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Marine Pollution Monitoring Systems under International law and the Northeast Asia: Lessons from the Barcelona Convention and Protocols

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The marine environment of Northeast Asia is becoming increasingly critical. Beyond the Japanese government's decision to marine discharge of contaminated water from Fukushima nuclear power plant, there are many other marine environmental issues, such as pollution in the Yellow Sea and Marine Plastic Pollution. Nonetheless, Northeast Asia still lacks a legal framework to systematically implement marine environmental cooperation. International environmental law and the Law of the Sea establish the principle in the prevention of the marine pollution and the duty to cooperate. An important tool for achieving these two obligations is marine pollution monitoring. The obligation to monitor marine pollution is stipulated in Articles 204 and 205 of the United Nations Convention on the Law of the Sea. Furthermore, several Regional Sea Conventions provide for it. Among these, the Barcelona Convention and Protocols, a regional agreement for the protection of the marine environment of the Mediterranean Sea, is regarded as a commendable implementation of a marine pollution monitoring system. Particularly, the Mediterranean Sea bears numerous resemblances to the Northeast Asian ocean. It is geographically a semi-enclosed sea and has a complex geopolitical situation between littoral countries. Hence, this paper scrutinizes the marine pollution monitoring system mandated by the Barcelona Convention and Protocol and proposes legal implications for the Northeast Asia seas.

Key words : Monitoring of Marine Pollution, Marine Pollution Monitoring, United Nations Convention on the Law of the Sea, Barcelona Convention and Protocols, Northeast Asia seas

1. Introduction

On August 24th, 2023, TEPCO(Tokyo Electric Power Company) discharged Radionuclide contaminated water(or treated radioactive water) from the Fukushima Daiichi nuclear power plant into the ocean.¹ In response, the Korean government conveyed to its Japanese counterpart that effective and transparent monitoring should be conducted over a prolonged period to guarantee safety from a scientific and objective standpoint during director-level discussion meetings.² Marine pollution monitoring goes beyond diplomatic and political rhetoric and is an international legal obligation. The United Nations Convention on the Law of the Sea (UNCLOS) stipulates continuous surveillance of marine pollution in a distinct article. Article 1, paragraph 4, of UNCLOS defines marine pollution as:

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

The main types of marine pollution are pollution from ships, pollution from land-based sources including through the atmosphere, pollution by dumping, and pollution from seabed activities.³ States are obligated under international law to prevent marine pollution. In order to fulfill this obligation, it is imperative to foster cooperation among nations, and achieving prevention and cooperation can only be accomplished through the implementation of a marine pollution monitoring system. The semi-enclosed seas, which are surrounded by two or

¹ TEPCO conducted the second discharge on October 5th, 2023, the third discharge on November 2nd, 2023, and the fourth discharge on February 28th, 2024. The Japanese government plans to discharge the contaminated water into the ocean by 2051.

² ROK Office for Government Policy Coordination, "The monitoring of contaminated water should be effective and transparent"... Delivering our position to Japan', *Republic of Korea Policy Briefing*, 26 July 2023, <https://www.korea.kr/news/policyNewsView.do?newsId=148918176>.

³ Phillippe VINCENT, *Droit de la mer*, Bruxelles, Bruylant, 2020, p.245.

more countries, are particularly vulnerable to such pollution. Thus, Cooperation between maritime neighbors is even more necessary. The semi-enclosed sea of Northeast Asia is also vulnerable to marine pollution. In addition to the issue of contaminated water discharged from the Fukushima Daiichi nuclear power plant, the Yellow Sea is also heavily polluted and the problem of marine plastics is ongoing. This makes it even more important for Northeast Asian countries to cooperate on marine environment. Nonetheless, the level of cooperation in Northeast Asia remains insufficient, and unlike other regional seas, there is no regional agreement that can effectively safeguard the marine environment in Northeast Asia. This paper therefore examines the legal approach to marine pollution monitoring in general international law and regional maritime agreements. Particularly, the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) shall be thoroughly examined. Mediterranean Sea is a semi-enclosed sea, similar to the Northeast Asian seas. Furthermore, the Barcelona Convention and its Protocol are considered to have established good governance for marine pollution monitoring in regional seas protection programs. Therefore, this paper will scrutinize the marine pollution monitoring obligations and system established by the Barcelona Convention, and draw legal implications for marine environmental cooperation in Northeast Asia.

2. Marine Pollution Monitoring as a Procedural Obligation under International law

2.1. The definition of Marine Pollution Monitoring

In 1972, the United Nations Conference on the Human Environment held in Stockholm, Sweden, adopted the Declaration on the Human Environment (the Stockholm Declaration). Principle 24 of the Declaration states that “Co-operation through multilateral or bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all States”. The Stockholm Declaration emphasized the significance of international cooperation in the environmental domain. Subsequent international practice and the diverse environmental strategies of the United Nations Environment Programme (UNEP), the International Union for Conservation of Nature (IUCN), and other organizations have tended to emphasize the

need for prior notification, consultation, and negotiation to take place on an informed basis. Hence, environmental monitoring and *ex ante* impact assessment have become indispensable supplementary components of the most comprehensive environmental risk management plans.⁴ The dictionary definition of 'monitoring' is "to watch and check something over a period of time in order to see how it develops, so that you can make any necessary changes".⁵ The legal definition of marine pollution monitoring is found in Article 1 of Annex 4 to the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) which defines it as follows:⁶

1. For the purposes of this Annex "monitoring" means the repeated measurement of: (a) the quality of the marine environment and each of its compartments, that is, water, sediments and biota; (b) activities or natural and anthropogenic inputs which may affect the quality of the marine environment; (c) the effects of such activities and inputs.

⁴ Patricia W. BIRNIE & Alan E. BOYLE, *International law & the environment*, New York, Oxford University Press, 1992, p.105

⁵ Oxford University Press, Oxford Learner's Dictionaries – 'Monitor', 2024, https://www.oxfordlearnersdictionaries.com/definition/english/monitor_2?q=monitoring ; The word for monitoring varies between English, French, and Korean. In English, monitoring is mainly used, but depending on the specific activity, words such as 'systematic observation', 'surveillance', 'inspection', and 'verification' are used. In the French language, the words *Surveillance* and *Verification* are often used, although some scholars have retained the English word monitoring. In Korean, the translation of UNCLOS and related texts often employs surveillance. In my perspective, the term "surveillance" possesses a constrained scope. In this paper, we are using monitoring. For a detailed explanation of the legal concept of monitoring, see Philippe SANDS, *Principles of International environmental law*, New York, Cambridge University Press, 2003, pp.847-851.

