

Faculty of Law

## **State legislation and enforcement jurisdiction on vessel source pollution**

How can the existing international legal framework and mechanisms available to States mitigate marine plastic pollution?

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# 1. Introduction

For centuries, but most prominently since the industrial revolution, it has been the norm and attitude to use the world's oceans and rivers as dumpsites for waste. After a short period of time, the dumped debris would not be visible from shore, out of sight out of mind. The old idea that the sea can cope with anything is still prevailing in some communities, industries, and nations. Some items can be degraded by the seas, but this process may take years. However, plastic waste is, amongst others, a substance the seas unfortunately will not ever be able to degrade.

Today, it is clear that the ocean cannot function as the globe's dumpsite. Plastic waste that enters the ocean, stays in the ocean. There are two sources of marine pollution; marine source pollution from vessels and land-based pollution where waste usually enters the ocean through rivers. This paper will only address marine source pollution from vessels, including both fishing vessels and shipping vessels. Therefore, will this paper give extra attention to the role of the International Convention for the Prevention of Pollution from ships (MARPOL) which is an International Maritime Organization (IMO) convention.

This thesis will analyze the enforcement mechanisms available to port State, flag State, and coastal State as set out in the United Nations Convention of the Law of the Sea (UNCLOS). The legal framework utilized to combat vessels source pollution varies depending on which maritime zone the discarding of plastic debris occurs. This paper will mainly rely on the international regulations on vessel source pollution regarding the high seas and the exclusive economic zone (EEZ). Moreover, this paper will take into consideration the importance of adequate waste reception facilities at port and what legal obligations port States have to receive garbage from vessels at port.

## 1.1 Research question

What is the current international legal framework for vessel source pollution? And is the enforcement jurisdiction available to flag State, coastal State, and port State adequate in mitigation plastic pollution from vessels?

## 1.2 Methodology

In order to answer this paper's research question, different legal methods based on legal sources, such as treaty law, will be implemented to understand the best practicable means available to nation States in mitigating plastic pollution from vessels.

Most customary rules, with regard to coastal State jurisdiction over vessel source pollution, are already codified in treaties. Legally binding treaties are considered hard law because they are legally binding obligations which are precise and delegate authority for interpreting and implementing the law<sup>1</sup>. The predominant source is treaty law, and this paper will rely on UNCLOS as the main source of treaty law relevant for vessels source pollution. Article 38 of the Statute of the International Court of Justice<sup>2</sup> is widely recognized as an authoritative statement of the relevant sources of international law. It enumerated treaty law, customary law and the general principles of law as the primary sources<sup>3</sup>. Article 31(1) of the Vienna Convention on the Law of Treaties (VCLT) states "a treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the term of the treaty in their context and in the light of its object and purpose"<sup>4</sup>. This is a general rule on the interpretation of treaties. It unfolds an objective method focused on the meaning of the text in order to frame interpreter's discretion<sup>5</sup>.

State practice is an important element in creation and application of international environmental law and an essential component of customs which can evolve into customary international law. State practice is relevant with regard to interpretations of treaties<sup>6</sup>, as affirmed by the 1969 Vienna Convention on the Law of Treaties Article 31(3)(b). The article states "a treaty shall be interpreted in good faith in accordance with the ordinary meaning to

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<sup>1</sup> Kenneth W. Abbott and Duncan Snidal, 'Hard and Soft Law in International Governance' (2000) 54 *International Organization* 421

<sup>2</sup> Permanent Court of International Justice, *Statute of the International Court of Justice* (ICJ 1945)

<sup>3</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation' (2006) 47 *The Fridtjof Nansen Institute*

<sup>4</sup> United Nations, *Vienna Convnetion on the Law of Treaties* (1969)

<sup>5</sup> Hervé Ascensio, 'Article 31 of the Vienna Conventions on the Law of Treaties and International Investment Law' (2016) 31 *ICSID Review-Foreign Investment Law Journal* 366

<sup>6</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation` (2006)

be given to the terms of the treaty in their context and in the light of its object and purpose”<sup>7</sup>. This article’s interpretation of treaties applies for this paper when interpreting international treaties applicable to the research on vessel source pollution. Article 31(3)(c) in the VCLT states “There shall be taken into account, together with the context: any relevant rules of international law applicable in the relations between the parties”. This thesis will integrate and consider different bodies of law to answer the research question. Moreover, when interpreting the law, one must consider different bodies of law based on techniques of interpretation, taking account of one treaty or legal custom to assist the interpretation and application of another treaty or norm<sup>8</sup>.

In the study of vessel source pollution, one should take notice of international soft-law rules, which in principle are not legally binding. However, for the complete understanding of the subject matter one must take into consideration resolutions, declarations and recommendations by international institutions. They often contain valuable statements and entries of international trends<sup>9</sup>. This thesis will highlight some IMO mechanisms which are available to States in their implementations of the international legal standards, which are considered soft law.

### **1.3 Approach and content**

This thesis consists of four main chapters. Chapter 2 gives an introduction of the global marine plastic pollution problem and an insight into why it is relevant for the law of the sea. There are several types of plastic waste and more importantly, there are several ways for plastic to enter the ocean. This thesis will only focus on plastic pollution from vessels at sea. The purpose of this chapter is to introduce the reader to the problem of plastic pollution and how it is hazardous to both the marine environment and human health.

Chapter 3 reviews the legal framework utilized to combat marine plastic pollution. The thesis will focus on the legal importance of UNCLOS as the relevant framework convention. It will

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<sup>7</sup> United Nations, *Vienna Convention on the Law of Treaties* (1969)

<sup>8</sup> Alan Boyle, 'Relationship between international environmental law and other branches of international law', *The Oxford Handbook of International Environmental Law* (2008) Oxford University Press

<sup>9</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation` (2006)

argue why plastic can be defined as pollution under UNCLOS. This chapter will review the difference in the legal terms of “dumping” and “discharge”. The reader will get an introduction to the relevant terms and articles related to vessel source pollution in the framework convention for maritime law.

Chapter 4 introduces the relevance of the International Maritime Organization (IMO) as a generally internationally accepted competent international organization. MARPOL is the relevant IMO convention designed to tackle discharge from vessels at sea. The convention contains a specific ban on plastic discharge from vessels, with some exceptions. Moreover, MARPOL and its committees have established several mechanisms in the implementation of MARPOL regulations in order to help States follow its standards.

Finally, chapter 5 reviews the legal rules and standards flag State, coastal State, and port State must implement according to customary international law. It will look at the general due diligence obligations stated in UNCLOS and ruled after by several courts and tribunals setting an international standard for due diligence obligations to act with precaution where there is uncertainty. In addition, this chapter will analyze the enforcement mechanisms available to the different forms of States, taking a closer look at the benefit of port States joining a memorandum of understanding with other ports in the area to set a regional standard on consequences of polluting. Lastly, this chapter will analyze the importance of adequate port reception facilities in order to minimize the amount of waste entering the ocean.

## 2. Background – Marine Plastic Pollution (MPP)

The main cause of marine plastic pollution (MPP) is the rising trend of plastic use. Plastic has become an unavoidable substance in every economy in the world and it has integrated itself into all parts of the world. It has been estimated that 8 million tonnes of waste plastic reach the ocean each year, and that volume is projected to double by 2030, and double again by 2050<sup>10</sup>. Plastic accounts for around 10% by mass of municipal waste, but up to 85% of marine debris items<sup>11</sup>. The global production of plastic was 381 million tonnes in 2015. That is 200 times more than the global production of plastic in the 1950, which was at 2 million tonnes per year. There was a downturn in production in 2009 and 2010 due to the result of the 2008 global financial crisis<sup>12</sup>, and we can see a similar downturn in production in 2019 and 2020 due to the global Covid-19 pandemic<sup>13</sup>. A historic trend, after a global financial crisis like these, is production and consumption will increase and catch up to the previous rate before the downturn<sup>14</sup>.

At the global level, it is estimated around 80% of ocean plastic comes from land-based sources and 20% from marine sources<sup>15</sup>. However, these numbers are general consensus but there is some debate over the accuracy of these statistics. Other environmental scientists have estimated marine pollution to be closer to 30% of total MPP. Another challenge with researching the amount of plastic pollution entering the ocean is the “missing plastic problem”. The problem is plastic debris found in the ocean surface water is a great deal lower

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<sup>10</sup> Oliver Tickell, *International Law and Marine Plastic Pollution - Holding Offenders Accountable*, (2018)

<sup>11</sup> Christopher J. Rhodes, 'Plastic Pollution and Potential Solutions' (2018) 101 *Science Progress* 207

<sup>12</sup> Ritchie H and Roser M, *Plastic Pollution*, (2018) <<https://ourworldindata.org/plastic-pollution>> accessed

<sup>13</sup> Plastics Europe, *Plastic - the Facts 2020, An analysis of the European plastics production, demand and waste data* (2020)

*An analysis of the European plastics production, demand and waste data* (2020)

<sup>14</sup> Ritchie H and Roser M, *Plastic Pollution*, (2018) <<https://ourworldindata.org/plastic-pollution>> accessed

<sup>15</sup> Geography Realm, '80% of Plastic in the Ocean Comes From 1,656 Rivers' (2021) <<https://www.geographyrealm.com/80-of-plastic-enters-the-ocean-from-1656-rivers/>> accessed



than the estimated annual ocean plastic inputs<sup>16</sup>. In other words, we have limited knowledge of the actual global amount of plastic debris in the ocean today.

Plastic is typically buoyant, which means it floats on the ocean surface. The plastic pollution is then transported by the prevalent wind and surface current routes. As a result, plastic tends to accumulate in oceanic gyres. There are five large subtropical gyres: in the North and South Pacific, North and South Atlantic and in the Indian Ocean. These accumulations are mainly caused by global wind patterns and their effect on ocean surface currents<sup>17</sup>. Traditionally the term “gyre” is used to refer to large, rotation ocean currents. But in more recent years the term is also used to refer to the collection of plastic waste and other debris found in higher concentrations in certain parts of the ocean<sup>18</sup>, such as the Great Pacific Garbage Patch. In addition, some regional seas like the Mediterranean and the East Asian seas around Japan are observed to be high accumulation points of marine plastic debris. The concentration of plastic in these zones are comparable to, or even higher, than those detected for the subtropical gyre<sup>19</sup>. The Mediterranean Sea is classified as a special area in MARPOL which this paper will address later.

## **2.1 Marine based pollution from vessels**

Marine based sources of plastic pollution include cargo, recreational and military navigation, fishing activities, aquaculture facilities, oil and gas platforms, legal and illegal dumping. In addition, large quantities of plastic may enter the ocean during storms, tidal floods, and shipping accidents<sup>20</sup>. This paper will distinguish between marine based pollution from fishing vessels and merchandise shipping vessels. The other source of plastic pollution is land based which mainly concerns rivers. One study finds that between 1.15 and 2.41 million tonnes of

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<sup>16</sup> Ritchie H and Roser M, *Plastic Pollution*, (2018) <<https://ourworldindata.org/plastic-pollution>> accessed

<sup>17</sup> Charles Sheppard, *World Seas: an Environmental Evaluation : Volume III: Ecological Issues and Environmental Impacts* (Elsevier Science & Technology 2018) 307

<sup>18</sup> NOAA, 'What is a gyre?' (2021) <<https://oceanservice.noaa.gov/facts/gyre.html>> accessed

<sup>19</sup> Sheppard, *World Seas: an Environmental Evaluation : Volume III: Ecological Issues and Environmental Impacts*

<sup>20</sup> Jelena Čulin and Toni Bielic, 'Plastic Pollution from Ships' (2016) 51 *Journal of Maritime & Transportation Science* 57

plastic waste enters the ocean every year from rivers. The top twenty polluting rivers are mostly located in Asia and accounts for 67% of the global total of plastic pollution through rivers<sup>21</sup>.

There is a differentiation in the legal term between discharge of plastic debris and dumping. This paper will mainly analyze discharge of MPP from vessels. Marine plastic pollution from the fishing fleet refers to broken fishing gear that is left behind at sea or lost in a storm, either as accidental or deliberate discharge. MPP from the merchandise shipping vessels refers to discharge of plastic waste, usually accumulated during the voyage, this is considered operational waste. There can also be accidental discharge of plastic debris from shipping vessels, but this is less frequent than that of fishing vessels due to the shipping vessel's large size and solid structure.

### **2.1.1 Shipping vessels**

For many years, environmental scientists have been operating under the paradigm that 80% of marine debris comes from land-based sources and 20% from marine sources. This has recently been challenged by several studies which suggest a greater proportion of MPP originates from marine based activities, like fishing and shipping. The ratio is likely to be highly location dependent and may vary considering the proximity to primary, local delivery mechanisms<sup>22</sup>.

