

The Impact of Weak Marine Debris Governance on the Increased Environmental Insecurity in Southeast Asia

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Abstract:

The Southeast Asian region is home to five countries that are included in the list of the top 10 countries that produce marine debris in the world. Although there are a lot of efforts to handle the situation through the creation of marine debris governance in the region such as the ASEAN Regional Action Plan, not much has changed. This article aims to determine what is the cause of weak marine debris governance and how it is impacted the increasing environmental insecurity in Southeast Asia based on the concept of policy harmonization and environmental security according to John Barnett's thinking which divides its meaning into three forms, namely changes in the environment, threats to national security, human security, and triggers for conflict. The research method used is descriptive qualitative research. Researchers found that weak marine debris governance formed as the result of a lack of policy harmonization between countries in the region regarding marine debris pollution and that environmental degradation that ensued had implications for the scarcity of marine resources, which is one of the main economic driving sectors for countries in the region and the possibility to contribute to fisheries conflicts that often occur in the South China Sea, which poses a threat to the national security of the surrounding countries. In addition, this environmental issue also creates human insecurity in the form of economic losses for coastal communities as well as health hazards for the human body.

Keywords:

marine debris; southeast asia; environmental security; policy harmonization; resource scarcity; human insecurities

Introduction

The Southeast Asia's relatively balanced landscape of land and sea areas presents challenges to the dynamics of environmental security as it could generate various environmental issues. Among these environmental issues,

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the problem of marine debris is one of the most crucial issues to discuss because apart from its global coverage, according to data, it is known that 5 of the 10 largest marine waste-producing countries in the world are ASEAN member countries, namely Indonesia, the Philippines, Vietnam, Thailand, and Malaysia (Jambeck et al., 2015, p. 769). Various regional efforts such as the RAP (Regional Action Plan) formed by COBSEA 2008 and the ASEAN RAP for Combating Marine Debris 2021 have not yet shown satisfactory results. The latest data based on research (Meijer et al., 2021) shows that despite the change in ranking, the five Southeast Asian countries still occupy the top 10 list, which means that the risk of threats to environmental security due to this pollution is increasing. For that reason, the impact of marine debris pollution is one of the most urgent issues that require immediate attention.

Scholars have discussed the consequences of marine debris in various sectors such as the socio-economy (Abalansa et al., 2020; Aung & Torre, 2019; Calil et al., 2021; R. Hermawan et al., 2017; Nash, 1992; Panwanitdumrong & Chen, 2022) and the ecosystem (Butterworth, 2016; Cormier et al., 2021; Gall & Thompson, 2015; Kühn et al., 2015; Laist, 1997; Todd et al., 2010). Multiple articles discuss the policy and governance of marine debris issues (S. Hermawan & Astuti, 2021; Lyons, 2019; Sari et al., 2021; Stoll et al., 2020; Vince & Hardesty, 2018). However, little attention has been paid to the impact of weak marine debris governance on environmental insecurity in Southeast Asia. This study aims to address this gap by exploring how inadequate governance contributes to the increased environmental insecurity in the region.

Through an extensive literature review, this paper seeks to elaborate about the impact of weak marine debris governance on environmental insecurity in Southeast Asia. The paper argues that inadequate governance of marine debris in Southeast Asia makes the environment more unsafe, causing social, economic, and even national security problems. Most existing studies (Butterworth, 2016; Cormier et al., 2021; Gall & Thompson, 2015; Kühn et al., 2015; Laist, 1997; Todd et al., 2010) have mainly focused on the effects of marine debris on the marine ecosystem, neglecting the impact on human security. Others like (Abalansa et al., 2020; Aung & Torre, 2019; Calil et al., 2021; R. Hermawan et al., 2017; Nash, 1992; Panwanitdumrong & Chen, 2022) focus too much on human security but overlook the national security aspect. On the other hand (S. Hermawan & Astuti, 2021; Lyons, 2019; Sari et al., 2021; Stoll et al., 2020; Vince & Hardesty, 2018) examine deeply on the policy and governance of marine debris issue in Southeast Asia without examining any implication on that policy to the environmental security of the region. This paper aims to fill this gap by providing insights into the relationship between weak marine debris governance and environmental insecurity that not only affects human security but also the national security of the region.

