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THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL)

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2.1 Pollution from Ships: Introduction and Historical Development

Ninety per cent of global trade is conducted by shipping, which is considered to be the most environmentally friendly form of transport, taking into account its productive value. Shipping contributes to a limited extent to marine pollution from human activities, in particular when compared to pollution from land-based sources (or even dumping).[1] Protection of the environment was not the International Maritime Organization's (hereinafter the IMO) original mandate. Its main interest was maritime safety. However, in 1954 the IMO became the depository of the first 1954 Convention for the Prevention of Pollution from Oil (hereinafter the OILPOL, see further below). Since then the protection of the marine environment has become one of the most important activities of the IMO. Among fifty-one treaty instruments the IMO has adopted so far, twenty-one are directly environment-related (twenty-three if we include the Salvage and Wreck Removal Conventions). The Marine Environment Protection Committee is the IMO's technical body in charge of marine pollution related matters (it is aided in its work by a number of Sub-Committees).[2]

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[1] <http://www.imo.org/OurWork/Environment/Pages/Default.aspx> (accessed 24 December 2013).

[2] See n. 1.

The precursor of the International Convention on the Prevention of Pollution from Ships[3] (hereinafter the MARPOL) was the OILPOL.[4] This Convention only relates to pollution caused by tankers during their routine operations such as the washing of cargo tanks and dumping of resultant oily water in the ocean. The OILPOL regulated the amount of oily water which could be discharged in the oceans, the places it could be dumped, and encouraged the Parties to install reception facilities where oily water could be discharged.[5] This Convention also introduced special areas (very sensitive) where dumping of oily residues were prohibited. It was amended several times, firstly in 1962 when the limits of special areas were extended. The next fundamental amendment of the OILPOL was effected in 1969 after the *Torrey Canyon* incident (see further below). A procedure developed by the oil industry and known as 'load-on-top' (LOT) was introduced to save oil and reduce pollution. Under this mechanism washings resulting from tank cleaning are pumped into a special tank. During the voyage back to the loading terminal the oil and water separate. The water at the bottom of the tank is pumped overboard, and at the terminal oil is pumped onto the oil left in the tank. Another amendment was the downsizing of tanks after 1972 so that, in case of damage to the vessel, only a limited amount of oil could enter the sea.[6] The LOT system failed expectations of producing environmental benefits, mostly due to difficulties in its operation and the lack of skilled crews as well as due to unscrupulous crews which circumvented LOT and simply discharged contaminated dirty ballast water.[7]

At the same time, several factors (eg the exponential growth in the maritime transport of oil, the size of tankers, the increasing amount of chemicals being carried at sea, and increasing concern for environmental issues in general), resulted in an opinion expressed by many States that the OILPOL was no longer adequate, despite the various amendments which had been adopted.[8]

One of the factors which contributed to the adoption of the MARPOL was the above-mentioned *Torrey Canyon* incident. In 1967, the *Torrey Canyon* ran aground while entering the English Channel and spilled her entire cargo of 120,000 tons of

[3] (London, 2 November 1973, entered into force 12 October 1983) 1340 UNTS 184 (MARPOL). See generally: MN Tsimplis, 'Marine Pollution from Shipping Activities' (2008) 14 *The Journal Of International Maritime Law* 101–152.

[4] The Oil Pollution Convention of 1954 was the first international treaty that attempted to protect the sea from pollution from oil tankers.

[5] JV Crayford, 'Forthcoming Changes to the International Convention for the Prevention of Pollution from Ships' in MH Nordquist and JN Moore (eds), *Current Maritime Issues and The International Maritime Organization* (Kluwer Law International/Martinus Njihoff Publishers, 1999) 133.

[6] <http://www.imo.org/fr/OurWork/Environment/PollutionPrevention/OilPollution/Pages/Background.aspx>; <http://www.imo.org/OurWork/Environment/PollutionPrevention/OilPollution/Pages/Background.aspx> (accessed 24 December 2013) See also A Griffin, 'MARPOL 57/78 and Vessel Pollution: A Glass Half Full or Half Empty?' (1994) 1 *Indiana Journal of Global Legal Studies* 489–513.

[7] Griffin (n. 6) 495.

[8] Crayford (n. 5) 133.

crude oil into the sea. It was the most serious oil pollution incident ever recorded up to that time. This incident raised questions about measures existing at that time to prevent oil pollution from ships and revealed drawbacks of the system for compensation resulting from accidents at sea.[9] In order to accommodate these various changes and occurrences, in 1969 the IMO Assembly decided to convene an international conference to adopt a completely new convention,[10] incorporating the regulations contained in the amended OILPOL Convention. In order to extend the mandate of the Sub-Committee on Oil Pollution, it was renamed the Sub-Committee on Marine Pollution, and finally became the Marine Environment Protection Committee (hereinafter the MEPC) in order to deal with all matters relating to marine pollution.

2.2 The International Convention for the Prevention of Pollution from Ships (MARPOL): Historical Development (with Special Attention to Annex I)

The conference which adopted the 1973 MARPOL was convened in October–November 1973, but preparatory meetings began in 1970. It incorporated much of OILPOL and its amendments into Annex I, covering oil, while other annexes covered chemicals (Annex II), harmful substances carried in packaged form (Annex III), sewage (Annex IV), and garbage (Annex V). A Protocol was later adopted in 1997 to amend the MARPOL and a new Annex VI on Air Pollution was added which entered into force on 19 May 2005.

Although Annex I only copied OILPOL, it was broadened and improved. It included requirements for continuous monitoring of oily water discharges and the requirement for governments to provide shore reception and treatment facilities at oil terminals and ports. It also established a number of Special Areas in which more stringent discharge standards were applicable (such as the Mediterranean Sea, the Red Sea and Gulf, and the Baltic Sea). These standards on special areas would be implemented when the coastal States concerned had provided adequate reception facilities for dirty ballast and other oily residues.

Regulation 13 required segregated ballast tanks on new tankers over 70,000 deadweight tonnage (dwt), in order to ensure that ballast water would not be contaminated by oil carried as cargo or fuel.

However, there was slow progress at ratifying the Convention and this became a major concern. Due to a series of serious oil spill incidents off the coast of the United States in 1977, the United States of America asked the IMO Council to consider adopting further regulations on tanker safety. In 1978 the Council

[9] Crayford (n. 5) 133.
[10] Crayford (n. 5) 133.

convened a Conference on Tanker Safety and Pollution Prevention.[11] The Conference, in February 1978, adopted a protocol to the 1973 MARPOL Convention. It absorbed the 1973 Convention and expanded on the requirements for tankers to help make them less likely to pollute the marine environment.[12]

The Protocol expanded the requirements for tankers in the following manner:

(i) all new crude oil tankers of 20,000 dwt and above and all new product carriers of 30,000 dwt and above were required to have segregated ballast tanks;
(ii) segregated ballast tanks were required to be protectively located (ie placed in areas of the ship where they will minimize the possibility of the amount of oil outflow from cargo tanks after a collision or grounding);
(iii) new tankers over 20,000 dwt were required to be fitted with a crude oil washing system (crude oil washing, or COW, uses high-pressure jets of crude oil for the cleaning or washing of cargo tanks. This reduces the quantity of oil remaining on board after discharge);
(iv) existing tankers over 40,000 dwt had to be fitted with either segregated ballast tanks or COW systems (for an interim period, it also allowed for some tankers to use clean ballast tanks, whereby specific cargo tanks are dedicated to carry ballast water only).

Annex I allowed certain exceptions to the general prohibition of oil discharge in the ocean, ie it permitted the discharge of a 1/15,000 and 1/13,000 quantity of the cargo of Existing Ships and New Ships respectively, provided that the tanker is: 1) not in a Special Area; 2) fifty nautical miles from the nearest land; and 3) the instantaneous discharge of oil does not exceed thirty litres per nautical mile.[13]

At the same time, additional measures for tanker safety were incorporated into the 1978 Protocol to the 1974 International Convention for the Safety of Life at Sea (hereinafter the SOLAS). These included:

(i) the requirement for inert gas systems (whereby exhaust gases, which are low in oxygen and thus incombustible, are used to replace flammable gases in tanks) on all new tankers over 20,000 dwt and specified existing tankers; and
(ii) the requirements for: steering gear of tankers; stricter requirements for carrying of radar and collision avoidance aids; and stricter regimes for surveys and certification.[14]

[11] See on MARPOL in general: Md S Karim, *Prevention of Pollution of the Marine Environment from Vessels. The Potential and Limits of the Maritime International Organization* (Springer International Publishing, 2015), in particular ch. 3.

[12] Crayford (n. 5) 135.

[13] <http://www.imo.org/en/KnowledgeCentre/ReferencesAndArchives/FocusOnIMO(Archives)/Documents/Focus%20on%20IMO%20-%20MARPOL%20-%2025%20years%20(October%201998).pdf> (accessed 9th November 2015) <http://www.imo.org/OurWork/Environment/PollutionPrevention/OilPollution/Pages/Background.aspx> (accessed 24 December 2013).

[14] Crayford (n. 5) 136.

To speed up the implementation of the MARPOL, the Conference allowed that the Parties will not be bound by the provisions of Annex II of the Convention for a period of three years from the date of entry into force of the Protocol. Therefore, States could accept Annex I and have three years to implement Annex II.

Initially, for the purpose of Annex II chemicals were divided in four categories: category A chemicals which both Existing Ships and New Ships were prohibited to discharge; category B chemicals with maximum discharge of 300 litres for Existing Ships and 100 litres for New Ships; category C chemicals with maximum discharge of 900 litres for existing Ships and 300 litres for New Ships; and Category D, with no restrictions on discharges. There was also a category of chemicals in Annex III that was considered not harmful if discharged into oceans from a cleaning tank or deballasting operations.[15]

Further amendments to the MARPOL, particularly to Annex I, were in response to major oil spills which indicated the necessity for stricter regulations. These are the 1989 *Exxon Valdez* incident, the 1999 *Erika* incident, and the 2002 *Prestige* incident.

The *Exxon Valdez* loaded with 1,264,155 barrels of crude oil, ran aground in the north-eastern portion of Prince William Sound, Alaska, spilling about one-fifth of its cargo which was the largest crude spill in the United States of America (US) to date. As a result, the US promulgated its Oil Pollution Act (OPA) of 1990 making it mandatory for all tankers calling at US ports to have double hulls. The US initiated the discussion on double-hull tankers in the IMO, a proposal which was met with some resistance on the part of the oil industry due mainly to the cost of retrofitting existing tankers. However, as explained below (Section 2.2), due to the subsequent *Erika* and *Prestige* incidents involving the sinking and massive marine pollution of single-hull tankers, the IMO ultimately considered the proposal of the US and later the European Union (EU) making the double-hull for tankers mandatory and the subsequent phasing out of single-hull tankers.

The MEPC agreed to make mandatory the double hulls or alternative designs (like the mid-deck tanker and Coulombi Egg tanker) which, however, ensured the same level of protection against pollution in the event of a collision or stranding. The amendments introducing double hulls (or an alternative) were contained in old Regulation 13F—(now Regulation 19) prevention of oil pollution in the event of collision or stranding. The amendments were adopted in March 1992 and entered into force in July 1993 (see further on double-hull tankers, Section 2.4).

The sinking of the *Erika*, which occurred off the coast of France, led to a new, accelerated phaseout schedule for single-hull tankers: that is, it resulted in the revision of the old regulation 13G of MARPOL.

[15] On the development of Annexes II and III see Crayford (n. 5) 138–46.

As a result of the *Erika* incident, the IMO also adopted the following measures in response:

(i) the 2000 amendments raising by fifty percent the limits of compensation payable to victims of pollution by oil from oil tankers under the International Convention on Civil Liability for Oil Pollution Damage (CLC Convention) and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (IOPC Fund) were adopted;
(ii) in 2000 the MSC adopted amendments to the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers (resolution A.744(18) in relation to the evaluation of the longitudinal strength of the hull girders of oil tankers);
(iii) other measures aimed at enhancing safety and minimizing the risk of oil pollution.

The *Prestige* incident off the coast of Spain led to further calls for amendments to the phaseout schedule for single-hull tankers. The MEPC at its 49th session in July 2003 decided to consider the adoption of proposals for an accelerated phaseout scheme for single-hull tankers, along with other measures including an extended application of the Condition Assessment Scheme (CAS) for tankers.[16]

2.3 The MARPOL: General Structure and Underlying Principles

2.3.1 General structure

As noted earlier, the MARPOL is the main international instrument which deals with pollution from ships, that is, with operational and accidental spillages from ships (Annexes I and II regulate only operational spillages). As such it is a global convention and its parties constitute ninety-eight percent of the world's merchant tonnage. As of 27 September 2012, there are 152 parties to it.[17]

MARPOL covers a multitude of instruments which consist of an umbrella convention (which sets out the main rights and obligations of States) and six Annexes (see above) which cover the areas under MARPOL's jurisdiction. All Annexes have been amended several times; therefore their content has undergone radical changes. However, not all States parties have accepted all amendments which had

[16] <https://www.imo.org/en/OurWork/Safety/Regulations/Pages/OilTankers.aspx>; <http://www.imo.org/OurWork/Environment/PollutionPrevention/OilPollution/Pages/Background.aspx> (accessed 9th November 2015). To date, MARPOL (Annexes I and II) has been ratified by 150 countries representing over 99 per cent of world merchant-shipping tonnage.

[17] AMSA website <https://www.amsa.gov.au/> (accessed 9 October 2012).

resulted in an extremely complex nexus of differentiated obligations of States under these Annexes.