A study done by Proceedings of the National Academy of Sciences of the United States of America (PNAS) finds most plastic debris and litter found on the Atlantic islands today comes from a different source than in the 1980's. Scientists have recorded stranded debris on Inaccessible Island, a remote and uninhabited island in the central South Atlantic Ocean roughly located in the middle of South America and Africa, since 1984. It is relevant to look at this remote island for the MPP studies considering it is located near the South Atlantic

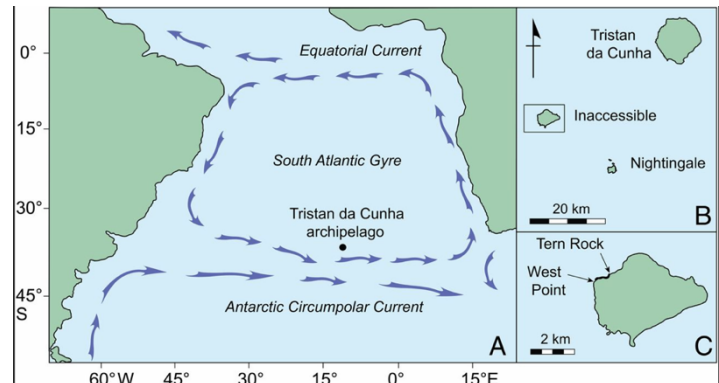
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<sup>21</sup> Laurent C. M. Lebreton and others, 'River plastic emissions to the world's oceans' (2017) 8 Nature Communications 15611

<sup>22</sup> D. A. Smith Stephen and others, 'Tracing the source of marine debris on the beaches of northern New South Wales, Australia: The Bottles on Beaches program' (2018) 126 Marine Pollution Bulletin 304

Gyre, which as mentioned earlier, is an accumulation of floating plastic debris. The picture illustrates how the ocean currents move and accumulates debris in and to the South Atlantic Gyre<sup>23</sup>.

Much debris washed up on shore on the Inaccessible Island in the Tristan da Cunha archipelago; is macroplastic, which indicates the plastic has not been present in the ocean long enough to break down into smaller pieces. In 2018,



scientists found 2.580 plastic bottles along the coast of the small island. During the 1980s most bottles found on the island were carried 3.000km by the west wind drift from South America. In 2018, 75% of the bottles found along the coastline on the same island were from Asia. 90% of the bottles found in 2018 had a manufacturing date no older than 2 years ago, which indicated that the bottles could not have travelled to shore with the ocean currents<sup>24</sup>. The manufacturing date on the bottles indicates few of the bottles could have drifted from Asia which normally takes 3-4 years. Most studies which aim is to track where plastic debris originates from look at plastic bottles because they are usually timestamped with the manufacturing date through barcodes, unlike most other plastic waste<sup>25</sup>. Most of the plastic bottles found on Inaccessible Island were manufactured in China. In previous decades, scientists found most plastic observed stranded on the island had travelled from the coast of South America through ocean currents, which means the bottles then was a result of land-based pollution. This study indicates merchandise vessels are responsible for a great percentage of the plastic bottles polluting the South Atlantic Ocean today<sup>26</sup>.

<sup>23</sup> Peter G. Ryan and others, 'Rapid increase in Asian bottles in the South Atlantic Ocean indicates major debris inputs from ships' (2019) 116 Proceedings of the National Academy of Sciences 20892

<sup>24</sup> *ibid*

<sup>25</sup> D. A. Smith Stephen and others, 'Tracing the source of marine debris on the beaches of northern New South Wales, Australia: The Bottles on Beaches program' (2018) 126 Marine Pollution Bulletin 304

<sup>26</sup> Peter G. Ryan and others, 'Rapid increase in Asian bottles in the South Atlantic Ocean indicates major debris inputs from ships' (2019) 116 Proceedings of the National Academy of Sciences 20892

A similar study of coastal plastic debris in New South Wales, Australia found similarly a large majority of the plastic litter observed over a seven-month period also came from passing merchant ships, like bulk carriers, tankers, and container ships<sup>27</sup>.

The scientific studies on Inaccessible Island and New South Wales took place in 2018 and 2019. Is it clear plastic pollution from merchandise vessels is increasing, which is in direct violation of international law and international conventions. The studies indicate specific regulations to mitigate vessels source pollution set out by the IMO through MARPOL are not being implemented efficiently by some States.

### **2.1.2 Fishing vessels**

Abandoned, lost, or otherwise discarded fishing gear (ALDFG) is a contributor to the MPP. Fishing gear is often made of non-biodegradable plastic materials and constitutes a threat at different levels to the marine environment when it gets lost. ALDFG equals a smaller amount of the total global MPP. But discarded fishing gear like gillnets and traps have the ability to ghost fish. In addition, monofilament lines and nylon nettings which float at specific depths at sea can result in what's commonly known as "ghosts nets". Ghost nets can be defined as the mortality of fish and other species that takes place after all control of fishing gear is lost by a fisher. Ghost fishing occurs when passive fishing gear continues to catch species of fish, marine mammals, turtles etc. Ghost fishing can also damage benthic habitats or pose a safety risk for fishermen if they become entangled with active gear<sup>28</sup>.

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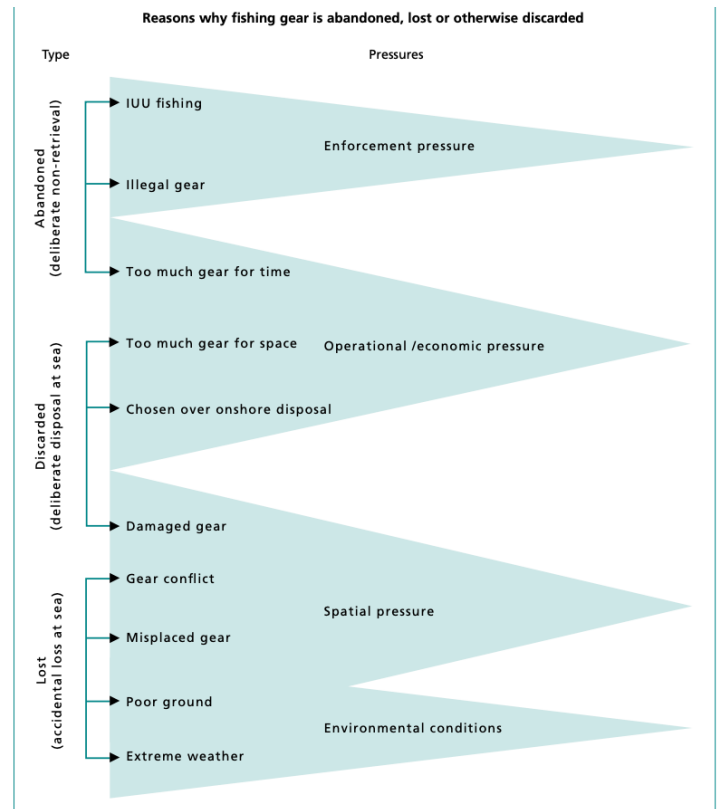
<sup>27</sup> D. A. Smith Stephen and others, 'Tracing the source of marine debris on the beaches of northern New South Wales, Australia: The Bottles on Beaches program' (2018) 126 Marine Pollution Bulletin 304

<sup>28</sup> James Brown and Graeme Macfadyen, 'Ghost fishing in European waters: Impacts and management responses' (2007) 31 Marine policy 488

Fishing nets and lines were designed to kill which they still do after the net has been lost or discarded. Modern fishing gear can continue to catch fish for long periods of time, sometimes years<sup>29</sup>. Overall catch rates of ALDFG varies, but an estimate considers lost tangle nets catch around 5% of the total commercial catch<sup>30</sup>. Passive fishing tools and equipment are more likely to be lost than active equipment. Passive fishing tools refers to nets and lines left in the ocean for a short time so the fish can accumulate. The figure below gives an overview of reasons why fishing gear is abandoned, lost, or otherwise discarded<sup>31</sup>.

It is estimated that plastic lines, ropes and fishing nets comprise 52% of the plastic mass in the “Great Pacific Garbage Patch”. This contribution is due to the intense fishing activity in the Pacific Ocean<sup>32</sup>. The Great Pacific Garbage Patch is one of the most visible plastic collections in the ocean with a high density of plastic waste on the surface. Some of this plastic slowly sinks to the ocean seabed and spreads throughout the entire water column.

States and fishers have a responsibility to mitigate the amount of ALDFG in the ocean. There are several mechanisms and incentive programs available to States to reduce ALDFG, which this paper will take a closer review of in chapter 5.



Source: Poseidon, 2008.

<sup>29</sup> ibid

<sup>30</sup> Gorke Sancho and others, 'Catch rates of monkfish (*Lophius* spp.) by lost tangle nets in the Cantabrian Sea (northern Spain)' (2003) 64 Fisheries Research 129

<sup>31</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009) UNEP Regional Seas Report and Studies No815  
FAO Fisheries and Aquaculture Technical Paper No523 115 47

<sup>32</sup> L. Lebreton and others, 'Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic' (2018) 8 Scientific Reports 4666

## 2.1 Plastic biodegrades into micro plastic

The durability of plastics products is one of their major advantages and but of the most devastating properties once discarded. Plastic degrades slowly and an increasing production of plastic will only lead to ever larger amounts of plastic waste in the marine environment<sup>33</sup>. Plastic does not biodegrade; it disintegrates into smaller pieces. Therefore, pieces of plastic can be found in almost all parts of nature. The degradation plastics undergo, when discarded into the marine environment, is a serious issue. Waves, UV radiation and abrasion, in combination with bacteria, degrade plastic fragments into micro and nanosized particles. This is what we call microplastics. Micro plastics are defined as particles less than 5 mm in size. They can derive from larger pieces of fragmentation but are also produced in this dimension for commercial uses, typically in cosmetics<sup>34</sup>.

Today, we can find plastic debris and micro plastic in every large water body including remote mountain lakes, rivers, and polar ice and deep-sea sediments. Some of these freshwater bodies may be used as a drinking water source<sup>35</sup> and scientists have found traces of microplastic in drinking water<sup>36</sup>. Microplastic is ingested by fish and other marine animals and organisms, and this is where micro plastics enters the food web. Scientists have found microplastic in 114 aquatic species and humans are known to eat more than half of those<sup>37</sup>. Scientists have also found evidence of microplastic in human bodies, for example in a human placenta<sup>38</sup>. The MPP-problem has reached the height of humans eating their own garbage. Microplastic ingestion by humans has unknown long-term consequences, but some research has shown that microplastics can lead to for example infertility, obesity, and cancer<sup>39</sup>.

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<sup>33</sup> Nils Simon and Maro Luisa Schulte, 'Stopping Global Plastic Pollution: The Case for an International Convention' (2017) 43 Heinrich Boll Stiftung 56

<sup>34</sup> Ragusa Antonio and others, 'Plasticenta: First evidence of microplastics in human placenta' (2021) 146 Environment International 106274

<sup>35</sup> Shivika Sharma and Subhankar Chatterjee, 'Microplastic pollution, a threat to marine ecosystem and human health: a short review' (2017) 24 Environmental Science and Pollution Research 21530

<sup>36</sup> Antonio and others, 'Plasticenta: First evidence of microplastics in human placenta' (2021)

<sup>37</sup> National Geographic, 'Plastic: sea to source' (2021)

<<https://www.nationalgeographic.org/projects/plastic/get-involved/>> accessed

<sup>38</sup> Antonio and others, 'Plasticenta: First evidence of microplastics in human placenta' (2021)

<sup>39</sup> Shivika Sharma and Subhankar Chatterjee, 'Microplastic pollution, a threat to marine ecosystem and human health: a short review' (2017) 24 Environmental Science and Pollution Research 21530

This paper will argue that plastic discarded in the ocean is harmful to both the marine environment and human health.

## 2.2 Negative impact on marine environment

It is relevant for this paper to exemplify why marine plastic pollution is harmful to both the marine environment and hazardous to human health, as used in the definition of pollution in UNCLOS Article 1(4).

Almost 800 species are now known to be affected by marine debris, much of which is plastic<sup>40</sup>. In recent years, marine scientists and seafarers have found an increasing amount of dead marine animals caused by plastic consumption. Marine animals are a part of the marine environment. UNESCO estimates that over a hundred thousand marine mammals die each year due to plastic pollution<sup>41</sup>. When a whale ingest plastic, mistaking it for food, the plastic may block food from later traveling from stomach to intestine or sharp plastic items can cut their internal organs.

The presence of microplastic was reported in approximately 30% of the individual fish species<sup>42</sup>. The accumulation of plastic and microplastic in the gut of fish results in starvation and malnourishment of fish and marine mammals and ultimately leads to death<sup>43</sup>. Larger plastic fragments take longer to move through the fish which causes them to remain in the gut longer. This is more harmful than microplastics and leads more often to death of the fish or mammal than smaller plastic beads which can be excreted via natural feces. Scientists have found that 83% of Norwegian lobster had been infected with plastic microfibers<sup>44</sup>.

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<sup>40</sup> United Nations, 'Convention on Biological Diversity' (2016)

<sup>41</sup> UNESCO, 'Facts and figured on marine pollution' (2017) <<http://www.unesco.org/new/en/natural-sciences/ioc-oceans/focus-areas/rio-20-ocean/blueprint-for-the-future-we-want/marine-pollution/facts-and-figures-on-marine-pollution/>> accessed

<sup>42</sup> F. E. Possatto and others, 'Plastic debris ingestion by marine catfish: an unexpected fisheries impact' (2011) 62 Mar Pollut Bull 1098

<sup>43</sup> C. M. Boerger and others, 'Plastic ingestion by planktivorous fishes in the North Pacific Central Gyre' (2010) 60 Mar Pollut Bull 2275

<sup>44</sup> F. Murray and P. R. Cowie, 'Plastic contamination in the decapod crustacean *Nephrops norvegicus* (Linnaeus, 1758)' (2011) 62 Mar Pollut Bull 1207

A comprehensive study of marine debris done by Laist in the 1990's found that entanglement in lost fishing gear at sea was a more likely cause of death for marine animals than ingestion at the time. Amongst the entanglement in gear documented, monofilament line, nets and ropes were the main source originating from commercial fishing operations<sup>45</sup>. In the 1990's the United States Marine Mammal Commission had reports on 136 different marine species being involved in entanglement incidents in the wider United States area<sup>46</sup>. Ghost nets and abandoned fishing gear is a death trap to living marine animals if they get caught and strangled in abandoned gear. It is clear, marine plastic pollution has a negative effect on the marine environment.