To achieve this goal, a qualitative research method will be utilized, which involves analyzing data from primary and secondary sources. The primary sources include Interviews and correspondence conducted with the Ministry of Environment

and Forestry of the Republic of Indonesia, as well as marine academics who focus on the issue of marine litter pollution. In addition, data was also obtained from a seminar that featured the Environment Division of the ASEAN Secretariat as a speaker. The secondary sources will include previously conducted research, scholarly publications, report, news article, and the official document from related institutions such as ASEAN, Ministry in ASEAN Member States, RKCMPD-ERIA (Regional Knowledge Center for Marine Plastic Debris – Economic Research Institute for ASEAN dan East Asia) and RC3S (Regional Capacity Center for Clean Seas). The data processing in this research is carried out through a process of data triangulation. The approach taken in this study will be critical, drawing on concept of environmental security and policy harmonization. The findings of this study will contribute to the current understanding of the impacts of marine debris and weak governance on environmental security in Southeast Asia.

Environmental Security and Policy Harmonization

Environmental security is a complex and multifaceted concept with diverse definitions and viewpoints. There is still no consensus among experts on how to define environmental security, and the existing literature reflects a range of perspectives on the relationship between the environment and security as noted by several sources (Barnett, 2009; Buzan et al., 1998; Dalby, 2008; R. M. R. A. Floyd, 2015; Graeger, 1996; Swatuk, 2014). The views of experts on the relationship between environment and security in the context of environmental security vary, ranging from Myers who considers the environment as the ultimate security or a determining factor for security because its issues become a derivative source of threats to other sectors' security, to Deudney who does not consider environmental degradation as a threat to national security at all (Buzan et al., 1998, p. 71).

Buzan provided a fairly general definition of this concept, namely "security related to the preservation of the local biosphere and the planet as an important supporting system on which all other human efforts depend" (Buzan et al., 1998, p. 76). However, in his further explanation in the book *Security: A New Framework for Analysis*, Buzan seems to place a very broad limit on environmental security by also including threats caused by nature without any human intervention. Although this can be accepted, contemporary environmental security concerns prioritize human-induced environmental issues or those caused by human activities, along with natural factors (Brauch, 2011, pp. 79–80).

Another security expert, Renner, views environmental security more specifically as a form of concern about environmental change and the potential for inter-state conflict that may arise due to resource scarcity (Dalby, 2019, p. 2). Even though this definition is rarely heard today since there are a lot of critics of that thesis, the argument itself is not completely wrong because the environment is not the sole factor that creates that conflict. Moreover, environmental issue already recognized by

various research or organizations in the environmental security sector such as GEF (Global Environmental Facility), as one of many factors that directly or indirectly contributes to conflicts. However, it should also be noted that there are other dimensions, such as those that refer to human security.

Barnett defines environmental security as a process of reducing human vulnerability to environmental degradation caused by human activities (human-induced) by addressing the root causes of environmental degradation and human insecurity (Barnett, 2001, p. 129). Meanwhile, Floyd believes that understanding of environmental security can differ for each person depending on their perspective on the concept of security itself. The advantage of Barnett's thinking is that he links several different perspectives and paradigms among environmental security experts into a related idea. Based on these various definitions, the researcher considers Barnett's understanding of environmental security to be the most appropriate for use in this paper, considering the issue of marine debris as something caused by human activities that cause environmental degradation.

Today's environmental changes are generally caused by human activities that lead to environmental degradation. The issue of marine litter that will be discussed in this study is a form of pollution caused by human activities that cause environmental change due to environmental degradation. Therefore, researchers consider marine litter from the perspective of environmental security as something that can pose a threat to national security, human security, and become one of the factors in the emergence of conflict, referring to the three most prominent interpretations from the perspective of environmental security according to Barnett (Barnett, 2009, pp. 554–557).

