PART I

Enforcement of Emissions Legislation through UNCLOS

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Introduction

Legislation that lowers the permissible sulphur content in marine fuel from a maximum of 3.5% to 0.5% may appear ordinary, rudimentary and unproblematic. This is, however, far from the reality. It is not ordinary or rudimentary, as such strengthened regulation can prevent 137,000 people worldwide from facing a premature death and 7.6 million children from developing asthma.[1] Nor is it unproblematic, as some shipowners can save billions of dollars each year by not adhering to this regulatory measure.

It is therefore essential that this sulphur limit, which is regulated in Annex VI to the International Convention for the Prevention of Pollution from Ships ('the MARPOL Convention'),[2] can be enforced effectively so that the global health benefits can be achieved. This obviously necessitates that shipowners who violate the regulations are not rewarded with higher profits but instead are penalised – appropriately and dissuasively.

Ships have traditionally enjoyed a special status within international law, regarding the exercising of jurisdiction over them. This distinct status has led to speculation as to whether the strengthened sulphur regulations can be enforced, and by whom, particularly when a ship violates the rules mid-ocean, far from any State.

It is the purpose of this book to establish that the United Nations Convention on the Law of the Sea (UNCLOS)[3] provides a legal basis for ensuring that the regulation of sulphur emissions by MARPOL Annex VI can be enforced effectively, regardless of where the violation occurs and which State the ship hails from.

The conclusions on enforcement through UNCLOS are also relevant and applicable for enforcing other international maritime legislation for protection of the environment, including impending legislative measures on reducing greenhouse gas (GHG) emissions from ships.

[1] See M Sofiev et al, 'Cleaner fuels for ships provide public health benefits with climate tradeoffs' (2018) 9:406 *Nature Communications* 4, available at https://www.nature.com/articles/s41467-017-02774-9#ref-link-section-d1456e583.

[2] International Convention for the Prevention of Pollution from Ships (adopted 11 February 1973, as modified by the Protocol of 17 February 1978, entered into force 2 October 1983) 1340 UNTS 61 (MARPOL), IMO Publication: IMO-520E.

[3] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3.

I. The Layout of the Book

This book is divided into five Parts consisting of 19 chapters.

Chapter 1 of Part I contains a brief introduction to the historic development of the MARPOL Convention and UNCLOS, the impact of sulphur pollution on human health and the potential savings for shipowners in not complying with the regulations. The challenges faced in detecting violations of and enforcing the regulations are also described.

The following chapters in Part I provide a basic introduction to the relevant regulatory frameworks of Annex VI of the MARPOL Convention (chapter 2) and UNCLOS (chapter 3). The practical enforcement of MARPOL, in accordance with UNCLOS, through Port State Control is analysed (chapter 4). The regional legislation under the European Union's (EU's) Sulphur Directive[4] is also examined, as the Directive has strong ties to MARPOL Annex VI (chapter 5). The final chapter of Part I describes the basic jurisdictional principles of international law and how these relate to a State's enforcement of international regulations (chapter 6).

Part II of the book contains a detailed analysis of the specific obligations and extended rights of different States to enforce rules for the protection and preservation of the marine environment, such as MARPOL Annex VI, in accordance with the special provisions of part XII of UNCLOS.

Following a general introduction to part XII of the Convention (chapter 7), the analysis will focus on the extended flag State obligations referred to in article 217 of UNCLOS (chapter 8) and the extended jurisdiction for coastal States according to article 220 (chapter 9) and for port States according to article 218 (chapter 10).

This gives way to an in-depth analysis of how UNCLOS, pursuant to article 228, governs questions of overlapping jurisdiction between States when enforcing environmental regulations in accordance with the legal basis of part XII (chapter 11).

The following chapter contains a brief overview of the procedural safeguards and general principles of dispute resolution found within UNCLOS (chapter 12). The final chapter of Part II offers a conclusion on the Part II analysis, including how the regulation of sulphur in marine fuels under Annex VI can be effectively enforced, irrespective of where a violation may occur (chapter 13).

In Part III of the book, the conclusions of the analysis in Part II are applied to enforcement of other international environmental maritime regulations (chapter 14). The conclusions of Part II are also put into perspective in relation to the enforcement of the anticipated future international regulation of GHG emissions from ships (chapter 15).

Part IV attempts to look at the enforcement of specifically international GHG regulation of ships from a completely different perspective. While Parts I–III of the book have a clear focus on analysing the enforcement of emissions regulations

[4] Directive 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels [2016] OJ L132/58.

pertaining to sulphur and GHG through the 'classical' jurisdictional basis found in UNCLOS, Part IV discusses whether it is conceivable that the forthcoming GHG regulations pertaining to ships can, within the foreseeable future, attain the status of legislation protecting international recognised peremptory norms, that is jus cogens norms. The principles of jus cogens and erga omnes, and the ties to universal jurisdiction, are also explained (chapter 16).

The analysis itself is based on examined case law from the International Court of Justice (ICJ) and statements from the International Law Commission (ILC), read in conjunction with international scientific reports and predictions as to the negative climate developments due to continued release of GHG (chapter 17).

Finally, discussion is made of what the legal consequences would be if international regulations ensuring the reduction of GHG emissions from ships were to be deemed legislation protecting jus cogens norms, including the applicability of erga omnes enforcement principles (chapter 18).

In the last part of the book, Part V, an overall summary and conclusion is presented (chapter 19).

II. Man-made Pollution Emanating from Ships

Man-made pollution has resulted in the contamination of oceans from discharges of oil, chemicals, plastics, invasive species and other damaging substances, with devastating consequences for fragile undersea ecosystems and all living creatures therein.

One of the most harmful forms of man-made pollution is nevertheless *air pollution*, because it degrades the quality of the air on which living creatures and plants are so deeply dependent. For humans, inhalation of contaminated air may lead to the development of various diseases and disorders that, ultimately, can be life-threatening.

Some forms of air pollution can also lead to global warming, extreme weather, increased UV radiation, melting of the polar ice caps and rising sea levels, which can threaten the habitations and environment needed for the existence of most living things, including human survival. Furthermore, the socio-economic costs that such pollution can inflict on a society are gargantuan.

These are all examples of direct consequences resulting from anthropogenic air pollution, which includes such pollution emanating from ships.

As the destructive effects of man-made pollution became apparent, it naturally resulted in some States unilaterally attempting to reduce pollution through various measures, including national legislative measures. Yet much pollution, including air pollution, represents the total cumulative contamination emanating from various sources on land and at sea. Therefore, many international governing bodies, especially under auspices of the United Nations (UN), haven taken initiatives to seek the reduction of global air pollution, including the International

Maritime Organization (IMO), which is the UN's specialised agency responsible for ships and shipping. These initiatives include developing international rules and regulations through multilateral agreements[5] such as conventions and treaties.

The enforcement of IMO regulations on air pollution have, however, been the subject of much debate, as such enforcement must be carried out in accordance with basic principles of international law respecting the sovereignty and jurisdiction of all relevant States. Ships have a special place and status within international law, as distinct jurisdictions apply depending on a ship's flag and where it sails. This area of international law is usually referred to as the *law of the sea*.

Such jurisdictional principles pertaining to the international law of the sea are codified in UNCLOS, and consequently any State's enforcement of the IMO's environmental regulations must be exercised in accordance with the jurisdictional framework of UNCLOS, particularly the provisions of part XII of the Convention.[6]

III. The IMO

The IMO was established as a specialised UN agency in 1948, in accordance with article 57 of the UN Charter. It was founded as the Intergovernmental Maritime Consultative Organization (IMCO), but in 1982 its name was changed to the International Maritime Organization.

The IMO consists of a General Assembly and several permanent committees and sub-committees addressing different maritime topics, such as safety in the Maritime Safety Committee (MSC) and legal issues in the IMO Legal Committee (LEG).

Of particular relevance to this book is the IMO's work on regulating environmental matters in the Marine Environmental Protection Committee (MEPC) and in the sub-committee on Pollution Prevention Response (PPR). The MEPC was created in 1973 and initially focused on regulating pollution of the sea in the form of spills and discharges of oil, toxic materials and other harmful substances. Yet in recent decades the MEPC has increasingly widened its legislative scope to encompass measures on the discharge of harmful substances into the atmosphere originating from ships. This includes regulations pertaining to sulphur and nitrogen, and, most recently, taking early steps towards regulating GHG emissions, including carbon dioxide (CO_2).

[5] An example of such an international agreement was the 'Action Plan' developed at the UN Conference on the Human Environment in Stockholm in 1972 (hereinafter 'the Stockholm Conference'). The participating States undertook commitments to reduce pollution, including air pollution and pollution of the seas. This Action Plan included a list of 109 recommendations, which the States should implement to address these problems. This has since contributed to the IMO's developing different international regulations to ensure the reduction of pollution coming from ships.

[6] M Dixon, *International Law* (Oxford University Press, 2007) 235.

IV. Development of International Maritime Rules for the Protection of the Environment

The focus of international maritime laws changed significantly throughout the 1960s and 1970s. The rules of the IMO (then IMCO) had primarily dealt with ensuring the safety of ships in relation to the dangers for passengers, crews and other vessels.[7] But several shipwrecks during those years,[8] resulting in significant oil spills and extensive damage to the marine environment, prompted a change in the regulatory focus of the IMO.

Developments in the construction of ships had, after the Second World War, led to their carrying more cargo, including liquid cargoes such as oil. Consequently, when such transport ships (tankers) were lost at sea, it resulted in more damage to the marine environment.

Trying to mitigate the risk from transporting such dangerous cargoes, the IMO adopted several international conventions addressing these concerns. One of the first of these conventions for protection of the marine environment against oil pollution was the International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL), which entered into force on 26 July 1958.[9] OILPOL essentially banned tankers from discharging oil within 50 nautical miles of a coast. Also, from 1969, the Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties ('the Intervention Convention') provided coastal States with special jurisdiction to counter pollution hazards from oil spills outside the coastal State's territory.[10]

In 1972, the Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter ('the London Convention') was adopted.[11] It sought to address the pollution that occurred when ships, platforms, etc were intentionally dumped in the sea as waste. A Protocol to the Convention was adopted by the IMO in 1996.[12]

In 1973, extensive IMO work culminated in the adoption of one of the most comprehensive international regulatory frameworks for the protection of the

[7] The first version of the International Convention for the Safety of Life at Sea (SOLAS), dating from 1914, was made as a direct consequence of the sinking of the *Titanic* in 1912. The latest version of SOLAS was adopted on 1 November 1974 and entered into force 25 May 1980, 1184, 1185 UNTS 2.

[8] One of those incidents was the loss of the *Torrey Canyon* off the coast of England in 1965.

[9] International Convention for the Prevention of Pollution of the Sea by Oil (adopted 12 May 1954, entered into force 26 July 1958) UNTS.

[10] The Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (adopted 29 November 1969, entered into force 6 May 1975) 970 UNTS 211 ('the Intervention Convention'). In 1973, the scope of the Intervention Convention was widened to include a Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances Other Than Oil (adopted 2 November 1973, entered into force 30 March 1983) 1313 UNTS 3.

[11] Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (adopted 13 November 1972, entered into force 30 August 1975) 1046 UNTS 120.

[12] The Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (adopted on 17 November 1996, entered into force 24 March 2006) (1997) 36 ILM 1 prohibits dumping of all waste, apart from certain specified exceptions.

marine environment from ship pollution – the MARPOL Convention. At the same time, work was ongoing within the UN to create a new regulatory framework Convention for the Law of the Sea, UNCLOS. The increased attention given to pollution from ships during this period also affected this UN work, resulting in the establishment of strengthened enforcement paradigms within part XII of UNCLOS.

The Action Plan adopted in Stockholm in 1972 at the UN Conference on the Human Environment made direct references to these – at that time – ongoing works within the UN and the IMO (IMCO).[13] Recommendation no 86(e) encouraged all States to participate in the work, creating and adopting international rules and regulations that could control and reduce such pollution, including pollution of the marine environment. The recommendation directly referred to States' participation in the IMO (IMCO) Conference on Maritime Pollution, as well as the United Nations Conference on the Law of the Sea, which later led to the adoption of, respectively, the MARPOL Convention and UNCLOS. The recommendation encouraged States to:

> Participate fully in the Intergovernmental Maritime Consultative Organization 1973 (IMCO) Conference on Maritime Pollution and the Conference on the Law of the Sea scheduled to begin in 1973.

Also, recommendation no 92 of the Action Plan invited all participating States to support the work of the UN and IMCO, with the development of rules that could protect the marine environment and human health. Therefore, both the early preparatory work on UNCLOS[14] and works relating to the MARPOL Convention[15] contain direct references to recommendation no 92.

A. The MARPOL Convention

The MARPOL Convention was adopted on 17 February 1973 and entered into force on 2 October 1983. Nevertheless, it needed supplementing with an Amending Protocol as early as 1978, since several maritime disasters[16] in the period 1973–78 showed the need for clarification and strengthening of the regulations adopted in 1973. The Amending Protocol also entered into force in October 1983.

The MARPOL Convention is thus sometimes referred to as MARPOL Convention 73/78, but this book will use the shorter title 'MARPOL Convention'.

[13] See n 5.

[14] See UN General Assembly Resolution on protection of the marine environment, UNGA 78, 50.

[15] See IMCO, 'General principles for assessment and control of marine pollution recommended by the United Nations Conference on the Human Environment (Recommendation 92)', MP/CONF/INF.6, 7 May 1973, 1.

[16] This included the loss of the *Metula* off the coast of Chile in August 1974, the *Argo Merchant* off the coast of Massachusetts (US) in December 1976 and the *Amoco Cadiz* off the coast of France in March 1978.

References to Annex VI to the Convention will be cited as 'MARPOL Annex VI' or simply 'Annex VI', depending on the context.

The MARPOL Convention contains several basic provisions that apply to the Convention, the Protocol and the Annexes, including definitions of certain basic expressions and concepts (article 2), and obligations regarding the dissuasive enforcement of violations (article 4) and for the certification and inspection of all ships (article 5). The Convention also entails provisions that seek to clarify the relationship between MARPOL and international maritime law, that is UNCLOS (article 9).

When it was adopted the MARPOL Convention included five Annexes, which to this day still impose specific requirements on ships to protect the marine environment from various sources of pollution. The five original Annexes covered 'Regulations for the Prevention of Pollution by Oil' (Annex I), 'Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk' (Annex II), 'Regulations for Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form' (Annex III), 'Regulations for Prevention of Pollution by Sewage from Ships' (Annex IV) and 'Regulations for Prevention of Pollution by Garbage from Ships' (Annex V). Only the first two Annexes entered into force together with the Convention and the amending Protocol in 1983, the other three being non-mandatory *operational Annexes*. The remaining three Annexes have since entered into force,[17] making their contents mandatory for the Contracting States.

B. MARPOL Annex VI – Regulations for Prevention of Air Pollution from Ships

After seeing and experiencing the tremendous, devastating impacts on the marine environment following different maritime disasters, the focus of the international community in the 1960s and early 1970s was on preventing such pollution from ships, to which focus the MARPOL Convention and its Annexes I–V bore testament. Then, in the late 1970s and especially in the early 1980s, another source of pollution attracted international attention, including from the IMO. This time, it was a form of pollution that can be difficult to see with the naked eye, and as a result of which the immediate damage from a single violation can be hard to determine – *air pollution*.

Studies revealed that the air in many areas was contaminated by man-made pollution in the form of harmful particles and substances, including substances that also could destroy the ozone layer.[18] It was believed that some of these airborne

[17] MARPOL Annex V entered into force on 31 December 1988; MARPOL Annex III entered into force on 1 July 1992; and MARPOL Annex IV finally entered into force on 27 September 2003.

[18] See at https://www.theguardian.com/environment/2015/apr/18/scientist-who-discovered-hole-in-ozone-layer-warns.

pollutants, apart from having a negative impact on the environment due to acidification and eutrophication, also had a direct adverse effect on the human health by way of causing respiratory diseases and the development of cancers.

As a consequence, a series of international conventions were adopted following the Stockholm Conference, in an attempt to reduce man-made air pollution, including The Convention on Long-range Transboundary Air Pollution 1979 ('the LRTAP Convention'),[19] The Vienna Convention for the Protection of the Ozone Layer 1985[20] and The United Nations Framework Convention on Climate Change 1992[21] (UNFCCC or 'the Rio Declaration).[22] These measures were, however, largely aimed at reducing airborne pollution originating in land-based sources. During the 1980s and 1990s, the IMO (MEPC) expanded the scope of its regulatory protection scheme to encompass the reduction of air pollution from ships.

In 1991 the work of the IMO resulted in Resolution MEPC A.719(17) on Prevention of Air Pollution from Ships, which in 1997 led to the adoption of a new annex (Annex VI) to the MARPOL Convention. MARPOL Annex VI entered into force on 19 May 2005.

The objective of this Annex was to regulate and reduce emission levels of certain airborne pollutants primarily arising from the combustion of marine fuels, including emissions of sulphur oxide (SOx), nitrogen oxide (NOx), volatile organic compounds (VOCs) and ozone-depleting substances (ODS). Some of these requirements, including the regulation of sulphur in marine fuels, were strengthened in 2008 by the MEPC's adoption of Resolution MEPC.176(58), which revised MARPOL Annex VI. In 2011, through the adoption of Resolution MEPC.203(62), Annex VI was expanded to include regulations on increasing the energy efficiency of new ships relating to the reduction of CO_2.

Annex VI therefore sets itself apart from the first five Annexes of the MARPOL Convention, by changing the regulatory focus from hindering tangible pollutants of the marine environment with visible impacts to seeking an overall reduction of air pollution from international shipping because of its cumulative effects.

At the end of 2018, 158 States, which together account for 99.01% of the total merchant fleet in the world, had ratified the MARPOL Convention. In addition, 94 States, which together constitute 96.71% of the world's total merchant fleet, have ratified MARPOL Annex VI.[23]

[19] The Convention on Long-range Transboundary Air Pollution (adopted 13 November 1979, entered into force 16 March 1983) 1302 UNTS 217.

[20] The Montreal Protocol on Substances that Deplete the Ozone Layer (adopted 16 September 1987, entered into force 1 January 1989) 1522 UNTS 3 was adopted as a protocol to the Vienna Convention for the Protection of the Ozone Layer (adopted 22 March 1985, entered into force 22 September 1988) 1513 UNTS 323.

[21] The United Nations Framework Convention on Climate Change (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107.

[22] See A Henriksen, *International Law* (Oxford University Press, 2017) ch 10.

[23] The ratification status of the different IMO conventions can be seen on the IMO's homepage at http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx.

Although the detailed content of MARPOL Annex VI will be reviewed in chapter 2 of this book, a brief introduction to regulation 14.1 of Annex VI, containing the global limits for the maximum allowed sulphur content of marine fuels, will be given here, as the question of enforcement of this regulation forms the basis of this book.

C. Regulation 14 of MARPOL Annex VI

Ships' emissions of sulphur particles are a major source of air pollution, which has a significant negative impact on human health and on the environment. Regulation 14.1 of MARPOL Annex VI therefore aims at the continuous reduction of the sulphur content of marine fuels.

Regulation 14.1 provides as follows:

> The sulphur content of any fuel oil used on board ships shall not exceed the following limits:
>
> 1. 4.50% m/m prior to 1 January 2012;
> 2. 3.50% m/m on and after 1 January 2012; and
> 3. 0.50% m/m on and after 1 January 2020.

Regulation 14.1.1 states that from the point of entry into force of the Annex in 2005 up to 31 December 2011, a global maximum limit of 4.50% (m/m)[24] sulphur in marine fuels applied. From 1 January 2012 the regulation was strengthened, with the permissible sulphur limit being reduced to 3.50% pursuant to regulation 14.1.2.

From 1 January 2020 the sulphur limit is once more to be lowered, this time significantly, to 0.50% according to regulation 14.1.3.[25] It is this regulation that has led to speculation about how the limit can be enforced effectively after coming into force.

It should be noted that an amendment to regulation 14.1, coming into force in March 2020,[26] will delete the references to the previous limit values of 4.50% and 3.50% pursuant to regulation 14.1.1 and regulation 14.1.2. Regulation 14.1 will thereafter consist of only one subparagraph and only one *global* limit value in the form of the 0.5 % limit, which, at that time, will have entered into force three months earlier. The reasoning behind this change is that the provisions

[24] Regulation 14.1 refers to the maximum allowed sulphur content in terms of '% m/m'. The abbreviation 'm/m' means 'mass/mass', and '% m/m' refers to 'mass/mass percent'. In other words, when, for example, reg 14.1.3 refers to marine fuels not having a maximum sulphur content exceeding '0.5% m/m', it means that a specific amount of fuel (fuel-mass) may not consist of more than 0.5% sulphur (sulphur-mass). This book, for reasons of simplicity, only refers to the percentage of sulphur, ie '0.5%', when referring to the global limit in reg 14.1.3.

[25] The 0.5% sulphur limit was adopted by Resolution MEPC.176(58).

[26] This change will be effectuated in connection with a planned revision of the regulation as part of the implementation of the so-called *carriage ban*, which is described later in this chapter.

(subparagraphs) that refer to the previous limits are obsolete and should be removed from regulation 14.1. Nevertheless, this book will refer to the subparagraphs applicable at the time where the 0.5% limit enters into force, that is, regulation 14.1.3.

D. EU Sulphur Directive

As noted in section I, the EU also regulates the sulphur content of marine fuels in Directive 2016/802 relating to a reduction in the sulphur content of certain liquid fuels, often referred to as the 'Sulphur Directive'.

The Directive has, since it was first adopted in 1993,[27] undergone several changes and amendments, until a codified version was presented in 2016.[28] It is the provisions of this 2016 version that are meant in this book when reference is made to the Sulphur Directive.

The Sulphur Directive is reviewed in chapter 5 of this book, but it will not be subjected to the same detailed analysis as regulation 14.1.3 of MARPOL Annex VI. The reason for this is that MARPOL Annex VI has global applicability, meaning that ships must comply with it wherever they sail, whether in the middle of the Pacific or the Atlantic Oceans, whereas the geographical applicability of the EU Sulphur Directive is limited to areas under the jurisdiction of EU Member States, and it is therefore often referred to as *regional* regulation.

V. Sulphur Pollution – Harmful to Humans and the Environment

That sulphur emissions are among the airborne substances regulated in Annex VI is based on scientific research proving that sulphur pollution can have a harmful impact on human health and on the environment.[29] This is directly specified, inter alia, in the fourth paragraph of the preamble to the EU Sulphur Directive:

> [E]missions from shipping due to the combustion of marine fuels with a high sulphur content contribute to pollution of the air by sulphur dioxide and particles that are harmful to human health and the environment, and which contribute to the formation of acid rain.

Furthermore, it is stated:

> Without the measures provided for in this directive the emissions from shipping before long would be higher than emissions from all land-based sources.

[27] Council Directive 93/12/EEC of 23 March 1993 relating to the sulphur content of certain liquid fuels [1993] OJ L74/81.

[28] Directive (EU) 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels [2016] OJ L132/58.

[29] The previously described international regulation of air pollution, eg through the LRTAP Convention, has led to the reduction of sulphur pollution from land-based sources. Sulphur pollution originating from shipping has the same negative consequences.

To better understand the harmful effects of sulphur emissions, a brief introduction to the scientific origin of sulphur is needed.

Sulphur is a natural element that has the atomic number 16 in the periodic table, with the atomic character 'S'. Sulphur is naturally found in organic material, including in fossil fuels such as coal, natural gas and oil. Oil that is processed into marine fuel therefore contains natural deposits of sulphur.

When marine fuel is burned to create energy and propulsion of a ship, the combustion process starts a chemical reaction causing the sulphur (S) bound in the fuel to react with oxygen (O_2) in the air, resulting in the formation of sulphur dioxide (SO_2).

In the atmosphere, sulphur dioxide is converted to sulphate, which can be deposited either as salts or as sulphuric acid. Sulphuric acids are one of the main reasons that precipitation polluted with sulphur becomes acidic (acid rain). Sulphate also contributes to the formation of particulate matter. As the exact state of the released sulphur oxide can vary, it is often referred to as 'SOx' where the 'x' indicates the unknown state of the sulphur.[30] This book uses 'sulphur' and 'SOx' as general and generic terms to cover different sulphur components in the exhaust fumes from ships emitted into the atmosphere via the ships' funnels (smokestacks). Similarly, 'GHG' is used to cover the diverse types of greenhouse gas, including CO_2, methane, etc.

A. How Sulphur Emissions from Ships Affect Human Health

Sulphur oxides can, as previously described, travel in an airborne state over long distances[31] until, for example, they are absorbed by humans via inhalation, at which point they can contribute to the irritation of the eyes and mucous membranes, and eventually lead to chronic respiratory disorders and diseases, including asthma, chronic bronchitis, etc. They can also cause cardiovascular diseases and result in premature death.

Certain vulnerable groups of people, including the elderly, sick, children, infants and pregnant woman, are considered as being at increased risk of suffering such adverse effects of sulphur pollution.[32] A Finnish report from 2016[33] estimated excess sulphur pollution from shipping alone to be responsible for more than 100,000 premature deaths each year, with most of these casualties occurring in highly populated coastal and harbour areas, particularly in Asia and Africa.[34]

[30] See at https://ww2.arb.ca.gov/resources/sulfur-dioxide-and-health.

[31] See at https://www.nilu.no/en/research/atmosphere-and-climate/long-range-transport-of-air-pollutants/.

[32] See Sofiev et al, n 1.

[33] JJ Corbett et al, 'Health Impacts Associated with Delay of MARPOL Global Sulphur Standards' (Finnish Meteorological Institute, 12 August 2016), available at http://shippingwatch.com/article9069067.ece/binary/Svovl_tidlig_doed.pdf, where the report was attached as an annex to a Finish submission to the IMO.

[34] The Finnish report also assesses, from a socio-economic angle, the costs for society associated with each premature death resulting from sulphur pollution from ships to be approximately $277,000.

The term 'excess sulphur pollution' is in this context used to describe the global consequences of the 0.5% sulphur limit's not coming into force or not being enforced, meaning that the shipping sector would continue to use marine fuels with a content of up to 3.5% sulphur. The reason for applying the term 'excess sulphur pollution' is that the Finnish report examined the global consequences of postponement of the entry into force of the 0.50% limit from 2020 to 2025, leaving the 3.50% limit to apply for a further five years.[35]

In 2018, two years after the Finish report, the disturbing consequences of excess sulphur pollution were confirmed and – unfortunately – uprated, as a study predicted that excess sulphur pollution every year would result in up to 137,000 premature deaths worldwide.[36] The report also noted that approximately 15,000 (14,800) of these premature deaths due to the development of lung cancer could be directly attributed to atmospheric sulphur emissions from shipping.

The same study further calculated how many cases of asthma among children could be avoided. It concluded that 7.6 million children will avoid developing asthma each year if the shipping industry uses 0.5% sulphur in marine fuels instead of 3.5%.

If ships were to continue to use much cheaper marine fuels with higher sulphur content, that is 3.5% or more, this would lead to the same harmful consequences for human health as described in the two reports occurring *every year on a permanent basis*. These calculations will be used in this book to describe the potential health benefits that will not be fully achieved if the 0.5% limit is not complied with due to lack of effective enforcement.

B. How Sulphur Emissions from Ships Affect the Environment

When sulphur emissions from ships, after undergoing the previously described chemical reactions, fall as acid rain, this can have significant negative consequences for the environment.

If acid rain falls over land it can have damaging consequences for trees, plants, crops, etc, as they absorb the acidic water, which affects their growth and eventually causes them to wither away. This is particularly so in areas where the earth is

[35] The reason for this discussion of a five-year postponement of the entry into force of the limit was the review provision (reg 14.8) in MARPOL Annex VI, which stipulated that a study of the global fuel market should be made to determine the availability of 0.5% fuel on the market in 2020. If Parties, based on the study, decided that it was not possible for ships to comply due to lack of compliant fuel, the regulation would allow for the delaying of the entry into force of the 0.5% limit until 2025. The fuel availability study ('Assessment of fuel oil availability', carried out by CE Delft and presented in submission MEPC70/INF.6 at MEPC70 in 2016, available at https://www.cedelft.eu/publicatie/assessment_of_fuel_oil_availability/1858) showed that there would be sufficient quantities of 0.5% fuel in 2020, which led the MEPC in 2016 to conclude that the entry into force of reg 14.1.3 should not be postponed. The Finnish health study was submitted to the IMO as a part of these discussions. Reg 14.8 is discussed in ch 2.

[36] See Sofiev et al, n 1, 4–5.

not very calcareous and therefore not able to efficiently neutralise the sulphur, for example in Sweden, where acid rain in the past has caused widespread deforestation of woodland areas.[37]

If acid rain falls in streams and lakes it can acidify the water by lowering its pH value, which can have severe consequences for the local ecology and the animal life of those streams and lakes.

Acid rain can also acidify seawater, especially in coastal areas, bays and ports, due to the reduced ebb and flow of the water, which can lead to a greater concentration of pollution in confined areas. This can have a destructive impact on the biodiversity, particularly in fragile ecosystems, including having adverse effects on plankton, corals and other organisms that also provide habitats and food for other species and marine life.[38]

Acidification can further have a negative impact on the biodiversity and marine life of the open oceans. This has occurred in places to such an extent that scientists refer to some parts of the oceans as being *dead zones*,[39] where ecosystems and animal life have been destroyed or are under threat of destruction. This is attributed, inter alia, to the discovery of the SUP05 bacterium[40] in deep areas of the oceans.[41] This bacterium can oxidise sulphur and tie it into organic material, including into the tissue of living organisms and animals like clams. SUP05 is a bacterium that is always present in the sea, but when introduced to certain other substances such as sulphur, it interacts with them, causing the bacterium to multiply exponentially, leading to further oxidisation resulting in deleterious effects to the ecology and marine life in these areas.

As the number of ocean dead zones are presumed to be increasing, in November 2017 this, amongst other reasons, prompted 15,364 researchers from 184 countries to sign an open letter, 'World Scientists' Warning to Humanity: A Second Notice',[42] warning the international community against such devastating environmental developments.

VI. What Shipowners Can Gain by Not Complying with the Sulphur Regulations

It should be obvious, due to the previously cited scientific research proving the harmful effects of sulphur pollution from ships, that regulations seeking to reduce

[37] See at https://www.britannica.com/explore/savingearth/acid-rain/.

[38] See at https://ec.europa.eu/jrc/en/news/ocean-acidification-exacerbated-emissions-ships-major-shipping-routes.

[39] Seeathttps://www.cbc.ca/news/technology/dead-zone-microbe-measures-ocean-health-1.814677.

[40] See at http://aem.asm.org/content/79/8/2767.full.

[41] See at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3554405/.

[42] See at https://academic.oup.com/bioscience/article/doi/10.1093/biosci/bix125/4605229.

these pollutants, such as regulation 14.1.3 of MARPOL Annex VI, ought to be complied with. The responsibility for ensuring such compliance lies with the shipowners.

In this book, the term 'shipowner' is used as a generic reference to the individual, legal person or entity (often a company) responsible for a ship, including being responsible for instructing the ship to use non-compliant fuel, and who or which stands to gain economically by not complying with the regulations.[43] UNCLOS also uses the same term.[44]

It is predicted that there will be a significant financial incentive for shipowners not to adhere to the more stringent 0.5% sulphur limit, as marine fuel with a low sulphur content will be much more expensive than high-sulphur marine fuel.[45] Different estimates and calculations have been made setting out the potential price difference between 0.5% fuels and 3.5% fuels, as the latter will continue to be available on the market after 2020.[46] These estimates place the price spread between 0.5% and 3.5% marine fuel in the range of $150–$200 per ton.[47] Based on such predictions, a large containership could save around $750,000 sailing from a port in Asia to a port in Europe[48] when using non-compliant 3.5% marine fuel instead of compliant 0.5% fuel. A shipowner with a large fleet of merchant ships could therefore save billions of dollars annually by failing to comply with the 0.5% limit.

This would create an uneven playing field for shipowners that comply with regulation 14.1.3 of MARPOL Annex VI, as some expect to spend more than $2 billion extra on fuel each year.[49] Some calculations have shown that the container

[43] Different commercial agreements, for instance the chartering of a vessel, can result in different constellations of responsibilities when operating a commercial ship, eg in accordance with the International Safety Management Code (ISM Code). It is not the intention of this book to illustrate the different persons, companies or legal entities that might be liable for a ship's violation. The relevant authorities (environmental, maritime, public prosecutors, etc) in the country where a violation is detected will be able, on a case-by-case basis, to utilise the jurisdictional basis of UNCLOS, as described in this book, to prosecute the correct person or legal entity responsible for it.

[44] See art 115 of UNCLOS.

[45] Due to the lack of demand, 0.5% marine fuel will not be a commodity available in larger quantities on the global fuel market before the coming into force of the new regulation, hence making the exact price of this fuel difficult to assess up until that point.

[46] Marine fuels with a high sulphur content, such as 3.5% products, will continue to be available after 1 January 2020. One of the reasons for this is that it will be legal for a ship to use fuel with a high sulphur content exceeding 0.5% if the vessel is employing an approved Exhaust Gas Cleaning System (EGCS), which cleans and purifies the emissions/gases from the ship by spraying water into the exhaust fumes, resulting in these having the same low levels of sulphur as those of a ship using 0.5% fuel. Many of these EGCS systems are so-called 'scrubber systems'. The rules and requirements for using such systems are described in ch 2.

[47] B Schieldrop, IMO 2020 Report #2, Skandinaviska Enskilda Banken (SEB) (25 October 2018) 9. This report even suggests a spike in the price spread between 0.5% and 3.5% fuel in 2020 of $360 per ton, before dropping down to the $200 range from 2021 onwards (ibid table 3). See at https://webcache.googleusercontent.com/search?q=cache:A-3iUin-QPIJ:https://webapp.sebgroup.com/mbs/research.nsf/alldocsbyunid/65BE99C18C39C835C12583310043C55F/%24FILE/2018_10_25_SEB_IMO_2020_Enough_MFO_05_if_the_price_is_right_Final.pdf+&cd=1&hl=da&ct=clnk&gl=jp.

[48] See at https://www.bloomberg.com/news/articles/2018-08-29/maersk-sees-fuel-bill-soaring-by-2-billion-from-2020-rules.

[49] ibid.

shipping industry alone will face an extra $10 billion fuel bill every year.[50] These costs will to a considerable extent be passed on the customers through increased freight rates or special surcharges.[51]

Non-compliant shipowners would not face these extra fuel bills, allowing them to generate greater profits for themselves and their shareholders, and at the same time to offer reduced freight rates to customers compared to compliant competitors.

Lack of effective enforcement of regulation 14.1.3 could therefore quickly create a vicious circle, where compliant shipowners are faced with the bleak outlook of either being strong-armed out of the shipping market by non-compliant competitors, or becoming non-compliant themselves in an attempt at self-preservation and survival in an uneven competitive market. As most international shipowners in such a scenario steadily become non-compliant, or disappear, the environmental and human health benefits from using maximum 0.5% instead of maximum 3.5% marine fuels are consequently also lost.

So, from environmental, human health and business viewpoints, strong enforcement of regulation 14.1.3 of MARPOL Annex VI is key. Enforcement that relies on the jurisdictional grounds embodied in UNCLOS.

VII. UNCLOS – A *Lex Superior* Framework Convention of the Sea

To obtain the full potential beneficial environmental and health-related impacts of the 0.5% limit, and to avoid commercial speculation in non-compliance, the Annex VI sulphur regulations must be enforced effectively. This means that regulation must be controlled and that any violation that is detected must be sanctioned so severely that it discourages future violations, especially considering the economic incentive for shipowners not to comply with the regulations.

This requirement for control and effective enforcement falls upon States, that is, the relevant government authorities for dealing with such violations, often the environmental or maritime (port) authorities who – sometimes in collaboration with the police and public prosecutors – bring such cases before a court, where the penalty normally consists of a fine. Many States provide the defendant with the option of paying the fine before going to court, thereby allowing the person or company to avoid additional court fees and the expense of legal representation, etc. Such fines can be issued by the police or as administrative fines directly imposed by the responsible (environmental or maritime) authority.

[50] See Report from AlixPartners, *2019 Global Container Shipping Outlook* (February 2019) 5, available at https://www.alixpartners.com/insights-impact/insights/2019-global-container-shipping-outlook/.

[51] See at https://www.maersk.com/en/news/2018/09/17/maersk-to-change-fuel-adjustment-surcharge-ahead-of-the-2020-sulphur-cap.