### **2.3 Negative impact on human health**

The evidence of microplastic in the marine food web and drinking water raises concerns regarding the ingestion of microplastics by humans through the consumption of marine species. Currently our knowledge about the effects of microplastics on the human health through the consumption of fish and shellfish is still in its infancy<sup>47</sup>. Microplastic are of special concern to human health mainly due to their small size and the lack of technology available to quantify the presence of the smallest microplastics in the environment<sup>48</sup>. Some researchers have calculated that in European countries, with high shellfish consumption, consumers ingest up to 11.000 microplastic particles per year<sup>49</sup>. The presence of microplastic is detected in the muscle of commercially important species of fish which makes it easy for humans to ingest the microplastic when eating seafood<sup>50</sup>.

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<sup>45</sup> David W Laist and Michael Liffmann, *Impacts of marine debris: research and management needs* (2000)

<sup>46</sup> Marine Mammal Commission, *Effects of Pollution on Marine Mammals* (Marine Mammal Commission Annual Report to Congress, (1996)

<sup>47</sup> Shivika Sharma and Subhankar Chatterjee, 'Microplastic pollution, a threat to marine ecosystem and human health: a short review' (2017) 24 *Environmental Science and Pollution Research* 21530

<sup>48</sup> *ibid*

<sup>49</sup> Lisbeth and R. Janssen Colin, 'Microplastics in bivalves cultured for human consumption' (2014) 193 *Environmental Pollution* 65

<sup>50</sup> Sajjad Abbasi and others, 'Microplastics in different tissues of fish and prawn from the Musa Estuary, Persian Gulf' (2018) 205 *Chemosphere* 80



Some research has shown the potential hazardous effect on human health by ingestion of microplastic can cause alteration in chromosomes which may lead to infertility, obesity, and cancer<sup>51</sup>. However, there is limited research concluded on the matter and further research is needed to understand the long-term effects of the microplastics particles on the human body<sup>52</sup>. In addition, macroplastic like lost and abandoned fishing gear is known to pose a potential navigation risk for seafarers and vessels. On one occasion in the Republic of Korea, a passenger ferry sank in an accident caused by floating marine debris<sup>53</sup>. This paper will argue that plastic, especially microplastics, is hazardous to human.

### **3. Legal framework applicable to plastic pollution**

This chapter of the thesis will address the relevant legal framework for mitigating plastic pollution from vessels. It will first review the United Nations Convention on the Law of the Sea (UNCLOS) as the relevant legal framework convention, and in the following chapter go into detail of the role of the International Maritime Organization (IMO) and the MARPOL Convention. Moreover, this chapter will specify plastic reviewed in this paper is considered discharge and not dumping.

#### **3.1 The 1982 United Nations Convention on the Law of the Sea**

The United Nations Convention on the Law of the Sea (UNCLOS)<sup>54</sup> is a framework agreement which governs the use of the ocean. It is the outcome of three United Nations Conferences on the Law of the Sea which took place between 1973 and 1982 and came into force in 1994. Today, UNCLOS is considered the “constitution of the ocean”<sup>55</sup>, and 168

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<sup>51</sup> Shivika Sharma and Subhankar Chatterjee, 'Microplastic pollution, a threat to marine ecosystem and human health: a short review' (2017) 24 Environmental Science and Pollution Research 21530

<sup>52</sup> *ibid*

<sup>53</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>54</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>55</sup> Erik Jaap Molenaar, 'Port State Jurisdiction: Toward Comprehensive, Mandatory and Global Coverage' (2007) 38 Ocean development and international law 225 236

nations plus the European Union are parties to the Convention<sup>56</sup>. UNCLOS is considered to represent customary international law. Customary international law is the law that is derived from State custom or practice. It is continuously evolving, mirroring fundamental shifts produced by the ever-changing needs of the international community<sup>57</sup>. As recognized by Article 38(1) of the Statute of the International Court of Justice, the Court shall apply international customs as evidence of a general practice accepted as law<sup>58</sup>. The ICJ has identified three circumstances in which international conventions may be considered customary international law. These circumstances are when a convention: (1) codifies existing customary international law; (2) causes customary international law to crystallize; and (3) initiated the progressive development of new customary international law<sup>59</sup>. UNCLOS represents customary international law based on these circumstances, as well as constitute an innovation in the development of customary international law<sup>60</sup>.

According to Article 211(1) in UNCLOS shall all member parties to the Convention act through a competent international organization when establishing international rules and standards to prevent, reduce and control pollution of the marine environment from vessels. Although not specified anywhere in the Convention, many scholars say the IMO is the “the competent international organization”<sup>61</sup>, the IMO secretariat has also confirmed this in a legal study<sup>62</sup>. Therefore, the general obligation for all States to establish rules and standards at the

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<sup>56</sup> Oliver Tickell, *International Law and Marine Plastic Pollution - Holding Offenders Accountable*, (2018)

<sup>57</sup> Hugo Caminos and Michael R Molitor, 'Progressive development of international law and the package deal' (1985) 79 *American Journal of International Law* 871

<sup>58</sup> ICJ, *Statute of the International Court of Justice*

<sup>59</sup> Jonathan I Charney, 'International Agreements and the Development of Customary International Law' (1986) 61 *Wash L Rev* 971

<sup>60</sup> Martin Lishexian Lee, 'The interrelation between the Law of the Sea Convention and customary international law' (2005) 7 *San Diego Int'l LJ* 405

<sup>61</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation` (2006)

<sup>62</sup> IMO, *Implications of the United Nations Convention of the Law of the Sea for the International Maritime Organization* (Study by the Secretariat of the International Maritime Organization, 2014)

international level, gives IMO the key role in the regulation of vessel source pollution under UNCLOS<sup>63</sup>.

### **3.1.2 Obligation to protect and preserve the marine environment, Part XII**

Part XII of UNCLOS is dedicated to the obligation for member states to protect and preserve the marine environment. Article 194(5) of UNCLOS emphasizes the obligation to protect and preserve fragile and rare ecosystems and threatened and endangered species. Article 194(1) obliges States not only to take measure to prevent pollution, but also to “reduce and control” it. This implies pollution, to a certain degree, is accepted to a certain extent<sup>64</sup>. Moreover, article 194(2) obliges all States to take all measure necessary to ensure activities under their jurisdiction do not cause pollution and damage to other States.

Article 192 of Part XII places a general obligation on the member States to protect and preserve the marine environment. However, the freedom of navigation and the conventional rights to use the marine resources will always imply a certain amount of influence according to the definition of the term “pollution”. Therefore, this rule does not imply prohibition of any form of pollution. There exists an obligation to always exercise your freedom with reasonable regard to the interest of others<sup>65</sup>. However, the Permanent Court of Arbitration (PCA) ruled China was in violation of Article 192 and Article 194(5) in the South China Sea case. Furthermore, the PCA Tribunal emphasized Article 192 entails a “positive obligation” to take measures to protect and preserve the marine environment as well as a “negative obligation” not to degrade the marine environment<sup>66</sup>.

### **3.1.3 Plastic is considered pollution**

The Convention defines pollution in Article 1.4. It is essential to clarify plastic pollution of the marine environment is considered pollution by the technical legal term in UNCLOS. Article 1.4 defines pollution of the marine environment to substances introduced by man which is harmful to the marine environment and hazardous to human health. It is clear plastic

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<sup>63</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation' (2005)

<sup>64</sup> *ibid*

<sup>65</sup> *ibid*

<sup>66</sup> Permanent Court of Arbitration, 'The South China Sea Arbitration (The Republic of Philippines v. The People's Republic of China' 2021) <<https://pca-cpa.org/en/cases/7/>> accessed

debris can be considered a substance by man considering it is a manmade material<sup>67</sup>. How the substance is introduced to the environment is not relevant under this definition. Thus, there are no distinctions between, operational discharge, accidental discharge or dumping. All ways of the introduction of plastic are accepted under this definition. This paper has argued in the previous chapter plastic pollution is harmful to both the marine environment and to human health. It is harmful to human health because microplastic enters the aquatic food web and gets digested by some humans with an unknown effect to their health. Macroplastic is directly harmful for the marine environment and it's living species who can starve to death after their intestines are blocked by plastic they have attempted to eat. Marine animals can be externally strangled to death by plastic debris such as ghost nest or plastic bags.

The science suggests that any version of plastic pollution introduced, in any way, to the marine environment is hazardous and harmful to both the marine environment and human health. Therefore, marine plastic pollution can be considered pollution according to the definition set out in UNCLOS Article 1.4 which is considered customary international law<sup>68</sup>. The member states of UNCLOS are bound by the obligations set out in the Convention regarding pollution when the discharge of plastic debris in the ocean from vessels qualify as "pollution" under Article 1.4. Moreover, this definition coincides with MARPOL's definition of "harmful substances" in Article 2(2) which requires the substance to be introduced into the sea and be liable to create harm to living resources, marine life and be hazardous to human health<sup>69</sup>.

### **3.1.4 Discharge**

UNCLOS draws a distinction between discharge and dumping into the oceans in Part XII. Discharge can be differentiated between operational and accidental discharge. Operational discharge is deliberate and can be defined as "routine" operations where accidental discharges occur when vessels collide or come in distress at sea. Some measurements can be taken to

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<sup>67</sup> Plastics Europe, *Plastic - the Facts 2020, An analysis of the European plastics production, demand and waste data* (2020)

*An analysis of the European plastics production, demand and waste data* (2020)

<sup>68</sup> James L Malone, 'The United States and the Law of the Sea after UNCLOS III' (1983) 46 *Law & Contemp Probs* 29

<sup>69</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

reduce the number of accidental discharges at sea, but there will always be unfortunate circumstances which cause accidents to happen, like unpredicted weather. The UNCLOS definition of dumping, Article 1(5)(b), excludes operational discharge referred to as “wastes derived from normal operations of vessels”. Article 194(3)(b) draws a distinction between intentional and unintentional discharges. Unintentional discharge can be understood as accidental discharge in reference to emergencies. However, the biggest source of discharge from vessels is operational<sup>70</sup>.

IMO’s MARPOL convention is specifically established to prevent pollution through discharge from vessels at sea. MARPOL defines discharge in Article 2(3)(a) as “in relations to harmful substances, means any release caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying”. Article 2(3)(b)(i) states that discharge does not include dumping within the meaning of the London Convention<sup>71</sup>. Also, MARPOL draws a distinction between discharge and dumping.

Article 194(3)(a)/(b) gives States the responsibility to minimize, to the fullest extent possible, release of harmful substances by dumping and pollution from vessels, both accidental discharge and intentional discharge<sup>72</sup>. MARPOL poses a more stringent ban on all types of discharge of plastic from vessels. Article 211(1) in UNCLOS mandates that States shall establish, through competent international organizations, international rules, and standards to prevent pollution of the marine environment from vessels. MARPOL is an IMO convention and IMO is considered a competent international organization. Therefore, will this thesis look further into the regulations and standards set out in MARPOL for further international restrictions on discharge of plastic as a harmful substance from vessels in the next chapter.

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<sup>70</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation' (2006)

<sup>71</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>72</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

### 3.1.5 Dumping

Dumping is intentional disposal into the sea of wastes that are generated on land, but not exclusively. Waste is loaded into ships and discharged at sea<sup>73</sup>. UNCLOS, Article 1(5)(a) defines dumping as “deliberate disposal of wastes or other matter from vessels at sea”<sup>74</sup>.

The London Convention was established under the auspice of IMO in 1975. The full name of the Convention is: The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and its goal is to directly target pollution through dumping from vessels. The London Convention defines dumping in Article III(1)(a) as “any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structure at sea” or “any deliberate disposal at sea of vessels, aircraft, platforms or other man-made structure at sea”. The London Convention, like both UNCLOS and MARPOL, draws a distinction between deliberate disposal (which is dumping) and disposal derived from normal operations of vessels (operational discharge).

Article 210 in UNCLOS gives national states the right and duty to adopt laws and regulations to prevent, reduce and control pollution of the marine environment by dumping. These laws shall not be less effective than the global rules and standards. Article 216 gives coastal states and flag states the authority to enforce laws and regulations adopted in accordance with this Convention and applicable international rules and standards established through competent international organizations. The London Convention is an IMO convention therefore it is clear that the laws set out in the London Convention represent “global rules and standards”. UNCLOS is acknowledged as customary international law<sup>75</sup>. Article 210 and Article 216 obliges member states of the Convention to adopt regulations for dumping no less effective than those stated in the London Convention. Therefore, will this paper not further address the legal elements and obligations contracting parties have under the London Convention.

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<sup>73</sup> Veronica Frank, 'The European Community and Marine Environment Protection in the International Law of the Sea', *Chapter 7 Ocean Dumping* (Brill | Nijhoff 2007)

<sup>74</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>75</sup> J Ashley Roach, 'Today's customary international law of the sea' (2014) 45 *Ocean Development & International Law* 239

## 3.2 State implementation of UNCLOS

UNCLOS gives the responsibility to reduce and minimize pollution through discharge from vessels to port State, flag State and coastal State. The next part will give a short introduction of the roles by the different forms of State to mitigate plastic pollution from vessels as stated in UNCLOS.