⁶ The OSPAR Convention is a regional agreement governing international co-operation on environmental protection in the North-East Atlantic Ocean. The work carried out under the Convention is managed by the OSPAR Commission, composed of representatives of the governments of the 15 signatories and a representative of the European Commission on behalf of the European Union. The OSPAR Convention was signed on 22 September 1992 in Paris. It consolidates and modernizes the 1972 Oslo Convention on Dumping of Wastes at Sea and the 1974 Paris Convention on Land-Based Sources of Marine Pollution. The name 'OSPAR' is a combination of the words 'Oslo' and 'Paris'. The current parties to the Convention are Germany, Belgium, Denmark, Spain, France, Ireland, Norway, Iceland, the Netherlands, Portugal, the United Kingdom, and Sweden.

2. Monitoring may be undertaken either for the purposes of ensuring compliance with the Convention, with the objective of identifying patterns and trends or for research purposes

The monitoring of marine pollution has a broad scope and is understood as the process of evaluating the progress or quality of the ocean over a prolonged period.⁷ Marine pollution monitoring is one of the simplest forms of vigilance required of States for the implementation of international environmental protection norms.

2.2. Legal nature of Marine Pollution Monitoring

2.2.1. Prevention Principle and Marine Pollution Monitoring

In international law, the obligation of prevention entails an obligation of conduct, illustrated, for example, by the adoption by States of diligent surveillance and monitoring measures. If this obligation is not taken into account, the State could be held responsible for its unlawful conduct or negligence.⁸ The obligation to provide information to states that may be affected by pollution already has a preventative aspect. The preventative requirement pervades environmental law as a whole and is a fundamental component that underpins virtually all environmental treaty law. Only a few international treaties use other methods, such as state responsibility or compensation for victims. The primary principle, both for environmental and economic reasons, is prevention. Ecological damage, such as the extinction of plant and animal species, erosion, and the discharge of certain pollutants into the ocean, can be irreversible. Despite the possibility of repairing damage, the process can be quite costly. However, even though the prevention is important, the principle of prevention remains *sous-jacent* in international texts.⁹ There is also a hesitation to recognize it as a

⁷ Young-Kyung YOON, 'State's obligations relating to marine monitoring and observation', World Maritime University, J Marit Affairs, 2011, p.31.

⁸ Danilo Garcia CACERES, 'CHAPITRE 2. Le cadre juridique international de la protection et de la conservation de l'environnement marin', Programme ERC Human Sea. Wealth and miseries of the oceans: Conservation, Resources and Borders Richesses et misères des océans : Conservation, Ressources et Frontières, GOMILEX, 2018, p.89.

⁹ Jean-Pierre BEURIER, *Droit international de l'environnement*, Paris, Pedone, 2010, p.152.

customary international law principle due to its lack of clarity and other reasons.¹⁰ However, several international treaties do acknowledge prevention principle. The 1991 Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)¹¹ is an exception, stating in its preamble that it is necessary and essential to develop policies to anticipate, prevent, mitigate and monitor environmental impacts in general and in a transboundary context in particular.¹²

In any case, more specifically, prevention means monitoring the environment in accordance with Principle 19 of the 1982 World Charter of Nature to detect degradation or threat as early as possible and to intervene in a timely manner.¹³ Monitoring becomes therefore a means of implementing prevention principle. The prevention principle and marine pollution monitoring are found in Article 204 (2) of UNCLOS. It stipulates that "in particular, States shall keep under surveillance the effects of any activities which they permit or in which they engage in order to determine whether these activities are likely to pollute the marine environment." This principle is applicable in situations where definite scientific

¹⁰ Myong-Joon ROE, Jae-Ho SUNG, Seung-Hwan CHOI, Chul-Won SUH, 'Environmental Cooperation in the Northeast Asia : Legal Perspective', The Korean Society of International Law , THE KOREAN JOURNAL OF INTERNATIONAL LAW 46(1), 2001.4, p.63.

¹¹ The Espoo Convention is a United Nations Economic Commission for Europe (UNECE) Convention signed in Espoo, Finland in 1991 and entered into force in 1997. This convention sets out the obligations of parties to assess the environmental impact of certain activities at an early stage of planning and lays down general obligations of states to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. Currently, 44 countries and the European Union are parties to the Convention.

¹² Jean-Pierre BEURIER, 2010, p.152.

¹³ 1982 World Charter for Nature (Principle 19) - The Status of natural processes, ecosystems and species shall be closely monitored to enable early detection of degradation or threat, ensure timely intervention and facilitate the evaluation of conservation policies and methods.; Hubert Delzangles, Jean-Marc Lavieille, Catherine Le Bris, *Droit international d'environnement*, Paris, Ellipses, 2018, p.162.

findings demonstrate that an activity has or is likely to have a detrimental impact on the environment. This clarity allows us to intervene at the source of environmental degradation to prevent or limit it. However, there are questions regarding whether such scientific certainty always exists, and what should be done if it does not. Nonetheless, prevention principle is a fundamental legal measure to prevent a nuisance within the parameters of the scientific knowledge available at the time of the act.¹⁴

2.2.2. Duty to Cooperate and Marine Pollution Monitoring

As Environmental issues are characterized by their transboundary nature, marine pollution is also not restricted to national boundaries or specific jurisdictions.¹⁵ Therefore, it is imperative for nations to collaborate in order to prevent and address marine pollution. This is reflected in the UNCLOS, which is often referred to as the Constitution of the Sea. In Part XII, titled "Protection and Preservation of the Marine Environment," section 2 of the Convention pertains to "Global and Regional Cooperation", Article 123 of the Convention also provides for an enhanced duty to cooperate in closed and semi-closed seas. This duty of cooperation is also recognized in several international case law. In the Mox Plant case, the tribunal ruled that the obligation to cooperate is a fundamental principle for the prevention of marine pollution under Part XII of UNCLOS and under general international law.¹⁶

The correlation between marine pollution monitoring and interstate cooperation is

¹⁴ Jean-Pierre BEURIER, 2010, pp.155~156.