Barnett argues that environmental security issues, like pollution and degradation, are interconnected and can pose a threat to national security. Many interpretations of environmental security are influenced by international relations theory, which prioritizes national security (Barnett, 2009, p. 554). Westing also recognizes this connection between environmental change and a country's military capacity. Negative environmental changes, like degradation, can weaken a country's economic basis, which in turn can affect its military capacity. Additionally, natural resources and environmental services are often necessary for economic growth in many countries. Agricultural, forestry, fishing, mining, tourism, and hospitality industries are all highly dependent on environmental conditions. These issues can cause as much if not more, damage than open warfare, particularly if environmental problems have a global nature and long-term impacts (Barnett, 2009, p. 554). Despite this, Barnett cautions against making national security the primary focus in resolving environmental security problems as it may limit solutions, promote state-centric resolution paradigms, and encourage orthodox military approaches (Barnett, 2009, p. 557). In his works, he critically examines this perspective while acknowledging its existence.

The perspective that environmental issues can threaten national security is also linked to the idea that they can drive conflict. Westing discusses this connection systematically and at length. He argues that environmental degradation caused by human activities, like pollution and overuse of resources, can lead to scarcity, which ultimately causes conflict and threatens national security (Westing, 2013, pp. 3–35). Moreover, environmental problems can cause scarcity in a particular region, such as fish scarcity, which can increase tension and even result in wars over resource control between countries (Westing, 2013, pp. 47–57). Homer-Dixon (1994) and Baechler (1999) explore the conflict paradigm related to environmental issues, with a focus on the role of resource scarcity. While Homer-Dixon examines civil conflicts, Baechler models various levels of conflict. Both studies suggest that environmental factors, particularly scarcity, can drive conflict but do not prove it as the sole cause of war. According to Barnett, environmental changes can increase the risk of conflict and social instability in weak countries economically and politically. Governments may also have conflicts, but it is rare.

As something transborder, the environmental security of a particular region may become the responsibility of several actors, especially state actors. This will be related to the agenda and policy-making of each country. Therefore, achieving a common vision and policy coordination that is implemented into action to address an environmental issue in a specific region that has implications for several state actors becomes crucial. This condition can be achieved through a policy harmonization process. Harmonization refers to the process of aligning the regulatory requirements or policies of different jurisdictions to be more similar or identical (Majone, 2014, p. 4). It is a concept in public policy that aims to create similar or equal governmental policies and regulations among different political jurisdictions at the national or regional level. To reduce the differences between laws and policies, a common political authority may be designated within a country, or similar laws and policies may be adopted across different countries, even without a common authority. This is a way to address issues that arise due to differences in policies or regulations among political units and is also a type of cooperation between governments. This approach has been implemented in federal regimes and regional organizations like the European Union and countries with federal regimes (International Public Policy Association, 2017).

According to David Leebron (Majone, 2014, pp. 4–5), harmonization could be distinguished into 4 different types. The first harmonization is related to specific rules and regulations that dictate how certain activities should be carried out. Second, The second type involves the goals of government policy. At the collective level, political entities share and aim to achieve the same objectives. However, they have the autonomy to decide their methods to reach those objectives. The third one involves adhering to certain general principles in policymaking where policy units are required

to abide by specific policies. Lastly, harmonization concerns the structures and procedures.

Policy harmonization is widely used by international and regional organizations to achieve their agenda through voluntary actions as international agreements are considered "soft law" with no enforcers. Environmental issues like pollution regulations for chemical factories, the "polluter pays principle," (International Public Policy Association, 2017) and emission targets for combating climate change have been harmonized via this process (Blanford et al., 2014). However, implementation difficulties exist, such as developing countries not being ready or prioritizing environmental issues differently due to economic limitations. Different organizations may also implement policy harmonization differently (Nurdianto & Resosudarmo, 2011, pp. 124–125). Despite these challenges, policy harmonization is necessary to tackle complex issues like marine debris that require collaboration among various institutions both inside and outside the country's territory (Khalid, 2019; LUU, 2012).