MARPOL as a global instrument comprises 'generally accepted international rules and standards' as formulated in the 1982 United Nations Convention on the Law of the Sea (UNCLOS) (Article 211). They constitute a minimum standard prescribed by flag States for their merchant ships and have also become binding on third States through the working of customary international law.[18] It may be presumed that the criterion of the minimum standard is applicable to the umbrella treaty itself and the two first Annexes (acceptance of which was mandatory for States ratifying the MARPOL). The acceptance of other Annexes is not so extensive.[19]

Apart from Annexes, the MARPOL has also two Protocols: Protocol I, Provisions concerning Reports on Incidents Involving Harmful Substances (in accordance with Article 8 of the Convention); and Protocol II, on Arbitration. The amendments in the MARPOL itself, the Protocols, and the Annexes are governed by Article 16 of the 1973 original Convention, which is very complex and combines the system of tacit approval (opting out) with express approval (opting in). The opting out system is based on the principle that a State party to the Convention may 'opt out' from accepting a new amendment within a prescribed period of time, and as a result is not bound by it. The procedure makes the application of the Convention (including the Annexes) very patchy and as observed by some authors it complicates the issue of whether some particular regulation is 'generally accepted' for the flag State to apply in the sense of Article 211 of the UNCLOS. Under the MARPOL the parties undertake to give effect to the provisions of the Convention and those Annexes which bind them, in order to prevent pollution of the marine environment by the discharge of harmful substances or effluents containing such substances in contravention of the Convention (Article 1 (1)).

Article 4 of the MARPOL provides a double system of national prohibitions and sanctions. First, violations are to be prohibited and sanctions to be established under the law of the Administration of the ship concerned, wherever the violation occurs (Article 4 (1)); and, secondly, violations are to be prohibited and sanctions established under the law of the party within whose jurisdiction they occur (Article 4 (2)). By 'the Administration' we understand

> . . . Government of the State under whose authority the ship is operating. With respect to a ship entitled to fly a flag of any State, the Administration is the Government of that State. With respect to fixed or floating platforms engaged in exploration

[18] P Birnie, A Boyle, and C Redgwell, *International Law and the Environment* (Oxford University Press, 2009) 404.

[19] Annex III entered into force on 1 July 1992; Annex IV entered into force on 27 September 2003; Annex V entered into force on 31 December 1988; Annex VI entered into force on 19 May 2005.

> and exploitation of the sea-bed and subsoil thereof adjacent to the coast over which the coastal State exercises sovereign rights for the purposes of exploration and exploitation of their natural resources, the Administration is the Government of the coastal State concerned (Article 2 (5)).

According to MARPOL, the flag State has to ensure that its ships comply with all the required technical standards. In order to achieve this end, the State has to conduct inspections and issues an 'international oil pollution prevention certificate'. Article 5 of the Convention introduced the far-reaching jurisdiction of the port State. It provides that the inspection must be carried out to confirm that the ship is in possession of a valid certificate to assess the condition of the ship when there are 'clear grounds' for believing that its condition does not conform substantially to the certificate.[20]

In cases of stated non-compliance with the MARPOL certificate, Article 7 imposes a duty of the port State not to allow the ship to leave the port unless it can do so without presenting an unreasonable threat or harm to the marine environment. However, the port State has an obligation not to delay ships unduly. In the event of such violation, within a jurisdiction of the Party, according to Article 4 (2), a Party can either start proceedings in accordance with its own law; or furnish such information and evidence as it may have in possession that violation has occurred to the Administration of the ship concerned (Article 4 (2a–b)). Article 4 (1) further provides that, if the Administration of the ship involved in a violation is informed of it and is satisfied that sufficient evidence is available to enable proceedings to be brought, that Administration shall cause such proceedings as soon as possible, in accordance with its law. It may also be noted that 'any violation' in Article 4 (2) means that it applies to operational and discharge standards, as well as to design and equipment standards of the Convention. MARPOL provides that the parties to the Convention 'shall cooperate in the detection of violations and the enforcement of the provisions of the Convention, using all appropriate and practicable measures of detection and environmental monitoring, adequate procedures for reporting and accumulation of evidence' (Article 6 (1)). Further, it states:

> any Party shall furnish to the Administration evidence, if any, that the ship has discharged harmful substances or effluents containing such substances in violation of the provisions or the Regulations. If it is practicable to so, the competent authority of the former party shall notify the master of the ship of the alleged violation (Article 6 (3)).

Parties have the duty to furnish the Administration information on the discharge of harmful substances or effluents. Upon the receipt of such evidence, the Administration so informed is to investigate the matter and may request the other party

[20] R Becker, 'MARPOL 73/78: AN Overview in International Environmental Enforcement' (1998) 19 *The Georgetown Int'l Envtl. Law Review* 625.

to furnish further better evidence of the alleged contravention. If the Administration is satisfied that sufficient evidence is available to enable proceedings to be taken in accordance with its law it shall do so as soon as possible. The Administration shall promptly inform the party which has reported the alleged violation, as well as the IMO, of such actions (Article 6(4)).

Article 4 (4) stipulates that the Parties adopt laws giving effect to agreed regulations by prohibiting prescribed acts and omissions and by specifying penalties under their domestic laws which are 'adequate in severity to discourage violations'.

MARPOL is one of the international legal responses that have been adopted after the occurrence of severe accidental releases of oil and other substances from ships.[21]

The Convention imposes a general prohibition of all discharges of oil and noxious substances and provides that sanctions shall be established according to the law of the State under whose authority the ship is operating.[22] These penalties 'shall be adequate in severity in order to discourage violations and shall be equally severe irrespective of where the violations occurred'.[23] Although the nature of these sanctions is not unquestionably and clearly affirmed it has to be assumed that these also include criminal sanctions applied in the context of criminal proceedings. For instance, in the United States MARPOL is implemented through the Act to prevent Pollution from Ships,[24] which establishes that the knowing violation of the Convention, of the Act itself, or of other regulations relating to wastes from ships, including garbage, oil, and hazardous substance shall be sanctioned with imprisonment up to ten years and/or with fines.[25]

MARPOL has exclusions concerning the enforcement of its obligations. The Convention does not apply to any warship, naval auxiliary, or other ship owned or

[21] See, among others, D Cremean and EJ Techera, 'Marine Pollution Law' in S Alam et al (eds), *Routledge Handbook of International Environmental Law* (Routledge, 2013) 277–93. See general rules on the imposition of penalties, Art. 230 UNCLOS:

Article 230
Monetary penalties and the observance of recognized rights of the accused:

> 1. Monetary penalties only may be imposed with respect to violations of national laws and regulations or applicable international rules and standards for the prevention, reduction and control of pollution of the marine environment, committed by foreign vessels beyond the territorial sea. 2. Monetary penalties only may be imposed with respect to violations of national laws and regulations or applicable international rules and standards for the prevention, reduction and control of pollution of the marine environment, committed by foreign vessels in the territorial sea, except in the case of a wilful and serious act of pollution in the territorial sea. 3. In the conduct of proceedings in respect of such violations committed by a foreign vessel which may result in the imposition of penalties, recognized rights of the accused shall be observed.

[22] Art. 4.
[23] Art. 4.
[24] Act to Prevent Pollution from Ships, 33 USC 1901 et seq.
[25] See 18 USC 3571.

operated by a State and used on government non-commercial service. However, the Convention imposes an obligation on these ships to act in a manner consistent with the Convention, as long as it is practicable. As it is evident that national governments and their agencies are quite prodigious polluters, provision excluding such entities undermines the purpose of the MARPOL, and the insertion of 'the best efforts clause' constitutes a weak attempt to ensure State compliance. The 'best efforts clause' was the result of a compromise among the parties to the MARPOL.[26]

The States argued that such vessels should not be subject to other States' inspection, as it would compromise national security. However, it is suggested that States can comply with the requirements of the Convention avoiding compromising national security, by assuming more responsibility for monitoring compliance (eg flag States could conduct an annual MARPOL inspection of their ships, or introduce a random inspection to which their ships would be subjected at any time). The existing provision appears to send a wrong message and should be changed to make it clear that these ships are not immune from the MARPOL regulations.[27]

With respect to the ships of non-parties to the MARPOL, the parties are to apply such requirements as may be necessary to ensure that no more favourable treatment is given to such ships (Article 5). The measures under Article 5 are the source of some doctrinal controversy in so far as they purport to apply to ships flying the flag of non-parties. As an exercise of jurisdiction of the coastal State over foreign ships, these provisions cannot, according to one of the authors, restrict the rights enjoyed by non-parties under the general international law principle of *pacta tertiis nec nocent nec prosunt*.[28]

2.3.2. The MARPOL and the precautionary principle

MARPOL, although very far reaching in protecting the environment and innovative in enforcing environmental regulations, does not include an express provision on the precautionary principle. However, the MEPC adopted on 15 September 1995 a resolution on Guidelines on the Incorporation of the Precautionary Approach in the Context of Specific IMO Activities.[29] The Resolution is related to Agenda 21 as well as Principle 15 of the 1992 Rio Declaration on Environment and Development. The precautionary approach was implemented on the basis of this Resolution as an interim measure, 'until further experience with their [i.e.

[26] DW Abecassis, RM Jarvis, and R Jarashow (eds), *Oil Pollution from Ships: International, United Kingdom and United States Law and Practice* (Stevens, 1985) 38.

[27] Abecassis, Jarvis, and Jarashow (n. 26).

[28] J Willish, *State Responsibility for Technological Damage in International Law* (Decker & Humbold, 1987) 115.

[29] Annex 10, MEPC 37/22, Add.1.

Guidelines] application has been gained'. The Resolution also requested all relevant IMO bodies to review the Guidelines and submit comments to the MEPC with a view to their eventual submission to the Assembly for their adoption to all the relevant IMO activities. The Annex to this Resolution set the specific Guidelines on the implementation of the precautionary approach. The Guidelines rely on Principle 15 of the Rio Declaration as a fundamental definition of the precautionary approach and on Agenda 21 chapter 17 on the manner of its application.[30]

The Guidelines include the following list of elements to be taken into consideration in order to incorporate the precautionary approach into the decision-making processes of the IMO:

1. anticipation and prevention of environmental problems arising from any regulatory activities of the IMO and striving for continued improvement in all facets of those activities;

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[30] In particular paras 17.21 and 17.22 of Agenda 21:

> 17.21. A precautionary and anticipatory rather than a reactive approach is necessary to prevent the degradation of the marine environment. This requires, inter alia, the adoption of precautionary measures, environmental impact assessments, clean production techniques, recycling, waste audits and minimization, construction and /or improvement of sewage treatment facilities, quality management criteria for the proper handling of hazardous substances, and a comprehensive approach to damaging impacts from air, land and water. Any management framework must include the improvement of coastal humans' settlements and the integrated management and development of coastal areas.
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> . . .
>
> 17.22. States, in accordance with the provisions of the United Nations Convention on the Law of the Sea on the protection and preservation of the marine environment, commit themselves, in accordance with their policies, priorities and resources, to prevent, reduce and control degradation of the marine environment to maintain its life-support and productive capacities. To this end, it is necessary to:
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> a. Apply preventive, precautionary and anticipatory approaches as to avoid degradation of the marine environment, as well as to reduce the risk of long-term or irreversible adverse effect upon it;
>
> b. Ensure prior assessment of activities that may significant adverse effect upon the marine environment;
>
> c. Integrate protection of the marine environment into relevant general environmental, social and economic development policies;
>
> d. Develop economic incentives, where appropriate, to apply clean technologies and other means consistent with the internalization of environmental costs, such as the polluter pays principle, so as to avoid degradation of the marine environment;
>
> e. Improve the living standards of coastal population in developing countries, as to contribute to reducing the degradation of coastal and marine environment.

See also B Sage-Fuller, *The Precautionary Principle in Marine Environmental Law. With Special Reference to High Risk* (Routledge, 2013) 218–45; S Marr, *The Precautionary Principle in the Law of the Sea. Modern Decision Making in International Law* (Martinus Nijhoff, 2003); EJ Molenar, *Coastal State Jurisdiction over Vessel-Source Pollution* (Kluwer law International, 1998) 45; A K-J Tan, *Vessel Source Marine Pollution. The Law and Politics of International Regulation* (Cambridge University Press, 2006) 68.

2. that solutions to problems and consideration of new and existing policies, programmes, guidelines, and regulations are developed in accordance with the precautionary approach;
3. that where the action is necessary and options may involve uncertainty, all options are evaluated consistent with the precautionary approach;
4. adoption of cost-effective practices and practical solutions to problems and promotion of their continued development;
5. where appropriate, that decision-making is proceeded by environmental assessment and risk analysis to identify the environmental impacts of the proposed or alternative courses of action, whether these impacts can be prevented or minimized and how that may be done;
6. improvement in decision-making and management by obtaining and providing baseline and other data, identifying and explaining environmental changes;
7. promotion of national and international research, analysis and information programmes to identify, understand, and disseminate information about threats to the environment from maritime operations, to contribute to defining problems, including analysis of the degree of risk involved, by which uncertainties are reduced, and developing and testing solutions to problems;
8. consideration and adoption of economic incentives to encourage environmental responsibility so as to conserve the marine environment and to avoid further degradation;
9. support for the development of new and existing policies, programmes, guidelines, or regulations, where appropriate, which contribute to the protection and enhancement of the marine and coastal environment consistent with IMO mandate;
10. that, as necessary and appropriate, the IMO should, through programmes such as its Integrated Technical Co-operation Programme, assist countries to improve their capabilities in order to comply with the IMO standards in the shortest possible time;
11. where existing practices fail to provide adequate environmental protection, encouragement of the development and use of cost-effective interim protective measures with feasible time frames, which include best environmental practice and best available technology;
12. promotion of clean technologies, and waste minimization techniques from maritime activities, including the best environmental practice and best available technology to ensure improving environmental performance.