### 3.2.1 Flag State

A ship shall always carry a flag of a State, and it must be the State in whose register the ship is. The flag identifies the nationality of the ships as well as which State is authorized to exercise flag State jurisdiction over the vessel<sup>76</sup>. Article 92 in UNCLOS states “ships shall sail under the flag of one State only and... shall be subject to its exclusive jurisdiction on the high seas”<sup>77</sup>. It is a basic principle in the law of the sea that the prime responsibility for compliance with international requirements lies with the shipowner or operator. But the flag State holds responsibility for ensuring such compliance<sup>78</sup>. Article 211(2) calls for the flag State to adopt laws and regulations for the “prevention, reduction and control of the marine environment from vessels flying their flag”. These regulations on vessel source pollution shall have “the same effect” as that of generally accepted international rules and standards. The flag State is free to establish independent pollution standards but must make sure they have the same effect as the international ones<sup>79</sup>.

UNCLOS is considered customary international law<sup>80</sup> and the flag State is obligated under this convention to make sure vessels flying their flag follow the regulations set in Part XII and other applicable international rules and standards, according to Article 217. The flag State is responsible to enforce repercussions on its vessels if they have violated international pollution standards. The flag State can, in accordance with Article 217(4), “institute proceedings in

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<sup>76</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation' (2006)

<sup>77</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>78</sup> Paris MoU, 'Organisation' *Paris MoU on Port State Control*, (2021)

<<https://www.parismou.org/about-us/organisation>> accessed

<sup>79</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation' (2006)

<sup>80</sup> James L Malone, 'The United States and the Law of the Sea after UNCLOS III' (1983)

respect of the alleged violation”<sup>81</sup>. The flag State is free to establish its own rules and standards of the “proceedings” to prevent plastic pollution from vessels flying its flag and must not enforce and legislate standards which are less effective than those stated in international law.

### **3.2.1 Coastal State**

When a State exercises jurisdiction over foreign ships navigating in the different maritime zones adjacent to its coastline, the State acts in the capacity of a coastal State<sup>82</sup>. The coastal State enjoys sovereignty in its internal waters and can claim authority over the territorial sea. According to Article 56(1)(b)(ii) in UNCLOS the coastal State has jurisdiction over the protection and preservation of the marine environment in its EEZ. However, other states and foreign vessels have the right of innocent passage in a coastal States’ territorial sea according to Article 17 in UNCLOS<sup>83</sup>. In maritime zones beyond the territorial sea all ships enjoy the freedom of navigation. The law must strike a reasonable balance between the interests of the coastal State and the needs of international navigation<sup>84</sup>.

Article 220(2) gives the coastal State enforcements rights to institute proceedings, such as detention of the vessel, if it has violated national or international laws on vessels source pollution in the territorial sea.

### **3.2.2 Port State**

A state can act in conformity of a port State over foreign vessels that have voluntarily entered its port. Port States have the authority to institute proceedings on a foreign ship voluntarily in its ports if there is evidence of the vessel having violated international laws on plastic pollution outside the EEZ of the port State. But if the violation took place in another State’s maritime zone the proceedings must be requested by that State or the State who is damaged or threatened by the discharge violation.

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<sup>81</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>82</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation` (2006)

<sup>83</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>84</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation` (2006)



The distinction between the enforcement jurisdiction of port States and that of coastal State is the extension of the coastal States' jurisdiction over its EEZ. But port States enjoy a greater flexibility to challenge the global rules than coastal States<sup>85</sup>.

Under customary international law, the port State has the authority to impose conditions for the entry of foreign ships into its ports. According to Article 211 in UNCLOS, a port State and a coastal State can establish particular requirements for the prevention and reduction and control of pollution of the marine environment as a condition for the entry into their ports or internal waters. The requirements on pollution regulations must not be less effective than those stated in a competent international organization. The port State has explicit rights under UNCLOS to establish more stringent regulations on vessels source pollution than stated internationally as a condition for vessels to enter its ports.

#### **4. International Maritime Organization – IMO**

This paper will now look further into the role of IMO as a competent international organization and MARPOL for the purpose of reducing pollution from ships. The International Maritime Organization is the only specialized agency of the United Nations wholly dedicated to maritime affairs. Over the years it has developed a coordinated scientifically and technically oriented strategy for the protection of the marine environment from pollution generated by the shipping industry<sup>86</sup>. The organization has developed a standard-setting role with regards to operational pollution from vessels. The adoption of treaties is another main task of the IMO<sup>87</sup>. The maritime organization is continuously working on establishing different work groups and sub-committees to help the practical implementation of its Conventions. Today the IMO has over 50 conventions and protocols under its auspice<sup>88</sup>. The IMO targets safety and pollution at sea, whereas UNCLOS is a broader framework convention giving the specific task of specifying the international

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<sup>85</sup> Henrik Ringbom, *Preventing Pollution from Ships – Reflections on the 'Adequacy' of Existing Rules* (1999) 24

<sup>86</sup> IMO, *Comprehensive Manual on Port Reception Facilities* (1999)

<sup>87</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation' (2006)

<sup>88</sup> IMO, 'International Maritime Organization' (2021) <<https://www.imo.org/>> accessed

pollution standards on harmful substances such as plastic to international competent organizations like the IMO.

One committee the IMO set up to help governments implement IMO legislations in 1992 is the Sub-Committee on flag State Implementation, which today it is called the Sub-Committee on Implementation of IMO Instruments (III). Some countries lack the expertise, resources, and experience necessary to implement the regulations in IMO Conventions, even though the government is a party to the convention<sup>89</sup>. The III addresses the effective global implementation and enforcement of IMO instruments concerning maritime safety and protection of the marine environment, and it's goal is to raise the standards of implementation. One of the focus points of the sub-committee is to review governments' implementation of IMO standards on protection of the marine environment and to maintain an updated and harmonized guidance on survey and certification related requirements. The IMO standards referred to includes the convention of MARPOL and SOLAS. In addition, the III emphasizes the promotion of global harmonization of port State control activities<sup>90</sup>, which will be addressed in chapter 5.

#### **4.1 MARPOL**

The International Convention for the Prevention of Pollution from Ships (MARPOL) is an IMO convention which entered into force in 1983 and absorbed its parent convention of 1973<sup>91</sup>. The convention has been and is being updated through amendments. Article 16(2)(d) of MARPOL states amendments after consideration by the Organization shall be adopted by a two-thirds majority of only the Parties to the Convention present and voting. But Article 16(2)(f)(iii) gives the authority to “the appropriate body at the time of adoption” to decide if the amendment will be accepted by tacit acceptance, meaning accepted unless objected, or explicit acceptance. The procedure provides an amendment to enter into force at a particular time unless before that date, objections to the amendment are received from a specified number of Parties<sup>92</sup>. Article 16(2)(f)(iii) states that the minimum time interval between

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<sup>89</sup> IMO, 'Implementation, Control and Coordination' (2021)

<<https://www.imo.org/en/OurWork/MSAS/Pages/ImplementationOfIMOInstruments.aspx>> accessed

<sup>90</sup> *ibid*

<sup>91</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>92</sup> IMO, 'Conventions' (2021) <<https://www.imo.org/en/About/Conventions/Pages/Default.aspx>> accessed

adoption and acceptance must be 10 months and the objection must be by more than one third of the Parties to be taken into consideration<sup>93</sup>.

It is stated in the pretext of MARPOL that its main goal is to eliminate intentional and accidental pollution of the marine environment by oil and other harmful substances. As of 2005 the MARPOL convention includes six annexes where the first two are mandatory:

- I. Regulations for the prevention of pollution by oil
- II. Regulations for the control of pollution by Noxious Liquid Substances in bulk.
- III. Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form
- IV. Prevention of Pollution by Sewage from Ships
- V. Prevention of Pollution by Garbage from Ships
- VI. Prevention of Air Pollution from Ships

#### **4.1.1 Annex V – general ban of plastic discharge**

MARPOL specifically addresses marine plastic pollution from vessels in Annex V and entered into force through an amendment to MARPOL in 1988. According to Regulation 2 of Annex V, the provisions of Annex V shall apply to all ships, unless expressly provided otherwise<sup>94</sup>. All ships mean; any ship operating in the marine environment from merchant ships to fixed or floating platforms to non-commercial ships like pleasure crafts and yachts. Annex V is optional, yet more than 150 countries have signed up to MARPOL Annex V<sup>95</sup>.

Annex V gives the responsibility of keeping a logbook of waste management on board to the flag State which are responsible to ensure the compliance by the shipowner and operator, with the option for port States to review the book<sup>96</sup>.

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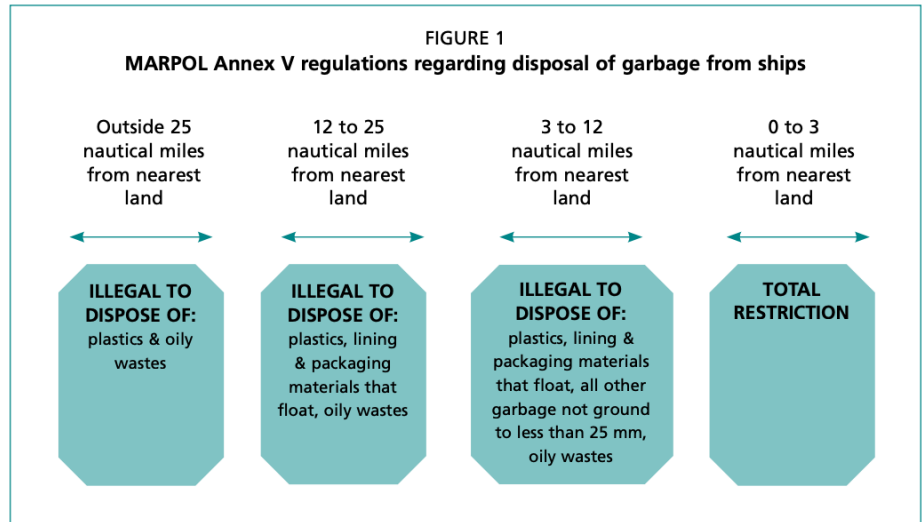
<sup>93</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>94</sup> IMO, 'International Convention for the Prevention of Pollution from Ships (MARPOL)' (2019) <[https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)> accessed

<sup>95</sup> IMO, 'Prevention of Pollution by Garbage from Ships' (2019) <<https://www.imo.org/en/OurWork/Environment/Pages/Garbage-Default.aspx>> accessed

<sup>96</sup> *ibid*

Annex V poses a complete ban on disposal into the sea of all forms of plastics and operational waste that have accumulated aboard ships during operation with a few exemptions outlined in Regulation 4. These exemptions are related to food waste, cargo residues, cleaning agents and additives and animal carcasses<sup>97</sup>, which are biodegradable. In the simplified overview of the discharge provisions of the revised MARPOL Annex V, which entered into force on 1 March 2018, discharge of all other garbage is prohibited. This includes plastics, synthetic ropes, fishing gear, plastic garbage bags, incinerator ashes, clinkers, cooking oil, floating dunnage, lining and packing materials, paper, rags, glass, metal, bottles, crockery and similar refuse<sup>98</sup>. As evidential in figure 1<sup>99</sup>, disposal of plastic waste from vessels is forbidden regardless of what maritime zone the ship is in.



Source: Based on IMO documentation.

#### 4.1.1.1 Exceptions to Annex V

Moreover, Regulation 5 gives an overview of permitted disposal in “special areas” under Annex V<sup>100</sup>. The special areas are the Mediterranean Sea, the Baltic Sea, the Black Sea, the Red Sea, the Gulfs area, the North Sea, the Wider Caribbean Region and the Antarctic Area<sup>101</sup>. The special sea areas are unique due to different factors such as; oceanographic and ecological conditions, the particular character of traffic like heavy maritime traffic, low water exchange, extreme ice states, or endangered marine species. Due to the vulnerability of these area is it mandatory to adopt special methods for the prevention of marine pollution by

<sup>97</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>98</sup> MARPOL, *Simplified overview of the discharge provisions of the revised MARPOL Annex V which entered into force on 1 March 2018* (MARPOL 2018)

<sup>99</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>100</sup> MARPOL, *Simplified overview of the discharge provisions of the revised MARPOL Annex V which entered into force on 1 March 2018* (MARPOL2018)

<sup>101</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

garbage<sup>102</sup>. The regulations in the special areas are more stringent than the regulations regarding the general maritime environment. However, Regulation 5(2) confirms the disposal of plastic, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags, is also prohibited in the special areas.

Regulation 6 of Annex V gives an overview of exemptions for disposal of garbage from ships. The exemptions include garbage disposal from a ship necessary for the purpose of securing the safety of a ship and those onboard and escape of garbage resulting from damage to a ship when all reasonable precautions have been taken<sup>103</sup>. It is not specified in the convention what “reasonable precautions” include. However, one can look to UNCLOS 194(3)(b) which states the States shall take all measures necessary to ensure activities under their jurisdiction or control does not cause damage by pollution to other States. This obliges States to take all measures necessary to prevent pollution from vessels and prevent accidents<sup>104</sup>.