¹⁵ Minchul KIM, 'A Critical Review on the Obligations to Cooperate for Marine Environmental Protection under UNCLOS: Implications for Japan's Contaminated Water Releas', Korean Society of Law, Justice 185, 2021, p.289.

¹⁶ The case was decided by the International Tribunal for the Law of the Sea in 2001 to resolve a dispute between the UK and Ireland. The case arose over the issue of nuclear fuel reprocessing, with the Irish government claiming that the UK's establishment of a plant to reprocess nuclear fuel into a new fuel called Mox was causing marine pollution. ITLOS, Mox plant case (Ireland v. United Kingdom), Provisional Measures, Case No. 10. decided on 3-12-2001, para. 82.

particularly evident in regional sea agreements. Article 10 of the Barcelona Convention requires the Parties to establish, in close cooperation with the competent international organizations, complementary or joint programs to monitor pollution in the Mediterranean Sea, in order to establish a system for continuous monitoring of marine pollution.¹⁷

2.2.3. Relationship between Environmental Impact Assessment(EIA) and Marine Pollution Monitoring

Prevention principle require two tasks: environmental impact assessment(EIA) and monitoring of planned activities.¹⁸ Article 204 of UNCLOS also states that monitoring and impact assessment are two fundamental elements of the precautionary approach adopted by the Convention.¹⁹ EIA is now a widely used and recognized tool. It is the process of evaluating the positive and negative impacts of a proposed project or activity on the environment. It involves identifying, predicting, interpreting, and communicating relevant potential consequences. In the Mediterranean region, it is imperative to conduct EIA for projects that are likely to have a significant impact on the environment. International case law has recognized that the obligation to conduct an EIA is not solely a direct obligation under the UNCLOS, but also a general obligation under customary international law.²⁰

As we have already seen, EIA and marine pollution monitoring are methods of

¹⁷ In addition, Article 10(1) of the Kuwait Regional Sea Agreement on Cooperation for the Purposes of Protecting the Marine Environment from Pollution, 1978; Article 14 of the 1991 Convention for the Protection of the Marine and Coastal Environment and Cooperation in Development in the West and Central African Region; and Article 10 of the 1982 Regional Convention for the Conservation of the Environment of the Red Sea and Gulf of Aden set out the obligations of cooperation and marine pollution monitoring.

¹⁸ Jean-Pierre BEURIER, 2010, p.152.

¹⁹ Mathias FORTEAU, Jean-Marc THOUVENIN, *Traite de droit international de la mer*, Paris, Pedone, 2017, p.795.

²⁰ TIDM, 'Responsabilités et obligations des Etats qui patronnent des personnes et des entités dans le cadre d'activités menées dans la Zone', avis consultatif du 1er février 2011, TIDM Recueil 2011, p.10.

implementing the prevention principle and the duty to cooperate. These two instruments, on the one hand, are recognized as independent obligations apart from these two principles. The correlation between the EIA obligation and the monitoring of marine pollution is viewed in a divergent manner by certain scholars. Mario Bettati believes that "monitoring pollution risks can be done in two ways: through observation, assessment and analysis or through environmental impact assessment".²¹ He regards EIAs as a means to fulfil the obligation to monitor marine pollution. On the other hand, Jean-Marc Lavière and others have argued that "environmental monitoring and environmental impact assessment are synonymous"²²; i.e. they are two obligations that go hand in hand in order to comply with the prevention principle. In the Uruguay Pulp Mill case, the International Court of Justice addressed the relationship between EIA and monitoring, upholding a state's obligation to conduct an EIA. Particularly, it clarified the connection in terms of time, stating that an environmental impact assessment is not only required to accompany a project prior to its implementation, but is additionally complemented by the obligation to monitor the environmental impact of the project once it has commenced.²³ In this instance, the tribunal did not intend to extend the scope of EIA and monitoring to the post-project phase, but rather to emphasize the ongoing procedural obligation.²⁴ In my view, EIA under Article 206 of UNCLOS is a prevention system for certain activities that may pose a threat to the marine environment, whereas monitoring of marine pollution under Articles 204 and 205 of the Convention is more comprehensive than EIA in that it is proactive, general and persistent.

3. The Monitoring Systems for Marine Pollution under International Agreements

3.1. The Global Environment Monitoring System (GEMS) and Marine Pollution

²¹ Mario BETTATI, *Le Droit international de l'environnement*, Paris, Odile Jacob, 2012, p.65.

²² Hubert Delzangles, Jean-Marc Lavieille, Catherine Le Bris, 2018, p.162.

²³ CIJ, 'L'arrêt des usines de pâte à papier, (Argentine c. Uruguay)', 20 avril 2010, para 205.

²⁴ Jochen SOHNLE, 'L'arrêt des usines de pâte à papier de la CIJ du 20 avril 2010 Un mode d'emploi pour violer des obligations procédurales sans peine', *Northeast Asia seasRevue juridique de l'environnement*, 2010/4 (Volume 35), p.612.

The Global Environment Monitoring System (GEMS) is the result of a global community effort to collect data necessary for the rational management of the environment through monitoring. In 1972, in accordance with the recommendations of the United Nations Conference on the Human Environment, the United Nations Environment Programme (UNEP) was established with the mandate to enhance and coordinate monitoring initiatives at both the international and regional levels. In 1975, UNEP initiated a systematic approach to monitoring by establishing the Programme Activity Centre for the Global Environmental Monitoring System at its headquarters in Nairobi, Kenya.²⁵ GEMS is reviewed in detail on a programme-by-programme basis by a group of government experts. For example, the GEMS, which focused on water activities, was heralded from 1997 to 2007 and was included in the 2030 Agenda and continues to be a monitoring programme.²⁶ In addition, the Global Environmental Monitoring System for the Oceans and Coasts (GEMS Ocean) was officially endorsed in September 2022 by the United Nations Decade of Ocean Science for Sustainable Development (2021-2030). GEMS Ocean is anticipated to facilitate the establishment of a network of collaboration with UNEP and various international and national organizations, enabling them to participate in projects and initiatives within the UN Ocean Decade framework. GEMS Ocean programme enables the protection and sustainability of marine and coastal resources through access, analysis, use and communication of information. It also aims to strengthen the capacity of all sectors of society to inform international, regional and national processes related to marine spatial planning, ocean forecasting and sustainable ocean economic development.²⁷

3.2. UNCLOS

²⁵ Michael D. GWRYNNE, 'The Global Environment Monitoring System (GEMS) of UNEP', *Environmental Conservation*, Vol. 9, No. 1(1982), p.35.