The Resolution also stresses that the precautionary approach should not be considered in isolation from the other IMO practices, procedures, and resolutions and principles such as the 'polluter-pays principle' as reflected in Principle 16 of the Rio Declaration. The document 'Framework and Activities of the IMO' outlines the management and decision-making framework to be followed in order

to promote the incorporation of preventive, precautionary, and anticipatory approaches.

In conclusion, it may be said that the main features of the precautionary approach of the IMO are as follows:

(i) the IMO supports the precautionary approach, not principle, which is in line with the formulation adopted by Principle 15 of the Rio Declaration;
(ii) the precautionary approach has to be applied in case of uncertainty, however,
(iii) it has to be cost-effective;
(iv) environment impact assessment forms an indispensable part of the implementation of the precautionary approach;
(v) access to and dissemination of information should be promoted;
(vi) national and international research (such as risk analysis) must be considered;
(vii) the conservation of the marine environment may be achieved through the adoption of economic incentives;
(viii) the IMO through various programmes will assist States where necessary in improving their capabilities of achieving the IMO standards;
(ix) new practices will be introduced based on the best available practices and the best available technology.

It is noteworthy that the above-mentioned elements of the implementation of the precautionary approach follow its general concept. The inherent vagueness of 'scientific uncertainty' and the risk of long-term irreversible adverse effects on the environment are counterbalanced by the presence of the environmental impact assessment, the duty to inform, and the use of best available technology and best environmental practice (the 'BATBEP'), which are the most tangible constitutive elements of this approach.

2.4 The MARPOL Annexes

2.4.1 Annex I: Prevention of pollution by oil

Oil tankers transport some 2,400 million tonnes of crude oil and oil products around the world by sea safely due to measures introduced by the IMO ensuring that the majority of oil tankers are safely built and operated and are constructed in order to reduce the amount of oil spilled in the event of an accident (see the introductory Section for more details). The technical designs of vessels are very strict. The rule in equipping new vessels with Segregated Ballast Tanks (SBT) is designed to eliminate the problem of discharging oily ballast as there are separate holds for water and oil. The cheaper variation of SBT is the Dedicated Clean Ballast Tanks (CBT) system, which operates on the basis of setting aside cargo tanks only for

carrying ballast water. This system can be as effective as SBTs but only if the tanks are kept clean of oil.[31] There is also the Crude Oil Washings (COW) system, which is based on a use of oil in place of water to clean off the walls of cargo tanks. These two systems were permitted by Annex I for older vessels (Annex I is based on a sliding scale). Apart from the requirement of SBTs, Annex I require all vessels to have the equipment necessary to operate LOT and to retain oily residues on board vessel until they can be discharged into port reception facilities. There is a requirement of State Parties to MARPOL to provide adequate reception facilities for oil residues and oily mixtures at loading terminals, repair ports, and other ports frequented by ships with oily residues to discharge.[32]

Annex I also requires ships to be equipped with systems that can monitor and control oily discharges. All oil record books must be kept for at least three years. According to the IMO there are three categories of cargo monitoring systems: control units, computing units, and calculating units.[33] As in the case of SBTs, the monitoring equipment is based on a sliding scale: new tankers are obliged to have it installed.[34]

Annex I also includes an operational requirements, which must be monitored by the monitoring equipment. For oil tankers, standards are as follows: 1. a ship may not discharge more than 1/30,000th of its total carrying capacity into the ocean; 2. the rate at which oil that may be discharged must not exceed sixty litres per mile travelled by ship; and 3. no discharge of any oil can be made within fifty miles from the nearest land or in certain areas. For other vessels, the standards are not so restrictive: 1. the oil content of effluents must be less than 100 parts per million; and 2. no discharge can be made within twelve miles from the nearest land or in certain special areas.[35] All ships must carry on board an oil record book in which all operations involving oil are recorded. This book may be inspected by authorities of any State Party to MARPOL.[36]

The US was the first State to legislate the phasing out of single-hull tankers.[37] Double-hull tankers of 5,000 dwt (or alternative design approved by the IMO)[38]

[31] Griffin (n. 6) 493.
[32] Annex I, Reg. 12, 1350–56, Griffin (n. 6) 499.
[33] Griffin (n. 6) 497.
[34] Griffin (n. 6) 498.
[35] Annex I, Reg. 9(1) b, 1344; Griffin (n. 6) 499.
[36] Annex I, Reg. 20, 1359–61, Griffin (n. 6) 499.
[37] See United States Oil Pollution Act 1990. <http://www.imo.org/OurWork/Environment/PollutionPrevention/OilPollution/Pages/Default.aspx>. (accessed 24 December 2013). See also, C Stenman, 'The Development of the MARPOL and the EU Regulations to Phase Out Single Hull Tankers', <https://gupea.ub.gu.se/bitstream/2077/1941/1/200556.pdf> (accessed 24 December 2013).
[38] Such as the so-called 'mid-deck' under which the pressure within the cargo tank does not exceed the external hydrostatic water pressure. Tankers of such a design have double sides but not

have become mandatory from 1993, following the 1992 *Erika* incident (regulation 13 F, at present regulation 19 of Annex I).[39] Then, the IMO had to react to the unilateral decisions of the United States, with the adoption in 1992 of a series of rules for double-hull tankers. Those standards require all tankers with deadweight up to 600 tons, delivered from 1996, to be constructed with a double hull or equivalent design. Consequently, from that date single-hull tankers of this size are no longer made.

Following the *Prestige* incident, a new, stricter timetable introduced an accelerated phaseout schedule for single-hull tankers, adopted by the MEPC resolution the MEPC 111(50) and entered into force for all Parties to the MARPOL in 2005.

Furthermore, another regulation related to the prevention of oil pollution from oil tankers regarding carrying of heavy grade oil (HGO) was introduced.[40] The new regulation banned the carriage of HGO in single-hull tankers of 5,000 tonnes dwt and above after the date of entry into force of the regulation (5 April 2005), and in single-hull oil tankers of 600 tonnes dwt and above but less than 5,000 tonnes dwt, not later than the anniversary of their delivery date in 2008.

Regulation 20 to Annex I (the previous regulation 13 G) allows the flag State to permit continued operation of Category 2 (MARPOL tankers) and category 3 (relatively small tankers of less than 5,000 dwt) tankers beyond its phaseout date in accordance with the schedule subject to satisfactory results of the Condition Assessment Scheme (hereinafter the 'CAS'), but their continued operation must not go beyond the anniversary of the date of delivery of the ship in 2015 or the date on which the ship reaches twenty-five years of age after the date of its delivery, whichever is earlier.[41]

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a double bottom, instead of which they have a mid-deck installed inside the cargo tank with the venting arranged so that there is an upward pressure on the bottom of the hull.

[39] This measure was adopted to be phased in over a number of years because shipyard capacity is limited and it would not be possible to convert all single-hull tankers to double hulls without causing immense disruption to world trade and industry.

[40] The new regulation banned the carriage of HGO in single-hull tankers of 5,000 tons dwt and above after the date of entry into force of the regulation (5 April 2005), and in single-hull oil tankers of 600 tons dwt and above but less than 5,000 tons dwt, not later than the anniversary of their delivery date in 2008.

[41] In the case of certain Category 2 or 3 oil tankers fitted with only double bottoms or double sides not used for the carriage of oil and extending to the entire cargo tank length or tankers fitted with double-hull spaces not meeting the minimum distance protection requirements, the Administration may allow continued operation beyond its phaseout date in accordance with the schedule, provided that the ship was in service on 1 July 2001, the Administration is satisfied by verification of the official records that the ship complied with the conditions specified and that those conditions remain unchanged (such continued operation must not go beyond the date on which the ship reaches 25 years of age after the date of its delivery). In the case of certain Category 2 or 3 tankers carrying HGO as cargo, fitted only with double bottoms or double sides, not used for the carriage of oil and extending to the entire cargo tank length, or tankers fitted with double-hull spaces not meeting the minimum distance protection requirements which are not used for the carriage of oil and extend to

It is very important to note that a Party to the MARPOL can deny entry of single-hull tankers which have been allowed to continue operation under the above exemptions into the ports or offshore terminals under its jurisdiction.

As already stated above, the MARPOL (Annex I) regulation 21 bans the carriage of HGO in single-hull tankers. A Party to the MARPOL can deny entry of single-hull tankers carrying HGO which have been allowed to continue operation under the exemptions (see note 30) into the ports or offshore terminals under its jurisdiction, or deny ship-to-ship transfer of heavy grade oil in areas under its jurisdiction except when this is necessary for the purpose of securing the safety of a ship or saving life at sea.

It may be worth mentioning the European Union (EU) adopted several regulations concerning the phasing out of single-hull tankers in the so-called *Erika* law packages, which consist of a set of complex and extensive regulations (*Erika* I–III packages).[42] The original regulation 417/2002 was amended several times in order to accelerate further the phasing out for single-hull tankers.

the entire cargo tank length, the Administration, under certain conditions, may allow continued operation of such ships beyond 5 April 2005 until the date on which the ship reaches 25 years of age after the date of its delivery. Regulation 21 also allows for continued operation of oil tankers of 5,000 dwt and above, carrying crude oil with a density at 15°C higher than 900 kg/ m^3 but lower than 945 kg/ m^3, if satisfactory results of the Condition Assessment Scheme warrant that, in the opinion of the Administration, the ship is fit to continue such operation, having regard to the size, age, operational area, and structural conditions of the ship and provided that the continued operation shall not go beyond the date on which the ship reaches 25 years after the date of its delivery. The Administration may allow continued operation of a single-hull oil tanker of 600 dwt and above but less than 5,000 dwt, carrying HGO as cargo, if, in the opinion of the Administration, the ship is fit to continue such operation, having regard to the size, age, operational area, and structural conditions of the ship, provided that the operation shall not go beyond the date on which the ship reaches 25 years after the date of its delivery. The Administration may exempt an oil tanker of 600 dwt and above carrying HGO as cargo if the ship is either engaged in voyages exclusively within an area under the Party's jurisdiction, or is engaged in voyages exclusively within an area under the jurisdiction of another Party, provided the Party within whose jurisdiction the ship will be operating agrees. The same applies to vessels operating as floating storage units of HGO.

All information available at: <http://www.imo.org/OurWork/Environment/PollutionPrevention/OilPollution/Pages/constructionrequirements.aspx> (accessed 24 December 2013).

[42] Regulation (EC) No 417/2002, entry into force 27.3.2002, OJ L 64 of 7.3.2002; amending acts: Regulation (EC) No 2099/2002, entry into force 9.12.2002, OJ L 324 of 29.11.2002; Regulation (EC) No 1726/2003, entry into force 21.10.2003, OJ L 249 of 1.10.2003; Regulation (EC) No 457/ 2007, entry into force 20.5.2007, OJ L 113 of 30.4.2007; Regulation (EC) No 2192009, entry into force 20.5.2007; OJ L 113 of 30.4.2007; Regulation (EC) No 1163/2009, entry into force 21.12.2009, OJ L 314 of 1.12.2009. There was a difference between the Revised Regulation 13G and the Regulation 417/2002. The Regulation did not allow 'the continued operation, in accordance with paragraph 5 of the revised Regulation 13G of the Annex I to MARPOL 73/78, of Category (2) and Category (3) oil tankers under the flag of a Member State' or 'the entry into ports of offshore terminals under the jurisdiction of a Member State of other Category (2) and Category (3) oil tankers, irrespective of the fact that they continue to operate the flag of a third State in accordance with paragraph 5 of the revised Regulation 13G of Annex I to MARPOL 73/78' (Art. 7 of the Regulation 417/2002).

In broad strokes the gist of the EU phasing-out regulation is as follows:

The regulation applies to all tankers of 5,000 dwt or above, which enter or leave a port or offshore terminal or anchor in an area under the jurisdiction of an EU country, irrespective of their flag, or which fly the flag of an EU country, and to oil tankers of 600 dwt and above for the transport of the heavy grades of oil.

Single-hulled oil tankers are not allowed to operate under the flag of an EU country, nor are they allowed to enter into ports or offshore terminals under the jurisdiction of an EU country after the anniversary of the date of delivery of the ship in the year specified below:

(i) For Category 1 (Pre-MARPOL) oil tankers: 2003 for ships delivered in 1980 or earlier; 2004 for ships delivered in 1981; 2005 for ships delivered in 1982 or later:
(ii) For Category 2 (MARPOL tankers) and 3 (small) oil tankers: 2003 for ships delivered in 1975 or earlier; 2004 for ships delivered in 1976; 2005 for ships delivered in 1977; 2006 for ships delivered in 1978 and 1979; 2007 for ships delivered in 1980 and 1981; 2008 for ships delivered in 1982; 2009 for ships delivered in 1983; 2010 for ships delivered in 1984 or later.

The Condition Assessment Scheme (CAS) will be applied to all types of oil tanker which have reached fifteen years of age by 2005 for Category 2 and Category 3 ships.

2.4.2. Annex II: Regulations for the control of pollution by noxious liquid substances in bulk

It may be observed that regulations governing the carriage of chemicals by ship are also contained in the International Convention for the Safety of Life at Sea (hereinafter the SOLAS).

The marine pollution hazards of thousands of chemicals have been assessed by the Evaluation of Hazardous Substances Working Group, giving a resultant GESAMP Hazard Profile which indexes the substances taking into account their bio-accumulation, bio-degradation, acute toxicity, chronic toxicity, long-term health effects, and effects on marine wildlife and on benthic habitats.