Regulation 6 in MARPOL also includes accidental loss of synthetic fishing nets<sup>105</sup>. According to Article 2.2.2 in the most recent guidelines for implementation of Annex V, MEPC 71/17/Add.1, fishing vessels operators are required to report accidental loss or discharge of fishing gear which poses a significant threat to the marine environment to the flag State. MEPC 71/17/Add.1 encourages the government to consider factors including the amount and size of gear lost and the condition of the marine environment where it was lost in order to determine the qualification of “significant threat”. If the government is not notified, the fishing vessels are still obligated to record the discharge or loss of fishing gear in the Garbage Record Book according to Article 2.2.1 in the Guidelines for implementation<sup>106</sup>.

#### **4.1.2 The Food and Agriculture Organization’s report on ALDFG**

Accidental loss of fishing nets is somewhat harder to identify than those lost in emergencies, as it is easier to testify the occurrence of an emergency. Accidental loss of fishing gear can be

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<sup>102</sup> IMO, 'International Convention for the Prevention of Pollution from Ships (MARPOL)' (2019) <[https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)> accessed

<sup>103</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>104</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>105</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>106</sup> MEPC, *2017 Guidelines For The Implementation Of MARPOL, Annex V* (2017)

hard to identify, and maybe easy to claim as the occurring cause of the lost gear when in reality the fishing gear has been abandoned and/or discharged. To mitigate the number of lost fishing gear, the UN's Food and Agriculture Organization (FAO) has developed guidelines for the application of a system for the marking of fishing gear. The guidelines set out the marking system and the responsibilities of owners of gear and fisheries authorities<sup>107</sup>. At an expert consultation on the FAO Code of Conduct for Responsible Fisheries (CCRF), the experts proposed solutions to mitigate accidental loss of fishing gear. The CCRF sets out international principles and standards of behavior to ensure effective conservation and management of marine resources. One recommendation the experts came with was all fishing gear should be marked in such a way as to uniquely identify the ownership of the gear. In the 2017 guideline for implementation of MARPOL Annex V, Article 2(2)(2)(5) encourages vessel operators to implement appropriate handling of fishing gear and consider relevant guidance issued by FAO and IMO<sup>108</sup>. This is a soft law mechanism but has proven to mitigate abandoned and lost fishing gear from vessels if implemented. For example, Canada requires static gear to be appropriately marked with operator identifies: "All types of shrimp traps or ring nets must be marked with the name of the person fishing the gear, i.e., the operator"<sup>109</sup>. Moreover, the Republic of Korea introduced in 2006 a gear-marking initiative which has encouraged fellow member countries of UNEP's Northwest Pacific Area Action Plan to adopt similar actions. The member countries shall "develop and use marked fishing gear to identify its owner or user that will contribute to preventing fisheries-related marine litter being abandoned"<sup>110</sup>. Canada and Korea are good examples of States following the FAO Code of Conduct recommendations to require the marking of fishing gear. However, in 2009, when the FAO wrote their report on ALDFG, there were few other examples of national requirements for gear marking with the intention to prohibit the deliberate abandonment of gear through enabling identification of ownership<sup>111</sup>.

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<sup>107</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>108</sup> MEPC, *2017 Guidelines For The Implementation Of MARPOL, Annex V* (2017)

<sup>109</sup> Department of Fisheries and Oceans, *Fishery (General) Regulations* (1993)

<sup>110</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>111</sup> *ibid*

In conclusion, the only exception when one is exempt from the regulations set out in MARPOL, Annex V, is accidental loss of fishing gear and disposal of gear to ensure the safety of a ship and those onboard as stated in Regulation 6 of Annex V<sup>112</sup>. This is what is considered accidental discharge under both UNCLOS and MARPOL. However, the exception of accidental loss of fishing gear can be argued to be too generous and should come with a mandatory requirement of all States to pose an obligation of operators to mark their fishing gear in order to prohibit the deliberate discharge of gear, rather than the current suggestion. This thesis will look further into the regulations and enforcement mechanisms available to States in the prevention of operational discharge from vessels.

### **4.1.3 Garbage management plan**

The State parties to Annex V are obligated to ensure vessels of 100 gross tonnage and above or ships certified to carry 15 persons or more to always carry a garbage management plan on board, according to Regulation 10.2 of MARPOL Annex V. The garbage management plan must include written procedures for minimizing, collecting, storing, processing, and disposing of garbage. Larger vessels of 400 gross tonnage or above are required to provide a garbage record book to record all disposal and incineration operations under Regulation 10.3<sup>113</sup>. Entries in the garbage record book shall be made when garbage is discharged to reception facilities ashore or to other ships. The garbage record book must state the date, time, position of the ship, description of the garbage and the estimated amount incinerated must be logged and signed. The master of the ship must keep the receipts or certificates received when using port reception facilities with the record book on board the ship for two years<sup>114</sup>. This regulation gives both flag States and port States the ability to review whether or not the regulations on garbage are being executed by the shipowner. In addition, this regulation could be an advantage to a ship when local officials are checking the origin of discharged garbage

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<sup>112</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>113</sup> MPECgaraveby , *2012 Guidelines for the development of garbage management plans* (2012)

<sup>114</sup> Northwest Pacific Action Plan and Marine Environmental Emergency Preparedness and Response, *Guidelines for providing and improving port reception facilities and services for ship-generated marine litter in the Northwest Pacific region*, (2010)

because it would be harder to be wrongly penalized for discharging garbage if the ship personnel can adequately account for all their garbage in the record book<sup>115</sup>.

## 5. Analysis of application

From an international environmental point of view, treaty law mainly governs pollution regulations of the marine environment. UNCLOS is considered to largely represent customary international law today, including the provisions on flag State, port State and coastal State jurisdiction. The regime for vessel source pollution is among the most detailed set of provisions in UNCLOS and involves a delicate balance between coastal and maritime interest, which differs from each maritime zone<sup>116</sup>. The obligations of a flag State are the same regardless of the maritime zones the ship is located in, but the obligations of the coastal State depend on what maritime zone the foreign ship is in<sup>117</sup>. The obligations of the port State depend on whether the foreign ship is leaving or entering the port<sup>118</sup>. However, the obligations of each form of State are founded in international treaty law, which is legally binding. According to Article 26 of the Vienna Convention on the Law of Treaties “Every treaty in force is binding upon the parties to it and must be performed by them in good faith<sup>119</sup>”. This obligation is known as “*pacta sunt servanda*”. It is widely recognized, conventions can generate customary rules of law that are binding on all States, including nonparties<sup>120</sup>. Article 34 of the VCLT states third parties are not obligated under a treaty without consent. But Article 38 of the VCLT states a rule set forth in a treaty may become binding on that State as customary rule of international law<sup>121</sup>. According to the VCLT, all

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<sup>115</sup> IMO, 'Prevention of Pollution by Garbage from Ships' (2019)

<<https://www.imo.org/en/OurWork/Environment/Pages/Garbage-Default.aspx>>accessed

<sup>116</sup> Henrik Ringbom, *Preventing Pollution from Ships – Reflections on the 'Adequacy' of Existing Rules* (1999)

<sup>117</sup> *ibid*

<sup>118</sup> Caroline Stenman, 'The Development of the MARPOL and EU Regulations to Phase out Single Hulled Oil Tankers' (2005) Göteborg University 45

<sup>119</sup> United Nations, *Vienna Convention on the Law of Treaties* (1969)

<sup>120</sup> Martin Lishexian Lee, 'The interrelation between the Law of the Sea Convention and customary international law' (2005)

<sup>121</sup> United Nations, *Vienna Convention on the Law of Treaties* (1969)



parties are obliged under treaty law to adopt and follow the regulations set out in UNCLOS, including nonparties to the convention because UNCLOS is considered customary international law.

The research question of this paper is: What is the current international legal framework for vessel source pollution? And is the enforcement jurisdiction available to flag State, coastal State, and port State adequate in mitigating plastic pollution from vessels? This chapter will analyze legislative- and enforcement jurisdiction available to the three different forms of State. It will analyze soft law mechanisms established by the IMO to help States implement their standards and look at what must be improved to further mitigate plastic discharge from vessels worldwide.

## **5.1 Due Diligence obligation to prevent pollution**

Article 211(2) in UNCLOS obliges States to “adopt laws and regulations for the prevention, reduction, and control of pollution of the marine environment from vessels flying their flag”. The laws shall “have the same effect as that of generally accepted international rules and standards established through competent international organization”. The Convention poses an obligation on all forms of State to either adopt and enforce international laws on vessel source pollution or establish their own more stringent rules on vessels flying their flag.

Article 194(2) in UNCLOS contains a due diligence obligation, requiring states to take all measures “to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment...<sup>122</sup>”. Moreover, Article 235(1) dictates “States are responsible for the fulfilment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law<sup>123</sup>”. States have a due diligence obligation to protect and preserve the marine environment under UNCLOS, and flag States have the primary responsibility of legislative and enforcement jurisdiction over ships flying their flag. According to Article 211(2) flag States hold the primary responsibility to reduce vessels source pollution on ships flying their flag in accordance with the international standards set

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<sup>122</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>123</sup> *ibid*

out in MARPOL, an IMO convention. Consequently, the flag State possesses the ultimate due diligence obligation to protect and preserve the marine environment from plastic discharge from vessels according to customary international law. This does not result however, in an unfulfilled due diligence obligation for the coastal- and port State. All forms of State have a due diligence obligation to protect and preserve the marine environment, but the flag State has the primary responsibility to prevent plastic discharge through vessels source pollution.

The Seabed Dispute Chamber of the International Tribunal for the Law of the Sea (ITLOS) explained in its advisory opinion for activities in the area an obligation of due diligence is “an obligation to deploy adequate means, to exercise best possible efforts, to do the utmost, to obtain this result<sup>124</sup>”.

The International Court of Justice (ICJ) states, in the Pulp Mills case on the River Uruguay, due diligence is “an obligation which entails not only the adoption of appropriate rule and measure, but also a certain level of vigilance in their enforcement...<sup>125</sup>”. The Rio Declaration of 1992, Principle 2 confirms States have a right to exploit their resources pursuant to their own environmental policies<sup>126</sup>, but also have “the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction<sup>127</sup>”. The Rio Declaration introduced the precautionary approach in the due diligence obligations. Principle 15 states the precautionary approach requires the “lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation<sup>128</sup>”. These soft law formulations have later been incorporated into a growing number of “hard law” instruments such as treaties<sup>129</sup>.

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<sup>124</sup> International Tribunal for the Law of the Sea, *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (2011) 41

<sup>125</sup> International Court of Justice, *Case Concerning Pulp Mills on the River Uruguay* (2010) 69

<sup>126</sup> Stephen Fietta, Jiries Saadeh and Laura Rees-Evans, 'The South China Sea Award: A milestone for international environmental law, the duty of due diligence and the litigation of maritime environmental disputes' (2016)

<sup>127</sup> United Nations, *Report of the United Nations Conference on Environment and Development* (1992)

<sup>128</sup> *ibid*

<sup>129</sup> Stephen Fietta, Jiries Saadeh and Laura Rees-Evans, 'The South China Sea Award: A milestone for international environmental law, the duty of due diligence and the litigation of maritime environmental disputes' (2016)

As several international courts and tribunals have observed, the duty of due diligence incorporates a requirement that States exercise a certain level of vigilance, to act with caution<sup>130</sup>.

The ICJ, in the Pulp Mills case, considered the obligation of due diligence would not be satisfied if a State initiating a project affecting the environment of the neighboring State did not undertake an environmental impact assessment (EIA)<sup>131</sup>. Moreover, the Court later observed customary international law does not specify the scope and content of an environmental impact assessment<sup>132</sup>. Principle 17 of the Rio Declaration also confirms there is now a requirement under general international law to undertake an EIA. “Environmental impact assessment... shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority<sup>133</sup>”. The IJC stated, in the *Costa Rica v. Nicaragua* case, procedural due diligence obligations include the obligation to conduct an EIA, but a State’s substantive due diligence obligation is to exercise due diligence to prevent significant transboundary harm<sup>134</sup>.

ITLOS confirmed, in its advisory opinion for *States Sponsoring Activities in the Area*, the link between an obligation of due diligence and the precautionary approach is implicit in the Tribunal’s order of the *Southern bluefin Tuna* case (1999)<sup>135</sup>. The parties “should in the circumstances act with prudence and caution to ensure that conservation measures are taken...<sup>136</sup>”. Hence, customary international law considers the precautionary principle to be a central element of the due diligence obligations that are stated in UNCLOS, Part XII.

In short, according to case law and customary international environmental law, States have a substantial due diligence obligation to prevent transboundary harm and affect the environment of the neighboring States. The due diligence obligation to protect and preserve the marine

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<sup>130</sup> *ibid*

<sup>131</sup> *ibid*

<sup>132</sup> International Court of Justice, *Case Concerning Pulp Mills on the River Uruguay* (2010) 69

<sup>133</sup> United Nations, *Report of the United Nations Conference on Environment and Development* (1992)

<sup>134</sup> Fietta, Saadeh and Rees-Evans, 'The South China Sea Award: A milestone for international environmental law, the duty of due diligence and the litigation of maritime environmental disputes' (2016)

<sup>135</sup> International Tribunal for the Law of the Sea, *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (2011) 41

<sup>136</sup> International Court of Justice, *Southern Bluefin Tuna cases* (1999)

environment stated in UNCLOS, Part XII includes the precautionary approach. These obligations regard all three forms of State, which means both flag- coastal and port State, must act with precaution and take due diligence in jurisdictional decisions regarding pollution of the marine environment.

