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TACKLING MARINE LITTER: MEDITERRANEAN REGIONAL COOPERATION PLATFORM AND EXPERIENCE FOR ASEAN

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ABSTRACT

Marine litter is an issue causing serious pollution to the marine environment. It has existed for a long time but has not been completely resolved. This is a preventable type of pollution. However, to that end, close cooperation among countries in the region is strongly required. This type of pollution comes from both sea-based and land-based sources. Therefore, a comprehensive and thorough coping mechanism is needed. In the Mediterranean region, countries have taken practical actions to combat marine litter since the early 21st century. These activities still receive the attention of member countries to this day. They have effective regional cooperation platforms that countries in other regions can learn from. In recent years, ASEAN has demonstrated its efforts and commitment to combat marine litter. However, it is still possible to learn from the models of the Mediterranean. The paper will study platforms that the Mediterranean countries used to cooperate in tackling marine litter. With the method of analysis and comparison, the paper will study platforms that the Mediterranean countries used to cooperate in tackling marine litter, and draw bright points that worth learning. As a result, this article will give a comprehensive and detailed view of Mediterranean regional cooperation platforms, as well as draw lessons for ASEAN.

Keywords: *marine litter, marine pollution, cooperation, Mediterranean, ASEAN.*

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية

E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

Introduction

Since the previous decade, countries around the world have become more concerned about marine waste. Marine litter has been identified as a chronic and expanding problem on a global scale (Chassignet, Xu and Romero, 2021). Marine litter in general and plastic waste in general cause impacts on public health and environment in many countries. A wide spectrum of environmental, economic, safety, health and cultural impacts have been pointed out in many studies. The United Nations Environment Programme (UNEP) notes that there is a gradual increase in marine litter found at sea and on the shores has been caused mostly by the very slow rate of degradation of most marine litter items, which plastics are the main items, together with the continuously growing quantity of the litter and debris disposed ("Marine litter"). Also noted by UNEP, marine litter originates mainly from both land-based and sea-based sources, in which 80% of the marine litter originates from land sources (including waste released from dumpsites nearby the coast or riverbanks, the littering from the use of beaches for tourism and recreational, fishing industry activities, and also from ship-breaking yards (Chassignet et al., 2021). On the other hand, sea-based sources also contribute to marine litter which originates from abandoned, lost, or discarded fishing gear, shipping activities, and legal and illegal dumping (Chassignet et al., 2021). Another study shows that since the 1950s, steady growth in the amount of discarded solid waste combined with the slow degradation rate of many waste items have gradually increased the amount of marine litter (Galgani et al., 2021). In recent years, the United Nations Environment Assembly (UNEA) has chosen marine litter as one of the top priorities in its resolutions (namely, UNEA-1 in 2014, UNEA-2 in 2016, UNEA-3 in 2017, and UNEA-4 in 2019), thus calling for actions to combat marine litter (Chassignet et al., 2021).

This paper will initially provide background on marine litter as the concept of marine litter, sources of marine litter, the impact of it to environment, society, and economics; secondly study the regional cooperation platform of the Mediterranean; and finally state lessons learned for ASEAN and Vietnam.

Background on marine litter

a. What is marine litter?

According to the UNEP, marine litter is defined any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment ("Marine litter – an analytic overview", 2005). It consists of items that have been made or used by human which deliberately discarded into the sea, rivers or on beaches; or indirectly disposed to the sea through rivers, sewage, storm water or winds. It also includes accidentally lost, namely material lost at sea in bad weather, such as fishing gear, cargo, and also something deliberately left on beaches and shores ("Marine litter – an analytic overview", 2005). Marine litter is also known as "marine debris", which

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

refers to any anthropogenic, manufactured, or processed solid material (regardless of size) discarded, disposed of, or abandoned in the environment ("What is Marine Litter? Marine Litter Solutions").

The United Nations Convention on the Law of the Sea (UNCLOS) does not contain a specific definition of what marine litter is. Rather, this notion is reflected by the matter "pollution of the marine environment", which means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities (UNCLOS, Art. 1(4)). Thus, marine litter pollution can be understood as the direct or indirect introduction of any manufactured or processed solid materials into the marine environment by humans, which can cause harmful effects such as damage to biological resources, and to marine fauna and flora, endangering human health, interfering with marine activities, altering sea water quality, and causing harm and reducing the aesthetic value of the sea.

b. Sources of marine litter

Studies have shown that marine litter originates from many sources ("Marine litter"), thus, it may be found in all areas of the sea in world (Tekman, Krumpen, and Bergmann, 2017), not only it locates near the source of input, it also be transported over long distances under the ocean currents and winds, in both densely populated regions and remote places far away from original sources ("Marine Litter: Causes, impacts and potential solutions", 2016).