According to standards prescribed by both Conventions, chemical tankers built after 1 July 1986 have to comply with the International Bulk Chemical Code (hereinafter the 'IBC' Code). It prescribes international standards for the safe transport by sea in bulk of liquid dangerous chemicals, through the design and construction standards of ships involved in such transport and the equipment they should carry. These measures are designed to minimize the risks to the ship, its crew, and to the environment, having regard to the nature of the products carried.

Amendments to the IBC Code have been adopted, which resulted in the amendments to the MARPOL Annex II. The said amendments incorporate revisions to the categorization of certain products relating to their properties as potential marine pollutants as well as revisions to ship type and carriage requirements following their evaluation by the Evaluation of Hazardous Substances Working Group.

Ships constructed after 1986 carrying substances identified in chapter 17 of the IBC Code must follow the requirements for design, construction, equipment, and operation of ships contained in the Code.

Ship types should correspond to the hazard properties of the products covered by the Codes (such as flammability, toxicity, corrosivity, and reactivity). To this effect the IBC Code lists chemicals and their hazards and gives both the ship type required to carry that product as well as the environmental hazard rating.

On the other hand, chemical tankers constructed before 1 July 1986 should comply with the requirements of the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (hereinafter the 'BCH' Code) which is the predecessor of the IBC Code.[43]

The Annex II Regulations for the control of pollution by noxious liquid substances in bulk define a four-category categorization system for noxious and liquid substances.

The categories of noxious substances are:

(i) Category X: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a major hazard to either marine resources or human health and therefore justify the prohibition of the discharge into the marine environment;
(ii) Category Y: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify a limitation on the quality and quantity of the discharge into the marine environment;
(iii) Category Z: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a minor hazard to either marine resources or human health and therefore justify less stringent restrictions on the quality and quantity of the discharge into the marine environment; and
(iv) Other Substances: substances which have been evaluated and found to fall outside Category X, Y, or Z because they are considered to present no harm to

[43] All information available at: <http://www.imo.org/OurWork/Environment/PollutionPrevention/ChemicalPollution/Pages/Default.aspx> (accessed 24 December 2013).

> marine resources, human health, amenities, or other legitimate uses of the sea when discharged into the sea from tank cleaning of deballasting operations. The discharge of bilge or ballast water or other residues or mixtures containing these substances are not subject to any requirements of MARPOL Annex II.[44]

This Annex also includes a number of other requirements reflecting modern stripping techniques, which specify discharge levels of products which have been incorporated into Annex II.[45] The evaluation of noxious substances is an ongoing process. For example, vegetable oils which were previously categorized as being unrestricted are now required to be carried in chemical tankers.[46]

2.4.3 Annex III: Regulations for the prevention of pollution by harmful substances in packaged form

The MARPOL Annex III includes regulations for the prevention of pollution by harmful substances in packaged form and includes general requirements for the issuance of detailed standards on packing, marking, labelling, documentation, stowage, quantity limitations, exceptions, and notifications for preventing pollution by harmful substances. Chemicals which are carried in packaged form, in solid form or in bulk are also regulated by Part A of SOLAS Chapter VII—Carriage of dangerous goods which includes provisions for the classification, packing, marking, labelling and placarding, documentation, and stowage of dangerous goods.

The parties to the Convention are required to issue instructions at the national level. The chapter refers to International Maritime Dangerous Goods Code (hereinafter the 'IMDG Code') developed by the IMO, which is constantly updated to accommodate new dangerous goods and to supplement or revise existing provisions.

The IMDG Code was developed as a uniform international code for the transport of dangerous goods by sea (it deals with such matters as packing, container traffic, and stowage, with particular reference to the segregation of incompatible

[44] (n. 43).

[45] For ships constructed on or after 1 January 2007 the maximum permitted residue in the tank and its associated piping left after discharge is set at a maximum of 75 for products in categories X, Y and Z (compared with previous limits which set a maximum of 100 or 300 litres, depending on the product category). <http://www.imo.org/OurWork/Environment/PollutionPrevention/ChemicalPollution/Pages/Default.aspx> (accessed 24 December 2013).

[46] An MEPC resolution on Guidelines for the transport of vegetable oils in deep tanks or in independent tanks specially designed for the carriage of such vegetable oils onboard dry cargo ships was adopted in October 2004. It allows general dry cargo ships that are currently certified to carry vegetable oil in bulk to continue to carry these vegetable oils on specific trades. The guidelines took effect on 1 January 2007. <http://www.imo.org/OurWork/Environment/PollutionPrevention/ChemicalPollution/Pages/Default.aspx> (accessed 24 December 2013).

substances). The IMDG Code includes products considered to be marine pollutants. The IMO's Maritime Safety Committee (MSC) decided in principle, at its seventy-third session in 2000, to make some parts of the IMDG Code mandatory.[47]

For the purpose of Annex III, 'harmful substances' are those identified as 'marine pollutants' in the IMDG Code.[48]

2.4.4 Annex IV: Sewage

This Annex contains the regulations regarding the discharge of sewage into the sea, ships' equipment and systems for the control of sewage discharge, the provision of facilities at ports and terminals for the reception of sewage, and requirements for survey and certification. It also includes a model International Sewage Pollution Prevention Certificate to be issued by national shipping administrations to ships under their jurisdiction.[49] The general principle is that on the high seas, the oceans are capable of assimilating and dealing with raw sewage through natural bacterial action, and therefore the regulations in Annex IV of the MARPOL regulates discharging sewage within a specified distance of the nearest land, unless they have in operation an approved treatment plant. Governments are required to ensure the provision of adequate reception facilities at ports and terminals for the reception of sewage.

The revised Annex will apply to new ships engaged in international voyages, of 400 gross tonnage and above or which are certified to carry more than fifteen persons. Existing ships will be required to comply with the provisions of the revised Annex IV five years after the date of entry into force of Annex IV, namely from September 2008. The Annex requires ships to be equipped with either a sewage treatment plant or a sewage comminuting and disinfecting system or a sewage holding tank.

The discharge of sewage into the sea will be prohibited, except when the ship has in operation an approved sewage treatment plant or is discharging comminuted and disinfected sewage using an approved system at a distance of more than three nautical miles from the nearest land; or is discharging sewage which is not comminuted or disinfected at a distance of more than twelve nautical miles from the nearest land.

[47] <http://www.imo.org/OurWork/Environment/PollutionPrevention/ChemicalPollution/Pages/Default.aspx> (accessed 24 December 2013).

[48] <http://www.imo.org/OurWork/Environment/PollutionPrevention/ChemicalPollution/Pages/Default.aspx> (accessed 24 December 2013).

[49] All information from <http://www.imo.org/OurWork/Environment/PollutionPrevention/Sewage/Pages/Default.aspx> (accessed 24 December 2013). This Annex entered into force in 2003. A revised Annex was adopted on 1 April 2004, with an entry into force date of 1 August 2005.

2.4.4.1 Revised sewage standards

The MEPC, by the Resolution 159 (55) at its fifty-fifth session in 2006 adopted revised Guidelines on implementation of effluent standards and performance tests for sewage treatment plants. The revised Guidelines, which will apply to sewage treatment plants installed on board on or after 1 January 2010, replace the Recommendation on international effluent standards and guidelines for performance tests for sewage treatment plants adopted by resolution MEPC.2 (VI) in 1976.

The MEPC also adopted a standard for the maximum rate of discharge of untreated sewage from holding tanks which is at a distance equal or greater than 12 nautical miles from the nearest land (see resolution MEPC.157 (55)).

2.4.5 Annex V: Garbage

Garbage poses danger to marine life as much as oil or chemicals.[50] In particular plastic is dangerous as it can float for years. Fish and marine mammals can in some cases mistake plastics for food and they can also become trapped in plastic ropes, nets, bags, and other items—even such innocuous items as the plastic rings used to hold cans of beer and drinks together.

Rubbish comes from people on shore as well as from cities that dump rubbish into rivers or the sea. But in some areas most of the rubbish found comes from ships. The process of degradation can take months or years.[51] The MARPOL sought to eliminate and reduce the amount of garbage being dumped into the sea from ships.

Under Annex V of the Convention, garbage includes:

(i) all kinds of food;
(ii) domestic and operational waste, excluding fresh fish, generated during the normal operation of the vessel and liable to be disposed of continuously or periodically.

Annex V totally prohibits the disposal of plastics anywhere into the sea, and severely restricts discharges of other garbage from ships into coastal waters and 'Special Areas' (see above). The Parties to the Annex have the duty to ensure the provision of reception facilities at ports and terminals for the reception of garbage.

Provisions to extend Port State Control (PSC) to cover operational requirements as regards prevention of marine pollution were adopted as a new regulation 8 to the

[50] <http://www.imo.org/OurWork/Environment/PollutionPrevention/Garbage/Pages/Default.aspx> (accessed 24 December 2013) entered into force in 1988.

[51] Paper bus ticket 2–4 weeks; cotton cloth 1–5 months; rope 3–14 months; woollen cloth 1 year; painted wood 13 years; tin can 100 years; aluminium can 200–500 years; plastic bottle 450 years. <http://www.imo.org/OurWork/Environment/PollutionPrevention/Garbage/Pages/Default.aspx> (accessed 24 December 2013).

Annex in 1994 (entering into force on 3 March 1996). PSC officers can inspect a foreign-flagged vessel and 'where 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' can require the proper training of crew or in extreme cases detain the ship.

A new regulation referring to implementation and enforcement was adopted in 1995. It requires all ships of 400 gross tonnage and above and every ship certified to carry fifteen persons or more, and every fixed or floating platform engaged in exploration and exploitation of the seabed to provide a Garbage Record Book and to record all disposal and incineration operations of garbage.[52]

The regulations concerning garbage management are very strict:

(i) all ships of 400 gross tonnage and above and every ship certified to carry fifteen persons or more will have to carry a Garbage Management Plan (including written procedures for collecting, storing, processing, and disposing of garbage, including the use of equipment on board. It should designate the person responsible for carrying out the plan and should be in the working language of the crew.)
(ii) The MEPC/Circ.317 gives Guidelines for the development of garbage management plans and an Appendix to Annex V of the MARPOL gives a standard form for a Garbage Record Book.

Regulation 9 came into force for new ships on 1 July 1997 and as from 1 July 1998 applicable to all ships built before 1 July 1997 thus making the standards even stricter.[53]

By the Resolution MEPC 76/40, the MEPC at its fortieth Session in September 1997 adopted a Standard Specification for Shipboard Incinerators (covering the

[52] The date, time, position of ship, description of the garbage, and the estimated amount incinerated or discharged must be logged and signed. The Garbage Record Book must be kept for a period of two years after the date of the last entry. This regulation does not in itself impose stricter requirements—but it makes it easier to check that the regulations on garbage are being adhered to as it means ship personnel must keep track of the garbage and what happens to it. It may also prove an advantage to a ship when local officials are checking the origin of dumped garbage—if ship personnel can adequately account for all their garbage, they are unlikely to be wrongly penalized for dumping garbage when they have not done so. <http://www.imo.org/OurWork/Environment/PollutionPrevention/Garbage/Pages/Default.aspx> (accessed 24 December 2013).

[53] All ships of 400 gross tonnage and above and every ship certified to carry 15 persons or more, and every fixed or floating platform engaged in exploration and exploitation of the seabed. The regulation also requires every ship of 12 metres or more in length to display placards notifying passengers and crew of the disposal requirements of the regulation; the placards should be in the official language of the ship's flag State and also in English or French for ships travelling to other States' ports or offshore terminals.

<http://www.imo.org/OurWork/Environment/PollutionPrevention/Garbage/Pages/Default.aspx> (accessed 24 December 2013).

design, manufacture, performance, operation, and testing of incinerators designed to incinerate garbage and other shipboard waste).[54] In July 2011, MEPC 62 adopted, by the revised MARPOL Annex V which entered into force on 1 January 2013. By resolution 220(63) the MEPC has adopted on 2 March 2012 Guidelines for the Development of Garbage Management Plans.

The revised Annex V now generally prohibits the discharge of all garbage into the sea, except as provided otherwise in regulations 4, 5, and 6 of the Annex, which are related to food waste, cargo residues, cleaning agents and additives, and animal carcasses. An overview of the revised MARPOL Annex V discharge provisions can be accessed here. Exceptions with respect to the safety of a ship and those on board and accidental loss are contained in regulation 7 of Annex V.

Under the revised MARPOL Annex V, garbage includes all kinds of food, domestic and operational waste, all plastics, cargo residues, incinerator ashes, cooking oil, fishing gear, and animal carcasses generated during the normal operation of the ship and liable to be disposed of continuously or periodically. Excluded from garbage are: fresh fish and parts thereof generated as a result of fishing activities undertaken during the voyage, or as a result of aquaculture activities.

The effectiveness of ships to comply with the discharge requirements of MARPOL depends upon the availability of adequate port reception facilities (especially within special areas). The Annex obliges Governments to ensure the provision of adequate reception facilities at ports and terminals for the reception of garbage without causing undue delay to ships, and according to the needs of the ships using them.[55]

It appears, however, that there is still insufficient understanding of the importance of not using oceans for disposing of garbage. Despite the entry into force of Annex V in 1988, even recent surveys carried out in the United States of America each year have produced up to 10 tonnes of garbage per mile of coastline.[56]

2.4.6 Annex VI: Regulations for the prevention of air pollution from ships

This Annex was added in 1997 in order to deal with local and global air pollution and environmental problems, and to minimize emissions from ships (eg SOx, NOx, ODS, VOC).[57] In 2007 international shipping was estimated to have contributed about 2.7% to the global emissions of carbon dioxide (CO2). The MARPOL Annex VI prohibits deliberate emissions of ozone-depleting substances.

[54] (n. 53).