## **5.2 Flag State**

### **5.2.1 Legislative jurisdiction**

Article 211(2) obliges flag States to adopt laws and regulation for the prevention of pollution of the marine environment from vessels flying their flag. These laws shall have the same effect as that of “generally accepted international rules and standards established through the competent international organization”. It has been made clear earlier in this paper that the IMO is a so-called competent international organization, which includes MARPOL. Consequently, the flag State must adopt laws and regulations for the prevention of pollution that has the same effect of MARPOL<sup>137</sup>. A certain margin of appreciation is entitled the flag State, since the rules do not need to be identical, but only have the same effect as those in MARPOL. Together with Article 94, Article 211(2) specifies the principle of flag State jurisdiction. Article 211(2) is applicable to all types of pollutions standards<sup>138</sup>.

### **5.2.2 Enforcement jurisdiction**

Article 217 of UNCLOS exclusively addresses the enforcement of international rules and standards by flag States. Article 217(1) dictated States “shall ensure compliance by vessels flying their flag with applicable international rules and standards established through competent international organizations”<sup>139</sup>. The flag State is therefore obligated under UNCLOS to meet the standards and regulations to prevent pollution from ships set forth by MARPOL. Article 217(3) requires flag States to ensure that vessels flying their flag “carry on board certificates required by and issued pursuant to international rules and standards referred

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<sup>137</sup> Caroline Stenman, 'The Development of the MARPOL and EU Regulations to Phase out Single Hulled Oil Tankers' (2005)

<sup>138</sup> Øystein Jensen, 'Coastal State Jurisdiction and Vessel Source Pollution: The International Law of the Sea Framework for Norwegian Legislation` (2006)

<sup>139</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

to in paragraph 1”. The garbage management plan required by vessels over 100 tons gross tonnage and above and every ship which is certified to carry 15 persons or more, through regulation 10 of Annex V in MARPOL, goes under this description of certificates<sup>140</sup>. The flag State can inspect the vessels regularly to ensure they are complying with the regulations according to Article 217(3)<sup>141</sup>.

Article 217(4) poses a mandate for flag States to “provide for immediate investigation and where appropriate institute proceedings in respect of the alleged violation irrespective of where the violation occurred”. The flag State is free to establish repercussions on a vessel flying its flag if it has violated the regulation for vessel source pollution stated either in MARPOL or that of the flag State. UNCLOS gives flag States several enforcement options through MARPOL of vessels flying their flag in violation of the international standards for pollution<sup>142</sup>. The flag State possesses ultimate responsibility for the enforcement and sanctions of vessels flying their flag in violation of Annex V, MARPOL<sup>143</sup>. Flag States are free to enforce higher standards on vessel source pollution for their ships than what is required internationally. However, they must meet the minimum standards set out in MARPOL. Lastly Article 217(8) in UNCLOS dictates “the laws and regulations of States for vessels flying their flag shall be adequate in severity to discourage violations”. Consequently, flag States must adopt law and regulations on vessel source pollution which discourages violations by vessels flying its flag<sup>144</sup>.

### **5.2.3 IMO procedures to control enforcement**

Article 11(1)(f) of MARPOL states the parties to MARPOL must communicate to the Organization “an annual statistical report... of penalties actually imposed for infringement of the present Convention”<sup>145</sup>, with the present convention being the IMO. The Marine Environment Protection Committee (MEPC) are the ones to review the annual statistical

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<sup>140</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>141</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>142</sup> Caroline Stenman, 'The Development of the MARPOL and EU Regulations to Phase out Single Hulled Oil Tankers' (2005)

<sup>143</sup> Andrew Rakestraw, 'Open Oceans and Marine Debris: Solutions for the Ineffective Enforcement of MARPOL Annex V' (2012) 35 *Hastings International and Comparative Law Review*

<sup>144</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>145</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

reports. MEPC was established to address environmental issues under IMO's remit, which includes the control and prevention of vessel source pollution covered by MARPOL and the penalties imposed by flag States<sup>146</sup>. In MEPC/Circ.888, report of 2020 for the period of 2013 to 2018, it becomes clear only 30 Parties are submitting annual reports in the reporting period<sup>147</sup>. Compliance with the mandatory report system in provision MEPC/Circ.318 continues to be low. Only five Party flag States reported they had imposed fines on vessels flying their flag (Denmark, Greece, Japan, South Africa, and Spain). This constitutes 120 fines by flag States worldwide, based on either: illegal discharge, not keeping an oil record book, not having an IOPP certificate or "others"<sup>148</sup>. As opposed to the seventeen Party port States, who jointly reported 322 fines based on violations in the same category, in the same year 2017<sup>149</sup>. Eleven Parties to MARPOL reported a total of 156 incidents involving Annexes IV and V materials, constituting 30% of overall incidents. With the lack of reports from Parties one can assume violations of MARPOL are exceeding the number of fines received from flag States. The reported numbers are a statistically improbable scenario.

Enforcement of MARPOL relies primarily on the exercise of flag State jurisdiction. A ship can largely evade MARPOL's requirements if the flag State cannot or will not enforce violations of international law, considering violations of Annex V are first and foremost sanctioned under the national laws of the State in which the ship is registered<sup>150</sup>. This is referred to as "flags of convenience". It is convenient for the shipowner to choose to register his vessel with a flag State lacking administrative systems to efficiently enforce national or international regulations compliant with MARPOL. There is no requirement that the shipowner needs to have any ties to the country in which the vessel is registered. The

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<sup>146</sup> IMO, 'Marine Environment Protection Committee (MEPC)' 2021)

<<https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-default.aspx>> accessed

<sup>147</sup> MEPC, *Summary Report and Analysis of Mandatory Reports Under MARPOL for the Period 2013 to 2018* (2020)

<sup>148</sup> *ibid*

<sup>149</sup> *ibid*

<sup>150</sup> Andrew Rakestraw, 'Open Oceans and Marine Debris: Solutions for the Ineffective Enforcement of MARPOL Annex V' (2012)

shipowner is free to choose his “flags of convenience”. Over one third of all ships throughout the world are registered under “flags of convenience”<sup>151</sup>.

MARPOL states in Article 4(4) “Penalties ... shall be adequate in severity to discharge violation of the present convention and shall be equally severe irrespective of where the violation occurs”<sup>152</sup>, similar to UNCLOS’s Article 217. However, flag State record numbers of reprimands of ships flying their flag are lacking globally. Many port- and flag States’ are not reporting their enforcement of regulations at all<sup>153</sup>. It is likely they are not enforcing the international standards set out in MARPOL. Lack of enforcement is occurring despite the obligation to report reprimands and enforcements by flag States to IMO’s Marine Environment Protection Committee.

The freedom a flag State obtains to choose the means of reprimands on their vessels are creating an unlevel playing field for flag State sanctions and penalties worldwide. Flags of convenience are often recognized as a major cause of environmental pollution<sup>154</sup>. Moreover, a ship flying a flag of a State, in which flag State regulation is negligent, can trade in regions where port State control is lacking and as a result avoid penalties on illegal discharge and pollution of the marine environment altogether. As made clear earlier in this paper, according to customary international law, nation States have the responsibility to act with due diligence which includes making sure vessels flying their flag also fulfil their due diligence obligations to protect and preserve the marine environment as stated in part XII of UNCLOS.

This paper will argue that flag States failing to enforce and legislate according to the regulations set out in MARPOL and international environmental law on vessel source pollution is a breach of the State’s due diligence obligation. Non-compliance with the treaty obligations set out in UNCLOS is a breach of treaty law<sup>155</sup>. The IMO established port State measures to serve as a second lifeline when flag States fail to meet their obligations on vessel

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<sup>151</sup> Mark L Boos, 'The Oil Pollution Act of 1990: Striking the Flags of Convenience' (1991) 2 *Colo J Int'l Env'tl L & Pol'y* 407 412

<sup>152</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

<sup>153</sup> MEPC, *Summary Report and Analysis of Mandatory Reports Under MARPOL for the Period 2013 to 2018* (2020)

<sup>154</sup> Bill Shaw, Brenda J. Winslett and Frank B. Cross, 'The Global Environment: A Proposal to Eliminate Marine Oil Pollution' (1987) 27 *Nat Resources* J157

<sup>155</sup> United Nations, *Vienna Convnetion on the Law of Treaties* (1969)

source pollution as addressed in both UNCLOS and MARPOL, which this chapter will address shortly.

## **5.3 Coastal State**

### **5.3.1 Legislative jurisdiction**

Coastal States have accepted the prominent role of the IMO in a disciplined manner. The norm is not to pose more strict requirements on vessels source pollution than those stated in MARPOL. Coastal States do not find any added value to further establish stricter rules for vessel source pollution<sup>156</sup>. The coastal State can legislate for the protection and preservation of the marine environment as long as it does not prevent the freedom of navigation. However, according to Article 211(6)(a) the coastal State has the ability to implement rules and regulations more stringent than the competent international organization if they have a reason to believe a clearly defined area of their EEZ is an area where the adoption of special mandatory measures for the prevention of pollution from vessels is required for recognized technical reasons. Those regulations must be communicated to the competent international organization with scientific technical evidence. The coastal State may only adopt special measures of regulations if the competent international organization determines approval<sup>157</sup>, with the competent international organization being the IMO. The coastal State, like the flag State has a due diligence obligation under treaty law to protect and preserve the marine environment as stated in UNCLOS. The coastal State is obliged to consider establishing more stringent rules for vessels source pollution in their EEZ than those in IMO through MARPOL if the oceanographical and ecological conditions demand.

### **5.3.2 Enforcement jurisdiction**

Article 211(5) in UNCLOS gives the coastal State the right to “adopt laws and regulations for the prevention, reduction and control of pollution from vessels conforming to and giving effect to generally accepted international rules and standards established through the

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<sup>156</sup> Henrik Ringbom, *Preventing Pollution from Ships – Reflections on the 'Adequacy' of Existing Rules* (1999)

<sup>157</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)



competent international organization” in respect to the EEZ of the coastal State<sup>158</sup>. Therefore, the coastal State must adhere to MARPOL, for laws and regulations on vessels source pollution in their EEZ and are not free to pass legislation which goes beyond that of the competent international organization<sup>159</sup>, except for special areas with approval as stated in Article 211(6)(a).

Article 220(1) in UNCLOS extends the coastal State’s enforcement rights in accordance with UNCLOS or applicable international rules and standards for the prevention and control of pollution from vessels to both the EEZ and the territorial sea of the coastal State. The vessels committing violations on these standards must be voluntarily within a port or an offshore terminal of the coastal State. Article 220(2) gives coastal States the right to inspect a vessel navigating in their territorial sea if they strongly suspect the ship has violated international rules and standards to prevent pollution from ships during its passage therein. If there is evidence, the coastal State may institute proceedings, including detention of the vessels, in accordance with its laws. However, Article 220 (7) insists the coastal state must let the vessel proceed if they have complied “with requirements for bonding or other appropriate financial security has been assured” and if appropriate procedures have been established, either through the competent international organization or as otherwise agreed<sup>160</sup>.

Article 220(3) gives the coastal State the authority to, if there are clear grounds for believing a vessel navigating in their EEZ committed a violation of applicable international rules and standards, require the vessels to give information regarding its identity and port of registry, its last and its next port of call and other relevant information required to establish whether a violation has occurred.

The coastal State has several enforcement rights over vessels violating MARPOL’s regulations with most stringent enforcement mechanisms available in the territorial sea. If a ship is detained in the territorial sea the coastal State can establish appropriate procedures through a MARPOL. If a vessel is suspected of violating the international standards for vessel source pollution in a coastal States EEZ, the coastal State can demand the vessel to give

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<sup>158</sup> *ibid*

<sup>159</sup> Caroline Stenman, 'The Development of the MARPOL and EU Regulations to Phase out Single Hulled Oil Tankers' (2005)

<sup>160</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

information about its port entries. This information can be entered into IMO's regional MoU for port state control and help the coastal State in the region determine if a violation took place.

According to Article 194 in UNCLOS, States have a duty to take measure to minimize the fullest possible extent pollution from ships, in particular measures for preventing intentional and unintentional discharges<sup>161</sup>. Coastal States has the right to prohibit polluting discharges from foreign and domestic vessels in their coastal zones. If they exercise this right, they have a duty to ensure the provision of adequate reception facilities for vessel generated waste in their ports. This duty is explicit in MARPOL. However, it is implicit in UNCLOS that each right also entails a duty<sup>162</sup>.

This paper will argue port States have the best legal tools available through international environmental law to enforce stringent pollution standards on vessels at sea if the flag State fails to do so. Unlike the coastal State, the port State can only impose its jurisdiction over foreign vessels if they have voluntarily entered its port. However, the port State can enforce more stringent rules on vessel source pollution than those claimed through a competent international organization without violating the freedom of navigation.

## **5.4 Port state jurisdiction**

### **5.4.1 Legislative jurisdiction**

Article 211 (3) gives port States the right to “establish particular requirements for the prevention, reduction and control of pollution of the marine environment as a condition for the entry of foreign vessels”. The port State can establish independent environmental regulations and demand the vessel entering its port to meet them as a requirement for entry. The port State is also obligated under article 211(3) to “give due publicity” of the requirements they may set. The port State regulations reflect the sovereignty of the State to set its independent standards and regulations on pollution. However, the international

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<sup>161</sup> *ibid*

<sup>162</sup> IMO, *Guidelines For Ensuring the Adequacy of Port Waste Reception Facilities, MEPC* (2000)

requirements on port State jurisdiction starts with a minimum requirement to follow the regulations set out by competent international organizations<sup>163</sup>.