²⁶ Jean-Pierre Beurier, 2010, p.155. ; UNEP, 'Global Water Quality Monitoring, GEMS/Water: A 50 year history', <https://www.unep.org/resources/factsheet/gemswater-50-year-history>

²⁷ UNEP, 'GEMS Ocean programme officially endorsed by the UN Ocean Decade', <https://www.unep.org/technical-highlight/gems-ocean-programme-officially-endorsed-un-ocean-decade>

In the UNCLOS, there is no obligation to monitor marine pollution in terms of a general obligation to meet the various needs for marine data.²⁸ However, monitoring for the purpose of protecting the marine environment is addressed to some extent in Articles 204 and 205 of the Convention. It should be noted that monitoring under the Convention extends beyond the limits of national jurisdiction to include areas where territorial jurisdiction is not exercised.²⁹ Article 204 (1) contains a general monitoring obligation that is new to the Convention regime, while Article 204 (2) contains more specific obligations that have been recognized since before that time.³⁰ However, it has been criticized that the lack of clarity in Article 204 has led to numerous obstacles to its implementation.³¹ Article 205 of the Convention requires States to publish reports on the results of their monitoring or submit them to a competent international organization. The actual application of the monitoring obligations under the UNCLOS is considered to be quite limited.³²

3.3 Regional Treaties.

The UNCLOS requires countries to cooperate regionally in order to plan and implement measures to protect the marine environment. The Regional Seas Regime implements regional co-operation in marine environmental protection under Part XII of UNCLOS.³³ Regional

²⁸ Young-Kyung YOON, 2011, p.32.

²⁹ Jean-Pierre Beurier, 2010, p.155.

³⁰ Minchul KIM, 2021, p. 298.

³¹ Alan BOYLE, 'The Environmental Jurisprudence of the International Tribunal for the Law of the Sea', *International Journal of Marine and Coastal Law*, Vol 22, No. 3, 2007, pp. 369~381.; Maki TANAKA, 'Lessons from the Protracted Mox Plant Dispute: A Proposed Protocol on Marine Environmental Impact Assessment to the United Nations Convention on the Law of the Sea', *Michigan Journal of International Law*, Vol 25, Issue 2, 2004, pp. 338~428.

³² Mathias FORTEAU, Jean-Marc THOUVENIN, 2017, p.795. ; For a detailed analysis of Articles 204 and 205 of UNCLOS, see Minchul KIM, 2021, pp.297-299, and Myron H. Nordquist (Sous la direction de), Shabtai Rosenne, *United Nations Convention on the Law of the Sea, 1982: A Commentary*, Leiden, Boston, M. Nijhoff , 2011,pp.109~117.

³³ Maki TANAKA, 2004, p.426.

agreements that have established regional seas monitoring regimes are usually found in Europe. In 1974, the 'Convention for the Protection of the Marine Environment of the Baltic Sea' (the Helsinki Convention) was signed. For the first time, comprehensive measures for a regional sea were established to address all sources of marine pollution. On the basis of this Convention, an international ministerial conference on the protection of the North Sea was organised in 1983 at the proposal of the German government. The conference underlined the urgent need to make the monitoring programme (a joint programme of the Oslo and Paris Commissions) more coherent and intensively developed to provide a basis for better knowledge of the state of the North Sea marine environment.³⁴ The OSPAR Convention, signed in 1992, provides the legal framework for the monitoring of marine pollution. Under Article 6 and Annex 4 of the Convention, Parties are required to conduct and publish a joint assessment of the qualitative state of the marine environment. This includes assessing the effectiveness of measures taken and planned by the Parties and identifying priorities for action. To achieve this, the Convention requires the OSPAR Commission to define and implement a joint monitoring programme for the protection of the marine environment. Accordingly, the Joint Assessment and Monitoring Programme (JAMP) was implemented by 2010 as a basis for the Parties to the Convention to cooperate in fulfilling these marine pollution monitoring obligations.³⁵ The 1978 Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution is the only regional sea agreement outside the European region to address marine pollution monitoring. Article 10 (a) of the Convention stipulate that " The Contracting States shall co-operate directly, or, where appropriate, through competent international and regional organizations, in the field of scientific research, monitoring and assessment concerning pollution in the Sea Area, and shall exchange data as well as other scientific information for the purpose of the present Convention and any of its protocols." In order to implement this, the Convention provides in Article 17 (d) (ii) that, on the basis of reports provided by competent international or regional organizations and States Parties, the Council shall review and assess the state of marine

³⁴ David FREESTONE and Ton IJLSTRA, *The North Sea : Perspectives on Regional Environmental Co-operation*, London, Graham&Trotman, 1990, p.8.

³⁵ Commission OSPAR, 'Stratégie pour un Programme conjoint d'évaluation et de surveillance continue (JAMP)', Numéro de référence : 2003-22, p.1.

pollution and its effects on the seas.