[55] <http://www.imo.org/OurWork/Environment/PollutionPrevention/Garbage/Pages/Default.aspx> (accessed 25 January 2015).

[56] (n. 55).

[57] Annex VI was adopted in 1997 and entered into force on 19 May 2005 and a revised Annex VI with stricter emissions limits was adopted in October 2008 which entered into force on 1 July 2010.

It also regulates shipboard incineration, and the emissions of volatile organic compounds from tankers.[58]

The stricter amendments of Annex VI consists of a progressive reduction globally in emissions of SOx, NOx and particulate matter and the introduction of emission control areas (ECAs) to reduce emissions of those air pollutants further in designated sea areas.[59]

The revised NOx Technical Code 2008 includes a new chapter based on the agreed approach for regulation of existing (pre-2000) engines established in MARPOL Annex VI, provisions for a direct measurement and monitoring method, a certification procedure for existing engines, and test cycles to be applied to Tier II and Tier III engines.

Revisions to the regulations for ozone-depleting substances, volatile organic compounds, shipboard incineration, reception facilities, and fuel oil quality have been made, with the addition on regulations on fuel oil availability.

In this regard it may be mentioned that air pollution from ships has been dealt with also within the framework of the EU. In November 2002, the EU Commission adopted the strategy of reduction of emissions of air pollutants from sea-going ships. The Commission also published a proposal for modifying directive 1999/32/EC as regards the sulphur content of marine fuels.[60] The emissions of air pollutants from ships in the Baltic Sea, the North Sea, the north-eastern part of the Atlantic, the Mediterranean, and the Black Sea were estimated to have been 2.6 million tonnes of sulphur dioxide and 3.6 million tonnes of nitrogen oxides (expressed as NOx) a year in 2000. Despite the enforcement of the MARPOL

[58] All information from <http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Air-Pollution.aspx> (accessed 24 December 2013).

[59] Under the revised MARPOL Annex VI, the global sulphur cap is reduced initially to 3.50% (from the current 4.50%), effective from 1 January 2012; then progressively to 0.50 %, effective from 1 January 2020, subject to a feasibility review to be completed no later than 2018. The limits applicable in ECAs for SOx and particulate matter were reduced to 1.00%, beginning on 1 July 2010 (from the original 1.50%); being further reduced to 0.10%, effective from 1 January 2015. Progressive reductions in NOx emissions from marine diesel engines installed on ships are also included, with a 'Tier II' emission limit for engines installed on or after 1 January 2011; then with a more stringent 'Tier III' emission limit for engines installed on or after 1 January 2016 operating in ECAs. Marine diesel engines installed on or after 1 January 1990 but prior to 1 January 2000 are required to comply with 'Tier I' emission limits, if an approved method for that engine has been certified by an Administration. Effective from 1 January 2015, the MARPOL (The International Maritime Organization's Marine Pollution Convention) will set a further reduction on marine fuel sulphur cap of 0.1% in the Northern European Sulphur Emissions Control Areas (SECAs) comprising the English Channel, the Baltic Sea and the North Sea.

[60] 'Air Pollution from Ships', briefing document by: the European Environmental Bureau (EEB), the European Federation for Transport and Environment (T&E), Seas At Risk (SAR), and the Swedish NGO Secretariat on Acid Rain, available at <http://123doc.org/document/1151018-the-european-environmental-bureau-eeb-the-european-federation-for-transport-and-environment-t-e-seas-at-risk-sar-the-swedish-ngo-secretariat-on-acid-r.htm>; <http://www.flad.pt/documentos/1227109470H7mFL7ge1Kr88CN8.pdf> (accessed 24 December 2013).

Annex VI, this set limits on the sulphur content of marine fuels for the Baltic Sea, the North Sea and the English Channel, and emissions of SOx from international shipping are expected to increase by more than forty-two per cent by 2020, and those of NOx by two thirds. In both cases, by 2020 the emissions from international shipping around Europe will have exceeded the total from all land-based sources in the twenty-five Member States combined. On 20 November 2002, the Commission published a proposal to amend directive 1999/32/EC so as to limit the sulphur content of marine fuels marketed and used in the EU.[61] This Directive was amended by Directive 2005/33/EC that designated the Baltic Sea, the North Sea, and the English Channel as sulphur emission control areas (SECAs) and limited the maximum sulphur content of the fuels used by ships operating in these sea areas to 1.5%. This fuel standard applies also to passenger ships operating on regular service outside SECAs. However, at the time of adoption the SECA fuel standard was already widely recognized as being insufficient to address observed environmental impacts from shipping.[62]

On the 1st January 2010, the EU implemented its requirement that ships burn fuel of 0.1 per cent sulphur content or less when they are within EU ports or within EU inland waterways.

On the 1st July 2010, this requirement was extended offshore into Emissions Control Areas (ECA) including the North Sea and the Baltic Sea. The European Parliament and the Council requested the Commission to report on the implementation of the Directive and to consider submitting a proposal for an amendment. Following this request and considering the development at the IMO in 2008 (see above), the Commission carried[63] out a review of the Directive and adopted a proposal for its revision on 15 July 2011. Particularly interesting is the US implementation of Annex VI. In 2009, they submitted a joint proposal with the Canadian government to designate coastal areas for low sulphur fuel use that will substantially reduce emissions coming from ocean-going vessels. The US flagged ships must match the standards of the MARPOL Annex VI. The US have calculated that the benefits from its enforcement are, in total, around 30:1, so for every dollar spent thirty dollars in health benefits can be saved and thus totals up to billions.

2.5 MARPOL Special Areas and Particularly Sensitive Areas

At the outset, Marine Protected Areas (MPAs) are also recognized under the regime of the 1982 UNCLOS, specifically Article 211. However, it has been

[61] (n. 60).

[62] <http://ec.europa.eu/environment/air/transport/ships.htm> (accessed 24 December 2013).

[63] (n. 62). See also Proposal for a Council decision establishing the position to be taken in HELCOM and IMO concerning the designation on the Baltic Sea as Nitrogen Oxyde Emissions Control Area (NECA) /* COM/2013/0300 final - 2013/0153 (NLE) <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52013PC0300> (accessed 21 January 2016).

observed that the issue of establishing such areas on the high seas is far from clear.[64] On one hand, the IMO has the competence regarding international shipping in such areas; but on the other hand, the debate is pending on the status of such areas in the forum of the United Nations'[65] Open Ended Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS). The issue of MPAs was discussed at this forum; however, there is still no clear set of conditions or modalities on how to establish such areas.[66] The second criterion, that is, ecological conditions, is species related, as it covers: depleted, threatened, or endangered marine species; areas of high productivity; spawning; breeding of nursery grounds for important marine species; and areas representing migratory routes for marine mammals and sea birds. Rare or fragile ecosystems (eg coral reef, mangroves, and wetlands) and /or critical habitats for marine resources are also being considered.[67]

For instance, the US established a national programme to designate certain areas of marine environments as areas of special national significance that warrant heightened care in its National Marine Sanctuaries Act. The primary purpose of the law is to protect marine resources and ecosystems, such as coral reefs, sunken historical vessels, or unique habitats, from degradation while facilitating public or private uses compatible with resource protection. In some sanctuaries the discharge of sewage is prohibited in special zones to protect fragile habitat, such as coral. The US authorities also provide for civil penalties for violations of its requirements or the permits issued under it.

2.5.1 Special Areas

The IMO has jurisdiction to establish Special Areas. Special Areas are areas designated in Annexes I (Prevention of pollution by oil), II (Control of pollution by noxious liquid substances), IV (Prevention of pollution by sewage from ships) and V (Prevention of pollution by garbage from ships) of MARPOL as marine areas in which, for the reasons relating to their oceanographical and ecological

[64] A Gillespie, *Protected Areas and International Environmental Law* (Martinus Nijhoff, 2007) 17; A Gillespie, *Conservation, Biodiversity and International Law* (Edward Elgar, 2012) 189–91. Sage-Fuller argues that the establishment of Special Areas and Particularly Sensitive Areas is an expression of the application of the precautionary principle by the IMO. Sage-Fuller (n. 30) 223–41.

[65] Gillespie, *Conservation, Biodiversity and International Law* (n. 64) 192.

[66] Gillespie, *Protected Areas* (n. 64) 17.

[67] They have also assessed the impact of Annex VI with air quality modelling and used census data to find the populations exposed to emissions from locomotive hubs and from ports; in particular they found that minority populations were two to three times as likely to be exposed to the pollution from ocean-going vessels. 67,000 people are exposed to ocean-going vessel pollution. They concluded that the combination of Annex VI measures with the emission control area will substantially reduce that exposure. See National Environmental Justice Advisory Council Meeting, 27–29 January, 2010.

condition and to their sea traffic, the adoption of specially strict mandatory methods for the prevention of sea pollution is required. The oceanographically conditions focus on how vulnerable the ecosystem of a particular area is to possible damage.[68] The possible conditions for vulnerability include circulation patterns (such as convergence zones or gyres), temperate and salinity stratification, flushing rates, extreme weather conditions, and the rate of exchange of water, such as the Baltic Sea.[69]

Annex VI Regulations for the Prevention of Air Pollution from Ships establish certain sulphur oxide (SOx) Emission Control Areas (ECAs) with more stringent controls on sulphur emissions.[70]

[68] Gillespie, *Conservation* (n. 64) 191.
[69] Gillespie, *Conservation* (n. 64) 192.
[70] Special areas under MARPOL are as follows:
Adoption, entry into force & date of taking effect of Special Areas

Special Areas	Adopted	Date of Entry into Force	In Effect From
Annex I: Oil			
Mediterranean Sea	2 Nov 1973	2 Oct 1983	2 Oct 1983
Baltic Sea	2 Nov 1973	2 Oct 1983	2 Oct 1983
Black Sea	2 Nov 1973	2 Oct 1983	2 Oct 1983
Red Sea	2 Nov 1973	2 Oct 1983	not yet in effect
'Gulfs' area	2 Nov 1973	2 Oct 1983	1 Aug 2008
Gulf of Aden	1 Dec 1987	1 Apr 1989	*
Antarctic area	16 Nov 1990	17 Mar 1992	17 Mar 1992
North West European Waters	25 Sept 1997	1 Feb 1999	1 Aug 1999
Oman area of the Arabian Sea	15 Oct 2004	1 Jan 2007	*
Southern South African waters	13 Oct 2006	1 Mar 2008	1 Aug 2008
Annex II: Noxious Liquid Substances			
Antarctic area	30 Oct 1992	1 Jul 1994	1 Jul 1994
Mediterranean Sea	2 Nov 1973	31 Dec 1988	1 May 2009
Baltic Sea	2 Nov 1973	31 Dec 1988	1 Oct 1989
Black Sea	2 Nov 1973	31 Dec 1988	not yet in effect
Red Sea	2 Nov 1973	31 Dec 1988	not yet in effect
'Gulfs' area	2 Nov 1973	31 Dec 1988	1 Aug 2008
North Sea	17 Oct 1989	18 Feb 1991	18 Feb 1991
Antarctic area (south of latitude 60 degrees south)			
16 Nov 1990	17 Mar 1992	17 Mar 1992	
Wider Caribbean region including the Gulf of Mexico and the Caribbean Sea			
4 Jul 1991	4 Apr 1993	1 May 2011	
Annex IV: Sewage			
Baltic Sea	15 Jul 2011	1 Jan 2013	

2.5.2 Particularly Sensitive Sea Areas (PSSAs)

A Particularly Sensitive Sea Area (PSSA) is an area that needs special protection through action by the IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities. An area can be designated as PSSA and at the same time as a special area, which is frequent practice.

Guidelines on designating a PSSA are contained in resolution A.982(24), called Revised Guidelines for the identification and designation of Particularly Sensitive Sea Areas (PSSAs), adopted by the IMO Assembly in November–December 2005 at its twenty-fourth session.

To be designated a PSSA, an area must fulfil a number of criteria: ecological criteria; social, cultural and economic criteria, such as significance of the area for recreation or tourism; and scientific and educational criteria, such as biological research or historical value.

Whilst dealing with ecological conditions relating to PSSAs, the IMO has endeavoured to distinguish this section from Special Areas (see Section 2.4.1) by including eight possible sub-sets. The additional categories are: uniqueness; representativity; dependency; productivity; diversity; integrity; vulnerability; and its naturalness, or the degree to which it is submitted to human influence. These

Special Areas	Adopted	Date of Entry into Force	In Effect From
Annex V: Garbage			
Mediterranean Sea	2 Nov 1973	31 Dec 1988	1 May 2009
Baltic Sea	2 Nov 1973	31 Dec 1988	1 Oct 1989
Black Sea	2 Nov 1973	31 Dec 1988	not yet in effect
Red Sea	2 Nov 1973	31 Dec 1988	not yet in effect
'Gulfs' area	2 Nov 1973	31 Dec 1988	1 Aug 2008
North Sea	17 Oct 1989	18 Feb 1991	18 Feb 1991
Antarctic area (south of latitude 60 degrees south)			
16 Nov 1990	17 Mar 1992	17 Mar 1992	
Wider Caribbean region including the Gulf of Mexico and the Caribbean Sea			
4 Jul 1991	4 Apr 1993	1 May 2011	
Annex VI: Prevention of air pollution by ships (Emission Control Areas)			
Baltic Sea (SOx)	26 Sept 1997	19 May 2005	19 May 2006
North Sea (SOx)	22 Jul 2005	22 Nov 2006	22 Nov 2007
North American (SOx, and NOx and PM)	26 Mar 2010	1 Aug 2011	1 Aug 2012
United States Caribbean Sea ECA (SOx, NOx and PM)	26 Jul 2011	1 Jan 2013	1 Jan 2014

(<http://www.imo.org/ourwork/environment/pollutionprevention/specialareasundermarpol/Pages/Default.aspx>) (accessed 24 December 2013).

conditions were added in 2001 with the possibility of adding further criteria of critical habitat and bio-geographical importance. The example of such a PSSA, fulfilling all criteria, can be the Great Barrier Reef.[71]

When an area is approved as a particularly sensitive sea area, specific measures can be used to control the maritime activities in that area, such as routing measures, strict application of the MARPOL discharge and equipment requirements for ships, such as oil tankers; and installation of Vessel Traffic Services (VTS).[72]

A PSSA can be protected by ships routing measures—such as an area to be avoided: an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and therefore should be avoided by all ships or by certain classes of ships.