As mentioned above, marine litter results from human behavior, whether accidental or intentional. The main sources of marine litter come from sea-based and land-based sources. First of all, marine litter could be from landfills (waste dumps) on land. Secondly, marine litter could be from waste and cargo room waste from commercial shipping, rubbish, and redundancy from fishing vessels. The source causing marine litter could be from domestic waste, including waste left on the beach and those from industrial production or distribution. According to UNEP and the International Coastal Clean Ups' 1989-2007 reports of the Center for Marine Conservation/Ocean Conservancy, the top ten marine debris items include cigarettes/cigarette filters, bags (paper & plastic debris), caps/lids, food wrappers/containers, cups/plates/forks/knives/spoons, beverage bottles (plastic) <2 litres, beverage bottles (glass), beverage cans, straws, stirrers, rope ("What is Marine Litter? Marine Litter Solutions"). This list presents the diversity of causes of marine litter and once again, it proves that human activities are the main cause of marine litter.

c. Impacts of marine litter

Many problems and threats are exposed to countries directly or indirectly caused by marine litter which can be grouped into environmental, social, and economic impacts (Potts and Hastings, 2011). As these impacts are diverse, interconnected with each other, therefore, it is difficult to define them

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

separately (Mouat, Lozano, Bateson, 2010). As Tavis and Hastings (2011) point out, marine litter affects the need for "clean, healthy, safe, productive, biologically diverse marine and coastal environments, managed to meet the long term needs of nature and people"(p.14).

d. Environmental Impacts

In our study, environmental impacts will be the main focus, as the impacts are quite clear and straightforward. Impacts on the environment can be both long term and short term which cause damages to individual organisms, species and ecosystems as a whole. Benthic environments is another impact, causing a loss of biodiversity and a reduction in overall ecosystem function (Moore, 2008). The entanglement by and ingestion of marine litter by organisms, are the most noticeable one (Gregory, 2009, "Philosophical Transactions of the Royal Society B", Thompson, Moore, vom Saal & Swan, 2009). Studies also points out that plastic litter is estimated to lead to the mortality either directly or indirectly of one million seabirds, 100,000 marine mammals (including 30,000 seals) and 100,000 turtles globally every year; either through entanglement or ingestion (Wallace, 1985). Marine litter can also threaten wildlife and the environment by smothering of the seabed, and disturbing habitats from mechanical beach cleaning.

Long-term impacts can be seen through the issue of ecosystem deterioration which is usually associated with long time fate and interaction of in-situ debris. A number of combined causes leading ecosystem deterioration, such as habitat damage (e.g., physical damage, fishing gear), reduced population size (e.g., bioaccumulation of toxins, competition from invasives…etc.) and biodiversity loss (Mouat, Lozano, Bateson, 2010).

Together with entanglement, ingestion are main impacts on marine wildlife (Potts and Hastings, 2011). The main physical problems, as a result of litter ingestion, include wounds (internal and external); blockage of esophagus and damage to the digestive tract leading to internal infections, satiation, debilitation, drowning, and starvation; impaired reproductive capacity; reduced predator avoidance; impaired feeding capacity and malnutrition ("Marine litter issues, impacts and actions", 2012). Ingested plastic resin pellets for a long time can absorb and concentrate toxic compounds. As a result, organisms are exposed to the risk of diseases, altered hormone levels and death as a result of ingestion (Derraik, 2002).

Another significant risk to marine organisms comes from entanglement by such items as fishing nets and line, lures, light sticks, fishing traps, plastic bags, strapping bands...etc ("Marine Conservation Society Beachwatch Big Weekend", 2009). A study ("Ocean Conservancy", 2008) shows that these items lead to an estimated 62% of all entanglements. Another study concludes that entanglement hinders conservation efforts, making up a high proportion of mortality rates in endangered species (Potts and Hastings, 2011).