Irrespective of any State's national legal system, all violations of international maritime rules, such as MARPOL Annex VI, must be enforced in accordance with the jurisdictional framework provided for in UNCLOS, as the Convention specifies which rights and obligations different States have at sea. UNCLOS is therefore often referred to as a framework convention[52] or as being the Constitution of the Sea,[53] as it codifies many basic customary principles of international law (ie the law of the sea), including different enforcement paradigms for different States, depending on whether these are designated as *flag*, *coastal* or *port States*.

UNCLOS bestows different rights and imposes different obligations on each of these three types of State, including prescribing different jurisdictions for enforcing violations of international environmental regulation. One State can of course be a flag State, a coastal State and a port State if it has a ship registry, a coastline and one or more ports. It depends on the specific circumstances of a given situation whether a State is considered a flag, coastal or port State in terms of which UNCLOS regulations can be invoked.

If a State wishes, or is under duty, to implement, control or enforce regulation over ships that are registered in the State, and which are thus sailing under (flying) that State's (country's) flag, the State is deemed a *flag State*. On the other hand, if a State wants to implement, control or enforce rules governing *foreign ships*,[54] for example when they are sailing in areas of the sea under the State's jurisdiction, that State is considered a *coastal State* or a *port State*. This means that a State that is party to MARPOL Annex VI must ensure that the rules of the Annex, including regulation 14.1, are enforced in accordance with UNCLOS over ships flying its flag (as a flag State) and in areas under its jurisdiction (as a coastal or port State).

No national, regional or international regulation can therefore be applied and enforced at sea by a State, without this being in accordance with UNCLOS. Thus, the rights and responsibilities set out in UNCLOS regulate the grounds for controlling, stopping, investigating, prosecuting and sanctioning vessels that do not comply with these rules.

If there is a discrepancy between other regulations (national or international) and UNCLOS, the latter must be followed, as to a considerable extent it codifies the fundamental principles of the law of the sea. UNCLOS must therefore be considered *lex superior* to other rules and regulations when it comes to determining a State's sovereignty and jurisdiction over ships under its flag and over different maritime areas and the foreign ships therein. National authorities and courts must

[52] See Advocate General Wahls, Advisory Opinion, in Case C-15/17 *Bosphorus Queen Shipping Ltd Corp v Rajavartiolaitos*, 28 February 2018, ECLI:EU:C:2018:557, para 59. This case is reviewed in ch 5.

[53] H Ringbom, 'Enforcement of the Sulphur in Fuel Requirements: Same, Same but Different', available at https://webcache.googleusercontent.com/search?q=cache:EBk8-0aReA0J:https://www.duo.uio.no/bitstream/handle/10852/61600/SO-Artikel-Ringbom.pdf%3Fsequence%3D4%26isAllowed%3Dy+&cd=1&hl=da&ct=clnk&gl=no, 20.

[54] The term 'foreign ships' refers to ships not flying the flag of the State but flying a foreign flag.

respect the jurisdictional paradigms laid out in this Convention when enforcing legislation at sea, in this instance the 0.5% sulphur limit.

Furthermore, some of the regulations under UNCLOS could be said to have the status of *lex specialis* themselves, as the Convention contains specialised provisions that, unlike some national legislation, distinguish what sort of a violation a ship has committed, for example whether it is a *discharge* or a *dumping* violation.

A. Flag State Jurisdiction on the High Seas – A Historical Principle

As described, a *flag State* is the State where a ship is registered, and it therefore sails under the flag of that State.

The right of States to let ships register and fly their flags has, since the adoption of the Declaration recognising the Right to a Flag of States having no Sea-coast in 1921, also applied to landlocked States.[55] This was later codified in article 90 of UNCLOS, giving rights to all States, including landlocked States, to let ships sail under their flags.

A ship can, pursuant to article 92, only sail under the flag of one State, and it is thereby, apart from exceptions set out in UNCLOS, etc, also subject to the exclusive jurisdiction of that State when sailing on the high seas.[56]

Article 94 stipulates that the flag State shall effectively exercise its jurisdiction over ships flying its flag, including ensuring that these ships comply with national and international rules on safety, working environment, crewing, etc. The flag State is therefore, pursuant to article 94(6), also obligated to investigate and take necessary action when foreign States inform the flag State of a violation committed by a ship under its flag.[57]

Article 94 also requires a flag State to maintain a register of ships flying its flag, with relevant information about the ships. Shipowners often pay a fee to the flag State for the registration of a ship, and continue to make payments to the State in the form of paying taxes (tonnage tax).

A flag State's responsibility to ensure that ships flying its flag comply with international environmental regulations, including MARPOL Annex VI, is regulated in the specific (*lex specialis*) provisions covering this in part XII of UNCLOS,

[55] Declaration recognising the Right to a Flag of States having no Sea-coast (adopted 20 April 1921, entered into force 8 October 1921) 7 LNTS 73. See NK Mansell, *Flag State Responsibility – Historical development and contemporary issues* (Springer-Verlag, 2009) 21.

[56] The 'high seas' is a legal term used to describe areas of the sea that are located outside any State's territorial waters and Exclusive Economic Zone (EEZ). See UNCLOS, art 86. These areas are therefore not subject to the territorial jurisdiction of any State. Examples of such areas are large parts of the Pacific, Atlantic and Indian Ocean.

[57] NM Hosanee, '*A critical analysis of flag State duties as laid down under article 94 of the 1982 United Nations Convention on the Law of the Sea*', The United Nations-Nippon Foundation Fellowship Program (2009–2010).

articles 192–237. According to article 217, this includes special obligations for the flag State to investigate, effectively enforce violations and promptly notify the IMO and other States of their effective enforcement. Article 217 is discussed in more detail in chapter 8 of this book.

The common denominator of articles 92, 94 and 217 is that they codify a historical founding principle within the law of the sea,[58] referred to as *the flag State principle*. The flag State principle dictates that, apart from codified exceptions, for example found in part XII of UNCLOS, only a flag State has jurisdiction when a ship under its flag violates an international rule whilst sailing on the high seas.

In practice, the flag State principle not only bestow flag States with an exclusive right to enforce international rules, it also entails an obligation to do so, as explicitly stated in articles 94 and 217.

B. Open Registry States – Flag States that Fail to Enforce Effectively

Despite the clear requirements in UNCLOS for flag States to effectively enforce international rules on ships flying their flags when sailing on the high seas, some do not fully live up to these obligations. The reason for this is often related to the aforementioned fact that shipowners pay a registration fee and a tax for having a ship registered in a flag State. These fees and taxes represent a significant revenue base for some flag States. Hence, some States offer (implicitly) particular advantageous terms for shipowners in an attempt to gain as large a merchant fleet as possible under their flag. These advantageous terms can, for example, involve the flag State's not exercising its jurisdiction over ships flying its flag when they violate international laws, or at least not exercising such jurisdiction effectively. Such flag States are often referred to as being 'open registry States'.[59] Another term used to describe such flag States is that they offer a 'flag of convenience'.[60] This book uses the term 'open registry flag States'.

It could be a potential win–win scenario for shipowners and open registry flag States, if the latter do not effectively penalise violations of the 0.5% sulphur limit. Shipowners could save billions of dollars on fuel expenses each year, and delinquent flag States could attract new shipowners, giving those flag States a larger income from the extra registered ships.

Open registry flag States could potentially also attract new non-compliant shipowners even if they enforce the regulations under MARPOL Annex VI, if this

[58] There are references to the principle in the verdict of the Permanent Court of International Justice in the *Lotus case* from 1927 (*SS Lotus (France v Turkey)* PCIJ Rep Ser A No 10 (7 September 1927) – see ch 6) and it was codified in art 11(1) of the Convention on the High Seas 1958 (adopted 29 April 1958, entered into force 30 September 1962) 450 UNTS 11, which today is implemented in art 97 of UNCLOS (see ch 3).

[59] See Mansell, n 55, 18, fn 14.

[60] See Henriksen, n 22, 165.

enforcement is ineffective. As savings for a shipowner could be in the range of $750,000 for a single non-compliant trip from Asia to Europe, a potential fine from a flag State to a shipowner of, for example, $50,000[61] for such an infringement would – although constituting a high fine compared to fines usually issued for violations of international regulations in other regulatory areas, such as safety, crewing, etc – nonetheless amount to *ineffective enforcement*, as the shipowner could pocket a $700,000 saving for the violation.

This could quickly lead to the previously envisioned vicious circle, forcing otherwise compliant shipowners to re-register their fleets with an open registry flag State to survive in an uneven competitive market, completely negating the potential environmental and health benefits expected from the 0.5% sulphur limit in MARPOL Annex VI.

It is therefore important to determine whether other States than flag States, that is coastal or port States, can exercise jurisdiction over such violations of regulation 14.1.3 of Annex VI committed by foreign ships, to counter any lack of enforcement by open registry States and prevent the vicious-circle effect. This author believes that part XII of UNCLOS provides such a jurisdictional basis, which will be analysed in Part II of this book.

VIII. Challenges with Detecting and Proving Violations on the High Seas

The purpose of this book is to clarify whether there is a legal basis for non-flag States to effectively enforce MAROL Annex VI,[62] ensuring that violations are met with effective sanctions (fines). There is, however, another aspect of ensuring the effective enforcement of the 0.5% sulphur limit that this book does not address in detail, regarding practical enforcement, that is, *detecting violations*.

The initial test of whether the fuel on board is non-compliant is carried out by examining the Bunker Delivery Note (BDN), which is issued by the fuel supplier to the ship each time marine fuel is 'bunkered' (taken on board). This follows from regulation 18.5 of MARPOL Annex VI.

The BDN specifies the sulphur content of the delivered fuel, and a (port) State's authority will begin a control (inspection) of a ship by examining this document. The inspection will also focus on whether the BDN itself meets the formal requirements of appendix 5[63] of MARPOL Annex VI.

[61] Ringbom, n 53, 21, fn 74.

[62] The conclusions of Part II regarding enforcement of the sulphur limit of reg 14.1.3 can be applied to the enforcement of other emission regulations, including future GHG measures, which are described in Part III of this book.

[63] The BDN is described further in ch 2.

If a BDN shows that fuel being used has a non-compliant sulphur content, or if the BDN is missing, flawed or can be suspected of being falsified, it will give the authorities grounds for examining the fuel in greater detail by drawing a fuel sample and analysing it. Fuel samples can also be drawn and analysed on grounds that do not directly relate to the BDN. In fact, the drawing of fuel samples is an integral part of Port State Control (PSC) that many port States perform. This PSC is described in chapter 4.

Fuel samples are drawn from the ship's fuel system, usually as close as possible to the engine where the fuel is combusted.[64] The fuel sample is afterwards taken to a laboratory for an analysis that determines the precise sulphur content of the fuel.

If the analysis shows that non-compliant fuel is being used, and the ship has not yet departed, the port State can demand that the ship debunker (remove) the non-compliant fuel and bunker compliant fuel instead. The port State can further demand that the ship (shipowner) post economic security (bail) to cover any potential fine before the ship is permitted to sail. The posting of economic securities by non-compliant ships is a key factor in achieving effective legal enforcement of MARPOL Annex VI.[65]

Yet a fuel sample taken from the main engine fuel oil system merely provides evidence as to whether the ship was using compliant fuel coming into port. It can be difficult to detect and prove any prior violation of the sulphur regulations, especially infringements that may have occurred days or weeks earlier on the high seas.

It should be noted in this regard that many ships have several fuel tanks on board that can contain different types of marine fuel, such as fuels with 0.1% and 0.5% (and 3.5%) sulphur content. The ship can switch the fuel tank that supplies the last (day/settling) tank before the fuel reaches the engine. It is therefore possible that a ship might sail for weeks on end, for instance when crossing the Pacific, on non-compliant 3.5% fuel and then, perhaps 24 hours prior to arrival in port, change to compliant 0.5% fuel stored in another tank on board.

Such a switch, carried out shortly before entering port, could nevertheless potentially lead to a *positive* (ie non-compliant) test result, as 3.5% residues in the combustion system could contaminate the 0.5% fuel, resulting in a higher sulphur value. In spite of that, given the chance of potentially saving billions of dollars a year, some non-compliant shipowners may approach such switchovers with scientific accuracy to determine when a fuel changeover from a non-compliant to a compliant fuel could be made without resulting in a positive test result. This leads to challenges with *practical enforcement* of regulation 14.1.3, regarding the detection and proof of non-compliance during a voyage on the high seas, for example in the middle of the Pacific.

[64] Fuel samples are therefore normally drawn from the day (/settling) tank, as these tanks often feed fuel directly into the engine.

[65] PSC and the possibilities for detaining ships and requiring economic security (bail) are discussed in ch 4.

A. Developing Advanced Methods and Technologies for Detection

Because of the abovementioned challenges in proving non-compliance, research and development of alternative technical solutions to aid such detection have evolved into a fast-growing area of business. Some of the most promising and scientifically recognised solutions will briefly be touched upon in the following to underline that one or more of these solutions, perhaps used in conjunction with fuel sampling, will be able to detect and prove non-compliance during any part of a voyage, including on the high seas.

One of the most developed and promising solutions for external detection of infringements of the sulphur limit is the use of a *remote sensing technology*, which measures the SO_2/CO_2 ratio in the exhaust fumes (emissions) coming out of a ships funnel. Too high a SO_2/CO_2 ratio in the exhaust fumes is a clear indication that non-compliant fuel is being used.

The devices utilising this remote sensing technology are often referred to as *sniffers*, and they can be fitted to bridges,[66] aircraft, helicopters, other ships and drones. Research has shown that sniffers attached to long-range solar-operated drones might be an effective way of detecting non-compliant ships in the middle of an ocean, as these drones can operate for extended periods of time, flying over ships and shipping lanes, measuring funnel output and combining the data with AIS data.[67] These combined data could immediately identify a ship not complying with the sulphur regulations and inform the authorities in the ship's next port of call. Further development of this technology and positive empirical data on the level of confidence resulting from the measures could lead to remote sensing (sniffers) being used as the sole evidence for proving non-compliance.

Another possibility is to install continuous monitoring of the emissions output. Noting this internal (on-board) detection technology is often abbreviated to CEMS ('Continuous Emission Monitoring System'), and it is already applied on most ships using an Exhaust Gas Cleaning System (EGCS),[68] which cleans the emissions from ships' exhaust gases, as described in chapter 2.

[66] In Denmark, the Danish Environmental Protection Agency has used a fixed sniffer attached to the Great Belt Bridge to detect non-compliant ships sailing through the Great Belt. See at https://eng.mst.dk/about-us/news/news-archives/2017/okt/two-shipping-companies-reported-to-the-police-for-sulphur-pollution/. It should be noted that some in some areas, including the waters off Denmark, a lower 0.1% sulphur limit already applies. This is described in ch 2.

[67] AIS refers to the Automatic Identification System that all merchant ships must use. The AIS data are transmitted continuously from a transponder on board a ship, sending GPS updates on the ship's position, along with information about the ship, eg the ship's unique identification number (IMO number), its name, its next port of call, etc.

[68] Regulation 4.1 of MARPOL Annex VI allows for the use of alternative means of compliance, eg approved technologies that reduce the sulphur emission levels to levels equivalent to using compliant fuel in accordance with the conversion table (table 1) implemented in MEPC Resolution MEPC.259(68).

Other promising means of detecting violations anywhere on the open seas is through *satellite monitoring*. Satellites have already been launched from different companies, and have shown themselves to be able to monitor and measure large emissions of SOx, NOx, CO_2, etc on a busy sailing route. Still, this technology must be developed further to be able to identify the emissions from specific ships. The satellite data could be used in conjunction with the aforementioned sniffers attached on a helicopter, plane or drone, using the sniffer to carry out exact measurements of a particular ship as a follow-up to a satellite's indication of general non-compliance in a particular area.

Development of a *fuel calculator* has also been mentioned as a possible means of detecting non-compliance. It is a method of calculation that is meant to determine the amount of fuel that a ship *should* have used, and which then compares the result to the ship's information on the amount of fuel *actually* used to find any discrepancies. This to prevent ships from filling a fuel tank with unregistered non-compliant fuel and burning that fuel before coming into the next port.[69] The method uses various data for the calculation, including the ship's size and engine, its cargo, speed, weather conditions, etc.

As mentioned, the fuel sampling that is drawn in port requires that the samples are sent to a laboratory for testing according to a specific reference method.[70] It is a procedure that can take several days to achieve a result, depending on the distance to the laboratory, etc. During this time the ship from which the sample was drawn has usually continued its journey. This can complicate the ensuing investigation and court proceedings. *Hand-held fuel-sampling devices* could resolve some of these challenges, as they allow authorities to conduct an on-board analysis of the fuel and instantaneously receive measurement of the sulphur content. Even though hand-held devices might not enable better detection of non-compliance on the high seas, they will offer port State authorities an easier and faster way of determining non-compliance, thereby giving them (clear) grounds for detaining a ship for further investigation during PSC. Hand-held fuel-sampling devices are already used by some port State authorities, but could be developed further and applied by other (or all) port States.

B. Ban on Having Non-compliant Fuel on Board – The 'Carriage Ban'

Finally, one of the most effective and important means of detecting and proving non-compliance had already been achieved in 2018 through a procedural change

[69] Fuel calculating was initially developed for ensuring compliance in SECA zones (described in ch 2), where a 0.10% sulphur limit applies.

[70] For reference methods see ISO 3685:1998 or ISO 12185:1996 and ISO 8754:2003; see app 5 to MARPOL Annex VI.

of the wording of regulation 14.1 of MARPOL Annex VI. This procedural change is often referred to as the acceptance of the 'carriage ban'.

To understand the reasoning behind the carriage ban, the precise wording of regulation 14.1 must be recalled: 'The sulphur content of any fuel oil used on board ships shall not exceed the following limits …' The phrase 'any fuel oil used on board' indicated that it was not illegal to have non-compliant fuel in some fuel tanks on board if the fuel *used*, that is the fuel fed directly into the engine, was compliant. As a result, fuel samples taken during a PSC were often, as described, taken from the day (/settling) tank or from the part of the fuel system that feeds directly into the engine. There was no reason for examining the sulphur content in other fuel tanks on board, as it was not illegal to *carry* non-compliant fuel in those tanks due to the wording of regulation 14.1.

This could potentially have caused severe problems in proving non-compliance, as it would be possible for shipowners, with intent to avoid compliance, to perfect the aforementioned changeover procedures, allowing the ship to undertake an entire voyage, perhaps lasting several weeks, on non-compliant fuel, finally changing over to compliant fuel just before sailing into port.

Resolution of this problem was sought by the IMO and its Member States, by amending the wording of regulation 14.1 to extend the prohibition to encompass fuel used 'or carried for use', thus rendering it illegal to carry fuel with more than 0.50 % sulphur content in any fuel tank on board.[71] Tankers, etc are still allowed to sail with such fuel carried as cargo in their cargo tanks.[72]

The introduction of the carriage ban will facilitate the detection of non-compliance and ease the burden of proof for many port States, as it will enable fuel sampling of several or all fuel tanks on board, making it impossible to engage in changing over from non-compliant to compliant fuel just before arriving in port.

C. IMO Work on Consistent Implementation of Regulation 14.1.3 of MARPOL Annex VI

The PPR committee has, under the auspices of the MEPC, also discussed several different means of effective detection as part of the Committee's ongoing work on ensuring *consistent implementation of regulation 14.1.3 of MARPOL Annex VI*. One of these means is developing a standard FONAR template and reporting system.

[71] The changing of the wording (implementing the carriage ban) was done in accordance with an expedited IMO procedure where it was first presented and agreed upon in the PPR committee at PPR5 in February 2018. The MEPC committee approved the carriage ban at MEPC72 in April 2018 before finally adopting it at MEPC 73 in October 2018. Following a mandatory 16-month implementation period, the carriage ban enters into force on 1 March 2020. As previously mentioned, at that time the other procedural changes to reg 14.1, ie the deletion of references to the former sulphur limits of 4.5% and 3.5% pursuant to regs 14.1.1 and 14.1.2, will also come into force.

[72] Ships using an approved EGCS (see n 46) will, needless to say, also be allowed to carry non-compliant fuel, as they are using an alternative means of compliance. This is described in ch 2.

A FONAR is a 'Fuel Oil Non-availability Report', which a ship can use to inform its flag State and the next port State of any non-availability of compliant fuel in the last port of call, requiring the ship to bunker and use non-compliant fuel.[73]

A FONAR issued on a truthful basis should allow the ship to use the non-compliant fuel without being penalised, provided the FONAR requirements are met. This means that the ship took every conceivable action to try to obtain compliant fuel elsewhere, including from other fuel suppliers, and that the ship bunkered only just enough non-compliant fuel to get it to the next port, meaning that it would be illegal to fill all tanks with the non-compliant fuel.

The FONAR system ensures that ships cannot justify any non-compliance by pleading the lack of compliant fuel at their last port of call; this must be reported using a FONAR. This system should, when used in conjunction with the ship's sailing plan, indicate whether a ship or shipowner deliberately, perhaps on a recurring basis, sought out ports and regions where compliant fuel is usually unavailable. This renders the use of a FONAR invalid.

The FONAR is not an exception as such from the sulphur regulations, as port States are merely required to take it into consideration. The authorities are conversely always within their rights to reject a FONAR.

The MEPC (PPR) work on consistent implementation of regulation 14.1.3 of MARPOL Annex VI has, in addition to FONARs, also included work on developing and amending guidelines on: designating sampling points for fuel sampling; PSC; confidence levels for fuel samples; safety implications; EGCSs, fuel oil suppliers; and a non-mandatory Ship Implementation Plan.[74]

D. Most Plausible Means of Detecting Violations of the Sulphur Limit

The abovementioned solutions show that detecting and proving violations of the 0.5% limit are achievable, including on the high seas.

The carriage ban will, upon entering into force in March 2020, undoubtedly have an immense impact on ensuring the practical enforcement of regulation 14.1, as it will complement the other possible detection methods described. For instance, if a violation on the high seas is detected by using a sniffer attached to a long-distance drone, perhaps initially patrolling the area due to data provided by satellite, this information on non-compliance can be used to target the ship for a PSC in the next port, where all fuel tanks on board, by way of the carriage

[73] The legal basis for the FONAR reporting system is found in reg 18.2 of MARPOL Annex VI, which addresses claims of non-availability from ships not able to bunker compliant fuel. This regulation is discussed in ch 2.

[74] See at http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Index-of-MEPC-Resolutions-and-Guidelines-related-to-MARPOL-Annex-VI.aspx.

ban, will be subject to fuel sampling, for example by using a hand-held detection device, perhaps backed up by a fuel calculation. The possible application of these detection methods as part of PSC, pertaining to their constituting *clear grounds* for detailed inspections, is discussed in chapter 4.

It should be noted that the sniffer technology could eventually be considered so well-advanced, and the sniffer results so reliable, that the information provided by the sniffer would by itself be sufficient evidence for proving non-compliance on the high seas and issuing a fine on that basis. So if the next port State the ship visits does not react to the information and does not target the ship for a PSC, other States can enforce the detected violation at a later stage when the ship calls into their ports, as the evidence provided by the sniffer(-drone) is sufficient to prove that a violation occurred on the high seas.

This author therefore believes that the challenges with the *practical enforcement* of regulation 14.1.3, that is in detecting and proving non-compliance by a ship at any point during its voyage, can be overcome.

This leaves one challenge unresolved before effective enforcement of the 0.5% limit is completely ensured: establishing that there is a *legal basis* in UNCLOS for non-flag States, that is coastal and port States, to ensure the sanctioning of violations, irrespective of where they are committed.

IX. Conclusion

The development of the MARPOL Convention and its Annexes reflects in many ways the general legislative advances within maritime law for protection of the marine environment and human health.

First, the original focus on the visible, tangible pollution of the sea by oil, etc has changed to include contamination of the atmosphere by airborne pollutants such as sulphur emissions from ships, as such emissions are harmful to both the environment and human health. Sulphur emissions from ships are regulated in Annex VI to the MARPOL Convention. Regulation 14.1 of MARPOL Annex VI sets the global limit values for the maximum sulphur content allowed in marine fuels. From earlier limit values of 4.5% and 3.5%, the limit has dropped significantly to 0.5%, which, if enforced effectively, will prevent 137,000 premature deaths and millions of children from developing asthma every year, particularly in highly populated coastal and port areas.

Still, some shipowners will have a huge economic incentive for not complying with the regulations, especially if they fly flags from an open registry flag State, as such a State might not meet its obligations to penalise violations of the 0.5% limit effectively, thereby neglecting to adhere to the flag State principle.

The detection and proving of violations that take place on the high seas are likely to be achieved by several different means used in conjunction, such as CEMS or sniffers and fuel sampling.

Part XII of UNCLOS provides a jurisdictional basis for coastal and port States to enforce compliance with regulation 14.1 of Annex VI if the flag State fails to do so.

The jurisdictional basis of part XII of UNCLOS is also of relevance when looking at enforcement of other international (IMO) rules for protection of the environment, including future legislative measures for reducing GHGs.

2

The Regulation of Sulphur in MARPOL Annex VI

Chapter 1 presented a brief introduction to the MARPOL Convention[1] and its Annex VI, especially in connection with regulation 14.1, concerning the challenges faced in detecting and enforcing the 0.5% sulphur limit. However, Annex VI contains several other complex regulations relating to the overall purpose of reducing the sulphur emissions from ships. Some of these will be touched upon in this chapter, but references will be made to many of these provisions throughout the book, notably in chapter 4 on Port State Control (PSC) enforcement.

I. Regulation 1 – All Ships are Covered by Regulation 14

Regulation 1 of MARPOL stipulates that the sulphur limits in Annex VI apply to *all ships*, as regulation 14 is not listed as one of the exceptions mentioned in the provision.

Furthermore, States cannot, at their own discretion, exempt a ship or type of ship from complying with the regulation, as MARPOL Annex VI does not allow for this. Exemptions can only be made in accordance with the explicit possibilities of the Annex relating to situations of force majeure and ships on which approved exhaust gas cleaning systems (EGCSs) have been installed. These exemptions are discussed in sections II and III of this chapter.

II. Regulation 3 – Exemptions in Cases of Force Majeure or Damage to the Ship

Regulation 3.1.1 of Annex VI specifies that a ship is not required to follow the requirements of the Annex, including regulation 14, if it poses a danger to the

[1] International Convention for the Prevention of Pollution from Ships (adopted 11 February 1973, as modified by the Protocol of 17 February 1978, entered into force 2 October 1983) 1340 UNTS 61 (MARPOL), IMO Publication: IMO-520E.

safety of the ship and crew, or if the ship is involved in saving lives at sea. In other words, the ship is exempt from following the rules in cases of force majeure.

Regulation 3.1.2 also exempts ships from adhering to the regulations in the Annex if an unlawful emission is caused by damage to the ship or its equipment. This necessitates all reasonable measures having been taken to avoid the damage, and that the damage was not an intentional or reckless result of the owner's or master's[2] actions or knowledge.

III. Regulation 4.1 – Exhaust Gas Cleaning Systems: Equivalent Compliance Solutions

As previously mentioned, ships have the option of complying with the sulphur regulations by installing and using an *equivalent* solution. The most widely used equivalent solution is the EGCS.

An EGCS is a system that cleans the exhaust gas of the ship, thereby reducing the sulphur emissions to a level equivalent to using fuel compliant with regulation 14 of Annex VI. This allows ships with an EGCS to use cheaper, high-sulphur marine fuel that does not comply with the sulphur limits.

Resolution MEPC.259(68) of the Marine Environmental Protection Committee (MEPC) includes an conversion table (table 1), which shows the emission levels (limits) that a ship using a EGCS must meet in order for them to be the equivalent of those produced by ships using fuel with a sulphur content of 3.5%, 0.5%, 0.1%, etc.

Even though the use of an EGCS may represent a formal exemption from complying with regulation 14, it does not set a lower regulatory bar for combatting air pollution as the EGCS technology reduces the sulphur emissions from the ship's exhaust fumes to a level equivalent to those released by ships using fuels compliant with Annex VI.

Such EGCSs must be approved by the competent administration (authorities) of the ship's flag State in accordance with to regulation 4.1. The flag State administration may also approve the installation and use of new emission reduction systems still under development. However, these must be tested over a specified trial period laid down by regulation 3.2. Equivalent emission levels must be achieved during that period. Regulation 4.3 stipulates that the administration, when evaluating and approving such systems, should do so in accordance with the guidelines issued by the International Maritime Organization (IMO).

[2] This book uses the term 'master' to describe the person in charge on board a ship, as this is the term used in the United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3 (UNCLOS), eg in arts 27, 94 and 211. Another, more common term for this person is 'captain'.

Such 'Guidelines for Exhaust Gas Cleaning Systems' have been issued by the MEPC in the form of Resolution MEPC.184(59) (2009), as amended by the aforementioned Resolution MEPC.259(68) (2015), which, inter alia, contains detailed requirements for such emission reduction systems and how these should be approved. In short, the guidelines refer to their being approved through either Scheme A or Scheme B. Scheme A takes a type approval approach. The focus is on the system's fulfilling several specific requirements, including documentation that the system is compliant when using a fuel with the maximum sulphur content (eg 3.5 %) specified by the EGCS manufacturer. The fuel used by the ship should not exceed this recommended maximum as otherwise it is not guaranteed that the emissions can meet the specified limits. Scheme B is based on continuous documentation to show that the emissions comply with the specified limits. This is done by installing a Continuous Emission Monitoring System (CEMS), which ensures that emissions comply with the limit values set out in table 1 of Resolution MEPC. 259(68). All ships with an EGCS should monitor the wash water discharge to demonstrate compliance with the limits in the EGCS guidelines.[3]

It might seem like the obvious solution for all shipowners to comply with the sulphur limits of Annex VI by using an EGCS, as their ships can then use cheaper high-sulphur fuel, but several other factors come into play. An EGCS is often very costly to acquire, install and operate, as it may require extra capacity, including manpower for continued maintenance and surveying of the system. The installation of an EGCS may also require the ship to dock while the system is being installed, which can come at a high price for shipowners if the ship is out of commission during that time. The constructions of some ships may also present special practical challenges in relation to installation of such a system. Furthermore, the risk of a malfunctioning EGCS can be a deciding factor in comparison with the stability ensured by using compliant fuel. The business case for using an EGCS therefore varies immensely from shipowner to shipowner, depending on the type of ship, its age and its operational pattern.

A. Scrubber Systems – A Widely Used EGCS

One of the most widely used and applied EGCSs are the so-called 'scrubber systems'.

A 'scrubber' is normally a type of EGCS technology that sprays water/liquids onto the uprising exhaust gas, which leads to the 'scrubbing out' (washing out) of a substantial amount of sulphur (and NOx and particulate matter) from the exhaust gas before it leaves the funnel and interacts with the external atmosphere.

[3] A circular was drafted at Pollution Prevention Response (PPR) 6 in February of 2019, amending the EGCS Guidelines to clarify what recourse should be taken in the event of EGCS breakdown. For instance, it was determined that a ship with a malfunctioning EGCS should not be allowed, by a port State, to leave a port either before the EGCS is repaired or before the ship uses compliant fuel.

Scrubber systems usually come as one of three types:[4] (i) an open loop system; (ii) a closed loop system; or (iii) a hybrid system.[5] Open loop scrubber systems often use seawater to scrub the exhaust gas. The seawater is afterwards discharged back into the sea. This 'discharge wash water' must meet the criteria set out in the IMO guidelines. Open loop systems usually have the lowest operating costs, but some States regulate (limit) such open loop discharges in their internal and territorial waters, as made possible by UNCLOS.[6]

Closed loop scrubber systems recirculate the wash (scrubber) water in a closed system, where additives (often alkaline) are added to the re-used water. The operating costs for such systems are often higher, but on the other hand the system can operate in waters where national or international regulations apply to restrict the use of open loop scrubbers. The closed loop wash water must, when it is necessary to change it, be discharged (delivered) in port to an appropriate reception facility. States that are parties to Annex VI undertake an obligation to ensure that there are port facilities available for receiving such wash water, laid down by regulation 17.1.2 of Annex VI.

Hybrid scrubber systems are systems that can function in both closed and open loop modes. These systems often come at a higher price, but they allow the ship to operate in open (ie the cheapest) mode whenever possible, while still allowing the ship to call at all ports and waters since it can switch to the closed loop mode when needed.

Both open and closed loop scrubber systems must, if approved pursuant to the previously described scheme B, use a CEMS installed in the funnel, ensuring continued emission compliance compared to ships using compliant fuel in accordance with the conversion factors implemented in table 1 of MEPC Resolution MEPC.259(68).[7]

IV. Regulation 14.3 and 14.4 – Special Sulphur Limits in SECA Zones

Annexes I, II, IV and V of the MARPOL Convention enable the designation of specific areas of the sea as 'Special Areas', where distinct and strict regulations apply to the discharging of oil, harmful substances, sewage and waste. The foundation

[4] Other scrubber modes include 'dry scrubbers', which do not use water or other liquids but clean the exhaust gases with hydrated lime-treated granulates.

[5] See https://www.idcconsorzio.com/all-you-need-know-about-scrubbers/.

[6] See ch 7.

[7] The EU Sulphur Directive (Directive 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels [2016] OJ L132/58) contains special regulations for the maximum allowed sulphur content in marine fuel used when operating an open loop system. This is described in ch 5.

for such a designation relates to special concerns regarding the protection of the marine environment within such a particular area of the sea.[8]

When MARPOL Annex VI was adopted in 1997, a new protection concept was introduced in the form of designating certain areas of the sea as Emission Control Areas (ECAs) in which special emission limits apply. Regulation 14.3 allows for the creation of Sulphur Emission Control Areas (SECAs) and regulation 13.6 of Annex VI for the creation of Nitrogen Oxide Emission Control Areas (NECAs). Regulation 14.4.3 stipulates a strict limit of maximum 0.1% sulphur content in marine fuels when sailing in a SECA. This limit came into force on 1 January 2015.

Present SECAs include the Baltic, North Sea[9] and North American waters,[10] including Canadian and Caribbean waters pursuant to regulations 14.3.1–14.3.3.[11]

A new SECA can be designated in accordance with the criteria and procedures specified in regulation 14.3.4, appendix 3 to MARPOL Annex VI and regulation 14.7. The Regional Marine Pollution Emergency Response Centre (REMPEC)[12] for the Mediterranean initiated a study in 2018 to assess the benefits, costs and feasibility of a new SECA in the Mediterranean.[13]

It should be noted that the enforcement problems addressed in this book primarily concern the enforcement of the global 0.5% sulphur limit in regulation 14.1.3 on the high seas. SECAs are located within waters under the jurisdiction of coastal States, that is in internal and territorial waters and in Exclusive Economic Zones (EEZs).[14] The challenges for enforcing MARPOL Annex VI in these areas therefore differ from those pertaining to high-sea enforcement. That being said, Part II of this book will also analyse the jurisdiction of coastal States, primarily pursuant to article 220 of UNCLOS.[15] This will encompass enforcement of a 0.1% limit in a SECA, as well as of a 0.5% limit outside a SECA.[16]

[8] An evaluation of coastal State jurisdiction in such Special Areas is to be found in ch 3.

[9] A change to the wording of reg 14.3.1 will come into force on 1 March 2020 as part of implementation of the carriage ban (see ch 8, section VIII.B). The reference to reg 1.11.2 in MARPOL Annex I and reg 1.14.6 of MARPOL Annex V defining the Baltic and North Sea as 'emissions' control areas is changed, as MARPOL Annexes I and V define these areas as Special Areas. MARPOL Annex VI merely re-uses the geographical delimitations of the areas as defined in these Annexes.

[10] See Resolution MEPC.202(62).

[11] The 0.1% limit is also implemented in the EU Sulphur Directive regarding the aforementioned SECAs in European waters; see art 6(2)(b) of the Directive.

[12] See http://www.rempec.org/rempec.asp?pgeVisit=New&theID=6.

[13] Available at https://www.assarmatori.eu/rempec-presented-the-study-of-cost-and-benefit-analysis-for-the-introduction-of-a-seca-area-in-the-mediterranean/?lang=en.

[14] The general jurisdiction of coastal States in internal and territorial waters and in the EEZ is described in ch 3. The special jurisdiction for coastal States to enforce the sulphur regulations in MARPOL Annex VI in these areas is discussed in ch 9.

[15] It was the enforcement of the 0.1% limit, after it came into force in 2015, that gave rise to the challenges associated with issuing fines that, at a minimum, strip all the shipowner's savings from the entire trip.

[16] Although this book focuses on enforcement of the sulphur regulations under reg 14, including coastal State jurisdiction and enforcement in SECAs, many of the same principles for implementation and enforcement apply to coastal State jurisdiction in NECAs; see reg 13 of MARPOL Annex VI.