2.6 Enforcement of MARPOL

As Griffin observes, the enforcement of the MARPOL can be done in three ways: through ship inspections to ensure that vessels fulfil minimum technical standards; by monitoring ship compliance with discharge standards; and by punishing ships violating the standards.[73] The main responsibility of inspections of ships is bestowed on the flag State. The MARPOL requires States to conduct inspections or surveys prior to putting the ship into service and when issuing the five-year International Oil Pollution Prevention (IOPP) certificate. At minimum a survey must be conducted once every five years. A ship which fails such a survey cannot sail unless it has fulfilled the MARPOL standards.

[71] Gillespie, *Conservation* (n. 64) 192.

[72] List of adopted PSSAs

The following PSSAS have been designated:

- The Great Barrier Reef, Australia (designated a PSSA in 1990)
- The Sabana-Camagüey Archipelago in Cuba (1997)
- Malpelo Island, Colombia (2002)
- The sea around the Florida Keys, United States (2002)
- The Wadden Sea, Denmark, Germany, Netherlands (2002)
- Paracas National Reserve, Peru (2003)
- Western European Waters (2004)
- Extension of the existing Great Barrier Reef PSSA to include the Torres Strait (proposed by Australia and Papua New Guinea) (2005)
- Canary Islands, Spain (2005)
- The Galapagos Archipelago, Ecuador (2005)
- The Baltic Sea area, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden (2005)
- The Papahānaumokuākea Marine National Monument, United States (2007)
- The Strait of Bonifacio, France and Italy (2011)

(<http://www.imo.org/OurWork/Environment/PollutionPrevention/PSSAs/Pages/Default.aspx>) (accessed 24 December 2013).

[73] Griffin (n. 6) 489.

One particular features of the MARPOL is the wide scope of the port State jurisdiction. The PSC officers can board the vessel and inspect the ship's IOPP certificate and the other MARPOL certificates. In case of the lack thereof or if there are 'clear grounds' to believe that the condition of the ship, its equipment, or crew does not substantially meet the international Convention, the PSC has jurisdiction of conducting the full detailed survey. If the ship, on the other hand has the IOPP certificate, the PSC has to treat it as its own and issue a 'clean' inspection report to the master of the ship.[74]

Moreover in the event of 'clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificate' the PSC has the authority to conduct a complete survey.[75] A port State has the jurisdiction to take administrative measures to prevent a vessel from leaving if it has breached international regulations applying to its navigation and if it threatens marine environment. Inspection can result in detention or temporary arrest of the ship and inspection report can be forwarded to any State requiring it.[76] However, 'all possible efforts shall be made to avoid a ship being unduly detained or delayed under Article 4, 5, or 6 of the present Convention, it shall be entitled to compensation for any loss or damage suffered'.[77]

Monitoring vessel discharges constitutes the second element of enforcement under the MARPOL.[78] All State Parties are required to cooperate in detecting ship violations, through environmental monitoring; reporting and accumulation of evidence.[79] If the State has evidence of the MARPOL breaches, it has to submit evidence to the flag State of the responsible ship.[80] The breaches of the MARPOL on the high seas are very difficult to prove. The best way to detect such a violation is when the ship is docked or in an off-shore terminal, as the MARPOL gives jurisdiction to PSC to conduct discharge inspections, through survey of its oil record book and oil discharge monitoring equipment and checking amounts of dirty ballast or oily residues in slop tank, as evidence of incorrect operational discharge.[81]

Upon notification about violations of the MARPOL by its ship, the flag State must investigate and if the evidence is sufficient, it must start the judicial proceedings. It has an obligation of notifying the State Party which reported the violation of the

[74] Art. 5 (1) MARPOL 73/78.
[75] Art. 5 (2) MARPOL M73/78.
[76] Arts 5 and 6 MARPOL 73/78 and Art. 219 UNCLOS.
[77] Art. 7 (1and 2) MARPOL 73/78.
[78] Griffin (n. 6) 501.
[79] Art. 6 (1) MARPOL 73/78.
[80] Art. 6 (3) MARPOL 73/78.
[81] Griffin (n. 6) 488–9.

action it had taken.[82] Penalties must be adequate in severity in order to discourage breaches of the MARPOL notwithstanding where they occur.[83]

The primacy of the jurisdiction of the flag State in environmental matters is confirmed by the provisions of the UNCLOS. Article 228 (1) of the UNCLOS provides that the proceedings against a foreign ship must be suspended in the event of the flag State instituting proceedings within six months after the original charges were commenced. A flag State has to enforce international rules and standards irrespective of the place of violation (Article 217 of UNCLOS). Therefore, in effect a flag State can supersede the port State jurisdiction and dismiss any proceedings brought by that port State.[84]

Although it is frequently argued that the MARPOL's drawback is its lack of proper enforcement by the flag State, the US is a good example of how it can be quite strictly enforced, including criminal penalties. The US became a party to the MARPOL in 2008 and it is implemented domestically through the Act to Prevent Pollution from Ships[85] (APPS) and to a lesser extent by the Clean Water Act.

The US implementation of the MARPOL Convention is based on the port State jurisdiction, and its jurisdiction covers all vessels in its jurisdictional waters, including the exclusive economic zone.

The US has ratified those of the MARPOL annexes that meet their standards and has aligned its practice with those annexes that they have not ratified because they do not meet US standards.

APPS applies to all US flagged ships anywhere in the world, and to all foreign flagged vessels while operating in the navigable waters of the US or while at a port or terminal under its jurisdiction. The APPS provides for the violation of the MARPOL, the Act, or regulations relating to wastes from ships, including garbage, oil, and hazardous substances and establishes a penalty of imprisonment of not more than ten years and/or fines as set forth in 18 USC 3571.[86]

The US Department of Justice, in conjunction with the Coast Guard and EPA's Criminal Investigation Division, has worked on a vessel pollution enforcement initiative designed to detect, investigate, and prosecute illegal vessel discharges of oily wastes, plastics, and other wastes that are in violation of US environmental laws, including those implementing international treaties such as the MARPOL, as well as related criminal violations.

[82] Art. 6 (4) MARPOL 73/78.
[83] Art. 4 (4) MARPOL 73/78.
[84] A Rakestraw, 'Open Oceans and Marine Debris: Solutions for the Ineffective Enforcement of MARPOL Annex V' (2012) 35 *Hastings Int'l&Comp.L.Rev* 392.
[85] Act to Prevent Pollution from Ships, 33 USC 1901 et seq.
[86] See 33 USC 1908(a).

2.7. The European Union and the MARPOL

In order to regulate the national legislation and policies of the EU Member States with regard to maritime safety and the protection of the environment, the EU adopted Directive 2005/35/EC[87] dealing with ship-source discharges of oil and noxious liquid substances.[88] The purpose of the Directive is to incorporate international standards for ship-source pollution into Community law.[89] This Directive has been amended by Directive 2009/123/EC[90] (the 2005 Directive, as amended by the 2009 Directive, is hereinafter referred to as 'the ship-source pollution Directive'. With regard to the geographical scope, the ship-source pollution Directive provides that an offence is committed if the discharging of polluting substances is carried out in internal waters of a EU Member States, in the territorial water of a Member State, in straits used for international navigation, in the exclusive economic zone (EEZ) of a Member State or in the high seas.[91] These rules apply to any ship regardless of its flag.[92] The Directive also addresses port and coastal State enforcement[93] and it requires Member States to comply with international law and to apply its provisions without discriminating against foreign ships.[94] Furthermore, the Directive imposes additional obligations on Member States on respect of matters such as cooperation and reporting, as well as other

[87] Directive 2005/35/EC on ship-source pollution and on the introduction of penalties for infringements [2005] OJ L255, 30.9.2005, 11.

[88] The list of categorized polluting substances is taken directly from MARPOL (Art. 2 of the Directive).

[89] Art. 1 Directive 2005/35/EC, as amended. As it has been highlighted ['t]he implementation of the International Convention for the Prevention of Pollution from Ships (MARPOL), 1973/78, as amended, shows discrepancies among Member States and thus there is a need to harmonize its implementation at Community level, in particular the practice of Member States relating to imposition of penalties for discharges of polluting substances differs significantly' (Axel Luttenberger, 'Criminal penalties for ship-source pollution in the environmental legislation', available at <http://www.researchgate.net/publication/253649917_CRIMINAL_PENALTIES_FOR_SHIP-SOURCE_POLLUTION_IN_THE_ENVIRONMENTAL_LEGISLATION/file/5046351fa19aa675ac.pdf.> (accessed July 2014). See also: V Mitsilegas, M Fitzmaurice, and E Fasoli, 'The Relationship between EU Criminal Law and Environmental Law' in V Mitsilegas, M Bergstrom, and T Konstantinides (eds), *Research Handbook on EU Criminal Law* (Edward Elgar, forthcoming 2016). In general, see L Nengye, 'The European Union's Role in the Prevention of Vessel-Source Pollution and its International Influence' (2009) 15 *The Journal of International Maritime Law* 411–22; F Pellegrino, 'The Introduction of Penalties for Ship-source Pollution in Community Law: Recent Developments' (2011) 48 *European Transport* 99–108; and A Pozdnakova, *Criminal Jurisdiction over Perpetrators of Ship-source Pollution, International Law, State Practice and EU Harmonisation* (Martinus Nijhoff, 2013) 209 ff.

[90] Directive 2009/123/EC amending Directive 2005/35/EC on ship-source pollution and on the introduction of penalties for infringements [2009] OJ L280, 27.10.2009, p. 52.

[91] Art. 3.

[92] Art. 3, para. 2.

[93] Arts 6 and 7.

[94] Art. 9.

provisions relating to implementation, although these are not directly the subject of the present analysis.[95]

The rules on criminal liability are contained in Articles 4, 5 and 8 of the ship-source pollution Directive. These rules will be analysed in light of the MARPOL provisions.

As explained in Section 2.3.1 the MARPOL establishes a general prohibition of all discharges of oil and noxious substances. In addition, Annex I and II[96] provide for a set of exceptions according to which discharges are permitted in three cases: where necessary to secure the safety of a ship or save life at sea (para. 1 of Regulation 4, Annex I and the corresponding provisions in Annex II); where the discharges into the sea of oil or oily mixture result from damage to a ship or its equipment provided that *i)* 'all reasonable precautions' were taken 'after the occurrence of the damage or discovery of the discharge' for the purposes of preventing or minimizing the discharge; and that *ii)* the owner or the master did not act either with intent to cause damage, or recklessly and with knowledge that damage would probably result (para. 2 of Regulation 4, Annex I and the corresponding provisions in Annex II); and where approved by both the flag State and any Government in whose jurisdiction it is contemplated the discharge will occur, in order to combat a specific pollution incident for minimizing the damage from pollution (para. 3 of Regulation 4, Annex I and the corresponding provisions in Annex II).

On the other hand, Art. 4 of the ship-source pollution Directive provides that 'Member States shall ensure that ship-source discharges of polluting substances . . . are regarded as infringements if committed with intent, recklessly or by serious negligence'. In addition, Art. 5 consists of two paragraphs that refer directly to the MARPOL exceptions to the above described general prohibition of discharge of oil and noxious liquid substances. More precisely, paragraph one provides that

> [a] discharge of polluting substances into any of the areas referred to in Article 3(1) [internal waters] shall not be regarded as an infringement if it satisfies the conditions set out in Annex I, Regulations 15, 34, 4.1 or 4.3 or in Annex II, Regulations 13, 3.1.1 or 3.1.3 of Marpol 73/78.

Paragraph two states that

> [a] discharge of polluting substances into the areas referred to in Article 3(1)(c), (d) and (e) [straits used for international navigation, EEZs and the high seas] shall not be regarded as an infringement for the owner, the master or the crew when acting under the master's responsibility if it satisfies the conditions set out in Annex I, Regulation 4.2 or in Annex II, Regulation 3.1.2 of marpol 73/78.

As far as the elements that are relevant for our analysis are concerned, the MARPOL and the ship-source pollution Directive differ in the following: the

[95] Arts 10–12.

[96] Annex I, Regulations 15, 34, 4.1 or 4.3 and Annex II, Regulations 13, 3.1.1 or 3.1.3.