3.4. European Union Directives

At the European Union(EU) level, obligations related to marine pollution monitoring are found in the EU Marine Strategy Framework Directive.³⁶ The aim of the Directive is to maintain the good environmental status of the EU marine environment and to ensure the sustainable protection of the marine resource base on which marine-related economic and social activities depend.³⁷ The Directive sets out legally binding operating principles for the management of the marine environment within the EU. Article 11 of the directive establishes the obligations of the monitoring programme. This Article consists of four paragraphs. Paragraph 1 establishes the obligation to monitor marine pollution on an ongoing basis by stipulating that " On the basis of the initial assessment made pursuant to Article 8(1), Member States shall establish and implement coordinated monitoring programmes for the ongoing assessment of the environmental status of their marine waters on the basis of the indicative lists of elements set out in Annex III and the list set out in Annex V, and by reference to the environmental targets established pursuant to Article 10.". It is important to note that these monitoring programmes should be compatible with the regional seas or sub-regions, and should be based on and compatible with the provisions for monitoring laid down in Community law or international agreements. Furthermore, (2) requires Member States to be consistent with their monitoring programs. Additionally, it requires them to consider transboundary impacts and features are taken into account. (3) is viewed as enhancing the binding nature of the marine pollution monitoring obligation by mandating Member States to notify the Commission within a period of three months of establishing a monitoring program.

³⁶ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).

³⁷ European Commission, 'Marine environment', https://environment.ec.europa.eu/topics/marine-environment_en.

4. The Monitoring System for Marine Pollution under the Barcelona Convention

4.1. Background

4.1.1. The Semi-closed Mediterranean Sea and Environmental Vulnerability

The proper noun "Mediterranean" has evolved into a noun that denotes a specific category of natural marine areas that resemble those found in semi-enclosed seas. As a sea in both the natural and legal sense, the Mediterranean is first and foremost part of the great world ocean, which covers most of the planet. But it is also a special and inner space in its breadth.³⁸ The Mediterranean Sea is located in the approximate place of the ancient Sea of *Thétis*, which was closed when the African tectonic plate moved northward. The Mediterranean Sea has a surface area of 2.5 million square kilometers and an average depth of 1,500 meters, reaching a depth of 5,150 meters off the southern coast of Greece. It is an intercontinental body of water with an average depth of 1,500 metres. Its volume of 3,700,000 cubic kilometres is large enough to cover a territory with a seven-kilometer-long water column. In addition, the Mediterranean Sea has about 46,000 kilometers of coastline, including islands and archipelagos, of which a third belongs to Greece. The majority of the coastline is made up of rocky cliffs, sandy beaches, and deltas. It is known for its warm waters, with water temperatures stabilizing at 13 degrees at a depth of 200 meters. This is attributable to the existence of a trench in the Strait of Gibraltar, which prevents the entry of the deep and frigid waters of the Atlantic.³⁹

The most distinctive geographical characteristic of the Mediterranean Sea in terms of its approach to the law of the sea is its semi-enclosed nature. As the largest and deepest semi-enclosed sea on Earth, the Mediterranean borders 21 coastal states, eight of which are members of the EU. Although the concept of a semi-enclosed sea was initially labelled as a stamp(*sceau*) of cooperation and common development and was eventually cemented in an ideologically neutral sense by Article 122 of the UNCLOS, the concept has its origins in the

³⁸ Jean-Paul PANCRACIO, *Droit de la mer*, Paris, Dalloz, 2010, p. 410.

³⁹ For a more detailed geographical description of the Mediterranean, see Julien ROCHETTE, 'La Méditerranée: nature et culture'. *Neptunus*, 13(3), 2007, pp.1-9.

Mediterranean.⁴⁰ The UNCLOS has a separate Part IX 'Closed and Semi-Closed Seas', with Articles 122 and 123. It is therefore necessary to clarify what is meant by the concept of a closed or semi-closed sea for the purposes of this Part IX. The concept of a closed sea is based on the premise that a sea that is entirely surrounded by land with no connection to the open ocean is not a sea within the meaning of public international law, even if its waters are salty. This can only apply to a subcategory of coastal seas, which are naturally more limited and narrow in their connection to the open ocean than semi-enclosed seas and, as a result, are more clearly enclosed by land.⁴¹ It is noteworthy that the definition provided in Article 122 is solely applicable to seas, bays, inlets, or gulfs that are themselves connected to the open ocean and other seas, or to seas that are surrounded by multiple States and connected to other seas or the open ocean by narrow passages, or that comprise entirely or predominantly of the territorial waters and exclusive economic zones of multiple States. Therefore, it refers to maritime areas that are connected to the open ocean either directly or through other semi-enclosed seas, such as the Mediterranean Sea and the Black Sea, which communicate with the open ocean through the Strait of Gibraltar.⁴²

Article 123 of UNCLOS requires cooperation between coastal states in closed or semi-closed seas regarding the management of marine living resources, conservation of the marine environment, and scientific research. It is justified to encourage such cooperation by geographical and environmental realities. The fundamental principle of Article 123 is to encourage coastal States in closed or semi-closed seas to adopt co-operative or co-management measures that are particularly significant due to their interdependence.⁴³ This approach, which is of an environmental nature, is founded on the notion that closed or semi-closed seas are vulnerable. They are especially vulnerable to pollution and anthropogenic

⁴⁰ Natalie Ros, 'La gouvernance de la mer méditerranée', dans le livre *Actualité du droit des mers fermées et semi-fermées*, Sous la direction de Bogdan Aurescu, Alain Pellet, Jean-Marc Thouvenin et Ion Gâlea, (Paris : CEDIN et l'ADIRI, 2019), p.110.

⁴¹ Jean-Paul PANCRACIO, 2010, p.411.

⁴² Ibid.

⁴³ René-Jean DUPUY, Daniel VIGNES, *Traité du Nouveau Droit de la mer*, Paris, Économica, 1985, p.954.

disturbance due to their small size and lack of interaction with other open seas.⁴⁴ The Mediterranean Sea, which is also a semi-enclosed sea, is prone to vulnerability due to numerous factors. Oxygenation and renewal of the sea by the Atlantic Ocean is only possible through the Strait of Gibraltar, which is the narrowest and deepest strait, and takes 90 years to cross. Additionally, it is the drainage channel for several major rivers, which discharge land-based pollution. Due to the urbanization of the coast, there is still untreated industrial pollution and municipal wastewater in many places, with high rates on some northern and southern coasts. In fact, 80 per cent of the Mediterranean's pollution comes from land, and half of the cities with more than 100,000 inhabitants have no waste treatment system. Furthermore, 60 per cent of the wastewater from people living on the coast is discharged directly into the sea.⁴⁵ The Mediterranean is also one of the most heavily traded regions by sea. The ports of Marseille (France) and Genoa (Italy) see 220,000 ship movements a year. With shipping responsible for 3 per cent of global carbon dioxide emissions, the Mediterranean is vulnerable to pollution based by ship. On September 5th 2006, the European Commission published a letter entitled “Developing an Environmental Strategy for the Mediterranean”. In this letter, the European Commission described the environmental vulnerability of the Mediterranean as follows.