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

Ghost fishing is the impact caused by a greater long-term risk. Ghost fishing is caused by natural fibers replaced by synthetic materials because of their durability It also occurs when and cost effectiveness and fishing gear (nets, ropes, traps) being discarded or lost in the sea ("Marine Conservation Society Beachwatch Big Weekend", 2009). As with entanglement, ghost fishing creates concern of the overall impact on vulnerable or endangered species (Allsopp, Walters, Santillo, and Johnston, 2006).

Secondary pollutants occur when fragmentation of in-situ plastic litter items is increased as from the production of microplastics and chemicals (Thompson R.C. et al 2004). Micro-plastics also enter the oceans as 'scrubbers' resulted from commercial activities, namely cleansing and air blasting (Derraik, 2002). Micro-plastics and associated chemicals are transferred to the aquatic food web and up trophic levels, posing a significant threat to a wider range of organisms (Barnes, Galgani, Thompson, & Barlaz, 2009). Organic pollutants such as PCBs, DDE and nonylphenols which contain micro-plastics enable these pollutants to enter living organisms and food webs (Moore, 2008).

Marine litter, particularly plastics, offers opportunities for the dispersal of non-native, potentially invasive species (Lewis, Riddle and Smith, 2005) which one study estimates that marine litter has doubled or tripled dispersal opportunities for marine organisms (Allsopp, Walters, Santillo, and Johnston, 2006). Marine litter contribute passively to the increase of and allow non-native species to adapt to local environment as their movement is slow (Moore, 2008). Invasive non-native species then compete native species and inadvertently cause biodiversity loss, changes to trophic and habitat structure and ecosystem functions (Derraik, 2002).

Finally, abrasion, scouring, breaking and smothering are physical damages to benthic habitats (Sheavly and Register, 2007). The reduced oxygen in sediments caused by litter causes smothering of benthic organisms on the seafloor, leading to changes in the composition of biota on the seafloor (Derraik, 2002).

e. Social Impacts

Marine litter causes direct and indirect social impacts, which, *inter alia,* public health issues (injuries, entanglement and navigational hazards) and impacts on quality of life (recreational opportunities, loss of aesthetic value and loss of non-use value) are the most concerns.

First of all, there is a public health issue caused by marine litter as it poses significant risks to human health (Fanshawe and Everard, 2002). Such litter on beaches as broken glass, medical waste, fishing line, and discarded syringes lead to risks of poisonous chemicals, thus endanger the beach users and then the tourism industry. They are harmful and potential biohazards which may serve as fibers a vector for viruses and bacteria (Rees, & Pond, 1994). Typical sources of sewage debris nappies, baby wipes, condoms, tampon applicators and needles (Sheavly and Register, 2007), they can affect water quality. A study shows that indeed consumption of or contact with contaminated water may cause hepatitis, cholera, typhoid, diarrhea, bacillary dysentery, and skin rashes (Williams, Gregory, and Tudor, 2005).

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

Entanglement can also pose a serious threat to recreational users, which may affect particularly swimmers, snorkelers and scuba divers as they can be entangled in submerged or floating debris, such as fishing nets and ropes.

There are risks to navigation caused by marine litter, both non-military and military, which, according to a study, include: fouling and entanglement of a vessel's propeller in derelict fishing gear: reducing stability and the ability to maneuver; blockage of water intakes by plastic bags; subsurface debris can foul anchors and equipment deployed from trawlers and research vessels; collisions can damage a vessel's propeller shaft seal; recovery procedures which require divers increases risk of personal injury loss (Mouat, Lozano, Bateson, 2010). Military activities are affected by marine litter, including surface and submarine navigation and geo-acoustics (Fanshawe and Everard, 2002).

In the discussion on social impacts of marine litter, fishermen and their life could be clearly affected. A variety of threats to fishermen and their livelihood, according to Edwards's study, can be namely the snagging of fishing gear on marine litter, increasing the risk of capsize, and in some circumstances resulting in loss of life.

f. Economic Impacts

Impacts of marine and coastal litter and the deterioration of the ecology system are clearly discussed above, the impacts on ongoing social and economic benefits are also quite vibrant. As mentioned above, impacts on the environment, in particular, ecosystem deterioration caused by marine litter, has a close link with the economic impacts. Every kind of environmental impacts can also those on economic perspective. Ghost fishing, for example, may impact significantly on commercial fisheries which are affected by reduced recruitment and reduction in reproductive potential, as the result of the capture of immature fish by ghost fishing (Macfadyen, Huntington, and Cappell, 2009). A wide range of industries operate that utilize marine space and provide a variety of services will be affected.