V. Regulation 14.8 – The 2020 Sulphur Limit was Not Delayed Until 2025

Regulation 14.8 of MARPOL Annex VI presented the possibility for the IMO (MEPC) to postpone the entry into force of the 0.5% limit from 2020 to 2025, if a global analysis (fuel availability study) showed that there would be insufficient amounts of compliant 0.5% fuel available to meet the needs of the international shipping sector in 2020. The reason for this was that 0.5% fuel was a product not widely available before 2020 as there was no demand for it.

The fuel availability study showed that there *would* be sufficient amounts of fuel on the global market in 2020 for the global merchant fleet to meet the 0.5% limit.[17] The MEPC therefore decided, at MEPC70 in 2016, by adoption of Resolution MEPC.280(70), that the entry into force of regulation 14.1.3 was *not* to be postponed until 2025.

It should be noted that even though the study showed that there would be adequate amounts of compliant fuel in 2020 seen from an *overall global perspective*, it was not unlikely that some regions, countries or specific ports might have difficulties suppling enough compliant 0.5% fuel over a limited period after the entry into force until the fuel supply market had completely transitioned to the new production demand. Such transitional issues are alleviated by regulation 18.1, which requires all parties to Annex VI to take all reasonable steps to promote and ensure that compliant fuel is available in their ports and off-shore terminals, and to inform the IMO of this availability.

The possibility of the non-availability of compliant fuel in a port or region is also addressed in regulation 18.2 of Annex VI by allowing ships to present a *claim of non-availability* to flag and port States. Regulation 18.2 has led to the development of a Fuel Oil Non-availability Report (FONAR) template and reporting system, as described in chapter 1.

VI. Regulation 18.2 – Claims of Non-availability

As mentioned previously, regulation 18.2 addresses the possibility of ships not being able to bunker compliant fuel in certain ports. The regulation encourages authorities in the next port State at which the ship calls to take this into consideration before penalising the ship for its use of non-compliant fuel, provided the ship has met the conditions of the regulation for claiming non-compliance. These conditions in regulation 18.2 will be integrated in the FONAR template, as highlighted in section VIII.C of chapter 1.

When a ship wishes to claim non-availability, it must forward the required information, that is the FONAR, to its 'Administration' (flag State) and the next port

[17] CE Delft, 'Assessment of fuel oil availability' in submission MEPC 70/INF.6 at MEPC70 in 2016, available at https://www.cedelft.eu/publicatie/assessment_of_fuel_oil_availability/1858.

of destination (next port State), as laid down in regulation 18.2.4. Regulation 18.2.5 require any party to Annex VI to inform the IMO of a claim of non-availability (FONAR) forwarded to them.

Regulation 18.2.1.1 stipulates that the ship must present a record of its actions trying to obtain to compliant fuel, which, pursuant to regulation 18.2.1.2, shall include information on the ship's attempts to purchase compliant fuel from alternative sources, that is from other fuel suppliers.

Regulation 18.2.2 specifies that the ship is *not* required to deviate from its planned route to purchase compliant fuel. This delimits the scope of regulation 18.2.1.2, regarding finding alternative fuel sources, to attempts made within the same port.

Even though it is not directly specified in the regulation, it is assumed, following discussions on this at the MEPC and PPR, that a ship cannot claim non-availability if any kind of compliant fuel is available in a port. This means that if a ship cannot purchase 0.5% marine fuel in a port but a 0.1% distillate fuel is available, the ship must purchase the 0.1% fuel even though that fuel is more expensive than 0.5% fuel. A ship can thus not claim non-availability (and issue a FONAR) if any kind of compliant fuel was available in port.

The competent authorities of the port State may, in accordance with regulation 18.2.3, take a claim of non-availability into consideration as part of determining whether a ship should be prosecuted for its violation. The port State may also take other circumstances into consideration, for instance if the ship or shipowner previously has claimed non-availability after calling into the same port or region where compliant fuel is often unavailable, as it shows a pattern of the shipowner's trying to circumvent the sulphur regulations of Annex VI. The FONAR reporting system plays a crucial role in determining such premeditated attempts from shipowners to continuously plan bunkering in ports or regions known for their lack of compliant fuel, as each FONAR will be entered into a database accessible to all IMO Member States.[18]

It should be noted that regulation 18.2.3 is not to be considered an exemption, as the port State is *not* required to accept a ship's claim of non-availability as a circumstance precluding wrongfulness for not complying with regulation 14.1. The port State is merely required to take the claim (FONAR) 'into account'.

VII. Documentation for the Fulfilment of the Requirements in Annex VI

MARPOL Annex VI contains several different provisions that require ships to have specific documents on board at all times, to show compliance with requirements of the Annex. This also applies to proving compliance with the sulphur limits under regulation 14.

[18] This is the GISIS (Global Integrated Shipping Information System) database described in ch 4.

This documentation is required to include an up-to-date fuel changeover log, an International Air Pollution Prevention Certificate (IAPP Certificate) and an International Energy Efficiency Certificate (IEE Certificate), as well as Bunker Delivery Notes (BDNs) for all purchased fuel.[19]

A. Regulation 14.6 – Fuel Changeover Procedure and Log

Regulation 14.6 of MARPOL Annex VI requires ships to a carry a written procedure for fuel changeover, which describes the operation of switching between different fuels located in different tanks. This procedure should indicate whether a ship is able to comply with the different sulphur limits when sailing in and out of SECAs.

When such changeovers are preformed, the ship must log information about the changeover in a fuel changeover log, including information on when and where the switch was made and the specifications of the sulphur content in the switched fuels.

The fuel changeover log and procedure must be presented during a PSC, which can be of particular relevance when calling into a port in a SECA zone. If the log is kept correctly, it can document whether the ship has switched between fuel complying with the global 0.5% sulphur limit and that complying with the 0.1% SECA limit.

The changeover log also gives an indication of whether a changeover was carried out in a timely manner, ensuring that the fuel system on board has been 'flushed' with 0.1% fuel before entering the SECA. A late changeover may cause fuel residues from using fuel above the SECA limit (eg 0.5%) to contaminate the 0.1% fuel entering the day tank, causing the sulphur content of the fuel used to rise above 0.1%.

If the changeover log indicates that a correct changeover was not performed, or that this was not done in a timely manner, or if the ship cannot present a written procedure for conducting such changeovers, then this could give port State authorities grounds for conducting a detailed PSC inspection[20] of the ship, including taking fuel samples.

B. Regulation 18.5 – Bunker Delivery Notes

Regulation 18.5 of Annex VI stipulates that all ships must carry a document (the BDN) showing what type of marine fuel (bunker) the ship has acquired. The BDN

[19] Ensuring that ships comply with these requirements for documentation will often be part of the initial inspection during a PSC, as described in ch 4.

[20] Grounds for PSCs conducting detailed inspections are described in ch 4.

contains information and specifications on the fuel purchased, including information on the sulphur content therein ensuring compliance with regulation 14.1 or 14.4.

The BDN is issued by the fuel supplier, and it is signed by fuel supplier's representative and the person on board ship responsible for receiving the fuel, for example the chief engineer, upon delivery. The fuel supplier and the ship respectively receive the original and a copy of the BDN.

A BDN must contain the information set out in regulation 18.5 and appendix 5 to MARPOL Annex VI, which is:

- The name and IMO number of the ship that bought the fuel.
- The name of the port where the fuel was delivered, together with the date of delivery.
- The name, address and telephone number of the fuel supplier.
- Full name and specifications of the product delivered.
- The amount of fuel delivered, specified in metric tons.
- Information on fuel density at 15°C, kg/m3.[21]

And perhaps most importantly in this context:

- Information on the sulphur content in the fuel purchased, specified in % m/m.[22]

In 2017, MEPC 71 decided to amend appendix 5 to Annex VI to include a box relating to fuel delivered to ships with an EGCS in the BDN information.[23] After the amendment came into force on 1 January 2019, ships using an EGCS must notify the fuel supplier of that fact. The fuel supplier will then 'check off' the aforementioned box on the BDN, stating that marine fuel, with a sulphur content exceeding the then allowed limit under regulation 14.1, has been delivered to the ship with an EGCS.

The ship must keep a BDN on board for a minimum of three years in accordance with regulation 18.6, as the ship must present the BDN during a PSC under regulation 18.7.1.

If a ship cannot present a BDN, or the BDN does not meet the requirements of appendix 5, it should lead to an immediate detailed inspection and the drawing of a fuel sample for testing. A missing or faulty BDN could by itself, regardless of the fuel sample test result, constitute a violation of Annex VI, which can be penalised by a port State by imposition of a fine.

[21] App 5 refers to the fuel density being tested in accordance with ISO Standard 3675:1998 or ISO Standard 12185:1996.

[22] App 5 refers to sulphur content's being tested and measured in accordance with ISO Standard 8754:2003.

[23] This amendment to app 5 to MARPOL Annex VI was made by Resolution MEPC.286(71) entitled 'Amendments to MARPOL Annex VI (Designation of the Baltic Sea and the North Sea Emission Control Areas for NOX Tier III control and the information to be included in the bunker delivery note)'.

i. Regulation 18.8 – The MARPOL Sample

Regulation 18.8.1 of Annex VI requires that a fuel sample be drawn from the bunker fuel supplied.[24] A sample is often referred to as 'the MARPOL sample'. It is also stipulated that the MARPOL sample must be sealed and kept on board for a minimum of 12 months.

The sample can, under regulation 18.8.2, be used during a PSC to verify the sulphur content as declared on a BDN.[25] Nevertheless, port authorities often choose to focus on the fuel sample they draw directly from the fuel oil system, as it presents reliable evidence to prove that non-compliant fuel is being used.[26]

Some shipowners may draw a second representative sample intended for commercial purposes. This sample is analysed by the shipowner to ensure that the delivered fuel is 'on spec'. If the supplied fuel does not meet the sulphur content stated in the BDN, or if the fuel does not meet the commercial standard,[27] it can lead to a civil case against the fuel supplier. This commercial analysis is important to shipowners, as 'off spec' fuels can have a negative impact on the ship's performance, and perhaps even damage the engine due to catalytic ('cat') fines, etc.[28]

C. Regulations 5 to 9 – IAPP and IEE Certificates

Regulation 5 of MARPOL Annex VI states that all ships of 400 Gross Tonnage (GT)[29] or above must undergo a periodic survey[30] to ensure that they, including their installations, equipment, etc, adhere to the different requirements of the Annex as listed in regulations 5.1–5.5.

Regulation 6 contains provisions ensuring that ships that have undergone and passed a survey in accordance with regulation 5, and are issued an IAPP Certificate in accordance with regulation 6.1 and an IEE Certificate in accordance with

[24] Regulation 18.8.1 refers to the MARPOL sample's being drawn in accordance with Resolution MEPC.182(59) '2009 Guidelines for the sampling of fuel oil for determination of compliance with the Revised MARPOL Annex VI'.

[25] A MARPOL sample must analysed in in accordance with the procedure described in reg 18.8.2. See app 6 to Annex VI, stating, inter alia, that the testing laboratory must be accredited to perform the analysis in accordance with ISO Standard 17025.

[26] After the carriage ban enters into force, port authorities will have a legal ground for drawing fuel samples from several or all fuel tanks on board.

[27] The commercial standard is set in accordance with ISO 8217.

[28] See https://www.exxonmobil.com/en/marine/technicalresource/marine-resources/cat-fines-removal.

[29] 'Gross tonnage' is a measure of a ship's overall internal volume. (Not be confused with 'deadweight tonnage' (DT).)

[30] Such regulations requiring ships to undergo periodical surveys and certifications are often integrated as a part of the IMO's specialized Harmonized System of Survey and Certification (HSSC). See Resolution A.1104(29) from 2015. This system ensures that the different IMO conventions requiring ships to undergo different periodical surveys are coordinated according to ship types, often following a five-year interval. This allows a ship to meet several different international regulations for survival and certification at the same time, including regs 5–9 of MARPOL Annex VI.

regulation 6.2, which certify that the ship complies with the requirements set out in Annex VI.

Point 2.3.1 of the IAPP Certificate requires the ship to confirm whether it complies with the sulphur regulations of regulation 14.1 by using compliant fuel (point 2.3.1.1 of the IAPP) or if it uses an approved EGCS for compliance (point 2.3.1.2).

Point 2.3.2 of the IAPP Certificate requires the ship to confirm whether it complies with the 0.1% SECA limits by using compliant fuel in accordance with regulation 14.4 (point 2.3.2.1), or if it uses an approved EGCS (point 2.3.2.2).

The IAPP Certificate must be drawn up in accordance with regulation 8.1, in a form corresponding to that set out in appendix 1 to MARPOL Annex VI, including point 2.3 addressing compliance with regulation 14. The certificate is issued for a period not exceeding five years, as laid down in regulation 9.1 of Annex VI.

The IEE Certificate is drawn up in accordance with regulation 8.2, based on the form set out in appendix 8 to MARPOL Annex VI. The certificate is, as a general rule, valid throughout the lifetime of the ship, according to regulation 9.10.

The IAPP and IEE Certificates must be presented upon request during a PSC, as laid down in regulations 10.1 and 10.5. If an IAPP Certificate is not presented or the certificate does not comply with the regulations, it can lead to a detailed PSC inspection and possibly a fine.

D. Regulation 17 of MARPOL Annex I – Oil Record Book, Part 1

Although this chapter focuses on the regulations under MARPOL Annex VI, brief reference should be made to MARPOL Annex I, as it contains provisions that implicitly enable effective enforcement of the sulphur regulations under Annex VI.

Regulation 17.1 of MARPOL Annex I requires all oil tankers of 150 GT and above, and *all* other ships of 400 GT and above, to carry – and continually update – an Oil Record Book (ORB), Part I.[31] This must contain information on all fuel bunkerings in accordance with regulation 17.2.5 of Annex I, including information on when and where the fuel is taken on board, and the quantities and specifications of the fuel purchased (point H/26 of ORB, Part I).

The ship is also required to log additional information in the ORB, Part I relating to the bunker fuel on board, such as cleaning of fuel tanks, ballasting and discharging ballast from fuel tanks, collected oil residues, etc, under regulation 17.2 of MARPOL Annex I.

The ORB, Part I must be presented upon request during a PSC in accordance with regulations 17.6 and 17.7 of MARPOL Annex I, and can, due the content and information mentioned above, also contribute towards establishing whether a

[31] The Oil Record Book, Part II, is reserved for tankships.

ship is complying or not complying with the sulphur regulations under MARPOL Annex VI, including carrying out a detailed PSC.

VIII. Regulation 10 and Regulation 11 – PSC, Detection and Enforcement of Violations

Regulation 10.1 specifies that ships can be subjected to an inspection (PSC) in a foreign port to determine if the requirements of Annex VI have been fulfilled. If this is not the case, the ship can be detained until the non-compliance has been rectified, according to regulation 10.2, including ensuring that compliant fuel is used.

Regulation 11 stipulates several obligations for States that are party to Annex VI to work together to detect violations and inform each other of detected violations, in their capacities either as port (PSC) States or as flag States.

Regulations 10 and 11 are discussed in more detail in chapter 4.

Furthermore, regulation 11.4 is studied in chapter 8, regarding the obligation for flag States to enforce Annex VI and inform relevant port States and the IMO of this enforcement; while regulation 11.6 is examined in chapter 10 with regard to its reference to enforcement of MARPOL Annex VI always being in accordance with contemporary interpretations of international law *mutatis mutandis*, that is, with the necessary changes being applied.

IX. Conclusion

MAPROL Annex VI (and Annex I) contains several regulations that are relevant when looking into effective enforcement of the sulphur limits under regulation 14, mainly pertaining to documentation that it is mandatory for ships to have on board. This includes BDNs dating back three years, showing the sulphur content of all fuel purchased. Fuel changeover logs and procedures indicate a ship's ability to perform timely changeovers between 0.1% SECA fuel and 0.5% fuel. A FONAR should also be presented to port authorities, when applicable.

Compliance with the sulphur regulations of MARPOL Annex VI can also be achieved by using EGCSs such as scrubbers.

Irrespective of whether a ship uses an EGCS or compliant (0.1% or 0.5%) fuel, the ship must be able to document that it complies with the applicable regulations of MARPOL Annex VI, and relevant guidelines, during a PSC.

3

UNCLOS

The United Nations Convention on the Law of the Sea (UNCLOS)[1] was adopted on 10 December 1982 but did not enter into force until 16 November 1994. Prior to its entry into force, several States had expressed dissatisfaction with the contents of part XI of the Convention concerning the 'Area', which, under article 1(1)(1) of UNCLOS, refers to 'the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction'. Or in other words, the deep-seabed beneath the high seas. The dispute, which revolved around exploration of the Area, resulted in 1994 in the adoption of a supplementary agreement to part XI, which entered into force on 28 July 1996.[2] A second supplementary agreement to UNCLOS entered into force on 11 December 2001, relating to the conservation and management of migratory species.[3]

One hundred and sixty-seven States,[4] as well as the European Union, have ratified UNCLOS, and 14 States are signatories to the Convention but have not yet ratified it.

UNCLOS consists of 17 parts (I–XVII), with 320 articles and nine Annexes. In general, parts I–VII (except part IV on the special regimes relating to archipelagic States[5]) will be studied in this chapter as they codify basic principles of international law pertaining to the law of the sea and different jurisdictional principles for coastal, port and flag States.

The provisions of part XII of UNCLOS, relating to protection of the marine environment, are analysed in detail in Part II of this book in chapters 7–13, although some provisions of part XII regarding Port State Control (PSC) will

[1] 1833 UNTS 3.

[2] Agreement relating to the implementation of Part XI of the Convention (adopted 28 July 1994, entered into force 28 July 1996) 1836 UNTS 3.

[3] Agreement for the implementation of the provisions of the Convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks (adopted 4 August 1995, entered into force 11 December 2001) 2167 UNTS 3.

[4] See at http://www.un.org/depts/los/reference_files/chronological_lists_of_ratifications.htm.

[5] As this chapter merely seeks to establish the general basic legal principles for enforcement of environmental regulations and not an in-depth description of all UNCLOS provisions, pt IV on archipelagic States is considered too specific to be covered here. The same applies to pt VIII on the 'Regime of islands', pt IX on enclosed or semi-enclosed seas, pt X on the right of access of landlocked States to and from the sea and freedom of transit, pt XI on the Area, pt XIII on marine scientific research, pt XIV on development and transfer of marine technology, pt XV on general provisions and pt XVI on final provisions. Pt XV on dispute settlement is discussed in ch 12 of this book.

also be addressed in chapter 4. This chapter will also, where applicable, make reference to relevant provisions of part XII, mainly article 217 relating to flag States, article 218 relating to port States, article 220 relating to coastal States and article 228 for determining how overlapping jurisdiction between flag States and other (port or coastal) States is resolved.

I. The 1958 Conventions

In 1958 the United Nations (UN) adopted four Conventions and an Optional Protocol to regulate (codify) various parts of the law of the sea. The four Conventions and the Optional Protocol were:

- the Convention on the Territorial Sea and the Contiguous Zone (CTS);[6]
- the Convention on the High Seas (CHS);[7]
- the Convention on Fishing and Conservation of the Living Resources of the High Seas (CFCLR);[8]
- the Convention on the Continental Shelf (CCS);[9]
- the Optional Protocol of Signature concerning the Compulsory Settlement of Disputes (OPSD).[10]

The regulatory basis set out in the four 1958 Conventions and the Optional Protocol has since, to a large extent, been absorbed by UNCLOS.[11] For instance, the CHS embodied the flag State principle in its article 11(1) concerning collisions by ships on the high seas, which today is directly codified in article 92 of UNCLOS.

The 1958 Conventions are, in principle, still in force, but due to its widespread acceptance, UNCLOS is considered as being *lex superior*,[12] this also being directly stated in UNCLOS article 311(1), which provides:

> This Convention shall prevail, as between States Parties, over the Geneva Conventions on the Law of the Sea of 29 April 1958.

[6] Convention on the Territorial Sea and the Contiguous Zone (adopted 29 April 1958, entered into force 10 September 1964) 516 UNTS 205.

[7] Convention on the High Seas (adopted 29 April 1958, entered into force 30 September 1962) 450 UNTS 11.

[8] Convention on Fishing and Conservation of the Living Resources of the High Seas (adopted 29 April 1958, entered into force 20 March 1966) 559 UNTS 285.

[9] Convention on the Continental Shelf (adopted 29 April 1958, entered into force 10 June 1964) 499 UNTS 311.

[10] Optional Protocol of Signature concerning the Compulsory Settlement of Disputes (adopted 29 April 1958, entered into force 30 September 1962) 450 UNTS 169.

[11] See T Treves, *1958 Geneva Conventions on the Law of the Sea* (United Nations Audiovisual Library of International Law, 2008) 4, available at http://legal.un.org/avl/ha/gclos/gclos.html (English version).

[12] UNCLOS could also be considered *lex specialis* to the 1958 Conventions, as the UNCLOS regulations on these matters are more detailed, accurate and up-to-date, as well as being *lex posterior* because of the more recent entry into force of UNCLOS.

This is further recognised by the International Law Commission (ILC) in its 2006 Report to the UN General Assembly, in which the Commission reflects on article 311:

> Clauses in the subsequent treaty that expressly abrogate the earlier treaty. An example would be article 311(1) UNCLOS according to which between parties to it and to the 1958 law of the sea conventions the former shall prevail.[13]

II. The Law of the Sea is Dynamic and Constantly Evolving

UNCLOS[14] represents the further development of the international law of the sea since 1958, not only in respect of amending and clarifying the legal matters addressed in the 1958 Conventions, but also in respect of the development of new principles within the law of the sea.

An example is the right of coastal States to invoke a 200 nautical mile (nm) Exclusive Economic Zone (EEZ), where the coastal State has certain specific and limited rights and obligations, for instance relating to exploiting and preserving the natural living and non-living resources in the zone, that is, fishing and exploration of the deep-seabed. The rights of the coastal State in the EEZ also extend to enforcing rules and regulations for the protection of the marine environment, which means exercising jurisdiction over foreign ships in the EEZ.

The right for coastal States to claim an EEZ, unlike the right to exploit the continental shelf contained in the CCS, was not yet a recognised right within international law in 1958. This right was recognised in 1982 in part V of UNCLOS.[15] This was in great part attributable to the International Court of Justice's (ICJ's) acknowledgement of the principle in the *Fisheries Jurisdiction case* in 1974,[16] where the ICJ accepted that Iceland had a right to the establish a 50 nm fishing zone.[17]

This example illustrates that international law is dynamic and under constant development, which is also explicitly affirmed in article 235(3) of UNCLOS,

[13] ILC, *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law* (finalised by M Koskenniemi), A/CN.4/L682, 13 April 2006, report presented at meeting no 58 in Geneva (2006) 136, ex no 5.

[14] UNCLOS is occasionally referred to as 'UNCLOS III', which refers to its having been adopted at the Third United Nations Conference on the Law of the Sea that took place between 1973 and 1982. The First Conference was held in 1956 and the Second in 1960, without resulting in any adoption. This book simply uses 'UNCLOS', as it refers to the *Convention* and not to the *Conference* on the Law of the Sea.

[15] GG Schram, 'Havretten og de nordiske lande' (1984) 1 *De nordiske juristmøter* 401, 407.

[16] *Fisheries Jurisdiction (United Kingdom v Iceland)*, Jurisdiction of the Court, Judgment [1973] ICJ Rep 3.

[17] L Bernard, 'The Effect of Historic Fishing Rights in Maritime Boundaries Delimitation', LOSI Conference Papers from the Law of the Sea Institute, UC Berkeley–Korea Institute of Ocean Science and Technology Conference held in Seoul, Korea, May 2012, 8.

which provides that 'States shall cooperate in the implementation of existing international law and the further development of international law'. Such legal developments are often made in line with the developments made by the international community relating to new technological advances, for example of more and bigger ships, and new acquired needs, such as exploiting natural resources in new areas.

New advances and needs also lead to new challenges and dangers, especially to the environment in view of the pollution emanating and generated from ships and from the exploitation of natural resources. This prompted the development of part XII of UNCLOS, which represented a monumental legal advancement within international law as it laid down a new set of framework obligations and rights regarding the enforcement of legislation for the protection of the marine environment. This included introducing a new legal entity in article 218 in the form of *port States*, which were granted a new and broader jurisdictional scope in comparison to the already well-established coastal and flag State entities.

This was also emphasised in the closing speech at the UN Conference in December 1982, following the adoption of UNCLOS, where conference President Tommy Koh Thong Bee stated that 'the Convention contains important new rules for the protection and preservation of the marine environment from pollution'.[18]

The special jurisdictions developed in part XII of UNCLOS were unlike anything seen in the 1958 Conventions, and can certainly be attributed to the increased focus on protecting the marine environment in the 1960s and 1970s, as described in chapter 1. In fact, many of the codified exceptions to the flag State principle, to which article 92 refers, are found in part XII of UNCLOS, of which article 218(1),[19] article 220[20] and article 228(1)[21] are particular examples, article 217 – entailing the flag State principle for enforcing environmental legislation – directly referring to flag States having to respect these exceptions.[22]

International law, including the law of the sea, is thus constantly evolving to meet the more newly developed needs of the international community, which is in line with the premise set out in Part II of this book as it, through analysis of articles 217, 218, 220 and 228, seeks to clarify whether there is a legal basis for ensuring that the more 'recent'[23] need of the international community to enforce legislation preventing air pollution from ships, including regulation 14 of MARPOL Annex VI, can be met – especially bearing in mind that effective

[18] Schram, n 15, 405.
[19] Art 218 is analysed in ch 10.
[20] Art 220 is analysed in ch 9.
[21] Art 228 is analysed in ch 11.
[22] See art 217(4). Art 217 is analysed in ch 8.
[23] See ch 1 for a description of the shift in environmental focus in the 1980s and 1990s towards addressing air pollution.

enforcement of regulation 14 will prevent 137,000 early deaths and 7.6 million children from developing asthma each year.[24]

III. UNCLOS – Protecting against Pollution of the 'Marine Environment'

It should be noted that the references in UNCLOS to protecting against 'pollution of the marine environment', particularly in part XII of the Convention, include pollution that causes a danger to human health. This is specified in the definition of the term in article 1(1)(4), which reads:

> 'pollution of the marine environment' means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities …

This means that any references in UNCLOS to international rules and regulations for the *protection and preservation of the marine environment* include MARPOL Annex VI, because of the reference to the introduction 'by man, directly or indirectly, of substances or energy into the marine environment' which results in 'hazards to human health'. This covers polluting substances such as sulphur released during the combustion of marine fuels, which can cause an early death and numerous different respiratory diseases. It also covers the release of greenhouse gases (GHGs).[25]

Enforcement of Annex VI, including the regulation 14 sulphur limits, is therefore covered by the special provisions of part XII of UNCLOS, including the wide jurisdictional basis for port States under article 218.[26] This conclusion is confirmed by the IMO Legal Committee:

> The power to impose sanctions conferred by IMO regulations on the port State (notably in the MARPOL Convention) should be related to the rights and obligations provided in part XII of UNCLOS.[27]

[24] International law in general could also develop to meet the same need of the international community for ensuring that legislation preventing destructive air pollution is enforced. For instance, ensuring enforcement of future IMO measures for reducing GHG emissions from ships through the further development of the jus cogens and erga omnes principles, as described in Part IV of this book.

[25] Y Tanaka, 'Regulation of Greenhouse Gas Emissions from International Shipping and Jurisdiction of States' (2016) 25 *Review of European, Comparative and International Environmental Law* 337.

[26] The application of art 218(1) on violations of emission regulations such as reg 14 is described in detail in ch 10.

[27] IMO, 'Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization' (LEG/MISC.8, 30 January 2014) 13.

All references in this book to UNCLOS provisions mentioning international regulations for the protection of the marine environment therefore automatically include MARPOL Annex VI, pursuant to the definition in article 1(1)(4) of the Convention.

IV. The Connection between UNCLOS and MARPOL Annex VI

It should be noted that besides the conclusions previously drawn pertaining to Annex VI's being subject to the provisions of, inter alia, part XII of UNCLOS, both UNCLOS and the MARPOL Convention contain indirect references to each another.

Although the MARPOL Convention[28] was adopted prior to UNCLOS, article 9(2) of the MARPOL Convention makes direct reference to UN Resolution 2750 C(XXV), which formed the basis leading to the development of UNCLOS.[29] Article 9(2) reads:

> Nothing in the present Convention shall prejudice the codification and development of the law of the sea by the United Nations Conference on the Law of the Sea convened pursuant to resolution 2750 C(XXV) of the General Assembly of the United Nations nor the present or future claims and legal views of any State concerning the law of the sea and the nature and extent of coastal and flag State jurisdiction.

The provision affirms that nothing in MARPOL Convention 'shall prejudice the codification and development of the law of the sea', nor 'future claims and legal views'. Thus, the MARPOL Convention and its Annexes are subject to, and bound by, the international principles on the law of the sea later set out in UNCLOS, and how these are interpreted in the future.

Article 9(2) of the MARPOL Convention refers to coastal and flag States, but there is no reference to port States, because the concept of port States did not exist as such until UNCLOS introduced it in 1982. But even though article 9(2) does not refer to port States directly, the reference to 'future claims and legal views of any State concerning the law of the sea' includes being subject to the jurisdiction of the port State entity that was developed later.

It should be noted that article 1(2) of the MARPOL Convention lays down that 'unless expressly provided otherwise, a reference to the present Convention constitutes at the same time a reference to its Protocols and to the Annexes'. This means

[28] International Convention for the Prevention of Pollution from Ships (adopted on 11 February 1973, as modified by the Protocol of 17 February 1978, entered into force 2 October 1983) 1340 UNTS 61 (MARPOL), IMO Publication: IMO-520E.

[29] LM Paul, 'Using the protective principle to unilaterally enforce transnational marine pollution standards', Report of the Proceedings of the Second International Conference on Marine Debris, Honolulu, Hawaii, 2–7 April 1989, 1055.

that since the MARPOL Convention is subject to the principles and provisions of UNCLOS, the same applies to its Annexes, including MARPOL Annex VI.

An implicit reference to the MARPOL Convention is found in the last article (article 237) of part XII of UNCLOS. Article 237(1) states that the provisions of part XII of UNCLOS are without prejudice to the obligations conferred by other conventions for the protection of the marine environment accepted by a State before becoming party to UNCLOS. However, article 237(2) emphasises that obligations assumed according to previous accepted conventions, such as the MARPOL Convention of 1973, must be enforced in a manner consistent with the general principles and objectives of UNCLOS, including the provisions of part XII. The MARPOL Convention and all of its Annexes, including the later adopted VI, must therefore be enforced in accordance with part XII of UNCLOS.

This corresponds with regulation 11.6 of MARPOL Annex VI, which refers to the regulations of the Annex being enforced and safeguarded in accordance with the international law for the protection of the marine environment in force at a given time. This ties directly to part XII of UNCLOS, especially section 6 on *enforcement* (which includes articles 217, 218 and 220) and section 7 on *safeguards* (which includes article 228).

Regulation 11.6 of Annex VI states:

> The international law concerning the prevention, reduction, and control of pollution of the marine environment from ships, including that law relating to enforcement and safeguards, in force at the time of application or interpretation of this Annex, applies, mutatis mutandis, to the rules and standards set forth in this Annex.

MARPOL Annex VI, including regulation 14, should therefore always be enforced in accordance with part XII of UNCLOS, with the necessary changes (*mutatis mutandis*) being applied.[30] This means that the conclusion and interpretations contained in Part II of this book pertaining to the scope and applicability of articles 217, 218, 220 and 228 also encompass enforcement of the sulphur limits of Annex VI.

Before analysing these special jurisdictions of part XII, the basic jurisdictions pursuant to parts II–VII (except part IV) of UNCLOS, and their relevance for enforcing the sulphur limits in Annex VI, should be examined.

V. Coastal State Jurisdiction

A coastal State has the right, within certain limits, to claim different maritime areas and zones in which different jurisdictions apply. The right for a coastal State to exercise jurisdiction over a foreign ship and the limitations on doing so are

[30] Case C-308/06 *Intertanko*, 20 November 2007, Advocate General Juliane Kokoot, Advisory Opinion, ECLI:EU:C:2007:689, paras 86–87.

therefore highly dependent on where the ship commits a violation and whether it afterwards continues to a port in the coastal State.

The relevant parts of UNCLOS specifying a coastal State's jurisdiction in internal waters, the territorial sea and the EEZ are described in the following subsections, as these are key areas when concentrating on enforcement of environmental legislation such as the sulphur regulations in MARPOL Annex VI. A brief introduction to the contiguous zone and the continental shelf will also be provided.

The portrayal of coastal States' jurisdiction in this chapter primarily relates to the general jurisdictions in these areas pursuant to parts II–VII of UNCLOS. The specific jurisdiction under part XII for coastal States to adopt national laws in their internal and territorial waters and in the EEZ pursuant to articles 211 and 212 is examined in chapter 7 and the jurisdiction for enforcing regulations pursuant to article 222 and, primarily, article 220 is studied in chapter 9.

A. Delimitation of Maritime Areas and Zones – Measured from the Baseline

The different areas and zones are measured in nautical miles, with 1 nm being equivalent to 1,852 kilometres (km). This means that 12 nm equal 22,224 km and 200 nm equals 370,400 km.

The nautical-mile delimitations are measured from the *baseline*, which in article 5 of UNCLOS is defined as being the low-water line along the coast, that is the coastline. But as many coastal States have a very uneven (indented) coastlines, UNCLOS provides the option of drawing a *straight baseline* pursuant to article 7, as it would be difficult to make exact measurements by using the normal baseline in article 5.

Article 7 allows for the drawing of a straight baselines between joining appropriate points from where the measurements are made. This is a codification of the practice accepted by the ICJ in the *Anglo-Norwegian Fisheries case*,[31] where the Court recognised that Norway had the right to delimit its coastline by applying this principle.[32]

Articles 8–13 of UNCLOS set out other measures for determining baselines pertaining to internal waters, the mouths of rivers, bays, ports, roadsteads and low-tide elevations.

Article 14 allows a coastal State to determine its baselines through a combination of any of these methods to suit different conditions.

[31] *Fisheries case (United Kingdom v Norway)* [1951] ICJ Rep 116.

[32] B Geirr Harsson and G Preiss 'Norwegian Baselines, Maritime Boundaries and the UN Convention on the Law of the Sea' (2012) 3(1) *Arctic Review* 117, available at https://arcticreview.no/index.php/arctic/article/view/28.

B. Internal Waters

A coastal State's *internal waters* are those on landward side of the baseline under article 8,[33] for instance on the landward side of a straight baseline drawn in accordance with article 7. This includes landward ports and harbours.

Article 2(1) of UNCLOS stipulates that a coastal State has full sovereignty over these waters, as the wording equates sovereignty over internal waters with the sovereignty a State has over its land. Article 2 reads:

1. The sovereignty of a coastal State extends, beyond its land territory and internal waters and, in the case of an archipelagic State, its archipelagic waters, to an adjacent belt of sea, described as the territorial sea.
2. This sovereignty extends to the air space over the territorial sea as well as to its bed and subsoil.
3. The sovereignty over the territorial sea is exercised subject to this Convention and to other rules of international law.

The jurisdiction of the coastal State over internal waters encompasses the air above and the subsoil beneath these waters, as stated in article 2(2). A coastal State therefore has full *territorial jurisdiction* in internal waters under article 2(1), allowing it to *prescribe*, *enforce* and *adjucate on* laws and regulations within this area. (See chapter 6 for discussion of these principles.) This includes full rights to adopt (prescribe) and enforce (including adjudicating on) national sulphur rules, although these rights are covered by the *lex specialis* provisions of article 212 and article 222.

C. The Territorial Sea (Territorial Waters)

The concept of special regulations applying to the *territorial sea* (territorial waters) was, prior to the adoption of UNCLOS – and alongside regulations on the contiguous zone – codified in the 1958 CTS.[34]

Article 3 of UNCLOS allows all coastal States to claim a territorial sea with a breadth of up to 12 nm, whereas previously the maximum allowed breadth was 3 nm.

It is optional for a coastal State to claim a territorial sea, but unless otherwise expressed, it is tacitly assumed that a coastal State has such a sea.

If two coastal States have waters adjacent to each and their 12 nm territorial seas overlap, article 15 stipulates that, unless otherwise provided for by an agreement or by historical rights, the sea between the two States should be divided equally.

[33] Art 8(1) refers to pt IV, on archipelagic States, as having exceptions (eg art 47) to this.
[34] See n 6 above.

The coastal State furthermore enjoys full sovereignty in that area under article 2(1), which also covers the air above and subsoil beneath in accordance with article 2(2) (see section V.B).

This also gives the coastal State *territorial jurisdiction* in these waters. Yet, unlike in its internal waters, the coastal State must respect certain exceptional limitations on its jurisdiction in the territorial sea under article 2(3). These exceptions include the right for foreign ships to make an *innocent passage* pursuant to articles 17–19 and the right to make a *transit passage* where a strait used for international navigation courses through a coastal State's territorial waters pursuant to part III (article 38).