Despite nearly thirty years of international efforts to protect this unique ecosystem, it remains fragile and continues to deteriorate as environment pressures increase. Over the last thirty years, numerous longstanding initiatives and organizations have identified the causes of the problems and developed strategies and actions for their solution. However, these strategies often remain unimplemented. Apart from the oft-cited problems of limited financial resources, one of the principal reasons for this inaction is low political

⁴⁴ Alexandra BELLAYER-ROILLE, ‘L’approche française des mers fermées et semi-fermées’, dans le livre *Actualité du droit des mers fermées et semi-fermées*, Sous la direction de Bogdan Aurescu, Alain Pellet, Jean-Marc Thouvenin et Ion Gâlea, Paris, CEDIN et l’ADIRI, 2019, p.17.

⁴⁵ Jean-Paul PANCRACIO, 2010, pp.411~412.

priority given to the environment, inter alia translating into insufficient integration between environmental, economic and social dimensions of sustainable development. A lack of inclusive environmental governance and limited public awareness of environment issues aggravate the situation. Furthermore, poor cooperation between the various actors from local to international has diluted the effectiveness of international assistance.⁴⁶

4.1.2. Adoption of the Barcelona Convention and Protocols

The UNCLOS explicitly requires cooperation between states in semi-enclosed seas. "All solidarity measures to protect, conserve and rationally utilize the resources of the marine environment and exchange the necessary scientific information presuppose first resolving the thorny issue of sovereignty in relation to the delimitation of maritime borders," said Moroccan jurist and diplomat Moganned Bennouna, noting that clarity of maritime sovereignty is a priority.⁴⁷ Jean-Paul PANCRACIO, on the other hand, set out his opposite opinion : "This is of course true, but today, in the absence of new claims by states, most of the disputes regarding the delimitation of maritime boundaries in the basin can be considered settled. Therefore, there is ample space in the Mediterranean for the establishment of inter-state cooperation schemes, whether within the framework of neighboring states in the local sea or within the framework of the Mediterranean as a whole."⁴⁸ In any case, the Mediterranean region has a legal framework for cooperation in marine environmental protection between countries : the Barcelona Convention and Protocol.

Following the United Nations Conference on the Human Environment in 1972, the systematization of international cooperation emerged as an essential goal in the prevention of

⁴⁶ COMMISSION DES COMMUNAUTÉS EUROPÉENNES, 'Établir une stratégie de l'environnement pour la Méditerranée', COM(2006) 475 Final - Non publié au Journal officiel. 2006.

⁴⁷ Mohammed Bennouna, "La délimitation des espaces maritimes en Méditerranée", <http://www.fao.org>.

⁴⁸ Jean-Paul PANCRACIO, 2010, p.415.

marine pollution and the protection of the marine environment. Deriving directly from the Stockholm Plan of Action, UNEP was created in 1972 and began its Regional Seas Programme of Action in 1974. At the beginning of its operation, the programme focused on the Mediterranean Sea, which was considered threatened and vulnerable, leading to the adoption of the Mediterranean Plan of Action in 1975, initiated by the General Fisheries Commission for the Mediterranean the Plan of Action adopted the Barcelona framework as its legal component. The Barcelona Convention and its seven Protocols, a pioneering framework for a cooperative protection model of regional seas, have evolved over a half century into a form of governance that is emblematic of the Mediterranean region and the broader objective of sustainable development.⁴⁹

4.2. Structure and Content of the Barcelona Convention and Protocol

The Mediterranean Action Plan is a truly regional initiative that unites the 21 nations⁵⁰ bordering the Mediterranean Sea and the EU.⁵¹ The legally binding the Barcelona Convention was signed on 16 February 1976 and entered into force on 12 February 1978. It was amended by a Protocol in 1995, subsequent to the 1992 Earth Summit held in Rio de Janeiro, Brazil, which coincided with the commencement of the Barcelona Process for a Euro-Mediterranean Partnership.⁵² The amendments entered into force on 9 July 2004.

The Barcelona Convention is modelled on the 1974 Helsinki Convention. The goal of the Barcelona Convention is to address all types of marine pollution that affect the entire region while taking into account the different levels of economic development of the signatories.

⁴⁹ Natalie ROS, 2019, p.112.

⁵⁰ Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syrian Arab Republic, Tunisia, Türkiye,

⁵¹ Natalie ROS, 2019, p.113.

⁵² The Barcelona Process is designed to make the Mediterranean basin a region of dialogue, exchange and cooperation that ensures peace, stability and prosperity. Déclaration de Barcelone, 1995.

The Framework Convention is complemented by a series of protocols that address distinct concerns. Article 29 of the Convention stipulates that no one may become a party to the Convention without concluding at least one Protocol to prevent accession for convenience and to demonstrate that the content of the Basic Convention is insufficient. Furthermore, no one is permitted to accede to a Protocol without first adhering to the Basic Convention.

The Barcelona Convention contains minimum provisions that all member states must adhere to. These include the prevention of all forms of pollution, efforts to improve the marine environment, and mutual co-operation to protect the Mediterranean Sea. To date, seven special additional protocols have been adopted in order to apply Articles 4 (5)⁵³ and 21⁵⁴ of the Convention.. Four of the pre-1995 Protocols were modified subsequent to the adoption of amendments to the Barcelona Convention, and three new Protocols have been drafted subsequent to that. The seven Protocols set out objectives and measures to combat different forms of pollution and the environmental impacts they cause.