The marine and coastal zones offer the opportunity for many social and recreational activities. Such activities as swimming, diving, boating, and recreational fishing will be then affected by marine litter found on beaches, in the sea water and on the seafloor. The accumulation of marine litter can act as a strong but subjective deterrent from these activities (Ballance, Ryan, and Turpie, 2000). The economic impacts will be then proven, and it is significant for countries that economies are dependent heavily on tourism.

Not only fishing and tourism industries are affected by marine litter, impacts on industries from marine litter that rely on the sea, such as energy production, for example, coastal power stations can be affected by blockages in intake pipes (Fanshawe and Everard, 2002). Serious impacts by marine litter surge local authorities with responsible for clean-up activities, the concern of making beaches safe and clean for tourists as well as the increased cost for fixing damages caused by marine litter. Despite the uncertainties, marine litter also impacts ecosystem services.

In conclusion, measures to prevent and combat marine litter must be taken in a variety of locations, as part of a variety of activities, and by a variety of people in a variety of situations. Given

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

the diversity of causes of marine litter, solutions to address the problem, whether at the global, regional, or national level, must be similarly extensive ("Marine litter – an analytic overview", 2005). Globally, there has been an increase in efforts to address and enhance marine litter management. Some countries have overarching national legislation; however, it is uncommon. To date, the more typical practice has been to establish broad policy, strategies, plans, and programs through international or regional cooperation frameworks, as well as to approve or alter specific elements in various laws ("Marine litter legislation: A toolkit for policymakers", 2016).

Mediterranean regional cooperation platforms

In the Mediterranean, the problem of marine litter has been identified a long time ago and UNEP MAP began with active work on the issue nearly thirty years ago. Pollution due to marine litter has been analyzed above as well as its consequences. In this part, the authors shall analyze the marine litter model that has been applied in the Mediterranean so far. In addition, the paper evaluates the effectiveness of these mechanisms.

There are two platforms that should be paid attention which are the Regional Plan on Marine Litter Management in the Mediterranean and the Marine Litter med project.

a. Regional Plan on Marine Litter Management in the Mediterranean

With the Regional Plan on Marine Litter Management in the Mediterranean (the Plan), the UNEP Mediterranean Action Plan (MAP) was the first Regional Seas Programme and Convention to develop legally binding measures to prevent and reduce the adverse effects of marine litter on marine and coastal environments. Adopted in 2013, the entry into force of the Plan coincided with the update of national action plans of the Mediterranean countries to combat pollution from land-based sources and activities.

The plan provides a definition of Marine Litter and Litter monitoring ("Regional Plan for the Marine Litter Management in the Mediterranean", 3.):

> *"Marine litter, regardless of the size, means any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Litter monitoring means repeated surveys of beaches, sea bed, water column, surface waters and biota to determine litter types and quantities in a representative manner such that information can be compared with baseline data to follow trends. Barcelona Convention means the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, 1995 hereinafter referred to as the Barcelona Convention."*

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

The authors believe it is crucial to determine the correct scope of pollution and management activities. Failure to properly identify the type and extent of contamination can lead to omissions and inadequate management.

The main objectives of the Regional Plan ("Regional Plan for the Marine Litter Management in the Mediterranean", 4) are to: Prevent and reduce to the minimum marine litter pollution in the Mediterranean; Remove to the extent possible already existent marine litter; Enhance knowledge on marine litter; and ensure that the management of marine litter in the Mediterranean is in line with internationally accepted standards and approaches. To that end, The plan guided the Contracting Parties 7 principles Plan ("Regional Plan for the Marine Litter Management in the Mediterranean", 4) that the authors evaluate as adequate and up to standard. This pollution is placed in correlation with other types of pollution. The treatment of this pollution has not separated from the treatment of other pollutants. This is natural when the end goal is to clean up marine pollution of any kind. General and important principles of environmental protection in general are also applied here, which are prevention, precautionary, polluter-pays, sustainable consumption and production principles and the principle of public participation and stakeholder involvement. The plan involves several key principles of pollution prevention and control, including integrating marine litter management into solid waste management and waste minimization through a focus on promoting consumption and sustainable production practices. A key component of the Plan is working with the private sector to reduce plastic consumption.

Article 5 of the Plan stated that: "The provisions of this Regional Plan shall be without prejudice to stricter provisions respecting marine litter management measures contained in other existing or future national, regional or international instruments or programmes." Thus, the Plan encourages, as well as does not restrict stricter regulations.