These exceptions, now codified in UNCLOS, represent customary principles of international law and must therefore also be respected by States that are not party to the Convention.

i. The Right of Innocent Passage

The principle of *the right of innocent passage* can be traced back to the eighteenth century[35] and is now embodied in articles 17–19 of UNCLOS. This right allows a foreign ship to pass directly through the territorial sea without any hindrance by the coastal State pursuant to article 17, thereby limiting that State's territorial jurisdiction.

Foreign ships must fulfil certain requirements according to articles 18–19 for a passage to be deemed innocent. Under article 18, the passage must be *continuous and expeditious*, without entering internal waters.

Article 8(2) stipulates that if the drawing of straight baselines in accordance with article 7 results in the enclosing of internal waters that had not previously been considered as internal waters, the right of innocent passage shall exist in those waters.

Article 18(2) specifies that a foreign ship is not allowed to stop or anchor during its passage, unless it is necessary due to ordinary navigation, force majeure or danger to the ship, or to render assistance to persons, ships, etc in distress.

Article 19(1) defines the term 'innocent' by demanding that such passage must not infringe on the *peace, good order or security of the coastal State*. Article 19(2)(a)–(h) set out a non-exhaustive list of examples of conduct and actions rendering a passage harmful, including any threat or use of force, propaganda, fishing, wilful and serious pollution, research activities, and acts interfering with communication systems or the loading or unloading of any commodity or person contrary to the customs, fiscal, sanitary or immigration laws of the coastal State.

[35] A 2007 report from the Danish Department of Justice refers to the principle of innocent passage as dating back to 1894 when it was referenced in *Institut de droit international*: Danish Justice Department, Report no 1488 on jurisdiction (2007), section 13.2.4.

Articles 17–19 should be read in conjunction with article 21, which provides coastal States with jurisdiction to adopt laws and regulations in conformity with the provisions of UNCLOS pertaining to passage through the territorial sea.

Article 21(3) requires the coastal State to make such laws and regulations public. Foreign ships must comply with such laws and regulations despite performing an innocent passage, in accordance with article 21(4).

Article 21(1) has clear ties to article 19, as it lists numerous regulatory matters that can be legislated by the coastal State and which are applicable to innocent passage. These are regulatory matters that coincide and overlap with many of the prohibited conducts and actions listed in article 19. Article 21(1)(a)–(h), inter alia, refer to ensuring the safety of navigation, preventing infringement of fisheries laws, illegal scientific research and infringements of customs, fiscal, immigration or sanitary laws.

When examining the legal basis for coastal States to adopt or implement sulphur rules in the territorial sea, such as the 0.5% or 0.1% limits in Annex VI, article 21(1)(f) allows for the adoption of national laws, or implementation of international regulation, for 'the preservation of the environment of the coastal State and the prevention, reduction and control of pollution thereof'.[36]

It should be noted that article 212 and article 222, which are discussed in chapter 7, are considered as being *lex specialis* provisions for coastal States to adopt and implement the regulation of sulphur in the territorial sea. Under article 222, this regulation is enforced in accordance with article 220.

Nevertheless, if a foreign ship undertakes an innocent passage as stipulated in articles 17–19, the coastal State cannot take enforcement measures in response to violations of the sulphur regulations unless these are implemented in accordance with article 21(1)(f), explicitly obligating foreign ships as laid down in article 21(4).

This conclusion is supported by article 220(2) – allowing coastal States to undertake physical inspection of a vessel sailing in the territorial sea if the State has *clear grounds* for believing that a violation of an environmental rule has occurred[37] – which directly provides that such inspections must respect 'the relevant provisions of Part II, section 3'.

Coastal States can thus only exercise jurisdiction to stop and prosecute a foreign ship making innocent passage for a violation of environmental legislation if the legislation has been adopted and publicised in accordance with the provisions of article 21.

This conclusion applies to merchant ships passing through the territorial sea from a foreign port without entering internal waters, in accordance with article 27(5), which, as a rule, bars criminal enforcement over such ships. However,

[36] Advocate General Juliane Kokott, Advisory Opinion, n 30, para 121, discussed further in ch 5.
[37] Y Tanaka, *The International Law of the Sea*, 2nd edn (Cambridge University Press, 2015) 95.

this provision also exempts such enforcement (imposing fines, etc) of environmental regulations following the direct reference of the article to the provisions of part XII, encompassing article 220(2).[38]

Although nationally adopted environmental regulations, for example national sulphur limits in territorial waters, could be enforced over foreign ships making an innocent passage, the same does not apply to coastal State laws requiring or banning the use of exhaust gas cleaning systems. Such nationally adopted laws would, according to article 21(2), not be enforceable by the coastal States, as this provision prohibits national regulations pertaining to the *design, construction, manning or equipment* of foreign ships, unless these rules are 'giving effect to' (ie implementing) generally accepted international (IMO) standards. Nationally adopted rules banning the use of open loop scrubbers would, for example, not have any effect on ships making an innocent passage, unless as a result of an implemented IMO regulation, as this would otherwise constitute a national requirement relating to the *equipment* of the ship.

ii. The Right of Transit Passage through a Strait in the Territorial Sea

If part of a coastal State's territorial sea encompasses a strait used for international navigation (an 'international strait'), part III of UNCLOS sets limitations on the coastal State's right to exercise its territorial jurisdiction to investigate and prosecute foreign ships in that strait. These limitations are in most respects more restrictive than the those applying to the coastal State with regard to innocent passage.

An international strait is a strait in the territorial sea used for international navigation from one part of the high seas or EEZ to another part of the high seas or EEZ (see article 37).[39] Article 35(a) underlines, like article 8(2), that straits in internal waters are not subject to the same limitations as straits in the territorial sea, unless the use of straight baselines, in accordance with article 7, resulted in territorial waters becoming enclosed and deemed internal waters.

Article 38(1) requires a coastal State to respect a foreign ship's (or airplane's) right to a direct and unhindered *transit passage* through an international strait.[40] In return, under article 38(2), the ship must make a *continuous and expeditious transit of the strait*.

[38] Art 27 is part of pt II, section 3, subsection B (arts 27–28) relating to merchant ships and government ships operated for commercial use, whereas the regulations in section 3, subsection A (arts 17–26) apply to all ships.

[39] Art 35(c) provides that any longstanding international conventions still in force relating to a strait will be considered *lex specialis* in connection to the regulations in pt III of UNCLOS. The Copenhagen Convention of 1857 regulating tolls in the Sound of Oresund is an example of such an agreement: *Traktat ang. Afløsningen af Sund- og Belttolden* TRA nr 21000 af 14/03/1857 [The Copenhagen Convention (adopted 14 March 1857, entered into force 1 April 1857)], available at https://www.retsinformation.dk/eli/retsinfo/1857/21000.

[40] Art 38(1) excepts straits running between an island and the mainland of a State if a route of similar convenience exists on the seaward side of the island.

The right of transit passage is *lex specialis* compared to the right of innocent passage, which is stated explicitly in article 45(1)(a) and implicitly in article 38(3).

Article 39 sets out numerous criteria and demands a foreign ship must meet to be able to invoke the right of transit passage. For example, Article 39 (1) stipulates the transit must be continuous and expeditious, without delay, unless rendered necessary by force majeure and provided it does not pose any threat to the coastal State. Article 39(2)(b) also directly requires transiting ships to comply with international (IMO) regulations for the *prevention, reduction and control of pollution from ships*, which covers MARPOL Annex VI.

Article 42(1) allows the coastal State to adopt national laws to which foreign ships must adhere whilst making a transit passage, as laid down in article 42(4).[41]

Article 42(1)(b) specifically refers – as does article 21(1)(f) – to laws pertaining to *the prevention, reduction and control of pollution.* But while article 21(1)(f) allows coastal States to adopt national laws on all environmental matters applicable to innocent passage, for example establishing national sulphur limits, article 42(1)(b) only refers to the coastal State's *giving effect to* (implementing) *applicable international regulations regarding the discharge of oil, oily wastes and other noxious substances in the strait*. This means that these 'national laws' of the coastal State must implement international (IMO) regulations. This limits the coastal State's jurisdiction for adopting and enforcing national environmental regulations over foreign ships making a transit passage, compared to its jurisdiction over those making an innocent passage.

The reference to the 'applicable international regulations regarding the discharge of oil, oily wastes and other noxious substances' in article 42(1)(b) must be seen as a direct reference to MARPOL Annexes I and II. Conversely, coastal States cannot enforce any national or international (MARPOL Annex VI) sulphur regulations for ships making a transit passage.

One might ask how the limitations in article 42(1)(b) relate to article 39(2), obligating transiting ships to comply with all international regulations for the prevention, reduction and control of pollution from ships covering MARPOL Annex VI. This seemingly leaves a legal void regarding whether violations of regulation 14 of Annex VI by foreign ships can be enforced in an international strait. In the view of this author, the answer is to be found in article 233 in section 7 of UNCLOS part XII, as it relates to *safeguards* for enforcing such environmental legislation in an international strait.

Article 233 states as a main rule that nothing in sections 5, 6 and 7 affects the legal regime of straits used for international navigation, thereby including article 220(2) in section 6. Nevertheless, article 233 subsequently makes a direct reference to article 42(1)(a) and (b), stating that if a foreign ship violates these rules, that is discharges oil, oily wastes or other noxious substances into the sea,

[41] Art 43(b) encourages neighbouring coastal States bordering a strait to work together to prevent, reduce and control pollution from ships.

and this causes or threatens to cause major damage to the marine environment of the straits, then the States bordering the straits may take appropriate enforcement measures and, if so, shall respect *mutatis mutandis* the provisions of section 7 of part XII of UNCLOS.

The reference to *appropriate enforcement* must be a reference to the coastal State's stopping, investigating and, where the evidence so warrants, instigating legal proceedings against a ship violating these rules. The reference to this respecting *mutatis mutandis* the provisions of the section means that the procedural safeguards of section 7 must – with the necessary changes applied – be complied with by the coastal State when proceeding against violations of article 42(1)(b), that is, violations of MARPOL Annexes I or II.

Circling back to the previously asked question in which article 39(2) was compared with article 42(1)(b), the answer seems to be that article 233 allows a coastal State to take action in response to a foreign ship's violation of MARPOL Annex I or II in the strait, provided this violation also causes, or threatens to cause, major damage to the marine environment of the strait. The coastal State therefore cannot proceed against violations of MARPOL Annex VI, including regulation 14, committed by a foreign ship during its transit passage, as this regulation is not encompassed by article 42(1). The main rule of article 233 therefore dictates that a coastal State cannot exercise jurisdiction over such violations.

A foreign ship's infringement of article 39(2), for instance by violating regulation 14 of MARPOL Annex VI, can therefore only be enforced by a flag State under article 217. Article 217 is examined in chapter 8.

D. The Contiguous Zone

Article 33(1) of UNCLOS allows a coastal State to invoke a *contiguous zone*, where it has limited jurisdiction to prevent, control and bring enforcement proceedings against any infringement of its national laws relating to *customs, fiscal, immigration or sanitary matters*.

Article 33(2) stresses that the contiguous zone may not extend beyond 24 nm from the baseline. As the coastal State can claim a territorial sea extending up to 12 nm from the baseline, the contiguous zone merely adds an extra 12 nm in which these regulations can be enforced, as the coastal State has full territorial jurisdiction – with the aforementioned exceptions regarding innocent and transit passage – in its territorial sea and therefore also over these listed regulatory matters.

As the coastal State does not have full sovereignty over all regulatory matters in the contiguous zone, the added 12 nm cannot be viewed as part of the coastal State's territory as such, but merely as an area where the coastal State enjoys certain extended rights to regulate and enforce in the specific legislative areas listed in article 33(1). This list must be presumed to be exhaustive because of its clear and closed wording referring to these four regulatory areas.

As the list makes no reference to enforcement of any rules and regulations regarding the protection and preservation of the marine environment, the coastal State's jurisdiction in the contiguous zone does not confer any widened jurisdiction regarding the taking of measures against violations of MARPOL Annex VI occurring in that area.

E. The Continental Shelf

Part VI of UNCLOS enables a coastal State to claim certain sovereign rights over its *continental shelf* to exploit the natural resources therein, such as oil and minerals, and to protect these rights by regulatory measures.

The continental shelf is, in short, the natural underwater prolongation of a coastal State's mainland into the sea. The continental shelf can, in terms of UNCLOS, range up to 200 nm from the baseline under article 76(1).

If scientific geological data can confirm that a continental shelf extends beyond 200 nm, the continental shelf rights can equally be extended up to 350 nm from the baseline, provided the coastal State can meet the conditions for asserting such extended jurisdiction, pursuant to article 76(5)–(8).

Article 77(1) stipulates that the coastal State has the right to explore and exploit the natural resources found in the subsoil of the continental shelf.

The concept of a (coastal) State claiming certain sovereign rights over its continental shelf can be dated back to the period after World War II, when technological advancements allowed for the better extraction of oil and other substances located in the seabed. This led to the American President Harry S Truman's proclaiming, in 1945, that the United States invoked such sovereign rights over its continental shelf.[42] This was afterwards embodied in the previously mentioned 1958 CCS.[43]

The water above the continental shelf is considered *high seas* (unless it overlaps with a coastal State's 200 nm EEZ[44]), as emphasised by Harry S Truman's proclamation that 'The character as high seas of the water above the continental shelf and the right to their free and unimpeded navigation are in no way thus affected.'[45]

As the coastal State's continental shelf jurisdiction pursuant to part VI focuses on the exploration of the subsoil and does not confer any rights for enforcing violations of environmental legislation in waters above the shelf, these provisions of part VI will not be examined further.[46]

[42] See the White House News Release, 'The Policy of the United States with Respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf' (28 September 1945).

[43] See n 9 above.

[44] The water above a prolonged continental shelf from 200 nm to 350 nm will therefore always have high seas status.

[45] HW Roberts, 'International Law – The High Seas, The Continental Shelf, and Free Navigation' (1957) 35 *North Carolina Law Review* 524, 532.

[46] Pt XII of UNCLOS contains few references to the continental shelf, eg art 210(5)and art 216(1) refer to dumping on the continental shelf.

F. The Exclusive Economic Zone

A coastal State is entitled to claim an EEZ, which is regulated in part V of UNCLOS.

An EEZ can, according to article 57, extend up to 200 nm from the baseline. It thereby overlaps the first 12 nm of territorial sea where the coastal State has, with certain exceptions, full territorial jurisdiction given its sovereignty in that area under article 2.

The additional 188 nm, measured from the 12 nm to the 200 nm from the baseline, can therefore – like the contiguous zone and the continental shelf – not be regarded as an extension of the coastal State's territory as it does enjoy full sovereignty in the zone.[47]

The EEZ merely establishes a *special legal regime*, as stated in article 55. This bestows coastal States with limited sovereign rights for exploiting and managing living and non-living resources in the zone, creating artificial islands, and conducting scientific research and protecting the marine environment, pursuant to article 56(1).

Article 58(1) confers different rights and duties on other States in a coastal State's EEZ, such as allowing all States, and the ships flying their flags, to enjoy the *freedom of navigation* (and overflight), by referring directly to these rights codified in article 87 pertaining to sailing on the high seas. Article 58(2) also refers to application of the rights, obligations and exceptions regarding the high seas set out in articles 88–115, when compatible, to sailing in the EEZ.

Article 58(3) refers to compliance by all States, and therefore by the ships flying their flags, with nationally adopted laws and implemented international rules whilst sailing in an EEZ. Article 211[48] of part XII refers to a coastal State's right to implement international regulations and, in accordance with article 211(6), adopt national laws for the protection of the marine environment in the EEZ. If the EEZ is covered with ice then article 234 applies.

Article 73 presents coastal States with a jurisdictional basis for punishing violations of a coastal State's laws and regulations protecting its sovereign rights in the EEZ, regarding the exploitation, conservation and management of the living resources therein. This includes boarding, inspecting, instigating legal proceedings against and arresting a vessel until reasonable economic security is posted. That being said, article 73 makes no reference to the coastal State's enforcement of its laws and regulations for *protection of the marine environment*, although a coastal State has jurisdiction over such matters in the EEZ under article 56(1)(b)(iii).

Enforcement must therefore be carried out in accordance with the principles for coastal State enforcement laid out in part XII of UNCLOS, as article 56(1)(b)

[47] *Troubled Waters: Inquiry Into the Events Surrounding Crimes Committed at Sea*, Report of the Australian Parliament, The House of Representatives, Standing Committee on Social Policy and Legal Affairs (2013) 27.

[48] Tanaka, n 37, 133.

refers to the coastal State's having jurisdiction over these matters, *as provided for in the relevant provisions* of UNCLOS. This refers to the special coastal State jurisdiction found in article 220 for bringing proceedings for violations of environmental legislation, including violations of MARPOL Annex VI in the EEZ, as described in chapter 9. It is noted that the geographical scope of article 222, relating to enforcement of air pollution regulations, is limited to areas and to the air space under the sovereignty of the coastal State, which, in accordance with the principles of article 2 and article 58, does not cover the EEZ. This is discussed further in chapter 7.

A coastal State's enforcement of national and international laws and regulations for the protection of the marine environment in the EEZ, for example enforcing the sulphur limits under regulation 14 of MARPOL Annex VI, is to be carried out in accordance with article 220.[49]

VI. The High Seas

Part VII of UNCLOS (articles 86–120) regulates the *high seas*, which, according to article 86, are defined as those areas of the sea that are not deemed to be internal or territorial waters or part of an EEZ. The high seas are also referred to as 'international waters' or the 'open sea'.

Article 87 refers to the *freedom of the high seas*, which means that that the high seas are open to all States. Article 87(1)(a)–(f) present a non-exhaustive list of examples of what the freedom of the high seas comprises, including the rights to freedom of: (i) navigation; (ii) overflight; (iii) laying submarine cables and pipelines;[50] (iv) constructing artificial islands and other installations; (v) fishing; and (vi) conducting scientific research.

The right of all States to enjoy the freedom of the high seas is reinforced by the principles under articles 88 and 89, which stipulate (respectively) that the high seas can only be used for peaceful purposes[51] and that no State can claim sovereignty over any part of the high seas. The concept of the high seas being free and open to all States, and free from any claims to sovereignty, was first declared by

[49] This corresponds with the *travaux préparatoires* of the MARPOL Convention, which refer to coastal States' being required to protect the areas adjacent to their territorial waters against pollution, ie the EEZ embodied in the later adopted UNCLOS. See 'General principles for assessment and control of marine pollution recommended by the United Nations Conference on the Human Environment (Recommendation 92)' MP/CONF/INF.6, IMCO (1973) 6, item 17; http://www.imo.org/en/KnowledgeCentre/ReferencesAndArchives/IMO_Conferences_and_Meetings/MARPOL/MP_CONF_1973/Pages/default.aspx.

[50] Arts 112–115 of pt VII lay down the requirements for the laying of such cables and pipelines.

[51] Art 301, found in pt XVI of UNCLOS containing the 'General Provisions' of the Convention, also refers to the 'Peaceful uses of the seas', establishing that all States must exercise their rights and perform their duties without any use or threat of force.

Queen Elizabeth I in 1580, when Spain protested against English maritime activities in an area of the western Atlantic over which Spain had made claims. Queen Elizabeth declared:

> The use of the sea and air is common to all; neither can any title to the ocean belong to any people or private persons forasmuch as neither nature nor regard of the public use and custom permitteth any possession thereof.[52]

The Dutch lawyer Hugo Grotius cemented the concept of the freedom of the high seas in his study *Mare Liberum* ('freedom of the seas') in 1609,[53] when he stated that '[t]he open sea cannot be subject to the sovereignty of any state, access to all nations is open to all, not merely by the permission but by the command of the Law of Nations'.[54] That no State can claim sovereignty over the high seas is, according to Grotius, attributed to the fact that the high seas are considered '*Res Communis*', that is, the common heritage of mankind.[55]

A. Flag State Jurisdiction on the High Seas – The Flag State Principle

Under article 90 of UNCLOS, every State has the right to sail ships flying its flag on the high seas. This is conditional on there being a genuine link between the ship and the State, and article 91 provides that States must have fixed conditions for granting their nationality to a ship and for registering them.

As mentioned in chapter 1, article 92(1) of UNCLOS codifies the so-called *flag State principle*, which stipulates that ships can only sail under the flag of one State and that that State has, except for explicit accepted exceptions codified in UNCLOS or other treaties, exclusive jurisdiction over the ship on the high seas.

It should be noted that warships and ships used solely for governmental, non-commercial service are always immune from the jurisdiction of any State other than the flag State under articles 95–96. Such ships are also covered by the exceptions referred to in article 92(1).

The principle of a State's having jurisdiction over ships flying its flag can be traced back to the early 1800s, especially in the United Kingdom, where an Act for the registration of British ships was adopted in 1823 stating that these ships were subject to the jurisdiction of the State, including whilst sailing on the high seas.[56]

[52] W Vitzhum, 'From Rhodian Sea Law to UNCLOS III' in *Marine Issues: From a Scientific, Political and Legal Perspective* (Kluwer Law International, 2002) 7–8.

[53] *Mare Liberum* was published anonymously in 1609, but Hugo Grotius wrote it in 1604.

[54] Roberts, n 45, 524.

[55] See Advocate General Wahl, Advisory Opinion, in Case C-15/17 *Bosphorus Queen Shipping Ltd Corp v Rajavartiolaitos*, 28 February 2018, ECLI:EU:C:2018:557, para 52, note 13, where reference is made to Grotius' formulating this in his *Mare Liberum*.

[56] JNK Mansell, *Flag State Responsibility – Historical development and contemporary issues* (Springer-Verlag, 2009) 18.

The flag State principle was also recognised by the Permanent Court of International Justice (PCIJ) in the *Lotus case* in 1927,[57] and later embodied in the 1958 CHS[58] and subsequently in UNCLOS.

The flag State principle therefore permits the flag State to exercise *extraterritorial jurisdiction* over ships flying its flag. The *Lotus case* and the extraterritorial nature of flag State jurisdiction are discussed further in chapter 6.

Article 94(1) of UNCLOS describes how a flag State must effectively exercise its jurisdiction over ships flying its flag in *administrative*, *technical* and *social* matters. Article 94(2)–(3) set out examples of what these matters can cover, such as: registering the names and details of ships flying the State's flag (ie administrative matters); ensuring safety at sea by surveying the construction, equipment and seaworthiness of ships (ie technical matters); and, with regard to the manning of ships, labour conditions and the training of crews (ie social matters). Also, article 98 specifies that a flag State must ensure that all ships flying its flag are under a duty to render assistance to any ship or person in need or distress at sea.

Flag State obligations for enforcing environmental legislation are to be found in part XII of the Convention, particularly in article 217, as discussed in chapter 8.

B. Exceptions to Exclusive Flag State Enforcement on the High Seas

As noted in section VI.A, article 92 of UNCLOS also refers to exceptions to the flag State principle, inter alia, codified in UNCLOS. Some of the most relevant exceptions for this book are found in part XII, predominantly in article 218(1) and, to some extent, article 228(1). These articles are analysed in chapters 10 and 11. Yet part VII of the Convention also codifies certain exceptions to the flag State's unimpeded high seas jurisdiction (see article 97 and articles 99–111), which in brief provide as follows:

- In cases of collisions or other incidents at sea, article 97(1) and (2) allow the State of which the master or crew member deemed responsible for the collision or incident is a national to assert jurisdiction over this person, irrespective of the ship's flying another flag.
- Every State is required to take measures to prevent the transport of slaves on the high seas (see article 99); and States are required to cooperate in combatting piracy (articles 100–107) and illegal broadcasting (article 109).[59]

[57] *SS Lotus (France v Turkey)* PCIJ Rep Ser A No 10.

[58] See n 7 above.

[59] Art 108 refers to the cooperation between States to suppress *illicit drug trafficking*. This does not, in the view of this author, actually bestow any non-flag States with any extraterritorial jurisdiction on the high seas. The results of this cooperation can of course result in international treaties or conventions conferring extraterritorial jurisdiction regarding illicit drug trafficking in regulations, but art 108 in itself does not.

- Article 110(1)(a)–(c) allow a warship of any State to investigate foreign ships on the high seas if it has grounds for suspecting that such a ship has violated the aforementioned prohibitions.
- Article 110(1)(d) and (e) also allow all States to exercise jurisdiction over ships unwilling or unable to show a flag. This indirectly refers to article 92(2), which stipulates that if a ship sails under more than one flag, then it must *be assimilated to a ship without nationality*, which gives all States jurisdiction over this vessel in accordance with article 110(1)(d).

i. The Exception in Article 111 – The Right to Hot Pursuit

Article 111(1) of UNCLOS gives coastal States the right to undertake *hot pursuit* of a foreign ship on the high seas, provided the coastal State has good reason to believe that the ship has violated the State's laws whilst sailing in internal or territorial waters or in the contiguous zone,[60] and provided that the coastal State has been able to pursue the vessel uninterrupted after the violation.

This means that if a coastal State can pursue the ship uninterrupted (*in continenti*) from it own waters out onto the high seas, that State may exercise jurisdiction on the high seas by stopping, investigating and, if the evidence so warrants, detaining[61] the ship, or by escorting it back to the coastal State to instigate legal proceedings.

Article 111(2) also allows coastal States to initiate a hot pursuit for violations occurring in the EEZ or on the continental shelf, provided it is a violation of the rights over which a coastal State has jurisdiction in these areas, which includes protection of the environment in the EEZ pursuant to article 56(1)(b)(ii).

Certain conditions must be met by the coastal State when making a hot pursuit. First, the coastal State must ensure that the violation took place within the waters and zones mentioned in article 111(1) and (2), and that the ship has received a visual or auditory signal to stop as laid down in article 111(4). Secondly, under article 111(5), the pursuit must be exercised by a clearly identifiable warship or government ship or aircraft. If the pursuit is carried out by planes, the specific requirements of article 111(6) must be met.

The coastal State is, pursuant to article 111(3), required to abandon the pursuit when the foreign ship enters the territorial sea of another coastal State or its flag State.

If a coastal State stops a ship outside its own territorial waters on false grounds, it can result in the State's becoming liable for any economic loss or damage to the ship, as laid down by article 111(8).

[60] A hot pursuit relating to a violation in the *contiguous zone* must of course relate to a violation of the laws over which the coastal State has jurisdiction in that zone, ie customs, fiscal, immigration or sanitary matters (see section V.D).

[61] Such a detention could, if disputed by the flag State, be subject to the expedited judicial procedure under art 292; see art 297(1)(c) of UNCLOS.

It should be noted that article 111, unlike article 110, does not limit the right of hot pursuit to the investigation or prosecution of the crimes listed in articles 99–107 and 109 of UNCLOS (ie regarding the transport of slaves, piracy and illegal broadcasting). Article 111 refers, as previously mentioned, to *all violations* of coastal State laws and regulations within its jurisdiction, which thereby includes violations of environmental regulations in internal and territorial waters and in the EEZ.[62] This is relevant when examining the possibilities for coastal States to prosecute violations of the sulphur regulations under MARPOL Annex VI.

Chapter 9 of this book includes a section describing the possibilities for coastal States, in accordance with article 220 and article 111, to institute proceedings for violations of the 0.5% (or 0.1%) limit in internal and territorial waters and in the EEZ, by commencing a hot pursuit using a drone or plane with a sniffer attached.

VII. Special Protection of the Marine Environments and Biodiversity through UNCLOS

UNCLOS makes numerous recommendations for States to cooperate to preserve and protect the marine environment, for example in articles 118 and 119, which refer to cooperation between States to ensure the conservation and management of living resources. Article 197, in part XII of UNCLOS, also requires States to cooperate to protect the marine environment.[63]

There are several references throughout UNCLOS, including in articles 119 and 197, to this international cooperation between States being accomplished through the 'competent international organizations', which includes the IMO as the 'IMO is the competent international organization to adopt rules and standards relating to pollution from vessels and pollution by dumping'.[64]

This cooperation between States can result in the designation of specific maritime areas where different forms of protectionary measures apply that can confer obligations and rights on the participating (coastal) States. Such States are required to accept any strengthened regulation applying in their territorial waters or EEZ if the designated area covers parts of these waters and zones. This imposes a restriction on their territorial jurisdiction to legislate freely and carry out enforcement in these areas as they normally would in connection with sovereign environmental rights. They are nonetheless also provided with

[62] A Pozdnakova, *Criminal Jurisdiction over Perpetrators of Ship-Source Pollution* (Martinus Nijhoff, 2012) 113.

[63] Art 197 is found in pt XII of UNCLOS, but given its use as a legal foundation for establishing areas where special environmental regulations apply, often covering different maritime areas and zones, it is noted here as well as in ch 7.

[64] IMO, n 27, 56.

extraterritorial rights to participate in international cooperation that results in legislation that applies outside their territory, that is, on the high seas and in maritime areas and zones of other (coastal) States.

Articles 118 and 119 of part VII and article 197 of part XII emphasise the obligation for all States to participate in such international cooperation. Cooperation can be carried out under the auspices of the IMO system (Special Areas, Emissions Control Areas (ECAs) and Particularly Sensitive Sea Areas (PSSAs)) or of the UN system (Biodiversity Beyond National Jurisdiction (BBNJ)), or through ad hoc multilateral agreements (MPAs), all of which are described further in sections VII.A–C following.

A. Special Areas, ECAs and PSSAs – Cooperation and Protection through the IMO

The IMO has several legislative tools that allow it to protect the marine environment in designated areas. One example of such an IMO 'tool' is the possibility of deeming a delimited maritime area a *Special Area* in accordance with Annexes I, II, IV and V of the MARPOL Convention.

Particularly strict requirements apply in such a Special Area regarding discharges of oil, other noxious liquid substances, sewage and garbage, due to its specific oceanographic and ecological conditions. A Special Area may overlap the different areas and zones as defined in UNCLOS, for example by covering parts of a territorial sea, an EEZ and parts of the high seas. The detailed conditions for the designation of Special Areas are specified in accordance with the 2001 IMO Resolution A.927(22), 'Guidelines for the designation of Special Areas under MARPOL 73/78 and guidelines for the identification and designation of Particularly Sensitive Sea Areas'.

Its may be recalled from chapter 2 that MARPOL Annex VI uses a different term for establishing areas in need of distinct protection from certain airborne pollutants found in the emissions of ships. Annex VI refers to ECAs, in which control can cover NOx emissions under regulation 13 of Annex VI (NECAs) and SOx emissions under regulation 14.3 (SECAs), where a 0.1% sulphur limit applies in accordance with regulation 14.4.

The IMO can furthermore designate areas as being PSSAs, in which several more stringent rules and conditions apply, overlapping the regulatory scope of different IMO regulations pertaining to discharge, navigation, etc. A PSSA can be designated where there is a need for a higher level of protection of rare and unique ecosystems, or of marine animals and their habitats against *maritime activities*. In addition, considerations pertaining to an area's historical value or its value for marine biological research may also affect the assessment.

When the IMO has identified a PSSA, several Associated Protective Measures can be designed and implemented to reduce, and if possible eliminate, the threat

to this Area's ecosystem and biodiversity. For example, by rerouting shipping lanes, imposing reporting obligations and issuing IMO recommendations on the use of pilots.[65] By the end 2018, the IMO had designated 17 areas as PSSAs,[66] including the Great Barrier Reef and the Baltic Sea.[67]

The specific conditions for establishing a PSSA were, until 2006, found in Annex 2 of the previously mentioned IMO Resolution A.927(22). However, those regulations have been separated out from those guidelines and are now found in the independent IMO Resolution A.982(24). It is clear from point 4.5 in Resolution A.982(24) that it is possible to create a PSSA 'inside' an existing 'Special Area' and vice versa.[68]

The designation of Special Areas and PSSAs must always be done in accordance with the principles set out in UNCLOS.[69]

B. Marine Protected Areas – Cooperation and Protection through Ad Hoc Multilateral Agreements

The term 'Marine Protected Area' (MPA) is often used as a general umbrella term[70] for describing an area of the sea where special protective measures apply.[71] Special Areas and PSSAs[72] are therefore sometimes also described as MPAs.[73]

Bilateral and multilateral agreements, following international cooperation carried out in accordance with articles 118 and 119 or article 197 of UNCLOS, that have resulted in the designation of ad hoc areas where special protective measure apply can also be referred to as MPAs. Various conventions, including the

[65] IMO Recommendation SN 1/Circ 263, 23 October 2007, recommends that certain ships, depending on their draught and cargo, use a pilot when sailing through the Great Belt and Oresund.

[66] The 17 PSSAs can be seen at http://www.imo.org/en/OurWork/Environment/PSSAs/Pages/Default.aspx.

[67] The Baltic Sea was, on the basis of a request from several of the coastal States bordering the Baltic Sea, including Denmark, Estonia, Latvia, Lithuania, Germany, Poland, Finland and Sweden, designated as a PSSA on 22 July 2005 by IMO Resolution MEPC.136(53), which entered into force on 1 July 2006.

[68] The precise wording of point 4.5 is 'In some cases a PSSA may be identified within a Special Area and vice versa. It should be noted that the criteria with respect to the identification of PSSAs and the criteria for the designation of Special Areas are not mutually exclusive.'

[69] IMO, n 27, 71.

[70] The WWF defines an MPA as 'An area designated and effectively managed to protect marine ecosystems, processes, habitats, and species, which can contribute to the restoration and replenishment of resources for social, economic, and cultural enrichment.' See at https://wwf.panda.org/our_work/oceans/solutions/protection/protected_areas/.

[71] Tanaka, n 37, 346.

[72] PSSAs are designated in accordance with IMO Assembly Resolution A.927(22), 'Guidelines for the designation of Special Areas under MARPOL 73/78 and guidelines for the identification and designation of Particularly Sensitive Sea Areas' (2001).

[73] Tanaka, n 37, 347.

Convention on the Conservation of Antarctic Marine Living Resources (CAMLR Convention)[74] and the Convention on Biological Diversity (CBD Convention),[75] designate such protected areas as MPAs in which special regulations apply.[76]

C. Biodiversity Beyond National Jurisdiction – Cooperation and Protection

Articles 116–120 of UNCLOS confer rights and obligations for all States to cooperate and adopt measures for the conservation of the living resources, including fish stocks, of the high seas.[77] For example, article 116 grants a right for all States to fish on the high seas, but explicitly refers in article 116(b) to article 63(2) and articles 64–67, regarding the rights and duties of coastal States to protect and manage stocks of certain species that live in EEZs (such as highly migratory species, marine mammals and anadromous stocks), also applying on the high seas.[78]

These principles, concerning the rights and obligations of all States in respect of protecting marine life in the high seas, were reiterated in UN Resolution 69/292 of 19 June 2015, in which the UN General Assembly agreed to develop an international legally binding instrument under UNCLOS to ensure the conservation and sustainable use of marine biological diversity of *areas beyond national jurisdiction* (ABNJ), that is on the high seas. This UN programme of work is entitled *Biodiversity Beyond National Jurisdiction* (BBNJ).

The ongoing work in the UN makes continued reference to these UNCLOS principles, for example in a statement made by the chair of the Preparatory Committee established by Resolution 69/292, referring to the BBNJ work, inter alia, having '[r]espect for the rights and obligations of coastal States over the resources under their jurisdiction, as provided for in UNCLOS' and to '[c]onservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, in line with applicable UNCLOS provisions'.[79]

The aim of the Resolution is, inter alia, to ensure the conservation and sustainable use of marine biodiversity for ocean health, productivity and resilience, food

[74] Convention on the Conservation of Antarctic Marine Living Resources (adopted 20 May 1980, entered into force 7 April 1982) 1329 UNTS 47.

[75] Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79.

[76] KM Gjerde and A Rulska-Domino, 'Marine Protected Areas beyond National Jurisdiction: Some Practical Perspectives for Moving Ahead' (2012) 27 *International Journal of Marine and Coastal Law* 357.

[77] ibid 356.

[78] Tanaka, n 37, 238–41.

[79] 'Chair's streamlined non-paper on elements of a draft text of an international legally-binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction' from the fourth session of the BBNJ PREP COM (10–21 July 2017), available at http://www.un.org/depts/los/biodiversity/prepcom.htm, 16.

security, ecosystem services and sustainable development for present and future generations.