MARPOL consider a discharge being 'reckless' only if made with 'knowledge that damage would probably result' (see *ii)* above), whereas the Directive does not contain this additional specification and only covers cases of pollution committed 'with intent, recklessly or by serious negligence' (although not providing further guidance as to the precise content of these criteria). Article 5(1) of the Directive that applies to internal waters, includes paragraphs 1 and 3 of Regulation 4 of Annex I (and the corresponding provision in Annex II) of the MARPOL in the regime of exceptions to liability, but excludes paragraph 2 of Regulation 4 of Annex I on pollution resulting from damage to the ship or its equipment. Furthermore, Art. 5(2) of the Directive, dealing with pollution in the straits used for international

navigation, in the EEZ or on the high seas, excludes from the exceptions to liability for pollution resulting from damage to the ship or its equipment all the persons different from the owner, the master and the crew acting under the master's responsibility. In other words, anyone could in principle be liable and subject to penalties in respect of a discharge. By contrast, in the MARPOL the exclusion from liability for discharges operates only if the master or the owner did not act either with intent to cause damage, or recklessly and with knowledge that damage would probably result. The literal wording of the international provision seems to suggest that the acts of persons other than the owner or master are completely irrelevant in the case of discharge resulting from damage to the ship or its equipment. Discharge would appear to be prohibited only where one of these two persons acted with intent or recklessly and with knowledge that damage would probably result. On this point some Authors have highlighted that such an interpretation of the MARPOL would lead to the rather illogical result that, for example, a person who caused intentional damage to a ship or its equipment could escape liability so long as neither the master nor the owner acted with intent or recklessly.[97] However, an interpretation more in line with the general objectives of the Convention to prevent pollution and to discourage potential perpetrators suggests that a wider range of persons can be involved in the pollution and potentially subject to criminal penalties. Therefore, it cannot be ruled out that other operators in the shipping chain bear responsibility and can cause damage resulting in discharge.[98] This interpretation avoids the possible contradiction between the MARPOL and the ship-source pollution Directive.

In relation to sanctions, the MARPOL specifies that sanctions have to be adequate in severity in order to discourage violations and equally severe irrespective of where the violations occurred. However, the nature of these sanctions is not clearly affirmed.

[97] See Pozdnakova (n. 89) 227.

[98] See the Advocate General's Opinion in the *Intertanko* case, para. 89 (*infra* para. 6) and Pozdnakova (n. 89) 246.

By contrast, the ship-source pollution Directive, still in its original version, required Member States to take measures to ensure that infringements were subject to 'effective, proportionate and dissuasive sanctions',[99] including *criminal* or *administrative* penalties (Art. 8 Directive 2005/35/EC). It is important to mention that the 2005 Directive was initially supplemented by a Council Framework Decision the main aim of which was to approximate criminal-law legislation of the Member States by requiring them to establish a system of criminal penalties in order to combat the pollution caused by ships. The Framework Decision also indicated the content of these criminal penalties (eg imprisonment up to ten years, fines up to 1.5 million euros, temporary or permanent disqualification from engaging in commercial activities, judicial winding up etc.). However, this was annulled by the ECJ in 2007.[100] On that occasion the Court affirmed, inter alia, that although the Commission may have prescribed the use of criminal penalties, the 'determination of the type and level of the criminal penalties to be applied did not fall within the Community's sphere of competence'.[101] Subsequently, Directive 2009/123/EC deleted the reference to the penalties of administrative nature and retained the one to the criminal penalties, thus aligning its wording with that contained in the environmental crime Directive, which will be described in the next paragraph. As it stands now, as far as natural persons are concerned, Directive 2009/123/EC requires that Member States shall take the necessary measures to ensure that ship-source discharges of polluting substances producing a deterioration of water quality[102] and committed with intent, recklessly or by serious negligence be regarded as criminal offences and are punished by effective, proportionate and dissuasive *criminal* penalties.[103] Therefore, differently from the unclear wording of the MARPOL, in the ship-source pollution Directive, at least the criminal nature of the measures is affirmed.[104]

[99] For the interpretation of the concepts of effective, dissuasive, and proportionate penalties see particularly M Faure, 'Effective, Proportional and Dissuasive Penalties in the Implementation of the Environmental Crime and Ship-source Pollution Directives: Questions and Challenges' (2010) *European Energy and Environmental Law Review* 259–65.

[100] C-440/05. *Commission of the European Communities v Council of the European Union,* Judgment of the Court (Grand Chamber) of 23 October 2007. <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-440/05>.

[101] Para. 70 of the ECJ judgment. See Faure (n. 99) 257–8; MJ Borgers and T Kooijmans, 'The Scope of the Community's Competence in the Field of Criminal Law' (2008) 16 *European Journal of Crime, Criminal Law and Criminal Justice* 379–95; and M Hedemann-Robinson, 'The EU and Environmental Crime: the Impact of the ECJ's Judgment on Framework Decision 2005/667 on Ship-Source Pollution' (2008) 20 *Journal of Environmental Law* 279–92.

[102] Art. 5a.2. The Directive also specifies that minor but repeated discharges fall within the scope of the prohibition, unless no deterioration of water quality is caused (Art. 5a.3).

[103] See Arts 5a.1 and 8a Directive 2009/123/EC.

[104] In addition, the Directive provides that any intentional act of inciting or of aiding and abetting a pollution violation has to be punished as a criminal offence under the domestic law of the EU Member States (Art. 5b Directive 2009/123/EC).

EU Member States are required to prescribe the use and to define the specific content of criminal penalties with regard to non-negligible illegal shipments of waste, non-negligible trade in protected specimens as well as to cases of illegal pollution caused by ships.

Finally, it has also to be mentioned that the Directive adopted in 2009 introduced provisions on liability and penalties for legal persons, which were absent in the original version.[105] However, the Directive stated that the penalties, although effective, proportionate, and dissuasive,[106] did not have to be necessarily of a criminal nature. Similar provisions are also contained in the environmental crime Directive.

Within the EU there has been a long struggle for the adoption of a binding instrument dedicated to the protection of the environment through criminal law.

A new instrument was considered necessary by the European institutions because of the rise in environmental offences and their effects, which increasingly extended beyond the borders of the States in which the offences were committed. The offences were considered to pose a threat to the environment and therefore an appropriate response was called. The existing systems of penalties had not been sufficient to achieve complete compliance with the laws for protecting the environment.[107]

After long negotiations which started in 2000 upon the Danish initiative for a Framework Decision and after a Commission proposal for a Directive adopted in 2001, the Council and the Parliament in 2008 finally reached an agreement on the proposal for a new instrument.[108]

The Directive 2008/99/EC of the European Parliament and of the Council on the protection of the environment through criminal law was formally adopted on 19 November 2008.[109]

The text of the environmental crime Directive offers a common understanding of what constitutes environmental crime. It requires Member States to establish a system of criminal sanctions for natural persons committing serious environmental

[105] The legal persons can be held liable for offences committed for their benefit by persons acting in leading positions or where the lack of supervision or control by a person in a leading position has made possible the commission of the offence (Art. 8b of Directive 2009/123/EC).

[106] Art. 8c.

[107] See, among others, GM Vagliasindi, 'The European Harmonisation in the Sector of Protection of the Environment Through Criminal Law: the Results Achieved and Further Needs for Intervention' (2012) 3 *The New Journal of European Criminal Law* 320–31.

[108] See H-E Zeitler, 'Happy End of a Long saga—Agreement on the Directive for the Protection of the Environment through Criminal Law' (2008) 5 *Journal of European Environmental & Planning Law* 281–91.

[109] Directive 2008/99/EC on the protection of the environment through criminal law [2008] OJ L328, 6.12.2008, 28.

crimes so as to demonstrate a social disapproval of a qualitatively different nature when compared to the administrative or a compensation mechanism under civil law.[110] It also clarifies the scope of the liability for legal persons.

The environmental crime Directive contains an harmonized definition of nine environmental criminal offences that are considered unlawful i) when they are in breach of the European legislation listed in Annex A or B and based on the EC and the EURATOM Treaty (objective element) and ii) when they are committed 'intentionally or at least with serious negligence' (subjective element).

As far as the objective element is concerned, the offences require that the activity causes or is likely to cause serious harm to persons or the environment, namely, the quality of air, soil, or water, or to animal or plants. The conduct that potentially constitutes a criminal offence includes: the illegal collection, transport, recovery, disposal and shipment of waste; the illegal use or storage of dangerous substances in the operation of a plant; the illegal production, handling and disposal of hazardous radioactive substances; the trade, killing, destruction, possession, and taking of endangered flora and fauna species; the unlawful deterioration of habitats; and the production, importation, exportation, placing on the market, or use of ozone-depleting substances.[111] It has to be noted that this list of activities is only indicative as under Art. 193 TFEU Member States are free to adopt stricter measures so that they may establish additional offences.

Nevertheless, while being true that the Directive expands the list of activities that can be potentially criminalized, at the same time, regarding the type and content of the penalties to be applied by the Member States, it suffers from the same vagueness as the ship-source pollution Directive. In fact, even if it provides that the penalties should be of a criminal nature (along with being effective, proportionate, and dissuasive), it still does not lay down any specific procedural rules of criminal law nor touches upon the powers of prosecutors and judges. This necessarily leads to a considerable variation in the level of punishment. At the Member States level the average of the criminal law sanctions ranges from six months to life imprisonment for natural persons and from 200,000 to 60,000,000 euros for legal persons.[112]

At present, there is a high degree of confusion regarding the national implementation of penalties. Therefore, it would be highly advisable to unify the provisions on criminal penalties at the national level.

[110] M Faure, 'The Implementation of the Environmental Crime Directives in Europe' (paper presented at the Ninth International Conference on Environmental Compliance and Enforcement, Brussels, Belgium) <http://inece.org/conference/9/proceedings/41_Faure.pdf> (accessed April 2014).

[111] For the analysis of each specific offence see Faure (n. 110) 362–5.

[112] Data presented by H Wagner (European Commission-DG Justice) during the European Union Project on Environmental Crime meeting (the EFFACE project) (efface.eu) on 24 January 2014 (Berlin, Germany).

Furthermore, still from the point of view of the objective element, the conduct under the Directive covers both the 'concrete' and the 'abstract' endangerment of the environment. However, some of these activities are very difficult to classify since the activities referred to can all potentially endanger the environment, but in some cases, the danger may be merely abstract whereas in other cases the danger may be more concrete or could lead to concrete harm. Some legal uncertainties arose with reference to some of the notions used in the environmental crime Directive (but also contained in the ship-source pollution Directive). Notions such as 'substantial damage', 'non- negligible quantities' or impacts, or 'dangerous activities and substances' can in fact be problematic and lead to difficulties in their interpretation since they 'would violate the *lex certa* requirement which follows from the legality principle in criminal law and requires that the law should be sufficiently precise for the potential perpetrator to know whether he will fall under the scope of the criminal law or not.'[113] As has been suggested, Member States could give content to these vague notions through the use of the European legislation listed in Annex A and B of the environmental crime Directive that has been already transposed at the national level. In fact, to the extent that quality standards have been determined or dangerous substances have been identified at the national level this may be very helpful for Member States who wish to provide more precision and guidance in the implementation of the vague notions contained in the environmental crime Directive.[114]

Another noteworthy point with regard to the environmental crime Directive is the definition of criminal offences, both in terms of technique and in terms of terminology.[115] A wide range of conduct is criminalized, 'when unlawful'.[116] Unlawfulness is defined by reference to the infringement of a wide range of Community instruments, listed in two annexes to the Directive.[117] This drafting technique poses serious challenges for legal certainty, in particular in the light of the fact that infringement constitutes a criminal offence.[118]

As far as the subjective element of the criminal offence is concerned, conduct as defined in Articles 2, 3, and the annexes to the Directive is a criminal offence when committed intentionally, 'or with a least serious negligence'.[119] Not only does the

[113] Wagner (n. 112) 368.

[114] Wagner (n. 112) 368.

[115] V Mitsilegas, 'The Third Wave of Third Pillar Law: Which Direction for EU Criminal Justice?' (2009) 34 *European Law Review* 523–60.

[116] Directive Art. 3.

[117] Directive Art. 2(a). The definition of key terms to the Directive (such as 'protected fauna and flora species' and 'habitat within a protected site') are also defined by reference to Community Directives—see Art. 2(b) and (c).

[118] See also in this context the analysis of Zimmermann, who notes that no less than 72 legal instruments are listed in the annexes to the Directive: F Zimmermann, '*Wann ist der Einsatz von Strafrecht auf europäischer Ebene sinnvoll?*' (2009) *Zeitschrift für Rechtspolitik* 74, 75.

[119] Directive 2008/99 Art. 3.

extension of *mens rea* to negligence (in combination with the long list of Community law instruments whose infringement constitutes a criminal offence) extend the scope of criminalization, but it also adds to the concerns with regard to respect for legal certainty in Community criminal law. As will be seen in the next section, the issue has been the subject of litigation before the ECJ in the context of the ship-source pollution Directive.

As it relates to the MARPOL the reference to the subjective element has been already described above in relation to the provisions contained in the ship-source pollution Directive.

Finally, the environmental crime Directive also contains rules on the scope of liability for natural legal persons that are absent in the relevant international Conventions. Legal persons may be held liable for offences committed for their benefit by persons acting in a leading position based on a power of representation, on an authority to take decisions on behalf of the legal person or to exercise control within the legal person.[120] Legal persons can be also liable where the lack of supervision or control by a person in a leading position has made possible the commission of the offence.[121] As to the penalties, Member States have to ensure that the offences are 'punishable by effective, proportionate and dissuasive penalties'.[122] Evidently, in this case the penalties do not have to be necessarily of a criminal nature.

In light of the above, both the environmental crime Directive and the ship-source pollution Directive constitute a step forward in the criminalization of certain activities and conduct harmful to the environment compared to the provisions contained in certain existing Multilateral Environmental Agreements (such as the Convention on the Trade in Endangered Species of Fauna and Flora or the Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal). Nevertheless, when it comes to defining the types and level of criminal penalties, these instruments reflect the status of the delicate debate on the harmonization of environmental criminal law of the Member States. Furthermore, legal uncertainties arise with reference to some of the notions used in both Directives, such as 'substantial damage', 'non-negligible quantities or impacts', and with regard to the definition of criminal offences itself (both in terms of technique and terminology) in combination with the extension of *mens rea* to negligence.