Besides that, the Plan integrated marine litter measures into the land-based sources (LBS) National Action Plans Plan ("Regional Plan for the Marine Litter Management in the Mediterranean", 7). The Contracting Parties had the duties to update the existing LBS National Action Plans to integrate marine litter measures in accordance with the provisions of this Regional Plan. With this Plan, the Mediterranean region is pioneering the adoption of legally binding measures on marine litter. Out of nine regional plans already adopted within the framework of the LBS Protocol, the Regional Plan on Marine Litter Management in the Mediterranean is the first to be fully based on the Ecosystem Approach principles to achieve Good Environment Status ("Regional Plan on Marine Litter Management in the Mediterranean to prevent and eliminate pollution enters into force").

The measures and timetables of the Regional Plan on Marine Litter Management in the Mediterranean, adopted by the Contracting Parties to the Barcelona Convention and its Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities (LBS) in December 2013, became binding on 8 July 2014 ("Regional Plan on Marine Litter Management in the Mediterranean to prevent and eliminate pollution enters into force").

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية

E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

"For the purpose of implementing the Regional Plan, the Contracting Parties shall adopt the necessary appropriate legislation and/or establish adequate institutional arrangements to ensure efficient marine litter reduction and the prevention of its generation"

("Regional Plan for the Marine Litter Management in the Mediterranean", 4)

The plan sets out cooperation obligations to the Contracting Parties. Obviously, cooperation is needed to deal with marine pollution. Regulations of the Plan create a foundation for countries in the region to make commitments and act cooperatively.

The Plan lays out a roadmap to reduce marine pollution from both Land-based sources and Sea-based sources. The Plan's entry into force coincided with the updating of National Action Plans (NAPs) to combat pollution from land-based sources and activities.

The Plan provides a legally binding set of actions and timelines to reduce marine litter in the Mediterranean. The targets set for 2017 have been largely achieved, as many were conditional with "explore and implement to the extent possible". However, many of the aims have passed the explore stage to implementation. Some progress has been made in the use of recycled plastic and in reducing the use of single-use plastic bags. Some Mediterranean countries such as France and Morocco have a total ban on plastic bags. Other countries such as Croatia, Malta and Israel and some municipalities and districts of Spain and Greece have introduced a tax on single-use plastic bags. Tunisia has banned non-biodegradable plastic bags in large chain supermarkets ("Regional Plan on Marine Litter Management in the Mediterranean").

The entry into force of the Plan coincides with the update of National Action Plans (NAPs) to combat pollution from land-based sources and activities. "With this Regional Plan now entering into force, Mediterranean countries will be able to elaborate national policies and action plans on pollution control and prevention that will contribute to addressing one of the most difficult environmental issues in the Mediterranean Sea", said Gaetano Leone, Coordinator of the United Nations Environment Programme/Mediterranean Action Plan ("Regional Plan on Marine Litter Management in the Mediterranean to prevent and eliminate pollution enters into force").

The plan sets out specific regulations on what the Countries must do to prevent and reduce pollution caused by marine litter such as removing existing marine litter and its environmentally sound disposal ("Regional Plan for the Marine Litter Management in the Mediterranean", 10).

The Plan provides assistance, guidelines and cooperation to the Contracting Parties to be certain of effective results ("Regional Plan for the Marine Litter Management in the Mediterranean", III and IV). The Countries have the obligation to take the necessary actions to enforce the measures in accordance with their national regulations ("Regional Plan for the Marine Litter Management in the Mediterranean", 22).

In conclusion, the authors evaluate that the Plan is circumstantial and is an effective platform for countries to implement by themselves as well as cooperate with each other in protecting the marine environment from marine litter.

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

The meeting of the Regional Cooperation Platform was held regularly, to review the progress achieved on the implementation of the Regional Plan on Marine Litter Management in the Mediterranean. Participants reviewed the main activities carried out for the implementation of the Marine Litter med project, and other relevant activities and initiatives done by members and other invited institutions. They also discussed the main priorities and needs for development of a joint Work Plan for 2018, as well as, ideas for improving the communication and visibility of this initiative through a regional node on marine litter.

b. Marine Litter med project

The Marine Litter MED is a project funded by the EU, implemented and coordinated by UN Environment/MAP, aiming to support the Contracting Parties to the Barcelona Convention to implement the Regional Plan on Marine Litter Management in the Mediterranean.