Environmental Security Threats in Southeast Asia by Marine Debris Pollution and ASEAN Policy

The issue of marine debris pollution in Southeast Asia not only affects environmental degradation but also has implications for humans and the state. Environmental threats due to marine debris pollution cannot be seen solely as a threat to marine creatures but also to the broader ecosystem. Marine debris pollution is a global issue with a transborder nature, but the Southeast Asia region is of particular concern due to its large population and rapid economic growth, leading to increased waste production, particularly plastic waste. It is known that five ASEAN member countries, namely Indonesia, the Philippines, Thailand, Vietnam, and Malaysia, were among the top ten countries producing the most marine plastic waste in the world (Jambeck et al., 2015; Meijer et al., 2021). The region has a low plastic recycling rate, and waste management capabilities are hindered by the lack of infrastructure for waste collection and recycling. Coupled with the policy of importing waste from other countries and Southeast Asia's tropical climate and high rainfall, large amounts of plastic waste leak into the marine environment through waterways, wind, and tides, contributing to the problem (Greenpeace, 2019, pp. 4–7; Jambeck et al., 2015, p. 770; Meijer et al., 2021).

Furthermore, the location of Southeast Asia, which is in the path of the ocean currents between two oceans and includes countries that produce large amounts of marine debris, is the second reason for the region's marine debris pollution problem. India and Bangladesh in the east and China in the north are among the top 10 countries that produce marine debris. The ocean currents carry marine debris from Chinese waters to the south during winter and from the Indian Ocean in the south to the north during summer. Marine debris accumulates on islands or coastal areas in northern

regions such as East Sumatra, West Kalimantan, North Sulawesi, and North Maluku, while waste accumulates in the Aru Sea, Lombok Strait, and Sunda Strait in the outflow area. Furthermore, the archipelagic landscapes that dominate the waters in the Southeast Asia Region, such as the Indonesian Archipelago and the Philippines, provide an environment for marine debris to accumulate quickly, which can be challenging to manage due to the difficulty of accessing remote islands. The densely packed islands in Indonesia can hinder the movement of marine debris, resulting in the deposition of plastic waste, which can erode and become microplastics, spreading throughout the oceans, including in other countries in the region (Purba et al., 2021, pp. 92–93; Shaw & Chao, 1994, p. 1664). Therefore, it can be understood that for the ASEAN region, marine debris pollution is an existential threat that needs to be looked at thoughtfully. Based on the research that has been done, researchers see that the failure to achieve security for the marine environment in Southeast Asia caused by environmental degradation due to marine debris pollution has implications for many things at once, ranging from economic losses, health hazards, the threat of food shortages, to contributing to increasing tensions in the region.

Many countries in and around Southeast Asia take advantage of this fishery product. SEAFDEC data shows that the production of the marine fisheries sector by ASEAN countries reached 45.5 million tons, around 17.3 million tons of which were sea-based catches, with 14.8 million tons consisting of fish and worth around 25.3 billion dollars (without taking into account Cambodia and Vietnam) in 2017 (SEAFDEC, 2020). This number has increased from previous years. This condition shows two things. Firstly, there is overexploitation of fish resources which is increasing every year. Secondly, if an ecological disaster occurs due to an ecosystem imbalance with a significant reduction in fish stocks, the threat to national security thus cannot be avoided.

Additionally, marine debris pollution is a complex issue related to human welfare. Plastic waste is a result of activities that meet basic needs such as food security and transportation, as well as economic activities like fishing and packaging. This pollution can lead to food insecurity and give health risks to a human. Most countries in the Southeast Asia Region rely on the marine economy, and regional trends in this sector are increasing. Being the location where the largest archipelagic country with one of the longest coastlines in the world is located, several major ASEAN economies such as Indonesia, the Philippines, Vietnam, and Thailand make the marine economy one of their main economic sectors that make up more than 15% of their total GDP. Communities in the area also depend heavily on the sea as a source of livelihood. It is estimated that there are 30 million fishermen in Southeast Asian countries, with an average family size of about 5 people, which amounts to around 150 million people depend directly on the fishery sector as a source of food and income (Pomeroy, Parks, Courtney, et al., 2016, p. 23). Various studies and reports show the condition of coastal

communities, both near urban and remote areas, that are affected by marine debris pollution (Azizi et al., 2021; Wahidin, 2021).

The environmental pollution caused by marine debris poses a severe threat to food security and human health, with both issues being interconnected. The presence of microplastics in marine biota, which threatens food sources and human health, is a major concern. Microplastics can accumulate and spread throughout the food chain, from planktonic to nektonic species, ultimately reaching humans. This means that marine debris, particularly microplastics, can indirectly affect human health when polluted marine resources are consumed (Ferreira et al., 2019; Lusher et al., 2017).