4.2. Regulations regarding Marine Pollution Monitoring.

4.2.1. Barcelona Convention and Protocols

The Barcelona Convention, revised in 1995, and its seven Protocols provide regulations on marine pollution monitoring. Each protocol deals with a specific issue based on the basic convention. Article 12(1) of the Barcelona Convention provides for the monitoring of marine pollution as follows:

The Contracting Parties shall endeavour to establish, in close cooperation with the

⁵³ Article 4 (5) The Contracting Parties shall cooperate in the formulation and adoption of Protocols, prescribing agreed measures, procedures and standards for the implementation of this Convention.

⁵⁴ Article 21 (1) The Contracting Parties, at a diplomatic conference, may adopt additional protocols to this Convention pursuant to paragraph 5 of article 4.

(2) A diplomatic conference for the purpose of adopting additional protocols shall be convened by the Organization at the request of two thirds of the Contracting Parties

international bodies which they consider competent, complementary or joint programmes, including, as appropriate, programmes at the bilateral or multilateral levels, for pollution monitoring in the Mediterranean Sea Area and shall endeavour to establish a pollution monitoring system for that Area.

The difference between this Regulation and Article 204 of the UNCLOS is that the latter refers to the object of cooperation as 'competent international organizations', whereas the former refers to 'international organizations deemed competent'. Presumably, the use of the term 'deemed' broadens the scope of cooperation with international organizations for the implementation of marine pollution monitoring. Furthermore, by requiring Parties to establish ongoing marine pollution monitoring systems and programmes, the provision can be seen as a framework for establishing marine pollution monitoring governance, as discussed below.

Subsequently, Article 2 requires Parties to designate responsible authorities to monitor marine pollution within their jurisdiction and, to the extent possible, to participate in international agreements to monitor marine pollution in areas beyond their jurisdictional limits.⁵⁵ Moreover, Article 3 specifically establishes the obligation of Parties to monitor marine pollution by stipulating their commitment to cooperate in the preparation, adoption, and implementation of any annexes to the Convention that may be necessary to establish common procedures and standards for the ongoing monitoring of marine pollution.

In addition to the overarching Barcelona Convention, the Protocol also addresses marine pollution monitoring. Article 5 of Protocol for the prevention of pollution of the Mediterranean Sea by dumping from ships and aircraft stipulates that Parties, individually,

⁵⁵ Michel Prieur argues that the synergy between the Barcelona Convention and the Espoo Convention, which provides for the environmental impact assessment of transboundary pollution, is essential and complementary, and therefore calls for the Parties to the Barcelona Convention to accede to the Espoo Convention to create a complementary framework of cooperation. Michel Prieur, 'Les études d'impact dans la Convention de Barcelone et ses protocoles et les liens avec la Convention d'Espoo', 2015, https://unece.org/fileadmin/DAM/env/eia/meetings/2015/April_Marocoo_Espoo_Conv___SE_A_in_Mediterranean_reg/b._Prieur_26_slides_Espoo-Fr.pdf.

bilaterally or in multilateral co-operation, shall develop and implement monitoring activities in Mediterranean waters to prevent, detect and combat pollution and ensure compliance with applicable international regulations. The Protocol provides for the monitoring of ship and aircraft activities. Article 7(1)(f) of the Protocol calls for cooperation in the development of new methods of preventing marine pollution by hydrocarbons and hazardous substances, new monitoring technologies and methods for pollution response, and related research programmes. The Protocol for the protection of the Mediterranean Sea against pollution from land-based sources also mentions continuous monitoring of marine pollution. The Protocol is particularly important as most marine pollution originates from land-based sources. Article 8 of the Protocol states that:

Within the framework of the provisions of, and the monitoring programmes provided for in, Article 10 of the Convention, and if necessary in cooperation with the competent international organizations, the Parties shall carry out, at the earliest possible dates monitoring activities in order:

- (a) systematically to assess, as far as possible, the levels of pollution along their coasts, in particular with regard to the substances or sources listed in Annexes I and II, and periodically to provide information in this respect;
- (b) to evaluate the effects of measures taken under this Protocol to reduce pollution of the marine environment.

Article 13 of the Protocol requires the submission of a report every two years to the Conference of the Contracting Parties through the mediation of the Organization. The report must include the results of the monitoring provided for in Article 8 above. In addition, Articles 7 and 20 of the Protocol concerning specially protected areas and biological diversity in the Mediterranean and Article 19 of the Protocol for the Protection of the Mediterranean Sea against pollution resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil provide for the monitoring of marine pollution.

4.2.2. Decision

The Barcelona Convention is structured with the support of a secretariat, regional action

centers, technical committees and working groups on specific topics (pollution, waste, etc.). These organizations work together in order to adopt decisions at the Conference of the Parties (COP). The decision-making process involves experts nominated by each Party. The process comprises of three distinct phases. The initial stage involves convening a group of technical experts to discuss each protocol. This is where the draft decisions sent by the Secretariat are discussed and amended to be of a technical nature. The second step involves convening a gathering of general experts regarding the Convention. This meeting allows for general discussion and revision of the draft decision. Ultimately, the third stage entails the biennial Conference of the Parties (COP), wherein the Parties make legally binding decisions and establish a comprehensive work program and associated budget.⁵⁶

The main decision on marine pollution monitoring is the 'Integrated Monitoring and Assessment Programme for the Mediterranean Sea and Coastal Areas and Related Assessment Criteria' adopted in 2016.⁵⁷ By referring to the provisions of the aforementioned conventions and protocols, the Decision enhances the oversight of marine pollution monitoring in the Mediterranean Sea. Specifically, Article 2 of the Decision pertains to the enhancement of the monitoring system by means of an Integrated Monitoring and Assessment Programme (IMAP) Furthermore, it requires Parties to take into consideration the technical capacity to implement monitoring programmes, taking into account the need to establish systems and provide technical support for the practical implementation of marine pollution monitoring.

4.3. The Implementation of Marine Pollution Monitoring Obligations under the Barcelona Convention and Protocol

4.3.1 Medpol

The monitoring programme under the Barcelona Convention, the Coordinated

⁵⁶ Milieu Marin France, 'La Convention pour la Protection du Milieu Marin et du Littoral de la Méditerranée', <https://www.milieumarinfrance.fr/Nos-rubriques/Cadre-reglementaire/Conventions-des-mers-regionales/Convention-de-Barcelone>.