The UN work on this furthermore refers to article 197 of UNCLOS relating to international cooperation through competent international organizations for protection of the marine environment, which means the IMO in respect of adopting rules relating to pollution from vessels. This is sought to be achieved by designating certain areas of the high seas (ie ABNJ) as MPAs, which, as described, ties the BBNJ work to the prerogative powers of the IMO to protect certain marine areas by designating them as Special Areas or as PSSAs to which the above-mentioned statement made by the chair of the BBNJ Preparatory Committee also refers.[80]

The BBNJ work may, through the application of the legal regimes of Special Areas and PSSAs, result in coastal States' having certain extraterritorial rights in ABNJ, for example on the high seas, regarding protection of the biodiversity in these areas. However, as that work does not focus, nor have any impact, on the enforcement of air pollution regulations such as MARPOL Annex VI, this book will not address the BBNJ work further.[81]

VIII. Conclusion

In conclusion, the implementation and enforcement of the MARPOL Convention and its Annex VI must, pursuant to article 237 of UNCLOS and article 9(2) of the MARPOL Convention, be carried out in accordance with the principles and jurisdictions provided for in UNCLOS parts II–VII as described in this chapter, but also in accordance with the special provisions of part XII of UNCLOS as described in chapters 7–13 (ie in Part II of this book). This is supported by the definition of 'pollution of the marine environment' in article 1(1)(4) of UNCLOS, which refers to manmade pollution by substances or energy that presents a hazard to human health, which completely matches the characteristics of sulphur pollution.

The provisions of parts II–VI relate to a coastal State's jurisdiction in its internal and territorial waters and EEZ, with certain exceptions applying, inter alia, relating to *innocent* and *transit* passage. These set the general parameters for how coastal States can enforce legislation, in principle, also covering enforcement of environmental legislation.

Still, the *lex specialis* regulation of part XII, for example article 222 enforced in accordance with article 220, will be the relevant jurisdictional framework for

[80] 'Chair's streamlined non-paper on elements of a draft text of an international legally-binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction' from the third session of the BBNJ PREP COM (27 March–7 April 2017), available at http://www.un.org/depts/los/biodiversity/prepcom.htm, 44 and 52.

[81] See, eg, Gjerde and Rulska-Domino, n 76, 356, who state that 'The LOSC also recognizes a duty to cooperate in the conservation and management of high seas living resources; although its more specific provisions focus mainly on fish.'

determining how a coastal State can prescribe (including implementing) and enforce legislation for protection of the marine environment, such as MARPOL Annex VI, within areas under its jurisdiction, perhaps using the principles for hot pursuit found in article 111 to support this enforcement.

Conversely, unlike parts II–VI, part VII of UNCLOS provides a coastal State, with few exceptions,[82] with no extraterritorial jurisdiction for penalising violations committed outside its areas, for instance on the high seas. The provisions of part VII do reiterate the flag State principle, which establishes that flag States have jurisdiction on the high seas. But article 92 stipulates that exceptions exist to this principle, which again leads to the *lex specialis* provisions of part XII, including article 218.

The IMO's designation of Special Areas and PSSAs, the UN's work on BBNJ and ad hoc multilateral environmental agreements can, in principle, protect maritime areas that overlap territorial waters, EEZs and the high seas.

Finally, it should be noted that international law, including the law of the sea, is subject to constant development and aligns itself with the technical progress and needs of the international community, as seen in the development of the EEZ and the special environmental protection principles of part XII of UNCLOS compared to the previous 1958 Conventions. The establishment of a new legal basis for enforcing regulation of a relatively new type of pollution, the release of long-range air pollutants from ships on the high seas, would therefore be a normal evolution of the law of the sea.

If such a basis were to be found within the provisions of part XII of UNCLOS, following the analyses in chapters 7–13 (Part II) of this book, it would be immediately applicable for enforcing the sulphur limits set out in regulation 14 of MARPOL Annex VI, including the 0.5% limit on the high seas. This is based on article 9(2) of the MARPOL Convention, referring to the Convention's (and its annexes[83]) being enforced in accordance with future claims and legal views developed within international law.

This is supported by regulation 11.6 of MARPOL Annex VI, which directly states that the enforcement of the Annex, including regulation 14, should be done in accordance with international law in force at the time and how this is interpreted, with the necessary changes applied, ie *mutatis mutandis*.

This means that if it is determined, following the analysis in chapter 10 of this book, that the jurisdictional scope of article 218(1) of UNCLOS is applicable to emission violations on the high seas, it could immediately be applied to the enforcement of regulation 14.1.3 of MARPOL Annex VI, pursuant to regulation 11.6 (*mutatis mutandis*) and article 9(2) of the MARPOL Convention.

[82] None of these above-mentioned exceptions relates to the enforcement of regulations on air pollution on the high seas; rather, they focus on the transport of slaves, piracy and illegal broadcasting. The work on BBNJ does aim at protecting the biodiversity in the high seas, but does not aim at protecting the marine environment itself, nor the air above, from air pollution.

[83] See art 1(2) of the MARPOL Convention.

4

Port State Control

Many port States perform a control (inspection) of foreign merchant ships while they are at berth in a port. The purpose of these Port State Controls (PSCs) is to ensure that the foreign ships, which come into port voluntarily, comply with certain internationally accepted International Maritime Organization (IMO) and International Labour Organization (ILO[1]) rules regarding safety on board, navigational safety, manning, working conditions and the protection of the marine environment, which includes the regulations under MARPOL Annex VI.

Since the beginning of the 1980s, PSC has increasingly become more internationally coordinated between port States, to ensure that the rules which are internationally agreed upon are effectively enforced. The different IMO Conventions often have regulations referring to how compliance with the rules of the particular convention can be ensured during a PSC inspection. The IMO also issues guidelines for how PSCs in general should be carried out, thereby establishing common criteria to guarantee a unified PSC approach in all ports.

This chapter seeks to depict how these PSCs are internationally coordinated and what legal measures can be applied by PSC authorities in the event of a ship's non-compliance, such as the imposition of fines, detaining the ship, requiring economic security (bail), etc. These legal measures are also examined in light of the general framework principles set out in UNCLOS,[2] particularly in articles 219 and 224–226[3] of part XII, and how these regulations support the PSC regime. So, even though Part II of this book contains in-depth analysis of most of the part XII provisions, articles 219 and 224–226 are singled out in this chapter, given their relevance for PSC.

It should be noted that PSC has a focus on port States' inspection of *foreign* ships. This might seem to conflict with article 227 of UNCLOS, which prohibits all States from discriminating, in *any form or in fact*, against foreign ships. But a port State must always ensure that any ship flying its flag – thereby rendering that

[1] The ILO is a specialised United Nations (UN) agency that, inter alia, governs the Maritime Labour Convention (adopted 23 February 2006, entered into force 20 August 2013) 2952 UNTS 3 (MLC).

[2] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3.

[3] Art 218 contains the only direct reference to *port States* in UNCLOS, but art 226 refers directly to art 218 and describes under which conditions a (port) State may investigate a foreign vessel while in port.

(port) State a flag State – complies with the same international regulations as those ships inspected during a PSC. (See, for example, article 94[4] pertaining to safety, navigation, manning and labour conditions, and see article 217(2)–(3) relating to international environmental regulations.) These obligations apply especially while ships under its flag are at berth in a port located in the flag State, as the flag State has complete jurisdiction over such ships, by virtue of their flying its flag and being located in an area (port) under its jurisdiction. Article 217 is examined in detail in chapter 8.

It should also be noted that article 236 of UNCLOS stipulates that the provisions of part XII, including articles 219 and 224–226, do not apply to any State-operated warship, naval vessels or aircraft in government (ie non-commercial) service.

This chapter will also look into the reporting systems that many port States use to inform each other of deficiencies discovered on board a particular ship, including the IMO's *GISIS* database[5] and the EU's *THETIS* database. The principle of 'no more favourable treatment' will be examined, in part with regard to whether this principle has obtained the status of international customary law.

Finally, this chapter attempts to establish a link between these general principles of PSC and the enforcement of MARPOL Annex VI, especially regarding how effective enforcement of the 0.5% sulphur limit could be envisioned. The intention is to establish that the current PSC structure, including the application of the GISIS module, will be able to offer the 'practical enforcement' that fully supports the 'legal basis' analysed in Part II of this book.

I. Port State Control Coordinated on an International Scale

Port State Control was originally preformed sporadically from port State to port State on an inconsistent basis. In 1978, a multilateral administrative arrangement was drawn up in The Hague between a number of European port States. This agreement (The Hague Memorandum) aimed at establishing coordinated regional PSC between the participating States based on unified criteria. The goal was to ensure that all ships voluntarily calling into a port in those countries complied with

[4] M Reuß and J Pichon, 'The European Union Exercise of Jurisdiction Over Classification Societies – An International Law Perspective on the Amendment of the EC Directive on Common Rules and Standards for Ship Inspection and Survey Organisation and for the Relevant Activities of Maritime Administrations' (2007) 67 *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht* 119, 122, available at https://www.zaoerv.de/67_2007/67_2007_1_a_119_144.pdf.

[5] The Global Integrated Shipping Information System (GISIS) is an IMO-administered online reporting database, where the Member States can report different findings and information relating to different IMO Conventions, including MARPOL Annex VI.

the requirements of ILO Convention no 147 on minimum standards in merchant ships,[6] pertaining to working conditions on board merchant ships.

The agreement was scheduled to enter into force in July 1978, but this was delayed due to the running aground of the Liberian oil tanker *Amoco Cadiz* off the west coast of Brittany on 16 March that year. The incident resulted in a massive oil spill, and consequently the States participating in The Hague Memorandum agreed to expand the regulatory scope of the PSC agreement to include ensuring compliance with applicable IMO (IMCO) regulations on safety and environmental protection. This extension was adopted in Paris in 1982 as a Memorandum of Understanding (MoU).[7] This agreement is therefore often referred to as 'the Paris MoU'.

This form of regional coordination of PSC through MoUs spread, following the adoption of the Paris MoU, to other parts of world. The EU has also tried to coordinate mandatory PSC measures between EU Member States by adopting regional legislation, the Port State Control Directive (PSC Directive).[8]

The international regulations with which PSCs aim to ensure compliance include, but are not limited to, the following IMO conventions:[9]

- the MARPOL Convention and its Annexes;[10]
- the SOLAS Convention;[11]
- the BWM Convention;[12]
- the STCW Convention.[13]

The Hong Kong Convention[14] on environmentally sound recycling of ships will also be encompassed when it eventually enters into force. The MLC Convention,[15] which as noted is an ILO convention, is also part of the general PSC inspection scheme.

[6] Convention (No 147) concerning minimum standards in merchant ships (adopted 29 October 1976, entered into force 28 November 1981) 1259 UNTS 335.

[7] Paris Memorandum of Understanding on Port State Control (adopted 26 January 1982, entered into force 1 July 1982) (Paris MoU). The Paris Memorandum is available at https://www.parismou.org/inspections-risk/library-faq/memorandum.

[8] Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on Port State Control [2009] OJ L131/57.

[9] Y Tanaka, *The International Law of the Sea*, 2nd edn (Cambridge University Press, 2015) 297–98.

[10] International Convention for the Prevention of Pollution from Ships (adopted on 11 February 1973, as modified by the Protocol of 17 February 1978, entered into force 2 October 1983) 1340 UNTS 61 (MARPOL), IMO Publication: IMO-520E.

[11] International Convention for the Safety of Life at Sea (SOLAS) 1974 (adopted 1 November 1974, entered into force 25 May 1980), 1184, 1185 UNTS 2.

[12] The International Convention for the control and management of ship's ballast water and sediments 2004 (adopted 13 February 2004, entered into force 8 September 2017) (the BWM Convention).

[13] The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (the STCW Convention) (adopted 7 July 1978, entered into force 28 April 1984) 1361, 1362 UNTS 2.

[14] The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (the Hong Kong Convention) (adopted 15 May 2009, not yet entered into force).

[15] The MLC Convention, n 1.

A. Port State Control through Memorandums of Understanding

Several other European States, and Canada and Russia, have, since its adoption in 1982, joined the Paris MoU, leading to a total 27 participating States[16] bordering the Atlantic region, thereby ensuring that most (if not all) merchant ships crossing the Atlantic on a regular basis can be subjected to a PSC.

In December 1993 a Tokyo MoU was adopted, entering into force in April 1994, which focuses on PSC in the Pacific region.[17]

Seven other regions have since established such MoUs, covering most of the world's oceans. These are the Caribbean MoU, the Mediterranean MoU, the Indian Ocean MoU,[18] the Abuja MoU,[19] the Black Sea MoU,[20] the Riyadh MoU[21] and the Acuerdo de Vina del Mar MoU.[22] It should be noted that the United States (US) adopts a singularly unilateral approach to PSC (see section I.C).

Many countries are parties to different MoUs as a result of their natural geographic locations. For example Canada is party to the Paris and Tokyo MoUs, Australia to the Tokyo and Indian Ocean MoUs, and Russia to the Paris, Tokyo and Black Sea MoUs.

Each MoU has it own underlying Memorandum (of Understanding), which sets out the conditions and principles for PSC in that region,[23] although many of these MoUs are modelled on the original *Paris Memorandum*.[24] This analysis will therefore focus on the provisions of the Paris Memorandum,[25] as the principles laid down in it will also apply to the other MoUs, including the Tokyo MoU[26] and the Indian Ocean MoU.[27] Those three MoUs (Paris, Tokyo and Indian Ocean) cover, in cooperation with the US, PSC of the majority of all merchant vessels crossing the high seas, so that they are of special relevance when looking into

[16] See at https://www.parismou.org/about-us/organisation.

[17] See at http://www.tokyo-mou.org/organization/.

[18] See at http://www.iomou.org/.

[19] The Abuja MoU covers West and Central Africa. See at http://www.abujamou.org/index.php.

[20] See at http://www.bsmou.org/.

[21] The Riyadh MoU covers the Persian Gulf. See at https://www.riyadhmou.org/.

[22] The Acuerdo de Vina del Mar MoU covers Central and South America. See at https://alvm.prefecturanaval.gob.ar/cs/ciala/home?Lang=1374097586979.

[23] For a thorough analysis of these MoUs, see A Kulchytskyy, *Legal Aspects of Port State Control* (Faculty of Law, Lund University, 2012) 22–33.

[24] It should be noted that this chapter uses both the term 'Paris MoU' and the term 'Paris Memorandum'. Although these describe the same Memorandum of Understanding, they are used/applied in different contexts for reasons of clarity. The term 'Paris MoU' (as well as 'Tokyo MoU', 'Indian Ocean MoU', etc) refers to the intergovernmental collaboration/association of (port) States for coordinating PSC. The term 'Paris Memorandum' refers to the tangible Memorandum (document) itself, ie the legislative text and the provisions and annexes therein.

[25] See n 7.

[26] The Tokyo Memorandum is available at http://www.tokyo-mou.org/organization/memorandum_of_understanding.php.

[27] The Indian Ocean Memorandum is available at http://197.230.62.214/IndianMoU.aspx?AspxAutoDetectCookieSupport=1.

effective enforcement of the sulphur limits (and future regulations on greenhouse gas (GHG) emissions).

B. Port State Control in the EU

Many EU Member States, which are required to comply with the PSC Directive, are furthermore voluntary parties to the Paris MoU. It therefore comes as little or no surprise that the PSC Directive contains several references to the Paris Memorandum, linking the two European PSC schemes. For instance, in paragraph (13) of the Preamble to the PSC Directive it is asserted that:

> The inspection system set up by this Directive takes into account the work carried under the Paris MoU. Since any developments arising from the Paris MoU should be agreed at Community level before being made applicable within the EU, close coordination should be established and maintained between the Community and the Paris MoU in order to facilitate as much convergence as possible.

Also, article 1(b) and (c) of the Directive include very clear references to the Paris MoU:

> The purpose of this Directive is to help to drastically reduce substandard shipping in the waters under the jurisdiction of Member States by:
>
> …
>
> (b) establishing common criteria for control of ships by the port State and harmonising procedures on inspection and detention, building upon the expertise and experience under the Paris MoU;
> (c) implementing within the Community a port State control system based on the inspections performed within the Community and the Paris MoU region, aiming at the inspection of all ships with a frequency depending on their risk profile, with ships posing a higher risk being subject to a more detailed inspection carried out at more frequent intervals.

Paragraph (10) of the Preamble refers directly to the European Maritime Safety Agency (EMSA), ensuring that EU PSC is implemented uniformly and effectively in all Member States and in accordance with the Paris Memorandum.

Article 3(1) of the PSC Directive stipulates that all ships calling at EU ports must comply with applicable international standards and conventions. Under article 2(1)(c), 'Conventions' includes the MARPOL Convention.

Article 11 requires that such ships be subject to PSC with a certain frequency. This decision on the necessary frequency, inter alia, is taken in light of the ship's risk profile, as specified in article 10. This allows for ships posing a higher risk to undergo more frequent and more thorough inspections, in accordance with article 14.

All initial PSCs must, in accordance with article 13(1)(b), verify whether outstanding deficiencies found during the previous PSCs carried out by an

EU Member State or by a State signatory to the Paris MoU have been rectified. Article 13(3) provides that a more detailed inspection must be carried out if 'the condition of a ship or of its equipment or crew does not substantially meet the relevant requirements of a Convention'.

C. Port State Control in Relation to the United States

The US has not joined any MoUs, but the US Coast Guard (USCG) conducts PSC on an unilateral basis and enforces all the same IMO (and ILO) Conventions that are enforced through the MoU regimes, including MARPOL Annex VI.[28] It should be recalled that the US and Canada also have a 200 nm Sulphur Emission Control Area (SECA) in which a 0.1% sulphur limit applies (see chapter 2).

The US PSC does have some link to the Paris Memorandum as, inter alia, it refers to the *banning list* issued under the Paris MoU. The ships banned from the Paris MoU region and ports are thereby also banned from the US region and its ports.[29]

That the US conducts unilateral PSC of the same IMO regulations, including MARPOL Annex VI,[30] is of significant importance, as US ports on the east coast comprise important destinations and hubs for many trading routes across the Atlantic basin; and this also applies to ports on the US west coast regarding trade routes across the Pacific basin.

It should be noted that US is not a party to UNCLOS, but as many of the relevant provisions of that Convention are deemed to represent customary principles of international law, the US can – and does – invoke them.[31]

D. White-, Grey- and Black-listed Flag States

The different MoUs enter their PSC findings into joint databases,[32] where the deficiencies found on each ship are recorded, including information on which flag it flies. The Paris MoU, as expressed in paragraph 3 of Annex 3 to the PSC Memorandum, uses these data to calculate the *white, grey* and *black lists* of flag States.[33] These white, grey and black lists, inter alia, provide information on

[28] See at https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Commercial-Vessel-Compliance/Domestic-Compliance-Division/MARPOL/.

[29] See at https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Commercial-Vessel-Compliance/Foreign-Offshore-Compliance-Division/PSC1/.

[30] MH Nordquist, TTB Kohn and J Norton Moore (eds), *Freedom of Seas, Passage Rights and the 1982 Law of the Sea Convention* (Martinus Nijhoff Publishers, 2009) 472.

[31] This includes art 218(1). See ch 10.

[32] The different databases used for reporting PSC findings are described in section XI of this chapter.

[33] See at https://www.parismou.org/detentions-banning/white-grey-and-black-list.

whether a flag State has many ships under its flag that do not comply with the required international conventions. These data are provided to illustrate whether there is a pattern showing that most of the ships found to be substandard during PSCs hail from the same flag States. The Tokyo MoU uses the same white, grey and black list approach.[34]

These lists are updated on an annual basis and follow a commonsensical approach. Flag States on the *white list* are considered effective at ensuring that they meet their flag State obligations pursuant to articles 94 and 217 of UNCLOS. Flag States on the *grey list* represent flag States that are less effective at ensuring such compliance. Finally, the *black-listed* flag States are, for want of a better word, 'inefficient' – to say the least – when it comes to fulfilling their obligations to ensure compliance by vessels sailing under their flags.

Whether a ship flies the flag of a white-, grey- or black-listed flag State also has an impact on the vessel's overall risk assessment profile, which, inter alia, determines how often it should be inspected.[35]

II. The Principle of 'No More Favourable Treatment'

Before going into the details of and regulations relating to PSC, the principle of 'no more favourable treatment' (NMFT) must be analysed, as this confers a right for a port State to ensure that all ships that voluntarily call into a port in the State comply with the relevant international regulations, regardless of whether the ship's flag State is party to the regulations or not. This is conditional on the IMO or ILO conventions' having incorporated the NMFT principle, and on the port State's having ratified and implemented this regulation.

The principle of NMFT is to some extent contrary to the general international law principle of *pacta tertiis nec nocent nec prosunt*, which means that a treaty only binds the parties to the treaty and does not create any obligations for a third State. This principle is embodied in articles 34 and 35 of the Vienna Convention on the Law of Treaties (VCLT).[36]

The principle of NMFT also conflicts with the flag State principle, as the latter dictates that the flag State is considered the primary legal entity that, in principle, can always exercise extraterritorial jurisdiction over ships flying its flag. It therefore seems anomalous that these ships can be forced to adhere to regulations the flag State has not accepted (ratified), as the regulations thereby implicitly bind the flag State and clash with articles 34 and 35 VCLT and the flag State principle.

[34] See at http://www.tokyo-mou.org/inspections_detentions/NIR.php.

[35] See art 12 of and Annex II to the PSC Directive, n 8.

[36] Vienna Convention on the Law of Treaties 1969 (adopted 22 May 1969, entered into force 27 January 1980) 1155 UNTS 331 (VCLT).

Then again, the NMFT principle rests on several reasonings that counter any concerns raised regarding the principle *pacta tertiis nec nocent nec prosunt*. First, NMFT is an expression of a State's right to legislate and enforce (and adjudicate) within its own territory – an expression of *territorial jurisdiction* (see chapter 6) – especially in a port in internal waters, where a State has full sovereignty according to article 2(1) of UNCLOS (see chapter 3). Second, the NMFT principle is limited to ships *voluntarily* entering a port, which means that if a ship cannot comply with the State regulations then it should not enter that State's territory – again, an expression of territorial jurisdiction. Lastly, the NMFT principle also ensures that that foreign ships that comply with the aforementioned international regulations are not put at a disadvantage compared with those ships that do not, due to their flag States' not having ratified these rules. This would introduce a distortive competitive element and could lead to a downward spiral, where shipowners seek open registry States, resulting in the worsening of safety and labour conditions and the lowering of standards for the protection of the environment, including safeguarding human health from SOx, NOx and CO_2. The reasons underlying the NMFT principle are therefore sound and in full alignment with article 227 of UNCLOS, which does not allow discrimination, as the principle ensures that all ships from all flag States are treated equally.[37]

The principle is also in complete alignment with international law, under which the territorial jurisdiction of a (port) State prevails over the *pacta tertiis nec nocent nec prosunt* principle given the State's sovereignty in its ports. Simply put, it can be compared to tourists having to abide the laws of the country they visit despite the fact that their homeland has different laws, for instance respecting the side of the road on which one drives. Or, to quote St Ambrose, 'When in Rome do as the Romans do.'[38]

A. IMO Conventions Codifying the 'No More Favourable Treatment' Principle

The application of NMFT requires, apart from the port State's having ratified the regulation, that the regulation (convention) itself codifies the NMFT principle. The MARPOL Convention refers explicitly to NMFT in article 5(4):

> With respect to the ship [*sic*] of non-Parties to the Convention, Parties shall apply the requirements of the present Convention as may be necessary to ensure that no more favourable treatment is given to such ships.

[37] As the NMFT principle relies on the port State's having ratified the international legislation that is enforced, it can ipso facto be concluded that the same State – when acting as a flag State – also enforces the same regulations over ships flying its flag; see art 94 and art 217(2)–(3).

[38] St Ambrose to St Augustine in the 4th century. See https://theculturetrip.com/europe/italy/articles/the-origin-of-the-saying-when-in-rome-do-as-the-romans-do/.

This principle also applies to the Annexes to the MARPOL Convention, in accordance with article 1(2). Further, MARPOL Annex VI contains a direct cross-reference in regulation 10.3 to article 5(4) of the Convention, applying to enforcement of the Annex, which includes the sulphur limits in regulation 14.

This means that all ships from all States must comply with the requirements laid down in MARPOL Annex VI when they call at a port in a State that is party to the Annex. This includes complying with the global 0.5% sulphur limit and the 0.1% SECA limit, where applicable.

Other IMO conventions, besides MARPOL, also refer to the NMFT principle, including article 1(3) of the SOLAS Convention, article 10(5) of the STCW Convention, article 3(3) of the BWM Convention and article 3(4) of the Hong Kong Convention. The ILO's MLC Convention also refers to the principle in article 5(7).

In addition, there are references to the NMFT principle in sections 1.2.2. and 1.5.1 of IMO Resolution 1052(27) on procedures for port State control (2011) and in article 3 of the EU PSC Directive and article 6 of the EU Sulphur Directive,[39] stating that all regulations of the Directives must be met by all ships when calling upon an EU port, irrespective of which flag they fly.

B. 'No More Favourable Treatment' – A Principle of Customary Law

In the view of this author, the NMFT principle must have obtained status as a recognised principle of international customary law as it meets the criteria for this. It fulfils the objective criterion as it constitutes *consistent repetition of a particular behaviour*,[40] the NMFT principle having been consistently applied by the IMO in its conventions since the 1970s. The subjective criterion of *opinio juris sive necessitatis* ('an opinion of law or necessity')[41] is also met, as NMFT constitutes a principle that is internationally recognised and used as applicable law. For example, many of the IMO conventions that codify the NMFT principle have over 100 States parties, which, in light of their participation in the IMO negotiations leading to the drafting of the regulations, and by their subsequent ratification of the convention, acknowledge the principle. This majority of nations apply the NMFT principle on a daily basis when carrying out PSCs through the nine MoUs (10 if we include the US unilateral PSC), as the NMFT principle allows those port States to enforce regulations and penalise detected violations by the imposition of fines and/or detention, irrespective of what flag a foreign ship flies.

[39] Directive 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels [2016] OJ L132/58.

[40] A Henriksen, *International Law* (Oxford University Press, 2017) 25.

[41] ibid 27.

The NMFT principle therefore represents 'evidence of a general practice accepted as law', in light of which it should be considered an *international custom* pursuant to article 38(1)(b) of the Statute of the International Court of Justice ('ICJ Statute').[42] The list of judicial sources listed in article 38(1)(a)–(d) of the ICJ Statute is believed to represent a comprehensive, but not exhaustive, list of the sources within international law,[43] thereby also applying to the law of the sea.

C. UNCLOS in Relation to 'No More Favourable Treatment'

UNCLOS contains no reference to the NMFT principle, but article 237(1) states, as noted in the previous chapter, that nothing in part XII of UNCLOS affects the obligations assumed by a State under a previous convention for the protection of the marine environment. This includes the MARPOL Convention and article 5(4) of that Convention.

In addition, article 237(2) requires States to comply with the specific obligations for protection of the marine environment in conventions they ratify after becoming party to UNCLOS, so that the references to NMFT in the BWM Convention and the Hong Kong Convention, and in MARPOL Annex VI (regulation 10.3), are also in alignment with UNCLOS.

Finally, it is to be recalled that the 'no discrimination' principle in article 227 of the Convention does not conflict with the NMFT principle.

This author therefore believes that NMFT is a principle of international customary law.

III. The A–Z of Port State Control

A PSC is an inspection of a foreign ship that has voluntarily called into a port and is berthed there. The maritime authority in the port State that carries out PSCs will often have targeted in advance which ships at berth should be subjected to a PSC.

Representatives from the maritime authority, often referred to as Port State Control Officers (PSCOs – see further section V), identify themselves to the ship's crew and should subsequently be allowed to come aboard.

Almost all PSCs start with an initial inspection, during which the PSCOs look around the ship to see whether there are any obvious deficiencies, followed by a document inspection of the relevant certificates, records and logbooks, including checking Bunker Delivery Notes (BDNs). During the initial inspection the PSCOs

[42] The ICJ Statute is available at https://www.icj-cij.org/en/statute.

[43] See M Dixon, *International Law* (Oxford University Press, 2007) 24, who eloquently states 'Article 38 of the Statute does not provide a complete and unambiguous statement of sources of international law and it leaves several questions unanswered. Still, it would be a mistake to underestimate the importance of Article 38, not least because it is vital that a reasonably clear and precise statement of the sources be available.'

might ask the crew, and often the master and chief engineer, supplementary questions to determine whether the crew is familiar with relevant regulations, safety procedures, etc.

If the initial inspection leaves the PSCOs with clear grounds for assuming that the ship is not complying with the applicable international regulations, it can lead to a *detailed inspection* in which more thorough investigations are carried out, for example drawing fuel samples from the fuel tanks. Nevertheless, detailed inspections can also be carried out irrespective of what the findings may be on an initial inspection. For instance, if a ship, during a previous PSC in another port State, was found to have certain deficiencies, a detailed inspection may be carried out during the next PSC, to check whether these have been rectified. Also, ships that generally are found to present with several violations and/or that are flying flags from flag States that notoriously do not enforce, that is *black-listed* flag States, can automatically be subject to detailed inspections.

Sometimes detailed inspections are also carried out as part of a *concentrated inspection campaign*, during which all or several ships – within a certain period – are subjected to the same in-depth inspection of certain regulations. A detailed inspection can also be instigated automatically if the port State has received information indicating that a particular ship has violated relevant regulations. For example, if another State (the ship's flag State or a coastal or port State) provides such information, or if a pilot or another ship has detected anomalies that need further investigation.

Finally, if an initial or a detailed inspection shows that a ship is not complying with certain regulations, it can lead to sanctions in the form of *fines*. These can be supplemented by *detention* until the violation has been rectified and/or economic security (bail) has been posted by the shipowner to cover the fine, which is often imposed at a later stage.

A. The Legal Basis for Port State Control

IMO conventions often include regulations relating to how PSC is to ensure compliance with a particular convention. For example, regulations 10 and 11 of MARPOL Annex VI provide information to PSCOs, as well as to shipowners, pertaining to what measures must be complied with to ensure compliance, including how PSCOs should ensure that the ship has valid BDNs in accordance with regulation 18 of and appendix 5 to MARPOL Annex VI. These general procedures for performing PSC are described in IMO Resolution A.052(27) on the procedures for Port State Control.

The subcommittees of the IMO also issue supplementary guidelines and procedures pertaining to PSC in connection with their respective conventions. See, for instance: Marine Environmental Protection Committee (MEPC) Resolution 181(59) on guidelines for port State control under the revised MARPOL Annex VI; MEPC.1/Circ 864 (9 December 2016) on guidelines for on-board sampling for the verification

of the sulphur content of the fuel oil used on board ships;[44] or MEPC Resolution 252(67) on guidelines for port State control under the Ballast Water Management Convention. The different memorandums also have regulations with which a State's PSC must comply when it becomes party to such a MoU.

Further, EU Member (port) States must ensure compliance with the PSC Directive, which, as described (see section I.B), to some extent overlaps with the regulations of the Paris Memorandum.

The PSC inspections and the subsequent means of enforcement must correspond with the legal basis of UNCLOS, especially according to articles 219 and 224–227.

B. Port State Control Officers

Paragraph 1.9.1 of IMO Resolution A.1052(27) and section 3.3 of the Paris Memorandum stipulate that PSCOs must be qualified and trained to perform these inspections. The detailed minimum criteria and qualifications for becoming a PSCO are listed in Annex 6 to the Paris Memorandum. Section 3.3 of the Paris Memorandum also stipulates that PSCOs must be authorised by the port State authorities to carry out inspections on behalf of the State.

Article 22 of Annex XI to the PSC Directive sets the minimum criteria European PSCOs must fulfil, and lays down how the Member States are required to ensure their continued training. Paragraph (10) of the Preamble to the PSC Directive proclaims that EMSA should contribute to the development and implementation of a harmonised EU scheme for the training and assessment of competence of PSCOs.

That PSCOs are required to possess these special qualifications for carrying out PSC (of international environmental regulations) and that they must be official representatives of the port State authorities aligns with article 224 of UNCLOS, which provides:

> The powers of enforcement against foreign vessels under this Part may only be exercised by officials or by warships, military aircraft, or other ships or aircraft clearly marked and identifiable as being on government service and authorized to that effect.

C. Port State Control Must Not Present a Danger to the Ship, Crew or Environment

The reasoning behind requiring that PSCOs fulfil certain criteria and that the port State must educate and train them, is not only to ensure that they can identify

[44] The MEPC guidelines relating to PSC of MARPOL Annex VI and on-board fuel sampling are expected to be revised following the MEPC's and Pollution Prevention Response's (PPR's) ongoing work on ensuring 'The consistent implementation of regulation 14.1.3 of MARPOL Annex VI' to enforce the 0.5% limit on a global scale.

any deficiency on board a ship, but also to ensure that they can carry out PSCs in a manner that does not constitute a danger to themselves, the crew, the ship or the environment. This latter requirement is also covered by the different IMO guidelines pertaining to PSC.

This is supported by article 225 of UNCLOS, which requires port States, when exercising enforcement against foreign ships, not to endanger the safety of navigation or otherwise create any hazard to a vessel, or bring it to an unsafe port or anchorage, or expose the marine environment to an unreasonable risk.

The practical scope of this article is somewhat limited in terms of PSC, as the ship is normally voluntarily safely berthed in port during the inspection, but it does underline that PSCs must not present a danger to ship, crew or environment.

D. Ships Must Report their Arrival and Departure

To ensure that port States can prepare and plan PSC inspections of foreign ships that intend to enter their ports, paragraph 3.1 of Annex 12 to the Paris Memorandum requires ships to notify their next port of call of their estimated time of arrival (ETA) and estimated time of departure (ETD) no later than 24 hours prior to ETA.

Ships that, due to their risk profile, will be subject to a detailed PSC inspection upon arrival, are required to report their ETA and ETD no later than 72 hours prior to their ETA.[45]

Paragraph 3.1 of Annex 12 also requires the ship afterwards to inform the port State of its actual time of arrival (ATA) and actual time of departure (ATD).

IV. Initial Port State Control Inspections

The *initial* part of a PSC primarily relates to checking that the ship has all mandatory documents and that these are in order. Annex 10 to the Paris Memorandum stipulates which documents are included in this initial PSC inspection.

The document control under MARPOL Annex VI covers, for example, the checking of BDNs (regulation 18 and appendix 5), the International Air Pollution Prevention Certificate (IAPP Certificate – regulations 5–9), the fuel changeover log (regulation 14.6), the International Energy Efficiency Certificate (IEE Certificate – regulations 5–9), the Ozone-Depleting Substance (ODS) Record Book (regulation 12.6), the Volatile Organic Compound (VOC) Management Plan (regulation 15.6), the manufacturer's operating manual for incinerators (regulation 16.7), the Energy Efficiency Design Index (EEDI) Technical File (regulation 20), the Ship Energy Efficiency Management Plan (SEEMP – regulation 22) and

[45] The concept of risk profiling is described in section V of this chapter, but it is noted that a ship that was detained or sanctioned during a previous PSC can be cautioned to use a 72-hour warning before calling into the next port, making the ship cognisant of this extended reporting obligation.

the Record Book of Engine Parameters (regulation 6.2 of the NOx Technical Code 2008 and regulation 13 of MARPOL Annex VI).

The documents that are of primary importance for ensuring compliance with the sulphur limits under regulation 14 are the IAPP Certificate, fuel changeover log and, obviously, BDNs, especially since the BDN template in appendix 5 to MARPOL Annex VI was amended in January 2019, thus requiring fuel suppliers to 'check off' on the BDN whether a ship has an Exhaust Gas Cleaning System (EGCS) on board if non-compliant fuel has been delivered to the ship. The ship must also attest to the fact, on the BDN, that such an approved and functional EGCS is on board.

The initial PSC will, apart from the document control, often also consist of the crew's being questioned regarding on-board procedures and international regulations, with the PSCOs looking for any observable deficiencies on board. The questioning aims to establish whether the crew is familiar with relevant regulations and procedures. This includes the crew's being able to answer any questions pertaining to an invoked Fuel Oil Non-availability Report (FONAR), such as providing information on which alternative fuel suppliers were contacted in the last port of call before bunkering non-compliant fuel.[46]

This initial PSC inspection (of compliance with international environmental regulations) follows the principle set out in article 226(1)(a) of UNCLOS, which provides, inter alia:

> States shall not delay a foreign vessel longer than is essential for purposes of the investigations provided for in articles 216, 218 and 220. Any physical inspection of a foreign vessel shall be limited to an examination of such certificates, records or other documents as the vessel is required to carry by generally accepted international rules and standards or of any similar documents which it is carrying …

The references to article 218 and article 220 establish that the principles of inspecting a vessel in accordance with article 226 apply irrespective of whether it is a port State investigating a discharge violation taking place outside its own territory, for example on the high seas (article 218), or a coastal State investigating a violation taking place within its internal or territorial waters or in the EEZ (article 220).[47]

The flag State is also compelled to help ensure that any ship flying its flag complies with such international regulations for the protection of the marine environment, including having all the required documents on board (see article 217(2)–(3)).[48]

[46] A visible indication, which PSCOs might note during the initial part of a PSC, of the ship's compliance with the sulphur regulations of Annex VI could be the lubricants that are present on board, often seen in the engine room. The use of 0.5% fuel will often require special lubrication to be used, to ensure that the engines are functioning in the optimal and most reliable way.