The project has the objective to support UN Environment/MAP Barcelona Convention and its Southern Mediterranean Contracting Parties to implement key common measures provided for in the Regional Plan on Marine Litter Management in the Mediterranean, and updated National Action Plans to achieve GES in synergy and coherence with the implementation of the European Union (EU) Marine Strategy Framework Directive (MSFD) and H2020 initiative. Moreover, the project aims to contribute to the region wide marine litter reduction targets as approved by COP 19 of the UN Environment/MAP Barcelona Convention, the MSSD and UN Environment/MAP MTS 2016-2021 as well as UN Agenda 2030 for Sustainable Development. The output the Contracting parties want to achieve are: Assisting the implementation of the marine litter Regional Plan at sub-regional levels with a particular focus on the up to five most common marine litter measures provided in the updated NAPs; Strengthening the implementation of harmonized approaches at regional and sub-regional level to reduce and prevent marine litter generation from land-based and sea-based sources including pilot interventions (EU countries to participate on a no- cost basis); and Assisting the establishment of regional and bilateral cooperation mechanisms with relevant regional actors as well as European Regional Sea Conventions to enhance synergies for the implementation of the ML Action Plans adopted or in process of preparation, with a particular focus on the collaboration with the Black Sea Commission ("Establishing Synergies: Mediterranean and Baltic Seas to identify where marine litter is accumulating").

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

To that end, the project set out its main activities ("Establishing Synergies: Mediterranean and Baltic Seas to identify where marine litter is accumulating"). The Project implemented the key best practices measures on marine litter, such as "Fishing-for-Litter" and "Adopt-a-beach" measures; Reduction of impacts of marine litter and micro-litter in the biota with a focus on endangered species; Enhancement of regulatory framework for banning of single-use plastic bags and other single- use products and promotion of EPR; Better management of sea-based litter in ports. These measures are very practical and unchallenging to implement. For instance, "Fishing for Litter" aims to reduce marine litter by encouraging the fishing industry, to collect ocean plastics, ghost gear and other debris that gathers in their nets during normal fishing activities. Fishing boats are given large bags to collect plastics, ghost gear and other debris that gathers in their nets during normal fishing activities. When the fishing boats come into port, they can unload the bags of litter. These bags are collected regularly and rubbish is recycled or disposed of on land ("Fishing for litter"). Many countries have adopted this measure and have achieved remarkable success. From 2009-2010, in the Galician Rias (NW Spain), fishermen from different fleets brought the litter they collected in their nets during ordinary fishing operations ashore. Participants included fishing associations, CETMAR, the Ports of Galicia, Port of Vigo, Port of Marin and Port of Coruña. 152 vessels and six hundred fishermen participated in the project ("Fishing for litter").

Therefore, it can be seen that there is stakeholder participation as regulated in the Regional plan analised above. Fighting the polution needs more than just the governments' effort. Stakeholder participation is an effective approach, making full use of available resources.

Besides, the Project strengthens the implementation of harmonized approaches at regional and sub-regional level through Guidelines for the implementation of the key marine litter best practices; and Risk assessment tool to define the ghost net accumulation areas and propose environmental sound ways for their removal. Risk assessment tool is to identify where in the Mediterranean accumulations of ghost nets poses a threat and should be removed ("Establishing Synergies: Mediterranean and Baltic Seas to identify where marine litter is accumulating"). The tool collect, assess and provide relating necessary data and information, develop maps linking the data and information collected and evaluate them.

Furthermore, it assists the establishment of regional and bilateral cooperation mechanisms with relevant regional actors as well as European Regional Seas. Which are Cooperation with the Black Sea Commission; and Coordination among European Regional Seas ("Establishing Synergies: Mediterranean and Baltic Seas to identify where marine litter is accumulating"). Environmental pollution in general and marine pollution in particular always require exchange and coordination between neighboring countries. The Project helps the Mediterranean countries cooperate not only with each other but also with countries in other regions.