#### **5.4.2 Enforcement jurisdiction**

UNCLOS, Article 218 (1) gives port States the right to investigate pollution offences and institute proceedings in respect to any discharge from that vessel outside the internal waters, territorial sea or EEZ of the State in violation according to applicable international rules and standards established through the competent international organization. The port State has the authority to enforce jurisdiction according to those set out in MARPOL on a ship which is voluntarily at port or at an offshore terminal of the port State who has violated the international rules on vessel source pollution.

According to Article 218(3) in UNCLOS, the port State has the right to inspect and enforce jurisdiction on the vessel “irrespective of where violation occurs”<sup>164</sup>. According to MARPOL Annex V, regulation 8, port State control officers can inspect a foreign-flagged vessel entering its ports if there “are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of pollution by garbage”<sup>165</sup>. Port States have several enforcement mechanisms available according to MARPOL, Annex V, regulation 8 and UNCLOS Article 218. The enforcement mechanisms could be inspections, detention of the vessel and other proceeding but can only take place if the port State has reasons to believe, or evidence, the ship has violated international rules for discharge at sea from vessels.

#### **5.4.3 MoU on Port State Control (PSC)**

The IMO has developed several mechanisms to monitor and regulate pollution from ships. One is Port State Control (PSC), this mechanism is considered soft law, as it is not legally binding but rather a tool available to port States for the implementation of IMO regulations. PSC is the inspection of foreign ships in national ports to verify the condition of the ships and that the ships are operated in compliance with the international regulations and requirements.

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<sup>163</sup> Caroline Stenman, 'The Development of the MARPOL and EU Regulations to Phase out Single Hulled Oil Tankers' (2005)

<sup>164</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

<sup>165</sup> IMO, 'Prevention of Pollution by Garabge from Ships' (2019)

<<https://www.imo.org/en/OurWork/Environment/Pages/Garbage-Default.aspx>> accessed

PSC is intended to serve as a “second line of defense” and amongst others monitor the responsibilities flag States have over vessels flying their flag to follow regulations on vessels source pollution. Port State control measures were a reaction to the failure of flag States not being able to regulate safety and pollution practices in vessels flying their flag, and PSC inspections were intended to be a backup to flag State implementations<sup>166</sup>. The potential lack of administration and ineffectively imposed national and international regulations on vessels by flag States poses a larger burden on port States to enforce these regulations<sup>167</sup>. According to the mandatory report from MARPOL, 2017; port States enforce fines on vessels not complying with the MARPOL pollution standards around three times more frequently than flag States<sup>168</sup>. PSC is also intended to minimize the concept of no-more favorable treatments which is the differentiation on enforcement measures on ships visiting the same port<sup>169</sup>. The following part of the paper will look at the port State control measures available to port States globally and argue one of the best legal tools for port States to mitigate vessels source pollution is to establish a global MoU on PSC with unified measures for regulations and enforcement on violations on vessels source pollution.

The IMO adopted resolution A.683(17) on regional agreement on cooperation on the control of ships and discharges. This resolution promoted the conclusion of regional agreements on coordinated inspections in order to avoid multiple inspections and enforce resources efficiently<sup>170</sup>. The benefit of regional agreements on port State control is ships going to a port in one country will normally visit other countries in the region, and it would be more efficient if the ports in the same region cooperates on PSC and inspections on vessel source pollution.

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<sup>166</sup> IMO, 'Implementation of Instruments Support' (2021)

<<https://www.imo.org/en/OurWork/IIIS/Pages/default.aspx>> accessed

<sup>167</sup> Andrew Rakestraw, 'Open Oceans and Marine Debris: Solutions for the Ineffective Enforcement of MARPOL Annex V' (2012)

<sup>168</sup> MEPC, *Summary Report and Analysis of Mandatory Reports Under MARPOL for the Period 2013 to 2018* (2020)

<sup>169</sup> IMO, 'Implementation of Instruments Support'

<<https://www.imo.org/en/OurWork/MSAS/Pages/ImplementationOfIMOInstruments.aspx>> accessed

<sup>170</sup> IMO, 'Port State Control' (2021)

<<https://www.imo.org/en/OurWork/MSAS/Pages/PortStateControl.aspx>> accessed

The North Sea States established the Paris Memorandum of understanding of PSC (MoU) in 1982, which superseded the Hague Memorandum of 1978<sup>171</sup>. After the “Amoco Cadiz” accident, where this tanker caused a massive oil spill, the Paris MoU decided to include safety at sea and prevention of pollution by ships in addition to living and working conditions on board ships in their agreement<sup>172</sup>. Paris MoU marks the beginning of the era of regional MoU’s on port state control. Later, in 1991, the IMO resolution A.682(17) on “regional cooperation in the control of ships and discharges” proposed to establish port State control regimes in different regions of the world, following the North Sea States’ Paris MoU<sup>173</sup>. This resolution invites governments to consider concluding regional agreement on the application of PSC measures in cooperation with IMO<sup>174</sup>. The IMO has established several regional PSC regimes unified under the same MoU and works towards a complete global maritime network<sup>175</sup>. Provisions to extend port State control to cover operational requirements considering prevention of marine pollution were adopted in 1994 and entered into force in 1996. Regional and unified PSC measures can improve cooperation between ports in the same region, enforce standards of inspection of ships and the repercussions if there is clear evidence of violation of pollution. In 2017, there were ten regional MoU’s globally, yet there are many maritime states which do not have the necessary experience or tools in adequately exercise PSC inspection of foreign vessels which are not members of an MoU.

The downside with regional variations of PSC is pollution through plastic discharge can simply just shift from one area to another. If a port State starts implementing strict PSC regulations, there could be other ports State with lower standards in the region which the ship would prefer to enter. This is referred to as “ports of convenience”<sup>176</sup>. There can be several incentives for a port State to not enforce internationally agreed standards on regulations for ships entering its port. Foreign ships visiting a port State can pay an essential part in the local

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<sup>171</sup> Secretariat Paris MoU on PSC, 'The Paris MOU on Port State Control' (2021)

<<https://parismou.org/>> accessed

<sup>172</sup> Paris MoU, 'History' (2021) <<https://www.parismou.org/about-us/history>> accessed

<sup>173</sup> IMO, 'Implementation, Control and Coordination' (2021)

<<https://www.imo.org/en/OurWork/MSAS/Pages/ImplementationOfIMOInstruments.aspx>> accessed

<sup>174</sup> Dilip Mehrotra, 'Memorandums of understanding on port state control: the need for a global MOU?' (2000)

<sup>175</sup> *ibid*

<sup>176</sup> Henrik Ringbom, *Preventing Pollution from Ships – Reflections on the 'Adequacy' of Existing Rules* (1999)

economy of the port when paying port fees and other fiscal fees posed upon entrance. In addition, the port State can be heavily dependent on import of crucial goods the ship may carry<sup>177</sup>. Due to a wide range of potential repercussions, unilateral approaches by port States are not likely to be pursued unless a policy assessment of its overall cost effectiveness indicates the expected benefits to the port State outweigh the expected risks and losses<sup>178</sup>. Thus, clear variations of PSC will continue to exist within regional port state control agreements<sup>179</sup>.

The Paris MoU leads a strict and informative PSC program on repercussions. Ships in violation of the MoU regulations for discharge of plastic from vessels can be banned from the entire regional MoU or put in detention until the flag State is notified. The flag State is ultimately responsible for the repercussions the captain and shipowner can receive after violation on vessel source pollution. The port State Control system informs readers about ships' previous inspections, detentions and bans on their webpage. In addition, the webpage publishes an annual report detailing violation records and classify flag states as low risk, medium risk or high risk depending on the frequency of violations and detentions occurring from that flag State<sup>180</sup>. With this instrument, port States under the Paris MoU have a better chance to enforce inspections and reprimand vessels voluntarily at their ports in violation of MARPOL, Annex V. The records of previous violations, and the classification of the flag State with the vessels registered there, makes it easier for the port State to be aware in advance of potential violations by the ship on vessels source pollution.

The Paris MoU's PSC information system creates an opportunity for the regional ports to communicate and share information of the different repercussions they have posed on the ship. Moreover, this system gives the regional port States a chance to unify their port State measures of repercussions and sanctions and/or coordinate inspections of the vessel in violation of international or regional pollution standards.

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<sup>177</sup> Erik Jaap Molenaar, 'Port State Jurisdiction: Toward Comprehensive, Mandatory and Global Coverage' (2007)

<sup>178</sup> *ibid*

<sup>179</sup> Henrik Ringbom, *Preventing Pollution from Ships – Reflections on the 'Adequacy' of Existing Rules* (1999)

<sup>180</sup> Secretariat Paris MoU on PSC, 'The Paris MOU on Port State Control' (2021)

<<https://parismou.org/>> accessed

Regional MoU is therefore an efficient tool in mitigating plastic discharge from vessels. The North Sea port States have through this mechanism coordinated and implemented more stringent regulations on vessels source pollution than those stated internationally in MARPOL. The consequence of being banned, from an entire region of port States, will have great fiscal consequences for the ship operation and will therefore incentivize the operator to comply with the regional regulation on vessels source pollution under the MoU.

This paper argues, the most effective way port States are able to prevent discharge of plastic debris from vessels is to cooperate in a regional MoU. Moreover, the creation of a global MoU would allow for unified port State measures amongst all the ports in the world and can improve the enforcement standards on violations of MARPOL Annex V from the current global standards. According to Article 197 in UNCLOS, States shall cooperate on a global basis to establish standards for the protection of the marine environment<sup>181</sup>. Port States are encouraged by international environmental law to cooperate globally on regulations to prevent discharge of plastic from chips.

Ship operators are incentivized to comply with the regulations and standards to prevent vessel source pollution when the regional ports in the same MoU on PSC enforce regulations mechanisms with fiscal penalties. To prevent ships that violate global international rules at sea from diverting to ports and regions where PSC standards are minimized or not enforced, the procedures of PSC must be uniformly applied in all ports of the world. A global MoU on PSC with unified regulations on vessel source pollution will lead to less opportunity for vessels to enter ports of convenience. It will also create a level playing field with standardized levels for pollution regulations on ships entering port. A global MoU on PSC would require a global network of information exchange.

#### **5.4.4 Port State measure to prevent ALDFG**

Port State measures can help reduce abandoned, lost or otherwise discarded fishing gear (ALDFG) caused by vessels registered under a port States' flag. Illegal, unregulated, and unreported (IUU) fishing is a significant contributor to ALDFG problems because illegal fishers are unlikely to comply with regulations and measures to reduce vessels source

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<sup>181</sup> United Nations, *United Nations Convention on the Law of the Sea* (1982)

pollution<sup>182</sup>. Minimized port State control is considered a weak link in the chain that facilitates IUU fishing<sup>183</sup>.

One action port States can take to mitigate discarded and abandoned fishing gear from vessels is to establish incentive programs through rewards schemes for disposal of old and unwanted gear in appropriate facilities. Seafarers are encouraged by the 2017 Guidelines for the implementation of MARPOL Annex V in Article 2.4.9. to recover persistent garbage from the sea during routine operations and retain the material for discharge at port<sup>184</sup>. After a tragic accident where a passenger ferry sank when it became entangled in discarded fishing gear the government of the Republic of Korea established such a program. It is called the “Waste Fishing Gear Buy-back” project and has been implemented successfully in Korea since 2003. The aim is to collect fisheries-related marine litter deposited in the sea and on the seabed by encouraging fishers to bring ashore collected litter, as a part of fishing activities. Fishing boats receive large, hardwearing bags to easily collect litter and deposit it at port. If the fishers bring back waste fishing gear collected during fishing operation to the designated place, it will be purchased at the cost of around \$10 per 100litre bag<sup>185186</sup>. However, this is a program dependent on significant public funding, but is an action port States are free to take under international law.

## 5.5 Port reception facilities

The lack of adequate port reception facilities is regarded as the main bottleneck for effective implementation of the Annex V regulations by port States. Inadequate port reception facilities may result in solid waste, such as plastic debris, being disposed at sea and then being

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<sup>182</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>183</sup> Food and Agriculture Organization, *Report of the Technical Consultation to Review Port State Measures to Combat Illegal, Unreported and Unregulated Fishing* (2004)

<sup>184</sup> MEPC, *2017 Guidelines For The Implementation Of MARPOL, Annex V* (2017)

<sup>185</sup> Cho Dr. Dong-Oh, *Case Study of derelict fishing gear in Republic of Korea*, (2004)

<sup>186</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)



transported to other locations by the wind and currents<sup>187</sup>. Adequate port reception facilities can help mitigate ALDFG as it will minimize the likelihood of a fisher wanting to discard unwanted gear at sea<sup>188</sup>. Port States are not specifically obligated under UNCLOS to establish adequate port reception facilities and receive waste from foreign ships in their port. However, it is implicit in UNCLOS that each right also entails a duty. The port State has the right to enforce more stringent environmental regulations on vessels voluntarily in their port than the international regulations. This right comes with the duty to protect and preserve the marine environment from activities taking place in the State's jurisdiction. Port States have an explicit duty in MARPOL to establish adequate port reception facilities in accordance with the regulations of Annex V. Furthermore, ports States have a due diligence obligation to protect and preserve the marine environment, and to fulfil this obligation, port States must establish port reception facilities for plastic waste as a preventative measure. Article 211(1) in UNCLOS obliges states to act through a competent international organization and establish international rules and standards to prevent pollution of the marine environment. Consequently, the port State is obliged by the regulations set out in MARPOL to establish waste reception facilities at port, considering it is an IMO convention.