[47] The reference to art 216 in art 226(1)(a) is to the obligation for all States to penalise *dumping violations*.

[48] The flag State often devolves these obligations to Classification Societies, but such an inter partes agreement does not relieve the flag State of its international ex parte obligations; see art 217(2)–(3). For more on this, see ch 8.

The last sentence of article 217(3) implicitly refers to article 226(1)(a) and the initial PSC, as it emphasises that the certificates issued by the flag State, such as the IAPP Certificate (but not BDNs), should be accepted by other States as evidence of the condition of the ship, 'unless there are clear grounds for believing that the condition of the vessel does not correspond substantially with the particulars of the certificates'.

V. Detailed Port State Control Inspection

A PSC can result in a *detailed inspection* if a PSCO, after the initial inspection, finds that there are *clear grounds* for believing that the vessel has violated one or more regulations. This means that a more detailed inspection is carried out on board the ship.

A detailed inspection can include specific surveys of equipment, for example life-saving equipment, or of the machinery or technical systems relating to navigation, etc. It can also include checking that a ship's EGCS is fully functional, or drawing fuel samples from a ship's fuel tanks in accordance with MEPC.1/Circ 864 (9 December 2016) on guidelines for on-board sampling for the verification of the sulphur content of the fuel oil used on board ships.

That *clear grounds* can lead to a detailed inspection corresponds with article 226(1)(a)(i)–(iii) of UNCLOS, which make provision for a detailed PSC inspection if:

(i) there are clear grounds for believing that the condition of the vessel or its equipment does not correspond substantially with the particulars of those documents;
(ii) the contents of such documents are not sufficient to confirm or verify a suspected violation; or
(iii) the vessel is not carrying valid certificates and records.

The last two grounds ((ii)–(iii)) are self-explanatory – missing documents, or documents omitting vital information, can lead to a detailed inspection to determine whether a violation has occurred or not, as these documents are formal testaments to the ship's actual compliance.

Article 226(1)(a)(i) refers to there being clear grounds for believing that the vessel, irrespective of the documentation (as documents are explicitly mentioned in (ii) and (iii) following), does not meet international environmental regulations and therefore should undergo a detailed inspection. This matches the wording of article 217(3) (*in fine*), which specifies that other States must have clear grounds for believing that the conditions on board the vessel do not correspond to the information contained in the certificates issued by the flag State before these other (port) States can carry out a detailed inspection.

It should be noted that detailed inspections can also be instigated without there being clear grounds, for instance if a detailed inspection is performed as part of a *concentrated inspection campaign*, where all ships are subject to the same 'limited'

detailed inspection. Such concentrated inspection campaigns are occasionally also coordinated between the different MoUs, for instance between the Tokyo and Paris MoUs, with a focus on ensuring compliance with the sulphur limits under regulation 14.[49]

A. What are 'Clear Grounds'?

Nine examples of what 'clear grounds' include are specified in paragraph 2.4.2 of IMO Resolution A.1052(27) on the procedures for Port State Control, which emphasises that a detailed inspection could be justified if: principal equipment is missing, certificates are missing or clearly invalid, the PSCO observes deficiencies, the crew is unfamiliar with essential procedures or crew members are unable to communicate with each other, false distress emissions are not properly cancelled, or the port State receives information from a third party that a ship appears to be substandard. These examples coincide with those set out in article 13(3) of and Annex V to the PSC Directive, although the list in Annex V is somewhat more detailed.

Section 1.6 of the Paris Memorandum refers to Annex 9 of the Memorandum, which also lists several conditions that can constitute clear grounds indicating that there is a need for further, detailed investigations, for example if the ship's *risk profile* demands this.

Section 3.2 of and Annex 7 to the Paris Memorandum specify the many factors and criteria that will be used cumulatively to establish a ship's risk profile, which will 'determine its priority for inspection, the interval between its inspections and the scope of the inspection'.

Annex 7 should be read in conjunction with Annex 8, which lists the different criteria for classifying and selecting ships for PSC inspection, taking into account a ship's cargo, type, age, former deficiencies noted during previous PSCs and the performance of its flag State pertaining to its being white-, grey- or black-listed.

Article 12 of and Annex I to the PSC Directive set out similar conditions for assessing a ship's risk profile by deeming the ship to be a high risk ship (HRS), a standard risk ship (SRS) or a low risk ship (LRS), which then contributes to determining whether the ship is to be categorised as 'Priority I' or 'Priority II' to undergo PSC.

Article 14 and Annex VII determine whether a ship should undergo an *expanded* (detailed) *inspection*. Article 14 also refers to expanded inspections of certain types of ship, irrespective of their risk profile, including passenger ships, oil tankers, gas tankers, chemical tankers and bulk carriers if these ships are more than 12 years old.

[49] The Paris and Tokyo MoUs carried out a concentrated inspection campaign regarding compliance with MARPOL Annex VI from 1 September 2018 to 30 November 2018. See at https://www.parismou.org/launch-joint-concentrated-inspection-campaign-marpol-annex-vi.

B. What are 'Clear Grounds' Relating to Regulation 14 of MARPOL Annex VI?

When focusing on enforcement of the sulphur limits under MARPOL Annex VI, as affirmed in chapter 1, different technologies can provide clear grounds for believing that a ship is non-compliant. For example, if measurements from a sniffer attached to a drone, plane, helicopter, bridge, etc indicate a violation.

This could lead to a detailed PSC inspection in the next port of call, where a fuel sample is taken from all fuel tanks on board,[50] while simultaneously BDNs, the fuel changeover log, etc are checked and the crew questioned. This would also correspond with regulation 10.3 of Annex VI, which refers to the procedures under article 5 of the MARPOL Convention applying to the enforcement of Annex VI. To this article 5(2) adds, inter alia:

Any such inspection shall be limited to verifying that there is on board a valid certificate, unless there are clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of that certificate.

It would also constitute clear grounds if a ship, or ships from the same shipowner, were continuously to claim non-availability and issue a FONAR, or continuously claim breakdown of an EGCS. This should lead to a detailed inspection, as such recurring incidents could indicate a pattern of non-compliance that requires further investigation.

It should be noted, as seen in chapter 1, that sulphur-detection technologies are under constant development, which also could influence how future PSCs check compliance with the sulphur limits under regulation 14 of Annex VI. One advance could be the use of *handheld measuring devices*, which would allow for on-the-spot tests of the sulphur content in fuel samples, thereby enabling on-the-spot detention if the device shows non-compliance.

Further, sniffer technology could become so advanced that it might be able to provide conclusive evidence of non-compliance. This would render the subsequent drawing of fuel samples unnecessary, as the sniffer data, by itself, could prove regulation 14 infringements beyond any reasonable doubt, including violations of the 0.5% limit on the high seas.

VI. Port State Control Sanctions

If violation of one or more international regulations is detected during a PSC, it can result in various sanctions, primarily fines and detention.

[50] The drawing of fuel samples from all fuel tanks on a vessel will become relevant after the carriage ban, also discussed in ch 1, comes into force.

Neither the IMO guidelines nor the Paris Memorandum refers to how detected infringements should be penalised, as decisions on such criminal sanctions are often the national prerogative of each individual State. These various means of penalising breaches of international regulations must nonetheless be within the terms of UNCLOS, including the special provisions of part XII, when PSCs enforce MARPOL Annex VI.

A. Fines

A violation that is detected during a PSC can result in the port State's issuing a fine.

These fines will often be imposed on the shipowner, but can also target the master and, in principle, other members of the crew, for instance the chief engineer or second officer. The responsibility of the crew will nevertheless often require the infringements to be attributable to their actions, while the shipowner's responsibility, and to some extent the master's, is of a more objective nature, as the mere occurrence of a violation can result in a fine.

Some port States empower their national maritime or environmental authorities to enforce PSC by directly imposing *administrative fines* when a violation is detected.[51] Other port States use the criminal system for imposing such fines, referring the case to the police and public prosecutors, who investigate and issue a fine and potentially take the case to court.[52]

A hybrid version is also seen, where the PSC authorities have a legal basis for imposing administrative fines up to a certain amount and any fine exceeding that amount must be issued by the police.

Irrespective of the legal approach adopted, it should lead to the same result – an effective fine that confiscates all savings and imposes a punitive element. This is of special importance when considering effective enforcement of the sulphur regulations, because of the possible savings described in chapter 1. What constitutes an *effective fine* is discussed in chapter 8.[53]

According to article 230 of part XII of UNCLOS, non-flag States, for example port States, are permitted to issue fines for detected violations of environmental regulations, including MARPOL Annex VI and future regulations on GHG emissions.

[51] An example of a State that uses administrative fines for violations of the EU Sulphur Directive and MARPOL Annex VI is Sweden; see at http://www.airclim.org/acidnews/sweden-will-fine-high-sulphur-ships.

[52] An example of State that sends cases of detected violations of the EU Sulphur Directive and MARPOL Annex VI to the police and public prosecutors is Denmark; see at https://mst.dk/service/nyheder/nyhedsarkiv/2017/maj/shipping-company-to-pay-dkk-375-000-for-using-fuel-containing-too-much-sulphur/.

[53] Ch 8 examines what constitutes an effective *flag State fine*. The same principles, originating from art 18 of the EU Sulphur Directive, also apply to what *port State fines* should cover.

B. Imprisonment

Imprisonment is rarely used as a sanction in PSC, except in extreme cases where deliberate infringements result in, or there is a risk of an infringement's resulting in, major damage. This general PSC approach to sanctioning also matches the jurisdictional limitations set out in article 230 for violations relating to the protection of the marine environment.

Article 230(1) of UNCLOS limits the jurisdiction of coastal and port States to impose penalties, as it stipulates that only monetary fines can be imposed for violations committed by foreign ships outside a State's territorial waters. This also applies to such violations that take place inside the territorial sea, unless the offence was *wilful* and of a *serious* nature, according to article 230(2).

A reverse conclusion from the wording of article 230 allows all States to exercise full adjudicatory jurisdiction in internal waters, as this is not mentioned in the article and therefore not covered by its limitations.

It should be noted that some port States penalise violations that seemingly occurred in the territorial sea, in the EEZ or on the high seas with imprisonment. This might seem at first sight to conflict with article 230, but it is important to take note of what exact violation is being sanctioned and where it took place. For example, if the master and/or a crew member were to be questioned by a PSCO during a PSC about a violation that took place in territorial waters, in the EEZ or on the high seas, and the master or crew member provided false information to the PSCO, that information could, by itself, constitute a new violation occurring in internal waters, as it occurs (is consummated) the very second it is committed (uttered), that is, while in port. Some States penalise the giving of such false information to PSCOs with the threat of imprisonment.

The same applies if a ship (ie the shipowner, master and/or the crew) has falsified documentation on board that is presented during an initial PSC to the PSCO. This could be seen as constituting forgery of documents, which in many States is also a crime punishable by imprisonment. The US PSC, enforced by the USCG, has applied this reasoning and interpreted it as being in accordance with article 230[54] – an interpretation with which this author is in full agreement.

Flag States are not subject to the limitations of article 230, as a ship is obviously not a 'foreign vessel' when it flies the flag of that State. The aim of article 230 is to safeguard the crews of *foreign* ships from a coastal or port State's disproportionate threat of prosecution. The flag State is not covered by this provision and can therefore impose stronger penalties, such as imprisonment, for violations committed by a ship under its flag on the high seas, or in the EEZ or territorial sea of another (coastal) State.

[54] See CD Michel, 'Vessel Source Pollution and Protection of the Marine Environment' in Nordquist, Koh and Norton Moore (eds), n 30, 480. The author's views are his own (as a Captain in the USCG), not necessarily those of the USCG itself.

This corresponds not only with the general flag State principle, but also with article 228(3) (part XII) of UNCLOS regarding enforcement of environmental regulations, which stipulates that it is the prerogative of the flag State to 'take any measures, including proceedings to impose penalties, according to its laws irrespective of prior proceedings by another State'. This means that a flag State can supplement a port State's PSC fine for a high seas, EEZ or territorial sea violation with other penalties, including imprisonment.

Article 230, including article 230(3), which refers to the recognised rights of an accused, is discussed in further detail in chapter 12.

C. Detention Due to Safety or Environmental Concerns

Article 19(1) of the PSC Directive requires the competent authority to be satisfied that any (minor) violations found during a PSC are, or will be, rectified. This means that the PSCO can demand that the ship remedy all deficiencies that are easily resolvable, and then may allow the ship to sail with any remaining deficiencies that cannot be easily fixed, provided they do not present an immediate danger and that the ship takes action to resolve these remaining deficiencies within a specified timeframe.

If a PSC reveals a violation that could threaten the safety of the ship or of navigation, or pose a danger to the marine environment, it can result in the PSCO's detaining the ship until these deficiencies are resolved.[55] If this requires repairs to the ship then the PSCO can demand that these be carried out while the ship is at berth in port, or the PSCO can instruct the ship to sail to nearest shipyard to undergo repairs, provided this journey does not present any danger, in accordance with article 21(1) of the PSC Directive.

Annex 2 to Resolution A.1052(27) lists numerous detainable deficiencies, including violations of the global sulphur limit according regulation 14.1 of MARPOL Annex VI and of the 0.1% SECA limit pursuant to regulation 14.4. This would mean that a ship could be required by a PSCO to remedy this deficiency by debunking (unloading) the non-compliant fuel and bunkering (taking on board) compliant fuel. The carriage ban will make it possible to require all non-compliant fuel on board to be debunkered, even if it is situated in fuel tanks that do not feed directly into the engine.

That a violation of regulation 14 of MARPOL Annex VI can lead to detention is in complete alignment with regulation 10.3 of the Annex, which denotes that the procedures under article 5 of the MARPOL Convention apply to the enforcement of Annex VI.[56] Article 5(2) obligates all (port) States party to the

[55] See para 3.5 of Annex 2 to IMO Resolution A.1052(27), art 19(2) of the PSC Directive and sections 3.4–3.13 of the Paris Memorandum.

[56] This also corresponds with the previously mentioned art 1(2) of the MARPOL Convention, which stipulates that all provisions of the Convention itself, unless otherwise stated, also apply to all of the Annexes to the Convention.

MARPOL Convention – and Annex VI, in accordance with regulation 10.3 – to take all steps necessary to 'ensure that the ship shall not sail until it can proceed to sea without presenting an unreasonable threat of harm to the marine environment'.

That a vessel can be detained due to detected infringements during a PSC, and for violations of regulations for the protection of the marine environment, is supported by article 219 and article 226(1)(c) of part XII of UNCLOS. Article 219 of UNCLOS imposes a special duty on *all* States to detain any ship within their ports or offshore terminals if the ship has violated IMO rules pertaining to the *seaworthiness* of the vessel and this may cause a threat to the marine environment. The vessel can be permitted to proceed to the nearest appropriate shipyard. The State must allow the ship to proceed once the threat (deficiency) has been removed or repaired.

Article 219 presumably refers to violation of the SOLAS Convention, etc because of the reference to the *seaworthiness* of a ship. Such conditions would normally not be covered by part XII of UNCLOS, but the provision refers directly to a violation's having a potential impact on the marine environment, which establishes the causal link between the violation, of for example SOLAS, and the enforcement via article 219 of part XII.

Article 219 refers to all States, which includes flag States. The obligation for flag States to ensure that ships under their flag do not leave any port in the State unless they fulfil applicable international environmental requirements is also found in article 217(2), which includes ensuring that the ship has undergone all mandatory surveys and is carrying all mandatory documents and certificates, in accordance with article 217(3). The obligation for (flag) States to detain vessels under their flag while at berth in a port within their jurisdiction is to be found in article 217(2), as this is a specific *lex specialis* flag-State obligation in comparison with the general wording of article 219.

Article 226(1)(c) of UNCLOS also makes provision for the PSC detention of ships that represent a danger to the marine environment, and states that this can be resolved by seeking repair at the nearest shipyard.[57] It specifies that the flag State must be informed of such actions, and that it can challenge such a detention or instruction at one of the dispute settlement institutions mentioned in part XV of UNCLOS. This must be a direct reference to article 292,[58] which allows for an expedited court procedure regarding matters of detention at the International Tribunal for the Law of the Sea (ITLOS) or the ICJ, or one of the other jurisdictional entities mentioned in part XV, discussed in further detail in chapter 12.

[57] H Ringbom, 'Enforcement of the Sulphur in Fuel Requirements: Same, Same but Different', available at https://webcache.googleusercontent.com/search?q=cache:EBk8-0aReA0J:https://www.duo.uio.no/bitstream/handle/10852/61600/SO-Artikel-Ringbom.pdf%3Fsequence%3D4%26isAllowed%3Dy+&cd=1&hl=da&ct=clnk&gl=no, 32.

[58] E Molenaar, *Coastal State Jurisdiction over Vessel-Source Pollution* (Kluwer Law International, 1998) 506.

D. Detention until Financial Security is Posted

Although neither IMO Resolution A.1052(27), nor the PSC Directive or the Paris Memorandum mentions this possibility, PSC can also result in detention with the aim of procuring *financial security* (a bond or bail), posted by the shipowner to cover a fine that could be imposed after the ship has departed. This includes for violations of the sulphur limits under MARPOL Annex VI.

A fine will only be imposed if one or more deficiencies are detected that, by themselves, could form the basis for detention. Yet a minor deficiency, or a deficiency that has been repaired or rectified, would not necessarily constitute sufficient grounds for detaining or continuing the detention of a ship. But if the detected violations, be they a minor violation or violations that have been rectified, will also result in a fine, the ship can be detained until financial security is posted by the shipowner, often by placing the required amount in escrow in a bank account designated by the PSC authorities. For instance, if a ship is found not to be in compliance with regulation 14 of Annex VI, it can of course be detained until it has debunkered the non-compliant fuel and bunkered compliant fuel. It can, however, continue to be detained after the bunkering until economic security is posted by the shipowner.

This arrangement serves to benefit the authorities and shipowners alike. Posting of financial security can be in the interest of shipowners, as it often can take weeks or even months before a PSC authority, perhaps via the police and public prosecutor's office, is ready to impose a fine for a detected violation since investigatory procedures and due process safeguards must be observed beforehand. These procedural steps can also be prolonged if the ship(owner) contests that a violation occurred. It would constitute a disproportionate punishment if a ship were to be detained while awaiting the imposition and payment of a fine, because even the slightest delay to a merchant vessel can come at a high cost for shipowners, with the delivery of cargo being delayed, port slots in the next port of call being missed, etc.

The PSC authorities can also benefit from the imposition of such financial security, as it can be difficult to find and contact the relevant 'shipowner' afterwards. It may be recalled from chapter 1 that term 'shipowner' is used in this book as an umbrella term covering the legal entity (person or company) responsible for the ship's non-compliance. But in the world of charter agreements, shipping agents, etc, a PSC authority can, after a ship has left port, find it difficult to find the right legal entity to question, subpoena and fine. And even if this entity is found, it might still be difficult to execute and enforce a fine imposed on a shipowner situated in another country. It is therefore also in the interests of the PSC authorities to obtain such economic security to cover a subsequently imposed fine.

Article 226(1)(b) of UNCLOS acknowledges the right for port State authorities to require a bond or *other appropriate financial security* if an investigation indicates a violation of rules and regulations for the protection and preservation of the marine environment. The right for port States to obtain a bond or financial

security is reiterated in article 218(4) and article 228(1) relating to the procedural steps that apply when a port State's jurisdiction overlaps with another (coastal or flag) State's jurisdiction.[59]

That fact that a port State, pursuant to article 226(1)(b), can detain a vessel for a detected violation of regulation 14 of MARPOL Annex VI until a financial security is posted by the shipowner is of monumental importance, as the subsequent legal procedures of UNCLOS, especially those pertaining to awaiting flag State actions and information in accordance with article 228(1), can be ongoing for a long time. That a port State can await such actions with sufficient financial security 'in the bank' is paramount, if the port State is later to resume any suspended proceedings.

As mentioned, article 226(1)(c) refers to the settling of disputes regarding detention in accordance with part XV. To that end, article 292(4) explicitly regulates detention pertaining to financial security:

> Upon the posting of the bond or other financial security determined by the court or tribunal, the authorities of the detaining State shall comply promptly with the decision of the court or tribunal concerning the release of the vessel or its crew.

This, including how the ICJ, ITLOS, etc can assess the proportionality of the required bail, is discussed further in chapter 12.

E. Refusal of Access

Section 4 of the Paris Memorandum and article 16 of the PSC Directive refer to port States having the right to refuse access to their ports and off-shore terminals. This allows port States to deny a foreign ship entry to its ports due to the potential risk that the ship poses to navigational safety or to the marine environment.

The right to 'refusal of access' is a PSC sanction that is distinct from both detention and the imposition of fines, as the PSC authority in the port State at which the ship intends to call has not yet inspected the ship and detected any violations or deficiencies.[60] A refusal of access therefore often rests on the findings made by other PSCOs during previous PSC inspections in other ports.

The refusal of access is closely linked to the previously described *black*, *grey* and *white lists* made by the different MoUs, to which the PSC Directive also directly refers in article 16 (see section I.D). Section 4.1.1 of the Paris Memorandum and article 16(1) of the PSC Directive provide that a port State may refuse a foreign ship access to its ports if the ship flies the flag of a flag State that is *black-listed* and has been *detained more than twice within the last 36 months* in an EU Member

[59] Part II of this book examines whether port States can exercise jurisdiction over violations of reg 14.1 of Annex VI on the high seas in accordance with art 218 and, if so, how the consequently overlapping flag State jurisdiction is resolved; see art 228(1). Art 218, including art 218(4), is examined in ch 10; and art 228(1) is discussed in ch 11.

[60] 'Refusal of access' is sometimes also referred to as 'refusing of port entry'. See, eg, Ringbom, n 57, 36.

State or Paris MoU party port. The port State is also allowed to refuse access to foreign ships flying flags from a *grey-listed* flag State that have been subject to *detention more than twice within the last 24 months* in an EU Member State or Paris MoU party port.

A port State that is the ship's next intended port of call may impose such a PSC sanction from the moment the ship departs its last port of call where it was subject to its third detention, in accordance with section 4.1.2 of the Paris Memorandum and article 16(1) (*in fine*) of the PSC Directive.

Section 4.1.6 obligates the port State to immediately inform the flag State of any refusal of access to a ship flying its flag. Yet this notification is for information only, as the port State is not required to await any response or acceptance from the flag State before implementing refusal of access.

Section 4.1.3 and article 16(2) establish that the refusal of access shall be lifted only after three months, and if the ship meets the conditions of paragraphs 3 to 9 of Annex VIII to the PSC Directive, including that all deficiencies have been rectified.

Sections 4.1.4 and 4.1.5 and article 16(4) stipulate that if a ship does not rectify or repair the deficiencies detected during a previous PSC, it can result in that particular vessel's being permanently banned from all ports in EU Member States or in (port) States party to the Paris MoU. An example might be if a ship were released from its third PSC detention on condition that the ship sailed immediately to the nearest shipyard for repairs, but it did not comply and continued its voyage as originally planned.

Article 21(6) of the PSC Directive enables a port State to allow a vessel, which has been refused access, to enter its ports in the event of *force majeure* or overriding safety considerations, or to reduce or minimise the risk of pollution or to have deficiencies rectified, provided the shipowner, operator and/or master can ensure the PSC authorities that adequate measures have been implemented to ensure safe entry.

The principle of refusing access also applies to violations of MARPOL Annex VI, including regulation 14, as regulation 10.3, mentioned in section VI.C, refers to the procedures of article 5 of the MARPOL Convention. Article 5(3) allows (port) States party to the MARPOL Convention, and consequently to Annex VI, to deny a foreign ship entry to their ports or offshore terminals if that the ship does not comply with the provisions of the Convention and Annex VI.

UNCLOS does not explicitly mention the possibility of refusing access to ports, but this PSC sanction must nonetheless be in complete conformity with the Convention, as article 219 and article 226(1)(c) make provision for a ship to proceed to the nearest shipyard to undergo repairs. Thus, if the ship does not comply and effect such repairs, it will pose a danger to the marine environment wherever it sails, and to the marine environment in the next port of call. It is therefore in complete alignment with a State's exclusive territorial jurisdiction in internal waters, given its complete sovereignty over this area pursuant to article 2 of UNCLOS, that it can refuse access to a foreign ship that intends to enter a port in these waters.

F. Unlawful Sanctions

It should finally be noted that article 232 of UNCLOS stipulates that all States are liable for damage or loss attributable to them following unlawful or unwarranted enforcement measures pursuant to section 6, which includes articles 219 and 224–227, imposed in the light of available information. Every port State is liable for any unlawful PSC sanctions that result in damage to or economic loss for a shipowner. States shall also, in accordance with article 232, provide for recourse to actions in their courts in respect of such damage or loss. This is especially relevant pertaining to *detentions*, as such a sanction – unlike fines, imprisonment and refusal of access – is a measure that is quickly decided upon by the PSCO based on the information available at the time.

However, the last part of article 232, referring to unlawful measures *in the light of available information*, absorbs and absolves situations where the enforcement measures taken by the PSCO, such as detention, were justified based on the information at hand. Especially when the unlawful measure is assessed in light of what the potential catastrophic consequences could have been if the suspected deficiency had been present. Recalling that detailing inspection and detention would be the natural result if an initial inspection revealed that documentation was missing or flawed, or if the ship's crew or owner by their actions and statements – or the lack of same – contributed to the PSCO's believing that there was a violation allowing for detention.

VII. Different Databases Relating to Port State Control Inspections

Findings made during a PSC, including information on violations, deficiencies and sanctions (detention), are often entered into one or more international databases by the port State authorities. As previously stated in section I.D, the Paris and Tokyo MoUs[61] use these data, inter alia, to create white, grey and black lists of flag States, pertaining to their performance in ensuring compliance by ships sailing under their flags.

There are many reporting databases, but the following subsections will focus on the regional databases of the Paris MoU and the EU, including *THETIS* and *SafeSeaNet*, the quasi-global information system of *Equasis* and the global IMO-administered *GISIS* database. The GISIS database in particular could have several important applications for ensuring enforcement of MARPOL Annex VI on the high seas. The links between UNCLOS and the information entered into these systems are therefore also described.

[61] Tokyo MoU's reporting system, APCIS (the Asia Pacific Computerised Information System) and the Black Sea MoU's BSIS (the Black Sea Information System) are systems hosted by Russia.

A. The Thetis Database – Information relating to PSC Inspections

The principles of the Paris MoU (and the other MoUs) and the PSC Directive seek to establish a unified PSC approach by coordinating PSC inspections between the participating parties to ensure maritime safety and protection of the marine environment.

This coordinated PSC inspection scheme, which includes giving ships a risk profile, conducting follow-up surveys of previous detected deficiencies, and drawing up white, grey and black lists, necessitates the electronic exchange of PSC information between the different parties and PSC authorities.

Annex 3 to the Paris Memorandum refers to violations and deficiencies detected during PSCs being registered in a joint *Information System on Inspections*. The PSC Directive refers to the development of an EU database that also uses data relating to inspections carried out within the Paris MoU regime (see article 2(22) and article 24(1)).

In 2011, a new joint Paris MoU/EU PSC reporting system was established, called THETIS, which serves both PSC regimes and is linked to the general information available within the EU SafeSeaNet system noted in article 24(2) of the PSC Directive. The THETIS system is managed by EMSA.[62]

The THETIS system calculates the different risk factors, that is, establishing a ship's risk profile, thereby indicating which ships have priority for a PSC inspection.[63] The outcome of PSC inspections, including violations, deficiencies and sanctions, are recorded in the system.

The THETIS system also includes several individual modules directly linked to separate EU regulations that are not, as such, encompassed by the Paris MoU PSC inspection scheme, in non-EU countries such as Russia and Canada. THETIS EU (previously THETIS-S) records information on non-compliance with the EU Sulphur Directive,[64] which to a considerable extent implements the relevant regulations of MARPOL Annex VI (mainly articles 14 and 18) pertaining to sulphur limits and document requirements. Also, THETIS MRV records information on ship efficiency following Directive 2015/757[65] on the monitoring, reporting and verification of CO_2 from marine transport.[66]

The THETIS system is therefore a valuable information system for notifying PSC authorities that are party to the Paris MoU of any detected violations of the sulphur regulations in MARPOL Annex VI, as is THETIS-EU pertaining to violations of the Sulphur Directive.

[62] http://emsa.europa.eu/psc-main/thetis.html.
[63] https://www.parismou.org/inspection-search/inspection-search.
[64] http://emsa.europa.eu/ship-inspection-support/thetis-eu.html.
[65] Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC, [2015] OJ L123/55.
[66] http://emsa.europa.eu/ship-inspection-support/thetis-mrv.html.

B. SafeSeaNet – General Information on Ships Entering and Leaving EU Ports

SafeSeaNet is an EU-based information system that also monitors vessel traffic. It is administered by EMSA and there are several references to it in the PSC Directive, for instance in article 24(1). It was established by Directive 2002/59/EC,[67] and seeks to enhance maritime and port safety and security as well as protecting the marine environment. It serves a maritime network for data exchange within the EU and for Norway and Iceland.

The information that is entered into the database includes, but is not limited to, information on current and previous vessel positions by the Automatic Identification System (AIS),[68] details of hazardous goods carried on board, ATAs, ATDs, and safety and pollution-related incidents affecting ships that have been refused access to EU ports.

Most of the information entered into SafeSeaNet does not solely focus on PSC, and the system is therefore not a specific PSC-reporting system but a general EU maritime information system, containing all relevant information on ships expected to enter and leave EU ports. Much of this information is nonetheless of relevance for PSC inspections.

The link between SafeSeaNet and the Paris MoU THETIS system is seen in article 24(2) of the 2009 PSC Directive, requiring that information entered into the joint Paris MoU/EU PSC inspection database (ie THETIS) also be entered into the SafeSeaNet system where relevant.

SafeSeaNet therefore serves as a regional information system that has a supporting role in effective PSC enforcement, including under MARPOL Annex VI because of the reference to protection of the marine environment.

C. Equasis – A Public System with General Information on the Global Fleet

The Equasis system is a maritime data collection system that also is managed by EMSA.[69] The system was established in 2000 and collects data relating to ship safety. The work on creating the Equasis system was instigated in 1997 by the European Commission and France.[70]

[67] Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC, [2002] OJ L208/10.

[68] The AIS provides near-real-time ship positions by updating every six minutes.

[69] http://emsa.europa.eu/equasis-statistics.html.

[70] http://www.equasis.org/EquasisWeb/public/About?fs=HomePage&P_ABOUT=MainConcern.html.

Equasis sets itself apart from THETIS and SafeSeaNet by collecting and processing information on a global scale on all merchant ships above 100 GT and their owners. This information is made available to all, free of charge. Equasis is therefore not directly linked to PSC inspections and non-disclosed PSC information, but provides factual data for all on the performance of different shipping companies, which potential costumers, etc can rely on and take into account before choosing a shipping provider.

Equasis also sets itself apart by the fact that it is not only PSC authorities from one region that provide information to the system. The IMO, seven PSC MoUs, EMSA and different private classification societies, vetting companies, industry associations and 'P&I Clubs'[71] also enter relevant information into the system.

The Equasis system is a free and public tool for all companies, customers, etc to use to obtain information on shipowners.

D. GISIS – A Global Database

The IMO launched the *Global Integrated Shipping Information System* (GISIS) in 2005 to enable IMO Member States to report directly into a joint database, for example regarding compliance with IMO rules and regulations.

On 26 November 2009, the IMO's General Assembly adopted Resolution A.1029(26),[72] which urges the IMO Member States to use the GISIS database for the reporting and transfer of data to be reviewed by relevant IMO committees, and to 'sustain and, even, enhance compliance with mandatory reporting requirements, as contained in those mandatory instruments to which they are Parties'.[73]

The GISIS database consists of several modules pertaining to different IMO conventions, standards and guidelines, including: Maritime Security, Port Reception Facilities, Marine Casualties and Incidents, Contact Points, Recognised Organizations, Ballast Water Management, Pollution Prevention Equipment and Anti Fouling, Survey and Certification, Piracy and Armed Robberies, Communications and SAR, LRIT Data Distribution Plan, Ship and Company Particulars, MARPOL Annex VI and Port State Control. The last two modules, on MARPOL Annex VI and Port State Control, are especially noteworthy.

The MARPOL Annex VI module enable administrations, that is flag State authorities, to report mandatory IMO notifications to the IMO and other Member States via GISIS. This, inter alia, covers reports made in accordance with

[71] P&I refers to 'protection and indemnity insurance', which is the insurance policy shipowners take out to protect themselves against liability claims from crew, passengers and third parties following incidents such as collisions, pollution accidents and the removal of wrecks. The term 'P&I Clubs' therefore refers to the companies and associations that offer these insurance policies.

[72] Resolution A.1029(26), 'Global Integrated Shipping Information System (GISIS)'.

[73] Para 3 of IMO Resolution A 26/Res.1029 (26) (adopted on 26 November 2009).

regulation 4.2 (approval of EGCSs), regulation 18.2.5 (evidence of non-availability of compliant fuel oil, ie FONARs) and regulation 18.9.6 (failure of fuel oil suppliers to meet the requirements specified in regulations 14 or 18 of Annex VI).

The module also contains a separate link to the IMO's 'Data collection system for fuel oil consumption of ships', often merely referred to as the IMO's 'Data Collection System', where information on ship efficiency (EEDI) can be entered pursuant to the reporting obligation of chapter 4 (regulation 22.A) of Annex VI – information that, inter alia, relates to the reduction of CO_2 emissions.

Yet the most valuable information that can be reported into the Annex VI module of the GISIS database, in the context of this book, is the obligation for flag States to report their bringing of proceedings against detected violations, as stated in regulation 11.4 of Annex VI. This is underlined by (overlaps) the same obligation for flag States to report their effective enforcement to the IMO and other States pursuant to article 217(7) when receiving information on an infringement, as stipulated in article 217(6) of UNCLOS.

The Port State Control module is linked to reports made by different MoUs, including the Paris MoU, Tokyo MoU, Indian Ocean MoU, Mediterranean MoU, Abuja MoU and Black Sea MoU. It should be noted that the Port State Control module is not open to the public.

The GISIS system is, because of its Annex VI and Port State Control modules, of extreme relevance when examining how the 0.5% sulphur limit, and future GHG (CO_2) legislation, can be effectively enforced, as it is a global database in which flag State and PSC proceedings for regulation 14 violations are registered.[74]

E. The Port State Control Reporting Systems Relating to UNCLOS and VCLT

Enforcement of international regulations for the protection of the marine environment is subject to the *lex specialis* provisions of part XII of UNCLOS, including the obligations for flag States to inform the IMO and other States of their effective enforcement according to article 217(7). As already mentioned, this obligation ties into the reporting obligation under regulation 11.4 of MARPOL Annex VI.

The reporting obligation in regulation 11.4 is also of importance when a flag State is required to report to a port State its (the flag State's) effective enforcement, after having invoked the main rule in article 228(1) of UNCLOS enabling it to suspend legal proceedings instigated by a port State.

[74] It has been discussed at MEPC (MEPC 73 and 74) and PPR (PPR 6) whether the GISIS database should be enhanced to include more information pertaining to enforcement of MARPOL Annex VI, eg on FONARs submitted and the collection of data ('data collection') on fuel availability and quality.

The reporting obligations in article 217 are discussed in chapter 8 and the obligations under article 228 in chapter 11.

Some flag States may object to providing such information on enforcement, referring to this as conflicting with its national laws, for example laws on non-disclosure of information in criminal proceedings. Articles 26 and 27 VCLT provide that such objections are without relevance if a flag State has voluntarily become party to UNCLOS or MARPOL Annex VI. Article 26 VCLT codifies the basic customary principle of *pacta sunt servanda,* which requires a State to fulfil its voluntarily accepted treaty obligations. Article 27 VCLT is, however, of special importance in countering such flag State claims that national legislation bars compliance with the reporting obligations in articles 217 and 228 of UNCLOS and regulation 11.4 of Annex VI to the GISIS database.

Article 27 VCLT clearly stipulates that a party to a convention or treaty 'may not invoke the provisions of its internal law as justification for its failure to perform a treaty'. Article 27 thereby 'trumps' such national legislation. The reasoning behind this is that a State should be held accountable for ensuring that its national legislation does not conflict with the terms of a treaty or convention into which the State has voluntarily entered. It must also continuously ensure that any subsequent adopted national legislation does not conflict with existing responsibilities under a treaty or convention.