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية

E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

Experience for ASEAN

a. ASEAN Regional Action Plan for Combating Marine Debris in the ASEAN Member States

On 28 May 2021, the Association of Southeast Asian Nations (ASEAN) launched the *ASEAN Regional Action Plan for Combating Marine Debris in the ASEAN Member States (2021 – 2025)*, which provides a scalable, solution-focused joint strategy to address marine plastic debris across the region ("ASEAN Member States Adopt Regional Action Plan to Tackle Plastic Pollution", 2021). The Plan includes 14 Regional Actions across four pillars of Policy Support and Planning; Research, Innovation and Capacity Building; Public Awareness, Education and Outreach; and Private Sector Engagement ("ASEAN Regional Action Plan For Combating Marine Debris in the ASEAN Member States (2021-2025)"). The Regional Action Plan supports ASEAN's overall commitment to tackle the challenge by reducing plastic inputs into the system, enhancing collection and minimizing leakage, as well as creating value for waste reuse. Actions include guidelines for countries to phase out single-use plastics, harmonize regional policies on recycling and plastics packaging standards, and strengthen regional measurement and monitoring of marine debris. These coordinated measures will also enhance regional platforms for innovation, investments, and training ("ASEAN Regional Action Plan for Combating Marine Debris in the ASEAN Member States (2021-2025)").

It can be seen that ASEAN has had great efforts in dealing with marine litter. Although a bit late, this effort is well worth appreciating. And because it was born later, the ASEAN Regional Action Plan has learned from the experiences and lessons of other regions. The authors assess that the Plan is very detailed and complete, but it only creates a common foundation for the parties to implement on their own, but does not maximize cooperation, especially in specific tasks to minimize existing damage of marine debris. The Plan mainly provides support in terms of policy, planning, research, evaluation and education. There is no specific and close contact and cooperation mechanism in each specific case. Furthermore, The Plan is not funded by the ASEAN or the Contracting parties. It only receive financial support from the World Bank through PROBLUE is an umbrella multi-donor trust fund, administered by the World Bank, that supports the sustainable and integrated development of marine and coastal resources in healthy oceans ("ASEAN Regional Action Plan for Combating Marine DebriS in the ASEAN Member States (2021-2025)"). Tackling marine litter consumes a lot amount of time and money. Therefore, receiving financial support from outside, not from the countries in the region, will not last long.

a. Experience for ASEAN

As mentioned above, although ASEAN's reaction to marine litter has been slower than Mediterranean's, the recent efforts are worth noting. However, with limited experience, ASEAN still needs to study from many different marine litter prevention cooperation models. Especially in the context of the post Covid -19 pandemic, the amount of plastic waste and other solid wastes increased

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية
E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

sharply. As analysed above, marine pollution caused by marine litter causes many adverse impacts on the environment, society and the economy which is struggling after the pandemic.

Regional Plan on Marine Litter Management in the Mediterranean includes specific cooperative actions and obligations that can be easily implemented by member states. Moreover, the cooperation of the Mediterranean countries in the protection of the marine environment has been going on for a long time and has proven its effectiveness in practice. ASEAN should refer and learn. ASEAN needs to be more proactive in cooperating with each other.

The Regional Plan of ASEAN should be added specific and close contact and cooperation mechanisms in specific cases; as well as specific solutions for the pollution, such as "Fishing-for-litter" or "Adopt-a-beach". It is necessary to quickly issue National Action Plans on the basis of compatibility with ASEAN Regional Action Plan for Combating Marine Debris. From those starts, the member states will intentionally prevent and reduce marine litter. Beside that, it is necessary to combine tackling marine litter with land-based sources waste. Because they are closely related. Most marine litter comes from land. ASEAN needs an effective mechanism to regularly check the implement of ASEAN Regional Action Plan by member states.

Lastly, ASEAN needs to focus on calling for financial support from its member states, besides receiving support from The World Bank. ASEAN needs its own fund to actively use when urgent situations occur. This is a common problem of ASEAN in all regional cooperation when members are afraid of spending money, so they often serach for sponsors from outside.

Conclusion

Mediterranean countries always appreciate cooperation in the protection of the marine environment, and have taken practical and effective activities to combat marine pollution in general and marine litter in particular. The model of Mediterranean regional cooperation tackling marine litter has been done and verified for a long time. Meanwhile, ASEAN countries have only taken the first steps of cooperation against marine litter in recent years. Therefore, learning from the existing model is necessary. The article analyzed Mediterranean regional cooperation platforms and made suggestions for ASEAN countries. Several things need to be done to combat marine litter and protect the marine environment in the region.

Law, Policy, and Social Science
مجلة القانون والسياسة وعلوم الإجتماعية

E-ISSN: 2948-3964, Vol. 1, No. 1, 2022, pp. 3-18

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