⁵⁷ UNEP(DEPI)/MED, Décision IG. 22/7

Mediterranean Pollution Monitoring and Research Programme (MEDPOL), is considered to be the most advanced regional marine pollution monitoring programme.⁵⁸ Launched in 1975, MEDPOL aims to help Mediterranean countries implement the Barcelona Convention and its three main protocols. These are the Land-based Sources of pollution Protocol, the Dumping Protocol and Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal.⁵⁹ Medpol's main activities are marine pollution monitoring and assessment, marine pollution control policies and measures, and capacity building and technical assistance. Looking only at marine pollution monitoring, the organization monitors trends in pollutant levels in Mediterranean countries and the biological effects of pollutants. It also undertakes regular inventory surveys of pollution sources and quantities. Within the regional cooperation policy framework of the Mediterranean Action Plan created by UNEP, Medpol is working with a number of actors at regional and international level who share the same common objectives.⁶⁰

4.3.2. Integrated Monitoring and Evaluation Programme

The Integrated Monitoring and Evaluation Programme, implemented under the 2016 Decision, aims to implement the cooperation within the Barcelona Convention by assessing the state of the Mediterranean Sea and its coasts from 2016 to 2021, as a basis for actions that need to be supplemented or strengthened.⁶¹ An integrated monitoring and assessment programme focuses on parameters that indicate the state of the environment, existing anthropogenic pressures and their impacts, and good ecological progress, based on common indicators. Monitoring is conducted in such a manner that it can be assessed with sufficient accuracy and confidence.

⁵⁸ Michael D. GWRYNN, 1982, p.39.

⁵⁹ UNEP, 'MED POL Programme for the Assessment and Control of Marine Pollution in the Mediterranean', https://wedocs.unep.org/bitstream/handle/20.500.11822/474/brochure_medpol_2015_eng.pdf

⁶⁰ Ibid.

⁶¹ UNEP(DEPI)MED IG.22/28, p.465.

The Programme provides the basis for Parties to implement the Programme and to cooperate within the framework of the Barcelona Convention on the creation and updating of common indicators based on regional assessments of the state of the Mediterranean Sea and its coasts.⁶² In accordance with the Decision, during the initial phase of the programme, 2016-2019, the Parties undertook the following First, between 2016 and 2017, they updated their existing evaluation programmes to include explanatory cards on the common indicators in accordance with the guidelines for integrated monitoring and evaluation programmes. In addition, several Parties continued to report on the basis of previously established national monitoring programmes. This was done in order to ensure that monitoring could continue until updated information was available within the new integrated monitoring program. Once existing monitoring programmes have been updated, qualitative data will be reported according to a common regional reporting model. This will require enhanced cooperation on information exchange between Parties.⁶³

The Integrated Monitoring and Evaluation Programme, funded by the EU, contributes to the achievement of Good Environmental Status in the Mediterranean Sea and its coasts in seven beneficiary countries - Algeria, Egypt, Israel, Lebanon, Libya, Morocco and Tunisia. The Programme is currently making an important contribution to the UNEP/Mediterranean Sea Action Plan Medium-Term Strategy 2022-2027 and the 2022-2023 Work Programme.⁶⁴

5. Conclusion

The obligation to monitor marine pollution, which is stipulated in a number of international conventions, has become customary international law. In September 2023, a historic case (hearing) was held at the International Tribunal for the Law of the Sea. A group of small island states has requested the tribunal to define greenhouse gas reduction as an obligation of states parties to the UNCLOS. Prior to the commencement of the case, 34 parties to the

⁶² Ibid. p.466.

⁶³ Ibid.

⁶⁴ For more information on the programme, see UNEP, 'The IMAP-MPA Project (2019-2023)', <https://www.unep.org/unepmap/what-we-do/projects/IMAP-MPA-Project>.

Convention and nine international organizations and coalitions of states submitted written observations to the tribunal. The Request specify that the monitoring obligation set out in Article 204 of UNCLOS is a critical tool for compliance with the general obligation to protect and conserve the marine environment set out in Article 192.⁶⁵ As we have seen, regional cooperation is essential for the systematic implementation of these pollution monitoring obligations, especially in semi-enclosed seas. It is necessary to create a legally binding implementation framework through regional agreements. The Bilateral environmental co-operation and the Northwest Pacific Action Plan (NOWPAP) have been established in the Northeast Asian seas, of course, but there is no strong legally binding regional sea convention. These factors include the international political dynamics of Northeast Asia, historical issues, territorial claims, and economic development priorities.

The region of the Mediterranean that we have been examined bears striking resemblance to Northeast Asia. Natalie Ros asserts that “the Mediterranean region encompasses not only a sea but also a region, a culture, a way of life, and an identity shaped by geography and history.” It is a focal point for conflict and human trafficking due to fragile political, economic, cultural and religious environments, and she points out that old-fashioned warfare, murderous maritime migration, illegal transport of psychotropic substances, illegal fishing, and deliberate pollution have placed the Mediterranean countries in an impossible situation of solidarity.⁶⁶ Nevertheless, 21 Mediterranean countries with different historical and political dynamics and cultures have adopted the Barcelona Convention and Protocol and are steadily developing the continuous monitoring of marine pollution required by the Convention and Protocol.

Hence, it may be necessary for Northeast Asia to conduct a thorough analysis of the Barcelona Convention and its Protocols adopted in the Mediterranean Sea, as they share similar international relations and geographical characteristics. If a comprehensive agreement such as the Barcelona Convention is not feasible, it is feasible to initiate a specialized

⁶⁵ For example, Belize, ‘Demande d’avis consultatif soumise par la commission des petits états insulaires sur le changement climatique et le droit international’, TIDM, Affaire No.31, 2023.06.16. p.28.

⁶⁶ Natalie ROS, 2019, p.109.

regional agreement that solely encompasses aspects related to marine pollution monitoring and environmental impact assessment as a means of fulfilling obligations. We have now entered the era of climate change. The climate crisis can only be solved by a collective global response. This includes protecting the oceans to prevent ocean acidification. Therefore, I hope that Northeast Asian countries will take the initiative and create a systematic mechanism to legally protect the regional marine environment.

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