It should be noted that the information the flag State is obliged to report under articles 217 and 228 of UNCLOS and regulation 11.4 of Annex VI is not necessarily of a sensitive nature as it should not contain personal information. The information that needs to be provided to GISIS should primarily focus on what deficiencies were found on a ship and what sanctions have resulted for the shipowner. If members of the crew are fined for a violation, or a shipowner is a private individual, information that can identify them could in principle be withheld, such as names, social security numbers, etc. Yet the need to anonymise such information is not predominant, as the information in the Port State Control module of GISIS is not open to the public.

The flag State information provided to GISIS should essentially answer two questions: What was the violation? And what was the sanction? The IMO and the relevant port State can then evaluate whether the sanction was effective and dissuasive.

It is important, when looking at enforcement of the sulphur regulations in Annex VI, that the information from the flag State contains a calculation of the economic gain (savings) the shipowner achieved by the violation, as it relates to the 'effectiveness' of the sanction.

Finally, a flag State cannot invoke article 302 of UNCLOS, which stipulates that no State is required to 'supply information the disclosure of which is contrary to the essential interests of its security' as a reason for not entering the required information into GISIS, as information pertaining to enforcement of international environmental regulation, such as MARPOL Annex VI, is *not* information that is essential to a flag State's national security.

VIII. Conclusion on Port State Control

The evolution of the 1978 Hague Memorandum into the Paris MoU in 1982 helped set the scene for the effective and international coordinated PSC inspection and enforcement scheme of international maritime regulations. This includes IMO conventions and guidelines pertaining to protection of the marine environment, such as MARPOL Annex VI.

The nine MoUs, and the independent USCG PSC, will ensure that MARPOL Annex VI, including the 0.5% global sulphur limit, can be enforced effectively, initially by ensuring that all required documentation relating to the sulphur regulations is in order, by checking BDNs, fuel changeover logs, IAPP Certificate and so on. Any FONARs issued are furthermore subject to the approval or rejection of the PSC authorities. The master and crew can also be questioned by the PSCOs during this initial part of the inspection.

This can lead to a detailed PSC inspection if the initial PSC provides *clear grounds* for believing that the ship is not complying with international regulations, for example with regulation 14 of Annex VI. This itself can lead to the drawing of fuel samples for testing, if possible using hand-held measuring devices that can give an instant test result, which can lead to instant detention.

It is noted that if sulphur-detecting methods, for instance sniffers (attached to drones, etc), fuel calculating, Continuous Emission Monitoring Systems (CEMSs), etc, indicate a sulphur violation, this should constitute clear grounds for a detailed inspection.

A global *concentrated inspection campaign* between the different MoUs, especially between the Paris, Tokyo and Indian Ocean MoUs, could, in cooperation with the US, cover most of the high seas and allow for detailed sulphur inspections of all targeted ships.

The principle of NMFT allows all port States parties to MARPOL Annex VI to impose the sulphur rules on all foreign ships that voluntarily call into their ports. The NMFT principle is codified in article 5(4) of the MARPOL Convention, to which regulation 10.3 of Annex VI directly refers.

A deficiency exposed during a PSC, including a violation of regulation 14 of Annex VI, can result in several different PSC sanctions. For example, port State authorities can impose fines, which should be calculated using the same criteria that flag State authorities are obliged to meet, as described in chapter 8. Detention can also be used to penalise regulation 14 violations, in part to ensure compliance by requiring that non-compliant fuel is de-bunkered (and compliant fuel bunkered), but also to ensure that the shipowner posts economic security (bail) that is proportionate to the potential fine.

The initial and detailed PSC inspections, and the different PSC sanctions, are in accordance with articles 219 and 224–227 of UNCLOS.

Violations of MARPOL Annex VI are entered into the Port State Control module of the GISIS system by PSC authorities. Such information can also be entered into regional MoU database systems such as THETIS, which allows

violations of MARPOL Annex VI to influence the overall risk profile of ships and shipowners, and whether the violating ship's flag State is deemed to be white-, grey- or black-listed.

The GISIS reporting platform is of immense importance for supporting global PSC enforcement of regulation 14 of MARPOL Annex VI, as it receives PSC reports from several MoUs, including the Paris, Tokyo and Indian Ocean MoUs.

Flag States report their enforcement of MARPOL Annex VI, including the sulphur regulations in regulation 14 (and the required EEDI information of chapter 4), to the MARPOL Annex VI module of GISIS. Flag States must provide such information pursuant to regulation 11.4 of Annex VI and article 217(7) and article 228(1) of UNCLOS.

Flag States that are parties to UNCLOS and MARPOL Annex VI cannot exempt themselves from fulfilling these reporting obligations by referring to their national laws (see article 26 and, in particular, article 27 VCLT).

These conclusions also apply to PSC enforcement of future IMO GHG legislation. Especially as it has been suggested[75] that some of the proposed short-term regulatory measures that the IMO can adopt to reduce GHG emissions encompass a revision (strengthening) of the EEDI regulation set out in chapter 4 of MARPOL Annex VI.

[75] See point 4.7.1 of Resolution MEPC 304(72), 'Initial IMO Strategy on reduction of GHG emissions from ships' (adopted 13 April 2018 at MEPC 72).

5

The EU and the Sulphur Directive Pertaining to UNCLOS

The European Union (EU) consists of 28 European Member States.[1] These States have, by becoming Member States of the Union, also become signatories of the Treaty on the Functioning of the European Union (TFEU) and the Treaty on European Union (TEU).[2]

The scope and range of the EU's powers to adopt legislation that has a binding effect in the Member States within a specific regulatory field depend on whether the Member States have conferred full (*exclusive*) or partial (*shared*) competence on the EU to regulate a given matter. Member States are free to regulate at a national level within areas where there is no exclusive or shared EU competence. The Member States are, on the other hand, completely barred from prescribing national rules within areas of exclusive EU competence.

Shared competence allows Member States to legislate within the regulatory fields, provided the EU has not exercised its right to legislate. If the EU has exercised its right to regulate within areas of shared competence, this bars Member States from doing the same independently at a national level. Article 4(2)(e) and (g) TFEU stipulate that there is shared competence within the regulatory fields of the environment and of transport, which includes shipping.

Many EU Member States have significant shipping and environmental interests, and can be deemed flag, coastal and/or port States, depending on the circumstances. The EU has therefore adopted several legislative acts pertaining to shipping with the aim of ensuring safety at sea and protecting the marine environment. For example, the Port State Control Directive (PSC Directive),[3] which was examined in chapter 4. It is not surprising, given the interests of the EU and its Member States in shipping and environmental protection, that the EU has also used its shared competence to adopt EU legislation regulating sulphur pollution from ships in the Sulphur Directive.[4]

[1] As of February 2019.

[2] Treaty on European Union of 26 October 2012 [2012] OJ C326/13 (TEU); Treaty on the Functioning of the European Union of 26 October 2012 [2012] OJ C326/47 (TFEU).

[3] Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on Port State Control [2009] OJ L131/57.

[4] Directive (EU) 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels [2016] OJ L132/58.

This corresponds with the course set out in Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe, giving priority to inspecting and improving EU regulation of these pollutants so that emissions can be further reduced. The Directive directly refers to sulphur in marine fuels, stating that 'The necessary Community measures to reduce emissions at source … and to address the sulphur content of fuels including marine fuels should be duly examined as a priority by all institutions involved.'[5]

The first version of Sulphur Directive was adopted in 1993,[6] being amended by a new Directive[7] in 1999 and then again in 2005[8] and 2012.[9] Finally, a codified version of the Sulphur Directive entered into force in 2016.[10]

The 2012 Sulphur Directive, which entered into force on 18 June 2014, introduced the 0.1% Sulphur Emission Control Area (SECA) limit applying to many of the waters of many EU Member States, but it also reiterated the 0.5% global limit. The 2012 amendments to the Directive thereby reflected the 2008 revision of MARPOL Annex VI.[11]

Several of the sulphur regulations in the Directive overlap (implement) the provisions of MARPOL Annex VI, for instance the aforementioned sulphur limits. This gives certain regulations under the Directive, in the view of this author, an interpretational worth pertaining to enforcement of Annex VI, especially as to how violations should be sanctioned. This is discussed in section I of this chapter.

Nevertheless, the Sulphur Directive does also go beyond the regulatory frame of MAPROL Annex VI, for example by demanding that ships at berth for more than two hours in an EU port always use 0.1% fuel, outside SECAs too. Or by setting a 3.5% limit for the maximum permissible sulphur content in marine fuels used by ships with an open loop scrubber system. Or by requiring passenger ships in regular service in EU waters[12] to use fuel with a maximum 1.5% sulphur content.

[5] Para 17 of the Preamble to Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe [2008] OJ L152/1.

[6] Council Directive 93/12/EEC of 23 March 1993 relating to the sulphur content of certain liquid fuels [1993] OJ L074/81.

[7] Council Directive 1999/32/EC of 26 April 1999 relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC [1999] OJ L121/13.

[8] European Parliament and Council Directive 2005/33/EC of 6 July 2005 amending Directive 1999/32/EC as regards the sulphur content of marine fuels [2005] OJ L191/59.

[9] Directive 2012/33/EU of the European Parliament and of the Council of 21 November 2012 amending Council Directive 1999/32/EC as regards the sulphur content of marine fuels [2012] OJ L327/1.

[10] As stated in ch 1, any references in this book to the 'Sulphur Directive' or the articles therein, unless otherwise specified, are to be considered references to this consolidated version of the Directive from 2016, ie Directive 2016/802 (n 4).

[11] International Convention for the Prevention of Pollution from Ships (adopted 11 February 1973, as modified by the Protocol of 17 February 1978, entered into force 2 October 1983) 1340 UNTS 61 (MARPOL), Annex VI, IMO Publication: IMO-520E.

[12] The term 'EU waters' is used in this context to describe the national and territorial waters and the EEZs of EU Member States; see the wording of art 6(5) of the Sulphur Directive.

These differences, and the European Court of Justice (ECJ) case law following the *Manzi case* relating to the special 1.5% limit for passenger ships,[13] are examined in section II.

Sections III–V respectively study the EU's affiliation with the International Maritime Organization (IMO), the EU's connection to UNCLOS,[14] and the relevant ECJ case law, that is, *Intertanko*[15] and the *Bosphorus Queen*.[16]

I. The Sulphur Directive's Connection to MARPOL Annex VI

It should initially be noted that the EU is not, unlike UNCLOS, an independent party to MARPOL Annex VI. Nonetheless, nearly all EU Member States are themselves independent parties to the Convention, as are several European States that are not members of the EU.[17]

Those EU Member States that are not party to MARPOL Annex VI must respect and implement the Sulphur Directive due to the aforementioned shared competence within this regulatory field.[18] If a EU Member State therefore were to withdraw from its commitment to MARPOL Annex VI, it would still have to follow the regulations under the Directive. The Sulphur Directive is thus an independent piece of legislation, but there are nevertheless strong ties between the Directive and the regulation of sulphur under MARPOL Annex VI.

Furthermore, paragraphs 20–24 of the Preamble to the Sulphur Directive explicitly refer to the work of IMO and MARPOL Annex VI. Inter alia, they refer to the SECA and global limits noted at the start of this chapter, but they also underline that any changes to MARPOL Annex VI should be implemented in the Directive. It is further stated that the designation of new SECA zones should be done in accordance with the IMO process under Annex VI, as provided in article 6(3) of the Directive.

The global sulphur limit laid down in regulation 14.1 of Annex VI is reiterated in article 6(1) of the Directive, while the 0.1% SECA limit under regulation 14.4 is echoed in article 6(2).[19] Both paragraphs refer to those limits applying to all

[13] Case C-537/11 *Manzi and Compagnia Naviera Orchestra*, ECLI:EU:C:2014:19.

[14] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3.

[15] Case C-308/06 *Intertanko, Intercargo, Greek Shipping Co-operation Committee, Lloyd's Register, International Salvage Union v Secretary of State for Transport*, ECLI:EU:C:2008:312.

[16] Case C-15/17 *Bosphorus Queen Shipping Ltd Corp v Rajavartiolaitos*, ECLI:EU:C:2018:557.

[17] Norway, Iceland, Albania and Montenegro are examples of European States that are not members of the EU but are parties to MARPOL Annex VI.

[18] Hungary and Austria are not parties to MARPOL Annex VI.

[19] It should be noted that the European Commission has set special conditions for ships using Liquefied Natural Gas (LNG) as propulsory means in relation to requirements of the Sulphur Directive. See Commission Decision of 13 December 2010 on the establishment of criteria for the use by liquefied natural gas carriers of technological methods as an alternative to using low sulphur marine fuels

vessels of all flags, irrespective of where a vessel's journey began, thereby utilising the principle of 'no more favourable treatment' (NMFT) described in chapter 4.

A. The Importance of Article 18 of the Directive to UNCLOS and MARPOL

Article 18 of the Sulphur Directive is, in the view of this author, one of its most important provisions, in terms of offering clarity not only as to the scope and extent of the Directive, but also as to how the sulphur regulations of MARPOL Annex VI should be enforced in accordance with the MARPOL Convention and UNCLOS.

Article 18 specifies that EU Member States must determine the penalties that shall be applicable to breaches of Directive. It also stipulates that:

> The penalties determined shall be effective, proportionate and dissuasive and may include fines calculated in such a way as to ensure that the fines at least deprive those responsible of the economic benefits derived from the infringement of the national provisions as referred to in the first paragraph and that those fines gradually increase for repeated infringements.

This precise list of criteria setting out what a penalty (fine) for violating the sulphur regulations should comprise is important, as article 4(4) of the MARPOL Convention merely requires violations of its provisions – including, in accordance with article 1(2), violations of the Annexes – to be met with penalties 'adequate in severity to discourage violations', irrespective of where the infringement occurs.[20]

Article 217(1) of UNCLOS simply refers to flag States' being obliged to enforce violations *effectively* irrespective of where these occur, and article 230 merely bestows a right for non-flag States, such as port States, to penalise Port State Control (PSC) violations with fines. It is therefore difficult, using the principles of MARPOL and UNCLOS, to establish what constitutes an *effective* and *dissuasive* penalty (fine) for a violation of regulation 14 of Annex VI.

Article 18 of the Sulphur Directive offers insight into this matter, as it describes what elements a penalty (fine) for violations of the 0.1% or 0.5% sulphur limit should contain, including:

(a) being effective;
(b) being proportionate;
(c) being dissuasive;

meeting the requirements of Art 4b of Council Directive 1999/32/EC relating to a reduction in the sulphur content of certain liquid fuels as amended by Directive 2005/33/EC of the European Parliament and of the Council on the sulphur content of marine fuels (notified under document C(2010) 8753) [2010] OJ L328/15.

[20] H Ringbom, 'Enforcement of the Sulphur in Fuel Requirements: Same, Same But Different', available at https://webcache.googleusercontent.com/search?q=cache:EBk8-0aReA0J:https://www.

(d) depriving those responsible of all economic benefits derived from the infringement; and
(e) that those fines should gradually increase for repeated infringements.

The last two elements in particular offer significant clarity on what constitutes an effective fine for sulphur violations, as it is specified that all savings must be stripped away and that fines should increase in the event of repeated infringements. These are crucial elements for ensuring effective enforcement of regulation 14.1.3 of Annex VI, as violations, as described in chapter 1, are expected to yield high profits for non-compliant shipowners, especially violations on the high seas.

It might, at the outset, seem illogical to use the principles found in regional legislation, such as article 18 of the Directive, to interpret and clarify the scope and content of international legislation, such as the application of article 217(1) of UNCLOS and article 4(4) of the MARPOL Convention pertaining to Annex VI infringements. Nevertheless, there is a certain *lex specialis* element to article 18 that has to be recognised, as it focuses solely on the enforcement of the same sulphur limits as are codified in MARPOL Annex VI. The principles of article 18 of the Sulphur Directive should therefore be recognised as being a *source of international law* when determining the scope of article 217(1) and article 4(4) for enforcement of regulation 14 of Annex VI.

This assumption is based on article 18's representing a *subsidiary means for the determination of rules of law*, as it was developed and presented by a 'highly qualified publicist' in international law, that is the EU, thereby allowing the International Court of Justice (ICJ) to apply the principles in accordance with article 38(1)(d) of the ICJ Statute.[21] This is relevant, as disputes between States regarding the interpretation of UNCLOS, including the scope and extent of article 217(1), can be submitted to the ICJ pursuant to article 287 of UNCLOS, which is discussed in chapter 12 of this book.

The details relating to what an *effective* and *dissuasive* flag State fine should comprise are examined further in chapter 8.

II. Differences in Relation to MARPOL Annex VI

The distinct differences between the Sulphur Directive and MARPOL Annex VI are set out in this section. These differences represent obligations that EU Member States alone have competence to enforce. This also means that all ships calling into ports in EU Member States must respect these strengthened sulphur regulations, compared to Annex VI, as the Directive applies the NMFT principle.

duo.uio.no/bitstream/handle/10852/61600/SO-Artikel-Ringbom.pdf%3Fsequence%3D4%26isAllowed%3Dy+&cd=1&hl=da&ct=clnk&gl=no, 25.

[21] The ICJ Statute is available at https://www.icj-cij.org/en/statute.

As noted in the introduction to this chapter, the Sulphur Directive sets out special requirements for ships at berth for more than two hours in an EU Member State port, special limits for the sulphur content of fuels used by ships with open loop scrubber systems and special conditions for passenger ships in regular service in EU waters.

A. Vessels at Berth for More than Two Hours in an EU Port

Article 7(1) of the Sulphur Directive demands that all ships at berth for more than two hours in a port of an EU Member State must use fuel with a maximum sulphur content of 0.1%, even if the port is located outside of a SECA, for example in the Mediterranean Sea.[22] A similar obligation is not found in MARPOL Annex VI.

The reason for this rule relates to how some ships let their engines, often auxiliary engines, run while at berth in port, as this produces power and electricity for the whole ship, allowing lights, communications, technical equipment, cooling units, electronic devices in residential areas, etc to function on board during the stay in port. But if the engines are in operation whilst a ship is in port, it results in harmful substances, such as sulphur emissions, being released into the immediate vicinity, which sometimes includes highly populated work and/or residential areas, where they can be inhaled and absorbed into the human body, potentially resulting in premature death, asthma and other respiratory disorders.

This is also described in paragraph (9) of the Preamble to the Sulphur Directive as a great problem for many EU Member States, and under paragraph (10), ships at berth are encouraged to use shore-side electricity, also known as 'cold ironing'.[23]

Article 7(2)(b) of the Sulphur Directive explicitly refers to ships being exempt from the 0.1% obligation set out in article 7(1) if they use shore-side electricity to provide power on board, as this obviates the need to run the engines while at berth.

B. Ships that Use Open EGCS Technologies: Open Loop Scrubbers

Another difference between the Sulphur Directive and MARPOL Annex VI is found in article 5 of the Directive. This stipulates that EU Member States shall ensure that marine fuel with a higher sulphur content than 3.50% is not used

[22] There are discussions on whether the Mediterranean, or parts thereof, should be designated as a new SECA under MARPOL Annex VI, and subsequently implemented in the Sulphur Directive. See at http://www.rempec.org/viewNews.asp?NewsID=474&.

[23] When a ship at berth is powered by shore-side electricity, it is sometimes also referred to as 'shore-to-ship power' (SSP) or 'alternative maritime power' (AMP). For more information, see at https://www.marineinsight.com/marine-electrical/what-is-alternate-marine-power-amp-or-cold-ironing/.

by ships unless they have an Exhaust Gas Cleaning System (EGCS) operating in *closed mode*. A reverse conclusion leads to the assumption that EGCSs in *open mode*, that is open loop scrubbers, are not permitted to use marine fuels with a sulphur content exceeding 3.5%.[24]

Neither MARPOL Annex VI nor the IMO scrubber guidelines[25] prescribe such a maximum sulphur limit for fuels used by ships that have an EGCS installed. The guidelines refer to EGCSs' being approved in accordance with *Scheme A* or *Scheme B*, where Scheme A, as described in chapter 2, merely refer to ships' adhering to the specifications and limits set by the EGCS manufacturer.

What the term 'closed mode' in article 5 actually covers has been discussed, as certain closed loop scrubbers also have a *bleed-off* discharge. This is not defined in the Directive, but evidently open loop scrubbers are not covered by the 3.5% exemption under article 5.

All ships with open mode EGCS (open loop scrubbers) must therefore comply with the regional requirement of the Sulphur Directive and not use fuel with a sulphur content exceeding 3.5% while sailing in EU waters, even though the EGCS could clean fuels with a higher sulphur content, such as 4.0% or 4.5%, to the required equivalent emission levels, and could meet the pH discharge limits of the IMO scrubber guidelines.

C. Passenger Ships Operating on a Regular Service in EU Waters until 2020

Passenger ships engaged in regular service to or from EU ports shall not use fuels with a sulphur content exceeding 1.5%, pursuant to article 6(5) of the Sulphur Directive. This expressly provides that this requirement will cease to have effect from 1 January 2020. This is obviously due to the entry into force of the 0.5% limit, also embodied in the Sulphur Directive, rendering the 1.5% limit obsolete, as passenger ships also must comply with the global limit. This is also directly expressed in paragraph (27) of the Preamble to the Directive, which also highlights the reasoning behind this special EU regulation. It explains that passenger ships operating on a regular service to or from EU ports frequently operate in highly populated coastal and port areas. Thus there are vast environmental, that is human health, benefits to requiring a lower sulphur limit for such ships.

Article 6(5) also codifies references to the flag State principle and to the principle of NMFT, as it places a dual obligation on all EU Member States, in their capacity as flag and port States, to ensure that all ships under their flag and all ships at berth in their ports, irrespective of their flag, comply with the requirement.

[24] The possibilities for coastal States to unilaterally adopt national legislation pertaining to the use of open mode EGCS, ie open loop scrubbers, are covered in ch 7.

[25] Resolution MEPC.184(59) (adopted 17 July 2009), amended by Resolution MEPC.259(68) of 2015 (adopted 15 May 2015), 2015 Guidelines for exhaust gas cleaning systems.

The fact that article 6(5) sets special requirements for passenger ships that are not found in Annex VI, and invokes the NMFT principle, has left EU Member States, who also are independent parties to Annex VI, in a difficult position when enforcing this regional legislation over vessels not flying an EU Member State flag, due to the treaty commitments of these EU Member States towards non-EU States that are Annex VI parties. This formed the basis of the so-called *Manzi case* brought before the ECJ.

i. The *Manzi* Case

In the *Manzi case*,[26] the court of Genoa in Italy referred three questions to the ECJ regarding the obligation for EU Member States to ensure that passenger ships used marine fuel with a maximum sulphur content of 1.5%, while other ships in the Mediterranean, including in Italian waters, merely had to adhere to the global 4.5% limit in force at the time (2008).

The case in Genoa was between the Italian Ministry of Transport and the shipping company Compagnia Naviera Orchestra and Captain[27] Matti Manzi, as in July 2008 the port authorities in Genoa had sanctioned the cruise ship MSC *Orchestra* and her captain for the ship's use of non-compliant fuel in breach of the Directive.[28] They had used marine fuel with a sulphur content exceeding 1.5% but not exceeding 4.5%. The ship sailed under a Panamanian flag.

The first question the ECJ took in to consideration was whether the ship fulfilled the criteria of being (i) a passenger ship, and (ii) 'operating on regular services to or from any Union port'. The ECJ found that the vessel and its voyage plan met these criteria, so that the ship was required to use fuel with a sulphur content of 1.5% instead of 4.5%.[29]

The next question the ECJ had to decide, and which is of interest here, related to the obligation for EU Member States – which also were parties to Annex VI – to enforce the 1.5% requirement on ships flying flags of non-EU Member States that were parties to Annex VI. The question was whether this obligation would force the EU Member States to violate the international principle of *pacta sunt servanda*[30] and the principle of 'cooperation in good faith' under article 4(3) TEU towards non-EU States that also were party to Annex VI.[31] That is, if Italian

[26] Case C-537/11, n 13.

[27] Although this book uses the term 'master', the ECJ uses the term 'captain', so this term is adopted in this description of the *Manzi case*.

[28] It should be noted that all references in the case to the Directive, ie the Sulphur Directive, are references to the 2005 version, ie Directive 1999/32 as amended by Directive 2005/33.

[29] *Manzi case*, n 13, paras 17–35.

[30] *Pacta sunt servanda* is a basic principle of international law that dictates that lawful agreements should be kept. This principle is codified in art 26 of the Vienna Convention on the Law of Treaties 1969 (adopted 22 May 1969, entered into force 27 January 1980) 1155 UNTS 331 (VCLT).

[31] *Manzi case*, n 13, para 36.

authorities were to enforce the Sulphur Directive, including a 1.5 % sulphur limit not found in Annex VI, over a ship flying the flag of Panama.

The ECJ held that the validity of the 1.5% limit could not be determined or viewed in light of MARPOL Annex VI, as the EU was not an independent contracting party to Annex VI,[32] nor were the regulations in Annex VI expressions of customary law.[33] The EU was therefore not bound by the regulations under Annex VI and had not violated the principle of *pacta sunt servanda*[34] and the principle of cooperation in good faith by establishing the 1.5% limit.[35]

The last question presented before the ECJ was whether the 1.5% limit did not apply to ships flying the flag of non-European States that were party to MARPOL Annex VI.[36] The Court merely stated that since neither the EU nor *all* EU Member States were contracting parties to Annex VI, the Court was not required to interpret the validity of the 1.5% limit's applying to ships flying non-EU Member State flags.[37] The Court underlined that as it was not required, and since the EU was not party to Annex VI, the ECJ should actually refrain from interpreting the validity of the 1.5% limit under the Annex, as such an interpretation could have consequences for the interpretation of EU law and thereby have a binding effect upon all EU Member States, which would constitute creating obligations for *third States* and thereby violate the principle of *acta tertiis nec nocent nec prosunt* embodied in article 34 VCLT.[38] The Court referred in this respect to paragraphs 49–52 of the *Intertanko* decision, which is reviewed later in this chapter.[39]

Then again, the ECJ did state obiter that:

> Even assuming that the Court could interpret Article 4a(4) of Directive 1999/32 in the light of the sulphur content laid down in Annex VI, it suffices to state that, in the light of the objective pursued by that annex and set out in the title thereof, namely to protect the atmosphere by a reduction in harmful emissions produced by marine transport, that provision, in so far as it fixes a maximum limit on the sulphur content of marine fuel lower than that provided for by that annex, does not appear to be incompatible with such an objective.[40]

This statement clearly indicates that if the ECJ had seen itself capable of answering the third question, it would not have found that the 1.5% limit violated the purpose and objective of MARPOL Annex VI, thereby also impliedly accepting the application of the NMFT principle in the Sulphur Directive.

[32] ibid, para 37.
[33] ibid, para 39.
[34] ibid, para 38.
[35] ibid, para 41.
[36] ibid, para 42.
[37] ibid, para 51.
[38] ibid, para 47.
[39] ibid, para 45; for further discussion of *Intertanko*, see section V.A.
[40] ibid, para 53.

III. The EU's Relationship with the IMO

The EU's close implementation in the Sulphur Directive of the sulphur regulations set out in the IMO's MARPOL Annex VI, shows a link between the EU and the IMO.

Article 220(1) TFEU allows the EU to establish appropriate cooperation with the organs of the UN and its *specialised agencies*, which includes the IMO. This, and the fact that EU Member States have granted the Union shared competence within the maritime and environmental regulatory fields, allows the EU to coordinate a joint EU position on many of the issues discussed and regulated in the Marine Environmental Protection Committee (MEPC) and in the Pollution Prevention Response (PPR) subcommittee, for example regarding the work on *consistent implementation of regulation 14.1.3 of MARPOL Annex VI*, which was an ongoing work within MEPC and PPR leading up the entry into force of the 0.5% sulphur limit.

That work, inter alia, covered adoption of the carriage ban, making a uniform Fuel Oil Non-availability Report (FONAR) template, adopting a non-mandatory Ship Implementation Plan, designation of sampling points, applying a confidence limit on fuel samples, and reviewing relevant guidelines on PSC, fuel sampling and scrubbers. These matters, which primarily relate to *detection* of violations of the sulphur regulations, are discussed in chapter 1.

The joint EU approach towards many of these subjects was often coordinated during one or more meetings in the European Commission in Brussels leading up to MEPC meetings. A final coordinating meeting was often also carried out *sur place* on the first day of these meetings.

Article 220(1) TFEU, and the shared competences, also allows the EU to spearhead coordinated submissions to MEPC and PPR, etc. The content of these submissions was often coordinated and developed within the European Sustainable Shipping Forum (ESSF)[41] and its sub-working groups.[42]

As the EU can coordinate closely between its Member States in such matters, and as the EU can participate directly in IMO negotiations, the Union can afterwards more easily adopt its regional legislation on the same subjects. These regional rules often implement the IMO regulations to a certain degree, thereby giving these a binding effect in all EU Member States.

This IMO-inspired EU work has, besides resulting in the Sulphur Directive, also resulted in the EU's adopting its Regulation on ship recycling,[43] pertaining to

[41] The ESSF group was established by the European Commission by Commission Decision of 24 September 2013 on setting-up the group of experts on maritime transport sustainability – The European Sustainable Shipping Forum (ESSF), Decision C2013 5984 final.

[42] The members of the EESF sub-working group on sulphur implementation were instrumental in securing acceptance of the carriage ban during the plenary discussions at MEPC 72 in 2018.

[43] Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No 1013/2006 and Directive 2009/16/EC [2013] OJ L330/1.

the Hong Kong Convention,[44] and its Regulation on MRV (Monitoring, Reporting, Verification),[45] relating to CO_2 reduction, which also is the objective of chapter 4 of MARPOL Annex VI.

IV. The EU's Position on UNCLOS

When becoming a member of the EU and entering into the TFEU and TEU, besides surrendering exclusive or shared legislative rights within certain regulatory fields, EU Member States also consent to the Union itself entering into international agreements, treaties and conventions with non-EU Member States or international organisations on behalf of the EU Member States, under article 216 TFEU.

The EU's mandate for entering into such international agreements is limited to regulatory areas in which it has full or shared competence. An example is the EU's[46] signing of UNCLOS on 7 December 1984 and its ratification[47] of the Convention on 1 April 1998.[48]

Upon signing the Convention, and in alignment with article 310[49] of UNCLOS, the EU formulated one of the most comprehensive declarations, particularly regarding part VII of UNCLOS, on the conservation and management of the living resources in the high seas, and section 2 of part XI pertaining to the exploitation of 'the Area', that is, the seabed below the high seas.[50] The EU also stressed in its declaration the extent of its exclusive and shared competences within the regulatory fields relating to UNCLOS. It affirmed that it had full and exclusive competence within the regulatory field of conservation of marine biological resources under the common fisheries policy, in accordance with article 3(1)(d) TFEU.[51]

[44] The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (adopted 15 May 2009, not yet entered into force).

[45] Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC [2015] OJ L123/55.

[46] In 1984 the EU was referred to as the 'EC' (European Community).

[47] The EU was the 124st party to ratify UNCLOS.

[48] M Reuß and J Pichon, 'The European Union Exercise of Jurisdiction Over Classification Societies – An International Law Perspective on the Amendment of the EC Directive on Common Rules and Standards for Ship Inspection and Survey Organisation and for the Relevant Activities of Maritime Administrations' (2007) 67 *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht* 119, 126, available at https://www.zaoerv.de/67_2007/67_2007_1_a_119_144.pdf.

[49] Art 310 of UNCLOS allows for declarations and statements to be made upon signing and ratifying the Convention.

[50] See http://www.un.org/Depts/los/convention_agreements/convention_declarations.htm.

[51] This part of the declaration reads: 'The Community points out that its Member States have transferred competence to it with regard to the conservation and management of sea fishing resources. Hence in this field it is for the Community to adopt the relevant rules and regulations (which are enforced by the Member States) and, within its competence, to enter into external undertakings with third States or competent international organizations. This competence applies to waters under national fisheries jurisdiction and to the high seas.'

This exclusive competence, and the declaration thereof, would, inter alia, allow the EU to fully coordinate how EU Member States should approach the ongoing work in the UN regarding Biodiversity Beyond National Jurisdiction (BBNJ), as described in chapter 3.

The EU also specified in its declaration that it had shared competence within the regulatory fields of maritime transport, safety, shipping and environmental protection, for instance pertaining to part XII of UNCLOS, stating that:

> With regard to the provisions on maritime transport, safety of shipping and the prevention of marine pollution contained inter alia in Parts II, III, V, VII and XII of the Convention, the Community has exclusive competence only to the extent that such provisions of the Convention or legal instruments adopted in implementation thereof affect common rules established by the Community. When Community rules exist but are not affected, in particular in cases of Community provisions establishing only minimum standards, the Member States have competence, without prejudice to the competence of the Community to act in this field. Otherwise competence rests with the Members States.[52]

V. EU Enforcement of IMO Regulations in Accordance with UNCLOS

The EU has, unlike the IMO, a wider discretionary right to determine how Member States should penalise violations of its regulations. This is exemplified by article 18 of the Sulphur Directive, which provides more detailed and specified guidance on how a violation should be sanctioned compared to article 4(4) of the MARPOL Convention and article 217(1) of UNCLOS.

The EU has furthermore adopted legislation exclusively pertaining to the enforcement and sanctioning of specific regulations, including of international regulations. An example is Directive 2005/35/EC (as amended by Directive 2009/123/EC[53]) on ship-source pollution and on the introduction of penalties for infringements. The of purpose this Directive was to ensure uniform implementation and enforcement of MARPOL Annexes I and II in EU Member States.[54] Directive 2009/123/EC specifically defines its purpose, and that of Directive 2005/35/EC, in paragraph (1) of the Preamble, as being to 'approximate the definition of ship-source pollution offences committed by natural or legal persons, the scope of their liability and

[52] See at http://www.un.org/Depts/los/convention_agreements/convention_declarations.htm.

[53] Directive 2009/123/EC of the European Parliament and of the Council of 21 October 2009 amending Directive 2005/35/EC on ship-source pollution and on the introduction of penalties for infringements [2009] OJ L280/52.

[54] Directive 2005/35/EC (as amended by Directive 2009/123/EC) of the European Parliament and of the Council of 7 September 2005 on ship-source pollution and on the introduction of penalties for infringements [2005] OJ L255/11, art 3(1); see also art 2(1)–(3).

the criminal nature of penalties that can be imposed for such criminal offences by natural persons'.

Such regional regulations on penalties and sanctions must nonetheless be enforced by the EU Member States in accordance with the jurisdictional frame of UNCLOS, particularly the provisions of part XII. Following its ratification of the Convention in 1998, the EU also has an explicit obligation to ensure that its regional legislation is in alignment with UNCLOS. This is reflected in article 9 of Directive 2005/35, which refers to the need for sanctions to comply with international law, including the safeguarding provisions in part XII of UNCLOS. Also, paragraph (12) of the Preamble refers to article 220 of UNCLOS on coastal State enforcement.

Directive 2005/35 has, despite these references to ensuring enforcement in alignment with UNCLOS, raised questions regarding its compliance with international law, which were brought before the ECJ in the *Intertanko case*[55] in 2008. It has also, after its amendment by Directive 2009/123/EC, formed the legal basis of another ECJ decision – the *Bosphorus Queen* (2018)[56] – where the ECJ interpreted this EU legislation in accordance with UNCLOS. These cases, particularly pertaining to the ECJ's assessment of the legal implications of the EU's ratification of UNCLOS, are now discussed in further detail.

A. The *Intertanko Case*

A dispute between the British Ministry of Transport and different shipping associations, including the International Association of Independent Tanker Owners (Intertanko), was submitted to the ECJ in 2006 by the High Court of Justice of England and Wales. The case included several questions regarding Directive 2005/35, most of which related to whether articles 4 and 5 of the Directive – which outlined the extent of criminal responsibility for infringements of MARPOL Annexes I and II – were invalid compared to the actual regulations in MARPOL Annexes I and II.[57]

The ECJ refrained from taking a position on these questions, as the EU was not an independent party to the MARPOL Convention or its Annexes,[58] and the relevant provisions of MARPOL Annexes I and II did not represent international customary law.[59] Thus the Court found that it was not 'incumbent upon the Court to review the directive's legality in the light of the Convention'.[60] Yet one question also challenged the compatibility of article 4 of the Directive with UNCLOS.

[55] Case C-308/06, n 15.
[56] Case C-15/17, n 16.
[57] It was specifically the compatibility of reg 11(b) of Annex I and reg 6(b) of Annex II with arts 4 and 5 that was in question.
[58] *Intertanko case*, n 15, paras 47 and 49.
[59] ibid, para 51.
[60] ibid, para 50.