Regulation 7 in Annex V of MARPOL poses a mandate for “the governments of each party to the convention ... to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to the ships...”<sup>189</sup>. MARPOL gives the port State this responsibility, and the port State is free to follow the soft law mechanisms developed by MARPOL for guidance on establishing adequate port reception facilities.

### **5.5.1 Guidelines for implementation on port reception facilities**

The Marine Environment Protection Committee (MEPC) is a permanent committee in charge of executing and coordinating all activities of the IMO relating to the prevention and control of pollution of the marine environment from ships. It is the main expert body of IMO and is, composed of experts nominated by Governments, industry, environmental organizations, and other organizations interested in the protection of the marine environment. MEPC emphasized

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<sup>187</sup> Plan and Response, *Guidelines for providing and improving port reception facilities and services for ship-generated marine litter in the Northwest Pacific region*

<sup>188</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>189</sup> MARPOL, *International Convention for the Prevention of Pollution from Ships* (1973)

in 2006, under its 54th session, the importance of adequate reception facilities in the chain of implementation of MARPOL. The committee stated the policy of “zero tolerance of illegal discharged from ships” could only be effectively enforced when there were adequate reception facilities in ports<sup>190</sup>. MEPC 55 approved an action plan in 2006 to tackle the alleged inadequacy of port reception facilities to try to achieve full compliance with MARPOL. This plan was developed by the Sub-Committee on Flag State implementation (FSI) and the goal was to contribute to an efficient implementation of MARPOL<sup>191</sup>. The plan contained a revision of the IMO Comprehensive Manual on Port Reception Facilities and development of a guide to good practice on port reception facility providers and users<sup>192</sup>.

MEPC’s Guidelines for the Implementation of MARPOL Annex V demands the reception facility should be based on the number and what type of ships that will call at the port. The MARPOL guidelines states: “Adequate facilities can be defined as those which...fully meet the needs of the ships regularly using them; do not provide mariners with a disincentive to use them; and contribute to the improvement of the marine environment”<sup>193</sup>. The reception facilities must fully meet the needs of the ships using them and allow for the ultimate disposal of ships’ wastes to take place in an environmentally appropriate way<sup>194</sup>. In addition to being adequate to receive the calculated quantity of garbage, Annex V poses an obligation on the port State to ensure the provision of adequate garbage reception facilities at ports and terminals without causing undue delay to ships.

Moreover, according to the Comprehensive Manual on Port Reception Facilities published by IMO in 1990, the scope of port reception facilities for ship-generated marine litter is generally defined as; “Provision of receptacles for garbage. Segregation of various types of garbage may be useful or in some cases necessary. A regular collection service and recycling and/or final disposal of garbage<sup>195</sup>”. The Comprehensive Manual on Port Reception Facilities includes several requirements the port State must meet, including how the waste from ships is

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<sup>190</sup> IMO, 'Reception facilities' (2021) <<https://www.imo.org/en/OurWork/Environment/Pages/Port-Reception-facilities.aspx>> accessed

<sup>191</sup> *ibid*

<sup>192</sup> *ibid*

<sup>193</sup> MEPC, *2017 Guidelines For The Implementation Of MARPOL, Annex V* (2017)

<sup>194</sup> MEPC, *Guidelines For Ensuring the Adequacy of Port Waste Reception Facilities* (2000)

<sup>195</sup> Plan and Response, *Guidelines for providing and improving port reception facilities and services for ship-generated marine litter in the Northwest Pacific region*

collected at port and the location of the waste bins. The requirements set out in the IMO Comprehensive Manual for Port Reception Facilities includes amongst others, standards on sufficient lighting, safety for seafarers and staff at port, the size of the waste receptacle, and these facilities must comply with national or local legislation on garbage collection and processing<sup>196</sup>. This is where the differentiation between the handling of wastes at ports comes in. Ultimately it is the government of the port State who is responsible for the port reception facilities, but a port State is free to subcontract the responsibility of running the port to a private company<sup>197</sup>. The 2017 guidelines emphasizes that it is the port State's responsibility to select an appropriate type of reception facility according to the projected need<sup>198</sup>.

To provide information on the relevant port reception facilities to port users, IMO has developed and maintained the Global Integrated Shipping Information System (GISIS). The purpose of GISIS is to make it easier for users of the port to find all the relevant information they need to manage the disposal at the waste facilities. It is clear the IMO has taken several necessary steps towards a complete implementation of the MARPOL regulations of Annex V and developed several important mechanisms helping port States implement them.

Port reception facilities can be ineffective if the off-loaded garbage ends up in the ocean through improper land-based waste management practices<sup>199</sup>. The Comprehensive Manual on Port Reception Facilities recognizes "states' responsibilities does not end at establishing "adequate" port reception facilities but also requires proper treatment and disposal of these wastes, along with land-generated wastes"<sup>200</sup>. Port States have an extended responsibility to ensure adequate port reception facilities to protect and preserve the marine environment, in addition to enforce and legislate jurisdiction on vessels entering its port to comply with vessel source pollution regulations.

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<sup>196</sup> *ibid*

<sup>197</sup> *ibid*

<sup>198</sup> MEPC, *2017 Guidelines For The Implementation Of MARPOL, Annex V* (2017)

<sup>199</sup> Andrew Rakestraw, 'Open Oceans and Marine Debris: Solutions for the Ineffective Enforcement of MARPOL Annex V' (2012)

<sup>200</sup> IMO, *Comprehensive Manual on Port Reception Facilities* (1999)

### 5.5.2 Improvements by developed countries

The first and most important step States need to take to achieve improvements on discharge of plastic garbage from ships is to establish adequate port reception facilities in accordance with international regulations like those set out on MARPOL Annex V. For example, there has been international recognition that scale, and capacity issues have prevented the provision of adequate reception facilities at small ports and harbors, many of which are fishing harbors in developing countries. For Pacific Island States, a lack of port reception facilities for fishing operations resulted in the South Pacific Regional Environment Programme identifying solid waste management as the number one issue facing Pacific Island States<sup>201</sup>. This thesis acknowledges the 2012 MEPC guidelines for the development of a regional reception facilities plan specifically designed to meet the unique challenges of small island developing states<sup>202</sup>, but chooses not to address this problem further.

Furthermore, many port waste reception facilities for broken fishing gear utilized by fishermen operate with a fee-for-service practice where the user pays to discard their broken fishing gear. This regulation is a barrier to the use of waste disposal facilities. Fishermen who do not wish to pay for these fees may consider illegally dumping the broken fishing gear instead<sup>203</sup>. Denmark has set a good example by lifting all fees on disposal of plastic and other litter brought in by fishermen who have collected the waste in their nets. The waste will be disposed or recycled by the port<sup>204</sup>.

Port facility users, both fishermen and shipping captains, can be directly charged with service fees for using the waste facilities according to the “polluter pay” principle. This is discouraging for users bringing their waste ashore. In order to overcome this matter, the countries in the Baltic Sea area have adopted the indirect “no special fee” system which includes the relevant cost to discharge ship-generated marine litter into a harbor fee,

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<sup>201</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>202</sup> MEPC, *Guidelines for the Development of a Regional Reception Facilities Plan* (2012)

<sup>203</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>204</sup> Clean Nordic Oceans, 'Measures in Norway, Denmark and Sweden' (*Clean Nordic Oceans*, 2021) <<http://cnogear.org/measures-in-norway-denmark-and-sweden>> accessed

regardless of whether or not the vessels use the reception facilities<sup>205</sup>. There appears little economic incentive for fisheries and shipping operators to deliberately discard plastic debris at sea to avoid onshore costs of doing so with this system<sup>206</sup>. The Baltic Sea States recognizes the benefit of including the other ports in the North Sea Region in the same system so as to avoid competition between ports<sup>207</sup>. The European Parliament and Council adopted a new directive in 2019, establishing an indirect fee for all ships, including fishing- and recreational vessels, visiting ports in the EU<sup>208</sup>. Both the Baltic Sea States and the EU port States have established an indirect fee system in order to mitigate plastic discharge from vessels. There is an incentive to bring collected broken and abandoned fishing gear to port if it does not require additional fees.

### 5.5.3 Chapter conclusion

This chapter has concluded port States are the form of State which is best equipped under international law to mitigate plastic debris discarded from vessels. The port State has several responsibilities in enforcing and legislating jurisdiction which protects and preserve the marine environment. In addition to enforcing inspection and sanctions on environmental regulation on vessels entering its port, the port State has a responsibility to establish adequate port facilities capable of receiving the waste from ships at port. Establishing waste collection systems and building capacities for recycling plastic waste will make an improvement in reducing MPP in States that do not already have these facilities<sup>209</sup>. In fact, improved infrastructure and waste facilities is a way to mitigate marine plastic pollution from both marine- and land-based sources.

The Port State has, according to the international regulations of MARPOL Annex V, a duty to receive waste generated at ships in operation. Moreover, the IMO has established several clear guidelines, through MEPC, on how port States can establish adequate port reception

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<sup>205</sup> Plan and Response, *Guidelines for providing and improving port reception facilities and services for ship-generated marine litter in the Northwest Pacific region*

<sup>206</sup> Graeme Macfadyen, Tim Huntington and Rod Cappell, 'Abandoned, lost or otherwise discarded fishing gear' (2009)

<sup>207</sup> Helsinki Commission, *Application of the "no-special-fee" system in the Baltic Sea Area* (1998)

<sup>208</sup> EU, *Directive (EU) 2019/883 on port reception facilities for the delivery of waste from ships* (2019)

<sup>209</sup> Nils Simon and Maro L. Schulte, 'Stopping Global Plastic Pollution: The Case for an International Convention' (2017)

facilities for plastic. However, the facilities and recycling operations must be in line with the national laws of the port State and preferably in coordination with other regional port States under the same MoU on port State control. Adequate port State facilities for waste generated at sea is an important tool port States must enforce, according to customary international law, to mitigate vessels source pollution of operational discharge and broken fishing gear. Lastly, port States are not obliged to, but are free to establish independent incentive programs for the collection of discarded fishing gear at sea. Incentive programs would likely help the port State fulfil its duty to protect and preserve the marine environment under the obligations stated in UNCLOS.

## **6. Conclusion**

The research question of this thesis is: What is the current international legal framework for vessel source pollution? Is the enforcement jurisdiction available to flag State, coastal State, and port State adequate in mitigating plastic pollution from vessels? This paper has highlighted the growing global problem of plastic pollution in the ocean and reviewed UNCLOS and MARPOL as the relevant legal conventions for mitigating plastic pollution from vessels. Each nation State which ratifies an international convention is responsible for the convention's implementation. Governments are obligated to incorporate the provisions into their national legislation. Despite only 150 nations having ratified Annex V of MARPOL, this paper has argued the regulations set out in the Annex can be considered customary international law through UNCLOS and are therefore binding upon all States.

IMO has established a satisfactory convention for the mitigation of plastic discharge at sea with several soft law mechanisms to help States implement the regulations. However, this paper has made it clear that practical enforcement of international conventions, like MARPOL, comes with some challenges. State implementation of Annex V can be inconsistent with the regulations set out in the annex, or the implementation of the Annex V regulations can not be a priority to the State. This paper concludes lack of enforcement of the international rules and regulations for vessel source pollution by flag- coastal and port State is the main reason vessel source pollution is still occurring.

This thesis has looked at how legally binding international law can prevent or reduce plastic pollution into the ocean. Specifically, this paper has analyzed how port State and flag State can enforce jurisdiction and set standards and sanctions shipowners are legally obliged to follow.

Port State control is not a substitute for the proper exercise of flag State responsibility, because the flag State has the primary responsibility of safeguarding the vessel against violations of discharge of plastic debris. But when flag States fail to meet their commitments, port States must act as the last safety net in the control system, which was the intention of the IMO when they established regulations on port State control. Port States can legislate stringent pollution regulations on foreign vessels entering their ports in violation of plastic pollution from vessels outside the EEZ, and demand vessels to meet their standards as a requirement for entry. There are several enforcement mechanisms available to port States which is why this paper has argued they are best equipped to incentivize against vessel source pollution in comparison to flag State and coastal State.

In addition, the port State is obligated, under international law, to establish adequate port reception facilities for vessels entering their ports, this duty is explicit in MARPOL. It is implicit in UNCLOS that each right entails a duty. The current trend of establishing “no special fee” system is incentivizing vessels to bring their garbage, as well as abandoned fishing gear, into port.

A regional MoU on PSC obliges States to unify their pollution standards and cooperate on inspections and enforcement. Regional PSC is efficient and allows for unified regulations on plastic pollution from vessels in the region. This thesis has argued a great deal of plastic pollution from vessels can be eliminated if the IMO develops a unified MoU on PSC that includes all the ports in the world and gives no room for “ports of convenience”.

Lastly, vessel source plastic pollution is a growing problem which must be tackled from several angles simultaneously. Port States are only intended to serve as a second lifeline to lacking flag State enforcement on pollution standards, not replace the responsibility. Enforcement of pollution control regulations is not an easy task, and its success depends on the concerted efforts of all Parties involved, which means flag States, coastal States, and port States worldwide. All three forms of State have an international legal obligation to protect and

preserve the marine environment by legislating and enforcing regulations to prevent plastic pollution from vessels.



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