. Administrative agencies are also vested with quasi law making function and rule making powers.

The Maritime Industry Authority (MARINA) is responsible for the implementation of the flag State obligations under international maritime instruments to which the Government of the Philippines is a Party. The Philippine Coast Guard (PCG), on the other hand, dispenses port State functions.

The Philippines is Party to the MARPOL Convention, the 1997 Protocol, UNFCCC and, the Kyoto Protocol and the Paris Agreement.

The Philippines acceded to MARPOL Annex VI in 2018 and has initiated action steps to implement the same. Given that the Philippine Clean Air Act of 1999 mandates the Department of Transportation (DOTr) and the Department of Environment and natural Resources (DENR) to cooperate in regulating air pollution from other mobile sources (such as ships), said law could provide the platform by which to facilitate the implementation of the 1997 Protocol without need to go for a new legislation.

The Climate Change Act of 2009 established the Climate Change Commission (CCC) to lead policy development and coordinate, monitor and evaluate the country's obligation under the UNFCCC. The Cabinet Cluster on Climate Change Adaptation and Mitigation (CCAM) is an interagency body and was also created to ensure coordination among government agencies in the implementation of the country's climate change measures.

Republic of South Africa

South Africa has a hybrid legal system which is primarily based on Roman-Dutch law, with English Common law influences. South Africa is a Constitutional Democracy, and the Constitution provides for three spheres of government, consisting of National, Provincial and local governments.

There are three arms of government, namely the Executive, the Legislature and the Judiciary. The National Parliament is bicameral, consisting of the National Assembly and the National Council of Provinces. The Provincial Legislatures and Municipal Councils have law making powers. However, the National Parliament is responsible for legislation dealing with shipping and international agreements.

Section 231 of the Constitution provides that the negotiation of and exercising the consent to be bound to a Treaty is the responsibility of the National Executive; however, the State will only be deemed to be bound by the Treaty when prior approval of the National Parliament has been obtained.

South Africa is a Party to the MARPOL Convention, the 1997 Protocol as well as the United Nations Framework Convention on Climate Change, its Kyoto Protocol, as well as the Paris Agreement.

The MARPOL Convention is incorporated in the Marine Pollution (Prevention of Pollution from Ships) Act 2 of 1986. The legal authority for prevention of vessel-source marine pollution is vested with the Department of Transport, which is the Government agency responsible for implementing the MARPOL Convention. The South Africa Maritime Safety Authority (SAMSA) is a statutory corporation and an agency of the Department of Transport with statutory responsibility for vessel source marine pollution. In relation to oil pollution response, this mandate is shared with the Department of Environmental Affairs.

The Department of Environmental Affairs of South Africa published a National Climate Change Response Paper that sets out how the country will respond to climate change and in particular the reduction of GHG emissions. The Intergovernmental Committee on Climate Change has also been established, with one of its functions being the coordination and alignment of all policies, strategies, action plans, legislation, regulations, systems and implementation projects that may have an impact on the government's climate change policies

and programmes. South Africa is also in the process of developing a national framework bill to respond to climate change, and has developed a proposed climate change mitigation system that will introduce carbon budgets for big GHG emitters. Within national legislation, GHGs have been declared a priority pollutant and those emitting over and above a specific threshold must submit pollution prevention plans.

MORE INFORMATION?

GloMEEP Project Coordination Unit
International Maritime Organization

4 Albert Embankment,
London SE1 7SR, United Kingdom

<http://glomeep.imo.org>