Article 4 required EU Member States to ensure that violations of Annex I or Annex II within their territory, including in straits under their jurisdiction, were to be considered as criminal offences by individuals on board if they were committed with intent, recklessness or serious negligence. The question to which this gave rise was whether the provision required EU Member States to violate their obligations as coastal States (i) to allow foreign ships a right of *innocent passage* through their territorial seas pursuant to articles 17–19 of UNCLOS and (ii) to allow a right of *transit passage* through an international strait located within their territory pursuant to article 38 of UNCLOS.

The ECJ noted that the EU was party to UNCLOS,[61] so it found that the Court *was* able to determine the compatibility of the Directive with that Convention.

The ECJ stated that 'UNCLOS seeks to strike a fair balance between the interests of States as coastal States and the interests of States as flag States, which may conflict'.[62] It also found that:

> It is true that the wording of certain provisions of UNCLOS, such as Articles 17, 110(3) and 111(8), appears to attach rights to ships. It does not, however, follow that those rights are thereby conferred on the individuals linked to those ships, such as their owners, because a ship's international legal status is dependent on the flag State and not on the fact that it belongs to certain natural or legal persons.[63]

The ECJ therefore concluded that:

> In those circumstances, it must be found that UNCLOS does not establish rules intended to apply directly and immediately to individuals and to confer upon them rights or freedoms capable of being relied upon against States, irrespective of the attitude of the ship's flag State.
>
> It follows that the nature and the broad logic of UNCLOS prevent the Court from being able to assess the validity of a Community measure in the light of that Convention.[64]

This view of the ECJ was in contrast with the Advisory Opinion offered by Advocate General Kokott,[65] who did not find that individuals were barred from relying on the rights established under UNCLOS.[66] Nevertheless, the Advisory Opinion did conclude that article 4 of Directive 2005/35 did not violate the right to innocent passage, stating that:

> Restrictions on the sovereignty of coastal States could also affect the enforcement of penalties on vessels at sea. Article 4 of Directive 2005/35, however, does not go that far. In particular, passage is not prohibited and no particular enforcement measures against vessels en route are required. Rather, the Member States are merely to prohibit certain

[61] ibid, para 53.
[62] ibid, para 58.
[63] ibid, para 61.
[64] ibid, paras 64 and 65.
[65] Case C-308/06, n 15, Advisory Opinion by Advocate General Kokott, delivered on 20 November 2007.
[66] Para 66 of the Advisory Opinion.

> acts which are not necessary for passage. In this respect the relatively low standard of care laid down in Marpol 73/78 is raised only slightly. That must be possible as a rule on prevention and reduction of environmental pollution within the meaning of Article 21(1)(f) of the Convention on the Law of the Sea.[67]

One of the conclusions of the *Intertanko case* is that, since the EU is party to UNCLOS, it allows the ECJ to assess whether regional EU legislation, such as Directive 2005/35, is in violation of the principles set out in UNCLOS. And perhaps also where individuals invoke the rights and duties laid down in UNCLOS. At least according to the Advisory Opinion of Advocate General Kokott.

B. The *Bosphorus Queen*

In 2018 the ECJ was presented with another case – the *Bosphorus Queen*[68] – pertaining to the implications of UNCLOS when enforcing EU regulations, again relating to Directive 2005/35/EC, now as amended by Directive 2009/123/EC.[69]

The case concerned the *Bosphorus Queen*, a ship that sailed under the Panamanian flag, which on 11 July 2011 discharged approximately 900 litres of oil into the sea within Finland's EEZ. This was a violation of MARPOL Annex I, and the Finnish Government was required to take action against the violation pursuant to Directive 2005/35/EC, as amended by Directive 2009/123/EC. The ship subsequently did not call into a Finnish port but continued to Saint Petersburg in Russia.

During the return voyage on 23 July 2011, when the ship again made passage through the Finnish EEZ, the Finnish authorities stopped the ship and charged the vessel for its infringement of Annex I. Financial security of €17,112 was demanded, upon payment of which the ship was released two days later.

It was claimed before the Finish court, which referred the claim to the ECJ, that Finland had exceeded its jurisdiction as a coastal State pursuant to article 220(3) and (5)–(6) of UNCLOS, when it stopped and prosecuted the *Bosphorus Queen*, which was a foreign ship engaged in a direct passage of the Finnish EEZ.

It should initially be noted that article 220 is discussed in chapter 9, particularly in connection with enforcement of MARPOL Annex VI. It is, however, underlined that a coastal State has almost unlimited jurisdiction to investigate and prosecute foreign ships for all environmental violations occurring within its waters, including in the EEZ, provided the ship afterwards voluntarily calls into a port in the State, in accordance with article 220(1). Conversely, a coastal State's

[67] Para 121 of the Advisory Opinion.

[68] Case C-15/17, n 16.

[69] The Framework Decision (2005/667/JHA) – which is directly referred to in art 4 of Directive 2005/35 – was annulled by the ECJ on 23 October 2007 in Case C-440/05 *Commission v Council (Ship-Source Pollution)* [2007] ECR I-09097. The legal vacuum in which the annulment resulted led to adoption of amending Directive 2009/123/EC.

right to stop and prosecute a foreign ship in direct transit through the EEZ is very limited under article 220(3) and (5)–(6), as it requires that discharge from the ship is 'causing major damage or threat of major damage to the coastline or related interests of the coastal State, or to any resources of its territorial sea or exclusive economic zone'.

The shipowner claimed that these conditions were not met, so that the prosecution of the *Bosphorus Queen* had been unlawful according to article 220(3) and (5)–(6) of UNCLOS, even though it may have been lawful in accordance with the regional regulations in Directive 2005/35/EC, as amended by Directive 2009/123/EC.[70]

First, it should be noted that the ECJ again placed emphasis on the fact the EU is an independent party to UNCLOS[71] but not to MARPOL or its Annex I.[72] The Court also explicitly referred to the previous ECJ statement on this in paragraphs 42, 47, 52 and 53 of the *Intertanko case*. The ECJ therefore found itself competent to address and determine whether Finland had infringed the principles in article 220(3) and (5)–(6) of UNCLOS while acting against the breach of MARPOL Annex I. This also allowed the ECJ to interpret the applicability and scope of article 220(3) and (5)–(6) of UNCLOS when answering many of the questions put before the Court.

One of the questions in the case was whether the specific geographical and ecological characteristics and sensitivity of the Baltic Sea, which, as described in chapter 3, had been designated a Particularly Sensitive Sea Area (PSSA) since 2006,[73] could have an effect on assessing whether the conditions in article 220(6) relating to the *threat of major damage* were met. The ECJ found that it could have an impact on the overall assessment, but a violation in a sensitive area (PSSA) would not automatically constitute a violation that would allow for the stopping and prosecution of a vessel in accordance with article 220(6) of UNCLOS and article 7(2) of the Directive.[74] An individual assessment of the pollution impact (or threat thereof) should always be made.

This must be interpreted as a demand for a causal link between the violation and the damage sustained (or the threat thereof), which is supported by the principles expressed by Advocate General Wahl's Advisory Opinion in this case.[75]

The ECJ also concluded that it is unnecessary to determine whether 'significant pollution' (or the threat thereof) has occurred according to article 220(5), if it has

[70] The claim against the Finnish authorities was presented before the ECJ as 10 separate questions relating, inter alia, to the different conditions of art 220(6) that must be fulfilled before a coastal State can invoke this provision. See *Bosphorus Queen*, n 16, para 42. The following will only focus on some of the aspects these 10 questions addressed.

[71] ibid, para 44.

[72] ibid, para 45.

[73] See IMO Resolution MEPC. 136 (53).

[74] *Bosphorus Queen*, n 16, para 108.

[75] ibid, Advisory Opinion of Advocate General Wahl, delivered on 28 February 2018, paras 106–108.

been established that 'major damage' (or the threat thereof) has taken place pursuant to article 220(6).[76]

The ECJ took it upon itself to determine the meaning of the term 'related interests' in article 220(6) by interpreting it in accordance with article 31 VCLT.[77] The Court also emphasised that the term 'any resources', also used in article 220(6), meant that the word 'resources' should be interpreted in the broadest possible sense.[78] These deductions are of importance when interpreting article 218, discussed in chapter 10.

Finally, it should be noted that although the Court referenced the approach applied in the *Intertanko case*, in the *Bosphorus Queen*, a decade later, the ECJ does seem to be more open to interpreting the wording and scope of the provisions of UNCLOS, such as article 220. This is an approach more aligned with the Advisory Opinion offered by Advocate General Kokott in the *Intertanko case*.

It should further be noted that the Advisory Opinion of Advocate General Wahl in the *Bosphorus Queen* also refers to the principles set out in the *Intertanko* and *Manzi cases* pertaining to determining whether or not an IMO regulation represents a customary principle of international law and therefore could be binding upon the EU and the ECJ.[79]

VI. Conclusions

The EU Member States have, by their membership of the EU and their accession to the TEU and TFEU, accepted that the EU has shared competence within the regulatory fields of transport, including shipping and the environment, according to article 4(2)(e) and (g) TFEU. They also accept, in accordance with articles 220 and 216 TFEU, that the EU can cooperate with specialised UN agencies, such as the IMO, and enter into international agreements, such as UNCLOS.

This shared competence has resulted in the EU's adopting the Sulphur Directive, which implemented many of the regulations and principles found in MARPOL Annex VI relating to the regulation of sulphur emissions, including the global and SECA sulphur limits in regulation 14.

Cooperation with the IMO, and the fact that the Sulphur Directive has implemented much of Annex VI, has led to the EU's – through the EU Commission and the ESSF – participating actively in the ongoing MEPC and PPR work on consistent implementation of regulation 14.1.3 of MARPOL Annex VI.

The Sulphur Directive does go beyond Annex VI in certain respects, with provisions relating to ships at berth for over two hours, and setting an implicit

[76] *Bosphorus Queen*, n 16, para 92.
[77] ibid, para 67.
[78] ibid, para 81.
[79] ibid, Advisory Opinion of Advocate General Wahl, delivered on 28 February 2018, paras 46–47.

maximum sulphur limit for fuel used on board vessels with open loop scrubber systems and a 1.5% sulphur limit applying to passenger ships in regular service between EU ports.

The discrepancies between the Directive and MARPOL Annex VI regarding passenger ships formed the basis of the *Manzi case*, where the ECJ, inter alia, found that the EU had not violated the principles of *pacta sunt servanda* and of cooperation in good faith by establishing the 1.5% limit, as the EU was not an independent contracting party to Annex VI and the regulations of the Annex did not express customary law.

The facts that the EU is not party to MARPOL Annexes I and II but is a party to UNCLOS were also key elements in the rulings of the ECJ in the *Intertanko case* and the *Bosphorus Queen*, as the Court refused to determine whether Directive 2005/35/EC, as amended by Directive 2009/123/EC, was compatible with MARPOL Annexes I and II, but was willing to scrutinise whether the Directive was compatible with the jurisdictional frame of UNCLOS.

In particular, the ECJ's clear and probing examination and interpretation of UNCLOS article 220(3) and (5)–(6) in the *Bosphorus Queen* leave one with the impression that the Court has become more inclined to assess the extent of the jurisdictions under UNCLOS than it was 10 years earlier in the *Intertanko case*.

Conversely, following the principles of the *Intertanko* and *Manzi cases* – which were reiterated in the Advisory Opinion of Advocate General Wahl in the *Bosphorus Queen* as still representing applicable law – the ECJ refrains from interpreting EU legislation, such as the Sulphur Directive and Directive 2005/35, in accordance with international regulations, such as MARPOL Annexes I, II and VI, if the EU is not an independent party to these regulations. The Court has explained this position by referring to ECJ rulings' having a binding effect on all EU Member States, including those not party to the international rules in question.

In conclusion, the ECJ places great emphasis on whether or not the EU is party to an international convention (that does not represent international customary law) when establishing which international legislative boundaries the EU must respect when adopting its own regional regulations or directives.

This would mean, for example, that the ECJ would be able to determine whether EU Member States can enforce the 0.5% sulphur limit, also implemented in the Sulphur Directive, in accordance with article 218 of UNCLOS, as the EU is party to that Convention.[80]

[80] The ECJ would presumably not see itself as competent to test the compatibility of the Regulation on ship recycling (n 43) with the underlying international IMO Convention on Ship Recycling (the Hong Kong International Convention, n 44), as the EU is not party to this Convention, nor does this IMO Convention represent international customary law.

A. Future EU Legal Measures on GHG and the Role of the ECJ

These conclusions would also apply if the EU in the future were to adopt legislative measures to reduce greenhouse gas (GHG) emissions from ships, if these measures basically were implementations of IMO measures. The ECJ would therefore not, at the outset, be able to test the compatibility of the EU's GHG legislation with the IMO's regulations unless the EU was an independent party to the latter. The ECJ would be able to establish if any EU legislation on GHG complied with the jurisdictions under UNCLOS.

However, it should be recalled that Part IV of this book examines whether it is conceivable that future IMO regulations on GHG could be seen as protecting peremptory (jus cogens) norms. If this is conceivable, it would enable the ECJ to ensure that any EU-adopted GHG measures are in accordance with the underlying IMO regulations, regardless of whether the EU is party to these or not, as these IMO regulations would represent *international customary law*.

6

Basic Jurisdictional Principles of International Law

Before the specific regulations of part XII of UNCLOS[1] for the protection and preservation of the marine environment are analysed in the next part of this book (Part II), some basic principles of international law need clarifying, regarding how States can legislate and enforce. Some of these jurisdictional principles will be discussed in section I, including a brief introduction to the *Lotus case*,[2] as several cross-references will be made to the decision and its findings throughout this chapter and others.

This will be followed by a closer examination of the principles for prescribing, enforcing and adjudicating legislation outside a State's territory (section II), and how this relates to the law of the sea and the provisions of part XII of UNCLOS (section III), especially relating to the flag State principle and how other States can exercise extraterritorial jurisdiction over violations committed by foreign vessels on the high seas. In section IV some basic principles of customary international law are examined as to whether these can provide a legal basis for exercising extraterritorial jurisdiction.

I. Basic Principles of Jurisdiction

Jurisdiction is a legal term used to describe a State's right to exercise its legal authority over events constituting a violation of its laws and legislation. Several basic forms of jurisdiction govern to what extent a State may prescribe and – without any overlapping claims of jurisdiction from other States – enforce its legislation, including maritime legislation.

Different forms of jurisdiction can be invoked by a State depending on the different circumstances in play, for example where the infringement took place, where it had – or threatened to have – an effect, and the nationality of those who committed the violation or of any victims. Also, some violations are by themselves

[1] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3.

[2] *SS Lotus (France v Turkey)* PCIJ Rep Ser A No 10.

deemed to be of such a grave and unacceptable nature that they inevitably give all States jurisdiction over them.

An attempt was made in 1935 to unify and codify these basic jurisdictional principles recognised within international law.[3] This resulted in the listing of the following principles:

- *Territorial jurisdiction* is the most fundamental and well-recognised jurisdictional principle, as it embodies the principal right in international law for all States to legislate and enforce without restriction within their own territory. This is based on a State's having exclusive sovereignty within its own territory, where no other State can, without consent, exercise its jurisdiction. It should be recalled that article 2(1) and (2) of UNCLOS stipulate that the sovereignty – and thereby the (territorial) jurisdiction – of a coastal State extends from its internal waters to the territorial sea, which includes the air space above and the subsoil beneath that sea.[4]
- *Nationality jurisdiction*, also referred to as the 'active personality principle', links a State's jurisdiction to a person's nationality, requiring nationals to comply with the laws of their country, even when abroad. This jurisdiction allows a State to exercise jurisdiction over its nationals who commit an offence outside its territory.
- The *passive personality principle* also allows a State to assert jurisdiction over crimes committed outside its territory based on the nationality of a person. But this jurisdiction pertains to the nationality of the victim. This form of jurisdiction is not as well-recognised as the other jurisdictional principles, and its scope will often overlap with these.
- *Protective jurisdiction* allows a State to establish and enforce legislation that protects various interests of a State, including interests of national security, etc. The US has in some cases relied on this jurisdictional principle to justify enforcement of anti-terror legislation.
- *Universal jurisdiction* is a special form of jurisdiction that confers a right for a State to claim jurisdiction over certain violations due to their grave nature, irrespective of their occurring outside the State's territory and not having any effect on, nor links to, nationals of the State.[5] The acts that are covered by the

[3] See the Harvard Draft Convention on Jurisdiction with Respect to Crime (1935) 29 *American Journal of International Law* 439.

[4] M Reuß and J Pichon, 'The European Union Exercise of Jurisdiction Over Classification Societies – An International Law Perspective on the Amendment of the EC Directive on Common Rules and Standards for Ship Inspection and Survey Organisation and for the Relevant Activities of Maritime Administrations' (2007) 67 *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht* 119, 132, available at https://www.zaoerv.de/67_2007/67_2007_1_a_119_144.pdf. See also D Bodansky, 'Protecting the Marine Environment from Vessel Source Pollution: UNCLOS III and Beyond' (1991) 18(4) *Ecology Law Quarterly* 737.

[5] Section IV of this chapter discusses the application of the universal jurisdictional principle regarding the principles of jus cogens and erga omnes.

scope of universal jurisdiction are those deemed as being the most damaging to and heinous – and therefore unacceptable – by the international community as a whole. These acts include, but are not limited to, crimes against humanity, genocide, torture, war crimes and others.

Some of these forms of jurisdiction that allow States to exercise jurisdiction outside their territory, for example for controlling or protecting nationals abroad, are often described as being expressions of *extraterritorial jurisdiction*.

The aim of this book is to establish whether a non-flag State, under certain conditions, can assert jurisdiction over certain violations taking place outside the State's jurisdiction, for instance on the high seas. This is therefore a question of whether a non-flag State can exercise extraterritorial jurisdiction over foreign ships. The right for States to exercise extraterritorial jurisdiction over vessels for violations occurring on the high seas formed the base of the *Lotus case* in 1927.

A. The *Lotus Case* – Establishing Principles that are Still Applicable Today

The *Lotus case* concerned the collision of the French steamer SS *Lotus* with the Turkish steamship *Boz-Kourt* on 2 August 1926. The collision took place on the high seas, and eight people on board the Turkish ship lost their lives.

The SS *Lotus* called at a Turkish port after the incident, carrying 10 survivors from the *Boz-Kourt*. The Turkish authorities charged the master of the ship (captain) and the officer of the watch on duty at the time of the accident with involuntary manslaughter, in accordance with the Turkish Penal Code. The national Turkish Penal Code allowed Turkey to assume extraterritorial jurisdiction over offences committed against Turkish citizens, irrespective of where this took place, including on the high seas. A Turkish court sentenced the French master – by virtue of its extraterritorial legislation – to 80 days' imprisonment and also imposed a fine.

France protested, as it claimed that such enforcement violated international law, and brought the case before the Permanent International Court of Justice (PCIJ).[6] France supported its claim by referring to the flag State principle, which gave flag States (here, France) exclusive jurisdiction over their ships and crew on the high seas.

The PCIJ recognised the right of France to exercise jurisdiction over the ship under its flag, but it also found that Turkey had not violated international law by exercising its extraterritorial jurisdiction on the high seas as the case concerned a

[6] The PCIJ was established by the League of Nations. After the establishment of the United Nations (UN) it was replaced by the International Court of Justice (ICJ). Many of the legal precedents set by PCIJ case law still apply today, eg the *Lotus cas*, n 2, and *SS Wimbledon (UK v Japan)* 1923 PCIJ Rep Ser A No 1.

collision between two ships that affected a Turkish interest, meaning the Turkish flagged vessel (the *Boz-Kourt*).[7] The Court thereby on the one hand cemented the flag State principle by recognising the rights of both France and Turkey as flag States over their respective vessels, but on the other hand it also recognised that the flag State principle is not exclusive when the jurisdictions of a flag State and another State overlap on the high seas.[8]

The PCIJ viewed the jurisdiction of a flag State as being closely linked to the principle of territorial jurisdiction, by basically perceiving the ship as being a part of the flag State's territory whilst it sailed on the high seas. Although this view, that flag State jurisdiction represents a territorial jurisdiction, might not be fully accepted by all, the principles of the case relating to how States can exercise jurisdiction are regarded as principles representing accepted international law.[9]

Two principles in particular have been derived from the case, pertaining to the possibilities for States to exercise jurisdiction and limitations on that exercise, which are still considered relevant and applicable today. These are often referred to as 'the *Lotus* principles'. The first *Lotus* principle established that a State cannot exercise its jurisdiction outside its territory unless an international treaty or customary law permits this. The PCIJ expressed this as follows:

> Now the first and foremost restriction imposed by international law upon a State is that – failing the existence of a permissive rule to the contrary – it may not exercise its power in any form in the territory of another State. In this sense jurisdiction is certainly territorial; it cannot be exercised by a State outside its territory except by virtue of a permissive rule derived from international custom or from a convention.[10]

The second *Lotus* principle, conversely, established that a State may exercise its jurisdiction unrestricted within its own territory, provided no rule under an international treaty or customary law prevents this.[11]

II. Extraterritorial Jurisdiction for Prescribing, Enforcing and Adjudicating

The previously described jurisdictional principles and those set out in the *Lotus case* show the differing jurisdictions of a State, on a theoretical level, to

[7] This principle – that a collision at sea can result in other States asserting jurisdiction because the effect of the collision has an impact on them (be it their ships or their coastline) – is to an extent represented in art 221 of UNCLOS, art 11 of the Convention on the High Seas (Convention on the High Seas (adopted 29 April 1958, entered into force 30 September 1962) 450 UNTS 11) and in the Intervention Convention (Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (adopted 29 November 1969, entered into force 6 May 1975) 970 UNTS 211).

[8] *Lotus case*, n 2, paras 71–84.

[9] See A Henriksen, *International Law* (Oxford University Press, 2017) 96.

[10] *Lotus case*, n 2, para 45.

[11] ibid, paras 46–47.

legislate without restriction inside and outside its territory over all matters concerning the State, curbed, on a practical level, by limitations on enforcing such legislation outside its territory. These differences between legislating and enforcing are often described as the right of States to *prescribe, enforce* and *adjudicate on* legislation.

It is the right of every State to *prescribe* legislation that applies and governs in territory under the State's sovereignty, as established by the second *Lotus* principle (see section I). This right includes the adoption of national laws and the implementation of international rules.

A State can, in principle, also prescribe legislation applying outside its territory, for instance protecting national interests abroad. This right is curtailed by the right of States – or the lack of it – to *enforce* and *adjudicate on* these rules. For example, the right to arrest, detain and prosecute a ship can be seen as the right to *enforce*, whereas the right to impose and execute a sanction (fine) relates to the right to *adjudicate*.

A State must have an *extraterritorial jurisdictional basis* for enforcing and adjudicating on a State's prescribed rules outside of territory under its sovereignty. According to the first *Lotus* principle (see section I), the exercise of such extraterritorial jurisdiction must be based on an international accepted convention or on recognised principles of international customary law. UNCLOS represents such an international accepted convention that, in certain respects, bestows extraterritorial rights on its participating States. This is discussed further in section III of this chapter.

Principles of customary international law can also provide States with an extraterritorial jurisdictional basis for enforcing international (International Maritime Organization (IMO)) regulations outside of their territory. This is examined in section IV.

III. UNCLOS Provides a Legal Basis for Extraterritorial Jurisdiction

UNCLOS constitutes an international convention that, pursuant to the second *Lotus* principle, requires all participating States to respect the limitations of the Convention when exercising their otherwise unrestricted right of enforcement within their territory. For instance, article 2(3) of UNCLOS, which refers to the exceptions of the Convention and international law for limiting a coastal State's territorial jurisdiction in the territorial sea. These exceptions include the right to *innocent passage* (articles 17–19) and the right to make a *transit passag*e of a strait used for international navigation (article 38).[12] See further chapter 3.

[12] See Bodansky, n 4, 745–48.

The first *Lotus* principle is also embodied in UNCLOS, as the Convention bestows on participating States limited and clearly defined extraterritorial rights to enforce and adjudicate on prescribed legislation. One example of an UNCLOS provision that provides an extraterritorial basis for exercising jurisdiction is the aforementioned codification of the flag State principle in article 92, which allows a flag State to exercise its prescribed legislation over vessels flying its flag on the high seas outside the territory of the flag State.

Article 217 also codifies the flag State principle and is, compared to article 92, *lex specialis* concerning the flag State's right and obligation to enforce regulations for the protection of the marine environment. Article 217 thereby also confers an extraterritorial legal basis for flag States to enforce environmental protections, for example in MARPOL Annex VI, irrespective of where they occur, including outside the flag State's territory. And just as article 92 refers to exceptions to this flag State principle, so does article 217(4), which refers to the flag State's jurisdiction being without prejudice to articles 218, 220 and 228.

These exceptions (articles 218, 220 and 228) provide non-flag States, such as port and coastal States, with extraterritorial jurisdiction for enforcing regulations for the protection of the marine environment outside of their own territory, thereby also expressing the first *Lotus* principle. Article 218(1) provides a port State with an extraterritorial jurisdiction to penalise discharge violations taking place outside its territory, for example on the high seas.

Article 220 provides a coastal State with a legal basis for penalising violations that take place in waters under its full or partial jurisdiction, including in the Exclusive Economic Zone (EEZ). As the EEZ is not an area where the coastal State enjoys full sovereignty and unlimited territorial jurisdiction, any jurisdiction conferred to the coastal State for regulating violations in the EEZ could be seen as conferring extraterritorial jurisdiction. Article 220 grants such extraterritorial jurisdiction to coastal States for enforcement in the EEZ.

These extraterritorial jurisdictions of port and coastal States according to articles 218 and 220 consequently overlap with the extraterritorial jurisdiction of the flag State pursuant to article 217 to regulate such (discharge) violations on the high seas and violations that take place in another State's EEZ.

Article 228(1) determines whether the coastal/port State or the flag State can assert primary jurisdiction over these violations and bring the legal proceedings and impose sanctions.[13] In the view of this author, it therefore provides the coastal, port or flag State with the final extraterritorial jurisdiction to adjucate, in accordance with the first *Lotus* principle.

Article 217 is analysed further in chapter 8, article 218 in chapter 10, article 220 in chapter 9 and article 228 in chapter 11, as these provisions form the cornerstones of Part II of this book.

[13] The overlapping extraterritorial jurisdiction between coastal and port States pursuant to art 218(1) and art 220, is resolved through art 218(2)–(4), discussed in ch 10.

A. The Perceived Lack of Extraterritorial Jurisdiction Bars Effective Enforcement of Annex VI

As noted in chapter 1, many non-flag States have penalised violations of the sulphur limits in Annex VI, predominantly violations of the 0.1% SECA limit, with fines ranging on average from $10,000 to $50,000.[14] These Port State Control (PSC) fines often primarily focus on punishing the shipowner (in the same way that non-compliance with, for instance, the safety regulations of the SOLAS Convention[15] is punished) and not on removing (confiscating) illegal savings achieved outside the State's territory.

These fines may nonetheless have been adequate when sanctioning violations of the 0.1% limit that entered into force in 2015, as the 0.1% requirement is geographically limited to the SECA zones coinciding with the 200-nautical-mile EEZs of the affected States, thereby limiting the potential economic savings for shipowners by not complying with this requirement.[16] These States have thus also 'only' penalised violations occurring within areas (internal and territorial waters and in the EEZ) where they have a clear – territorial/extraterritorial – jurisdictional basis for imposing such fines according to article 220(1). However, the potential savings for not complying with the 0.5% sulphur limit will skyrocket, as shown in chapter 1, with a calculated $750,000 saving for one violation on a normal commercial route between Asia and Europe. Needless to say, a $50,000 fine is hardly likely to be dissuasive if a ship can save $750,000 from one violation, in particular when one considers that not all violations are necessarily detected.

This means that, in order to be effective, the level of fines must increase to cover all savings achieved, and must also entail a punitive element that will increase in the event of aggravating circumstances, such as repeated violations, to counter any temptation not to comply.[17]

Many States have argued that this would require them to have a jurisdictional extraterritorial right to *enforce* and *adjudicate* the part of the violation of regulation 14.1.3 of MARPOL Annex VI that occurs on the high seas. An extraterritorial right that must be found within UNCLOS.

This author believes that the analysis set out in Part II of this book will show that there is such an extraterritorial right for (port) States, pursuant to article 218,

[14] H Ringbom, 'Enforcement of the Sulphur in Fuel Requirements: Same, Same But Different', available at https://webcache.googleusercontent.com/search?q=cache:EBk8-0aReA0J:https://www.duo.uio.no/bitstream/handle/10852/61600/SO-Artikel-Ringbom.pdf%3Fsequence%3D4%26isAllowed%3Dy+&cd=1&hl=da&ct=clnk&gl=no, 21, fn 74.

[15] International Convention for the Safety of Life at Sea (SOLAS) 1974 (adopted 1 November 1974, entered into force 25 May 1980) 1184, 1185 UNTS 2.

[16] Ringbom, n 14, 28–29.

[17] An in-depth discussion of what constitutes an effective fine for violations of the 0.5% sulphur limit is found in ch 8, inter alia building on the principles set out in art 18 of the EU Sulphur Directive (Directive (EU) 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels [2016] OJ L132/58), described in ch 5.

to proceed against such sulphur violations irrespective of where these occur, including on the high seas, thus allowing port States to impose fines that confiscate all savings achieved from the entire trip and also entailing a punitive, dissuasive element.

IV. Customary Law Provides a Legal Basis for Extraterritorial Jurisdiction

Customary international law can, in accordance with the second *Lotus* principle (see section I), limit the right of all States to carry out enforcement within their territory. For example, the right for foreign ships to make *innocent passage* through a territorial sea must be recognised, thereby requiring all (coastal) States to abide by this rule even if they are not party to UNCLOS.

The first *Lotus* principle bars States from exercising extraterritorial jurisdiction outside their territory unless this is explicitly permitted in accordance with a convention or by customary law. Some of the extraterritorial principles of UNCLOS, for example under article 218(1), can be seen as representing customary principles of international law, therefore also allowing States that are not party to UNCLOS to exercise this jurisdiction.[18]

Other principles of customary law, not necessarily relating to law of the sea or UNCLOS, can – in the view of this author – also effect the extraterritorial enforcement of IMO regulations for the protection of the marine environment. This assumption forms the basis of the analysis in Part IV of this book, but some of these principles should, for the sake of clarity, be briefly described here.

A. Customary Principles of Jus Cogens and Erga Omnes

The principles of jus cogens and erga omnes represent principles of recognised international customary law that allow and obligate States to protect certain basic recognised rights and seek to stop and penalise violations of them. Some basic rights are viewed as being rights that have the status of *peremptory norms*, also referred to as 'jus cogens norms'. No derogation is allowed from the protection afforded by these norms. Any agreement or treaty violating a jus cogens norm is void pursuant to article 53 or article 64 of the Vienna Convention on the Law of Treaties (VCLT).[19] These norms, inter alia, aim to protect humans from crimes that are so serious and damaging that they are deemed unacceptable

[18] The reason for assuming that art 218(1) reflects customary law is set out in ch 10.

[19] Vienna Convention on the Law of Treaties 1969 (adopted 22 May 1969, entered into force 27 January 1980) 1155 UNTS 331 (VCLT).

by the international community as a whole. Jus cogens norms therefore include prohibitions on genocide, torture and crimes against humanity. The right of all States to protect against such grave offences is also – in the view of this author – rather closely linked to the erga omnes principle. This principle confirms that any State has an obligation, owed towards the rest of the international community, to ensure the preservation of these basic human rights and prosecute any violation thereof. The erga omnes principle was accepted by the ICJ in the *Barcelona Traction case*.[20]

That such a linkage exists between recognised jus cogens norms and recognised erga omnes obligations has also been expressed by other authors, for example Anders Henriksen, who states that 'In practice, erga omnes obligations will include the norms of a peremptory/jus cogens character.'[21]

Thus, a State's right, by virtue of the principle of erga omnes, to exercise jurisdiction over such violations has ties to the principle of *universal jurisdiction*, as this principle, as described previously in section I, covers violations that often are deemed to be the gravest and most damaging to human life. This allows all States to assert jurisdiction over such violations, despite their failing to have any impact on, or other tie to, the State in question.

One of the common denominators underlying all these principles is that they are subject to constant change and development due to the transformation of the international community and which crimes are deemed to be the most atrocious or damaging. The principles of erga omnes and universal jurisdiction originally encompassed piracy, but they have since evolved to include other, more serious crimes, such as those mentioned previously.[22] This is also reflected in an UN report from July 2018, where it is discussed whether unlawful acts in the form of espionage, human trafficking, etc should also give rise to application of the principle of universal jurisdiction.[23] Article 64 VCLT therefore explicitly refers to the development of new jus cogens norms, making any existing treaty void if it contradicts these new norms.

Part IV of this this book seeks to clarify whether the effects of global warming, leading to continual deterioration of the environment and having adverse effects on human health and living conditions, may result in future IMO regulations on greenhouse gas (GHG) emissions being considered international rules protecting peremptory norms, that is jus cogens norms. And if so, whether this would consequently result in all States having an erga omnes obligation to prevent infringements of these norms by exercising extraterritorial jurisdiction over any violation of them through the assertion of universal jurisdiction.

[20] *Barcelona Traction (Belgium v Spain)* [1970] ICJ Rep 3 (Judgment of 5 February 1970) para 33.
[21] See Henriksen, n 9, 36.
[22] See D Haas, *International Law* (Oxford University Press, 2017) 93.
[23] See United Nations General Assembly, *The Scope and Application of the Principle of Universal Jurisdiction*, Report A/73/123 (July 2018) 10.

V. Conclusion

The fundamental principles of jurisdiction include territorial, nationality, passive personality, protective and universal jurisdiction. They allow a State to *prescribe* legislation that regulates matters within the State's own territory but also outside it, pertaining to nationals abroad or acts that threaten the State or which are of a particularly appalling nature.

States also have the right to *enforce* measures and to *adjudicate* on violations taking place within their territory, given their sovereignty and territorial jurisdiction there. The right to enforce within a State's own territory is only limited by regulations of a convention to which the State is party, or by basic principles of international law, as stated by the second *Lotus* principle.

The almost unrestricted right of States to prescribe legislation applying outside their territory is, however, curtailed by a lack of extraterritorial jurisdiction for States. Only where the regulations of a convention or basic principles of international law confer such extraterritorial rights on a State can it enforce and adjudicate outside its territory, as stated by the first *Lotus* principle.

UNCLOS is a convention containing provisions that include the first and the second *Lotus* principles, the latter as it imposes obligations on participating States to respect certain limitations on their territorial jurisdiction, for example to respect the right of foreign ships to exercise innocent passage or transit passage through a State's territorial sea.

UNCLOS also encompasses the first *Lotus* principle, as several of its provisions in part XII confer extraterritorial jurisdiction on participating States, especially in relation to their status as flag States, articles 92 and 217 codifying the flag State principle and bestowing those States with extraterritorial jurisdiction over ships flying their flag on the high seas too.

However, UNCLOS also bestows extraterritorial jurisdiction on non-flag States, such as coastal and port States, which therefore are codified exceptions to the flag State principle.

Article 217(1) relates to flag States' penalisation of environmental violations irrespective of where these occur, including on the high seas, recalling that any such enforcement measure must be 'effective'.

Exceptions to this basic principle are found in article 217(4), which explicitly refers to articles 218, 220 and 228. These articles grant port States (pursuant to article 218) and coastal States (pursuant to article 220) extraterritorial jurisdiction to punish violations of environmental measures, such as those in MARPOL Annex VI, outside their territorial sea, that is on the high seas and in the EEZ.

Article 228 (specifically article 228(1)) determines the overlapping extraterritorial jurisdictions between a flag State and a port or a coastal State.

These provisions concerning extraterritorial jurisdictions pursuant to the first *Lotus* principle – articles 217, 218, 220 and 228 – are analysed in chapters 8–11 of this book. Part II of the book will prove that non-flag States, especially port States pursuant to article 218, have an extraterritorial jurisdictional basis for enforcing

and adjudicating violations of the global sulphur limit pursuant to regulation 14.1.3 of MARPOL Annex VI on the high seas too. This enables port States to impose fines irrespective of where the violation took place. Those fines can confiscate all savings achieved and entail a punitive, dissuasive element.

Finally, the extraterritorial jurisdictional basis of universal jurisdiction has strong ties to the principles of jus cogens and erga omnes. Those principles, and the application of universal jurisdiction, form the basis of Part IV of this book, which examines whether it is possible that future IMO regulations on GHG could attain the status of rules protecting norms of a jus cogens nature.

It is noted that such principles are considered basic principles of customary international law, so that they are encompassed by the first and second *Lotus* principles, as they provide an exterritorial basis for enforcing and adjudicating outside a State's territory, but also provide limitations regarding enforcement and adjudication inside that territory.