As seen above, EU law has introduced more extensive criminalization provisions to international law, in particular as regards ship-source pollution. These divergences between the international and the European standards led a coalition of the shipping industry to bring an action against the Secretary of State for Transport before

[120] Art. 6.
[121] Art. 6.
[122] Art. 7.

the English High Court of Justice.[123] In 2008 the High Court of Justice (Queen's Bench Division) decided to make a referral for a preliminary ruling to the ECJ regarding the incompatibility between Community law and international law of the sea under the MARPOL 73/78 Convention and the UN Convention on the Law of the Sea (UNCLOS).[124] It was argued in particular that: it was unlawful for the Community to legislate independently of the MARPOL for third-country vessels on the high seas or in the EEZ; it was unlawful for the EC to legislate in relation to activities in the territorial sea otherwise than in accordance with MARPOL; and that under UNCLOS passage affected by negligent or serious negligent pollution remains lawful and any attempt to lower this threshold would amount to an unlawful interference with the right of innocent passage.[125] The applicants added that the use of the term 'serious negligence' in the Directive infringed the principle of legal certainty.[126] The High Court decided to refer these questions to Luxembourg Court,[127] where the applicants (representing a variety of shipping interests) and the Greek, Cypriot, and Maltese Governments submitted that Articles 4 and 5 of the ship-source pollution Directive did not comply with international law in particular by establishing a stricter liability regime for accidental discharges than that laid down in the MARPOL.[128]

In addressing these questions, the Court was called primarily to assess the compatibility of Community law with international law on pollution at sea.[129] The Court reiterated the principle of primacy of international agreements concluded by the Community over secondary Community legislation[130] and acknowledged

[123] *The Queen on the Application of the International Association of Independent Tanker Owners (Intertanko) and others v Secretary of State for Transport* [2006] EWHC 1577.

[124] See, *ex multis*, D König, 'The EU Directive on Ship-Source Pollution and on the Introduction of Penalties for Infringements: Development or Breach of International Law?' in TM Ndiaye and R Wolfrum (eds), *Law of the Sea, Environmental Law and Settlement of Disputes: Liber Amicorum Judge Thomas A. Mensah* (Martinus Nijhoff, 2007) 769; R Pereira, 'On the Legality of the Ship-Source Pollution 2005/35/EC Directive—The Intertanko Case and Selected Others' (2008) *European Energy and Environmental Law Review* 372–83; AKJ Tan, 'The EU Ship-Source Pollution Directive and Recent Expansions of Coastal State Jurisdiction' in D Vidas (ed.), *Law, Technology and Science for Oceans in Globalisation, IUU Fishing, Oil Pollution, Bioprospecting, Outer Continental Shelf* (Martinus Nijhoff, 2010) 292–3; and R Pavoni, 'Controversial Aspects of the Interaction Between International and EU Law in Environmental Matters: Direct Effect and Member States' Unilateral Measures' in E Morgera (ed.), *The External Environmental Policy of the European Union* (Cambridge University Press, 2012) 353–60.

[125] See V Mitsilegas, 'The European Union and the Globalisation of Criminal Law' (2009–2010) 12 *Cambridge Yearbook of European Legal Studies* 337–407.

[126] R Barnes and M Happold, 'Current Legal Developments. United Kingdom' (2007) 22 *The International Journal of Marine and Coastal Law* 331.

[127] See *Intertanko* para. 29.

[128] Para. 37.

[129] The Court also examined the issue of the compatibility of the term 'serious negligence' used in the Directive with the principle of legal certainty, but purely from the perspective of Community law—paras 67–80. The analysis in this part will focus on the part of the Court's ruling on the relationship between Community and international law.

[130] *Intertanko*, para. 42.

that the validity of a measure of secondary Community legislation may be affected by the fact that it is incompatible with such rules of international law.[131] The review of the validity of Community law in this context takes place under two conditions: i) that the Community is bound by the international agreements in question;[132] and ii) that review is not precluded by the nature and the broad logic of the international agreement and that the latter's provisions appear, as regards their content, to be unconditional and sufficiently precise.[133] The Court applied this two-fold test at two levels: to assess the validity of the ship-source pollution Directive in the light of the MARPOL: and to assess the validity of the Directive in the light of UNCLOS. In both cases, but via a different reasoning in each case, the Court shielded the ship-source pollution Directive from a review in the light of international law.

As regards the assessment of the validity of the Directive in the light of the MARPOL, the Court stated from the outset that the Community is not a party to that Convention.[134] It added that it does not appear that the Community has assumed, under the EC Treaty, the powers previously exercised by the Member States in the field to which the MARPOL applies, nor that, consequently, its provisions have the effect of binding the Community.[135] The Court distinguished the MARPOL from the General Agreement on Tariffs and Trade (GATT) within the framework of which the Community progressively assumed powers previously exercised by the Member States, with the consequence that it became bound by the obligations flowing from that agreement and found that the GATT case law cannot be applied to the MARPOL.[136] The fact that all the Member States of the Community are parties to the MARPOL does not change this finding as in the absence of a full transfer of the powers previously exercised by the Member States to the Community, the latter cannot, simply because all those States are parties to the MARPOL, be bound by the rules set out therein, which it has not itself approved.[137] The assessment of whether the validity of the ship-source pollution Directive can be assessed in the light of the MARPOL fell thus in the very first hurdle, namely to establish whether the Community is bound by the international Convention in question. Not even the acknowledgement by the Court of the contested fact that the Directive has the objective of incorporating certain rules set out in that Convention into Community law was deemed to be sufficient to allow such review.[138]

[131] Para. 43.
[132] Para. 44.
[133] Para. 45, where the Court referred to its *IATA* ruling—Case C-344/04 *IATA* and *ELFAA* [2006] ECR I-403.
[134] Para. 47.
[135] Para. 48.
[136] Para. 48.
[137] Para. 49.
[138] Para. 50.

The Court did further examine whether the Directive could be reviewed in the light of rules of customary international law, but found that in the specific case in question the relevant the MARPOL rules do not codify such rules.[139] In the light of the above, the Court stated unequivocally that the validity of the ship-source pollution Directive cannot be assessed in the light of the MARPOL, even though the latter binds the Member States.[140] This is a far-reaching conclusion, as it creates a fundamental tension between Member States' obligations under international law and their duties under Community law.[141] The Court addressed this tension by acknowledging that, based on the principle of loyal cooperation, it has a duty to interpret the relevant secondary law in the light of the MARPOL.[142]

This finding may open an avenue towards interpreting Community law in the light of the MARPOL. By way of example, the 'serious negligence' requirement under the ship-source pollution Directive could be interpreted as to include also an element of 'knowledge' as provided by the MARPOL.[143] Therefore, a serious breach of a duty of care (under the Directive) could thus correspond to reckless behaviour with knowledge that damage would probably result (as provided by the MARPOL). Following this interpretation, the compatibility between the international and the EU provisions would be assured. As has been suggested by legal doctrine, 'Member States will have implemented the Directives correctly so long as their domestic laws catch a sufficiently broad range of pollution incidents while specifically targeting violations. In fact, the national laws of many States apply simply to 'negligent pollution', rather than addressing the concept of 'serious negligence'.[144]

Nevertheless, the fact remains that in declining to review the validity of the Directive in the light of that Convention the Court has effectively allowed, under certain conditions, Member States to disregard their international law obligations when legislating at EU level.

The Court further declined to review the Directive in the light of UNCLOS.[145] While in the ship-source pollution ruling[146] the Court affirmed internally the

[139] Para. 51.

[140] Para. 52.

[141] On this point, see also see P Eeckhout, who points out that it has been ambiguous during negotiations whether the purpose of the Directive was to implement international standards—see his case note in Case C-308/06, *The Queen on the application of Intertanko and Others v Secretary of State for Transport*, Judgment of the Court of Justice (Grand Chamber) of 3 June 2008, (2009) 46 *Common Market Law Review* 2041, 2052.

[142] *Intertanko*, para. 51.

[143] The ECJ interpreted serious negligence as 'an unintentional act or omission by which the person responsible commits a patent breach of the duty of care which he should have and could have complied with in view of his attributes, *knowledge*, abilities and individual situation' (emphasis added, judgment, para. 77).

[144] Pozdnakova (n. 89) 224.

[145] Paras 53–65.

[146] See above, para. 2.

autonomy of the Community legal order with regard to the Union legal order, in *Intertanko* the Court did the same externally, by affirming the autonomy of the Community legal order with regard to international law. The Court thus has boosted the autonomy of both the constitutional and the political choices on the criminalization of ship-source pollution by the Community. However, in doing so, the choices of the European legislator may lead to over-criminalization in the field of the protection of the environment at EU level.

2.8 The Evaluation of MARPOL

In general MARPOL has been evaluated as one of the most successful and vibrant MEAs in the field of environmental protection in general.[147] Everyone will agree that because of MARPOL, ship-source pollution, whether intentional, operational, or accidental has significantly been reduced since its adoption.

However, there are certain aspects which diminish its effectiveness. One of the major difficulties with MARPOL is the question of enforcement (see Section 2.4), that is, the question of determination of which State has the jurisdiction to investigate and prosecute pollution violations: the flag State; the port State; the coastal State; or the combination of the three.[148] The efficiency of the flag State jurisdiction is frequently questioned in relation to the so-called flags of convenience (or open registers) which may apply less stringent standards to ships. A port State jurisdiction plays a secondary role to the flag State jurisdiction but, as mandated, the port State will only have to report a violation of the Convention to the flag State and it happens frequently that the flag State that receives the report does not investigate the alleged violation. One reason for this inaction is that such an investigation is frequently very expensive, and also the flag State lacks the necessary motivation to investigate as most often there is a lack of sufficient and real 'connecting factors' between the ship and the flag State.[149] MARPOL also provides for coastal State jurisdiction which presupposes that the ship is in the territorial sea of that State. The coastal State either prosecutes the violation itself or forwards evidence to the flag State. In fact, it is noteworthy that over-reliance on the State flag jurisdiction is one of the shortcomings of MARPOL and other maritime Conventions.[150]

[147] Md. S Karim, 'Implementation of the MARPOL Convention in Developing Countries' (2010) 79 *Nordic Journal of International Law* 9.

[148] Becker (n. 20) 631.

[149] Becker (n. 20) 631.

[150] G Peet, 'The MARPOL Convention: Implementation and Effectiveness' (1992) 7 *Int'l J. Maritime &(Estuarine) Coastal Law* 277–95; JB Curris, 'MARPOL 73/78: An International Success Story?' (1985) 15 *Envtl L* 676.

It has to also be mentioned that the failure to protect the oceans from accidental pollution has not only resulted in the States Parties amending MARPOL but also adopting unilateral measures after the occurrence of catastrophes, such as in cases of the *Erika* and the *Prestige* accidents. Their analysis clearly indicates that EU legislation and national legislation vary from MARPOL in many aspects, which can be exemplified by the case of the 1999 *Erika*. France (like the US previously), expanded the coastal State's competence to fight marine oil pollution caused beyond its territorial sea. France applied national legislation with more severe offences than those foreseen in MARPOL and with a wider scope covering areas excluded under MARPOL jurisdiction such as the exclusive economic zone.

Developing States have problems in complying with the MARPOL both as coastal and port States.[151] There are several contributory factors to non-compliance, such as the lack of funds and non-availability of modern equipment. Most developing States do not have reception facilities in their ports. They are of the view that the method of drafting MARPOL provisions regarding these facilities makes their installation a non-legally binding obligation.[152] One of the most important challenges developing States encounter is the implementation of the MARPOL in their domestic legal systems. Some States consider that it is against their sovereignty to apply the Convention directly domestically. Therefore MARPOL must be applied through enabling national legislation which at times cannot be enacted due to lack of required expertise. Even if there are experts they are underutilized by their governments.[153] Further, there remains the question of lack of funds and other economic factors. Lastly, it may be noted that there is a lack of political will in developing countries concerning the state of the marine environment and socio-economic impact of marine environmental pollution.[154]

There is also the question of insufficient reporting on the implementation of MARPOL as many States do not comply with this requirement. Other drawbacks of the MARPOL are the exclusion from its jurisdiction of the warships, naval auxiliary, and other State-operated ships or those used in non-commercial service, although governments and their agencies are the greatest sources of pollution.[155] It must also be mentioned that not all crews are sufficiently skilled in operating pollution prevention equipment on board and lack frequently a working knowledge of the English language.[156]

[151] Karim (n. 147) 319.
[152] Karim (n. 147) 319.
[153] Karim (n. 147) 327–28.
[154] Karim (n. 147) 328, 329.
[155] Art. MARPOL 73/78, Becker (n. 20) 635.
[156] Becker (n. 20) 638.

2.9 Conclusion

At the time of its adoption MARPOL, with its five annexes, was originally designed to be a Convention that would tackle all problems of ship source pollution. However, in 1997, taking into consideration a different source of pollution from ships, a Protocol was adopted adding annex VI to the Convention. Two more Conventions (The Ballast Water Convention and the Anti-Fouling Convention) were adopted subsequently to form a whole gamut of prevention of all ship-source pollution.

Despite the above-mentioned shortcomings of MARPOL, its regulatory regime is undoubtedly the reason why ship-source pollution incidents since the 1970s were always in decline, especially the so-called operational vis-à-vis accidental pollution. Credit of course should be given to the IMO for its dynamism in responding to the many challenges of the maritime industry, especially for forging consensus on many difficult issues confronting Member States due to the divergent interests of the maritime industry's stakeholders. The apparent success of MARPOL is very crucial in achieving IMO's goal for safe, secure, and efficient shipping on clean oceans. Regrettably, while the international mechanism for ship-source pollution is fully in place and has proved to be effective, there is no equivalent international mechanism that can address the land-source pollution which is still today's main source of coastal marine pollution.