There are various efforts taken by several international and regional organizations (governmental and non-governmental) or forums that are actively working to address the issue of marine debris pollution in the Southeast Asia region such as UNEP with the *Clean Seas Campaign*, COBSEA (The Coordinating Body on the Seas of East Asia), SEAFDEC with the Marine Environmental and Living Resources Management in the ASEAN Region (MEAM), Global Ghost Gear Initiative (GGGI), The Ocean Cleanup, and last but not least the ASEAN. As one of the most sophisticated regional organizations in the region, ASEAN has a very big chance to work as the ultimate platform for effective marine debris pollution eradication. Since they consist of all of the countries in Southeast Asia, including East Timor, logically they could formulate an effective plan that will be followed by every member of the organization.

ASEAN has been addressing marine protection for decades, but only recently focused on marine debris. The first regional initiative to combat marine debris pollution in Southeast Asia involved ASEAN countries in the COBSEA Regional Action Plan on Marine Litter in 2008. ASEAN's focus on marine debris pollution is relatively new compared to other regional organizations. The Conference on Reducing Marine Debris in ASEAN Region held in Phuket, Thailand in November 2017 marked the beginning of ASEAN's efforts to tackle this issue (ASEAN, 2021, p. 5). The conference resulted in an agreement to address marine debris through policy support, capacity building, education, private sector involvement, and increasing public awareness coverage. Efforts were also made to apply a land-to-sea approach and implement circular plastic economies. Two important documents were agreed upon in 2019 at the 34th ASEAN Summit: The Bangkok Declaration on Combating Marine Debris in the ASEAN Region and the ASEAN Framework of Action on Marine Debris (S. Hermawan & Astuti, 2021, p. 9). These documents outline key issues such as promoting a land-to-sea approach, strengthening regulations, and increasing public awareness to minimize marine debris leakage (Xuan Son, 2021, pp. 44–45).

The Bangkok Declaration on Combating Marine Debris in the ASEAN Region emphasizes joint action among ASEAN states and partners to prevent and reduce marine debris, a land-to-sea approach, private sector involvement, innovative waste management solutions, scientific research, and public education (Xuan Son, 2021, pp.

44–45). Meanwhile, The ASEAN Framework of Action on Marine Debris includes four main action frameworks: Policy Support and Planning, Research, Innovation, Capacity Building, Public Awareness, Education, Outreach, and Private Sector Engagement (ASEAN, 2019). The Policy Support and Planning framework prioritizes multisectoral policies and encourages ASEAN member states to implement relevant international laws to combat marine debris. The Research, Innovation, and Capacity Building framework aims to enhance scientific knowledge and promote innovative solutions to address marine debris issues. The Public Awareness, Education, and Outreach framework promotes knowledge platforms, innovations, and solutions in handling marine debris issues. Finally, the Private Sector Engagement framework encourages investment and contributions from the private sector in the fight against marine debris pollution (ASEAN, 2019).

As a continuation of ASEAN's efforts in addressing the issue of marine debris, the ASEAN Regional Action Plan (RAP) for Combating Marine Debris was developed from October 2019 to July 2020. The RAP, sponsored by the World Bank, aims to gradually implement a systematic and integrated response to guide regional action in addressing the issue of plastic pollution in the ASEAN region over the next five years (2021-2025). This plan is the most recent effort by ASEAN to combat marine pollution and is guided by the ASEAN Community Vision 2025. The plan aims to realize international commitments related to the protection of marine areas from solid waste and involves cross-sectoral cooperation among member states (ASEAN, 2021).

The ASEAN Working Group on Coastal and Marine Environment (AWGCME) leads the efforts to address marine debris in ASEAN. Three other working groups, including the ASEAN Working Group on Environmentally Sustainable Cities (AWGESC), also contribute to tackling marine debris (ASEAN, 2021, p. 31). The ASEAN Regional Action Plan for Combating Marine Debris goals are in accordance with the eight objectives stated in the Bangkok Declaration, with an emphasis on the issue of marine plastic debris. It also has four similar components to the 2019 ASEAN Framework of Action on Marine Debris but with more practical actions. The plan's implementation involves coordination among relevant stakeholders, with AWGCME serving as the coordinator. The process consists of planning, implementation, and monitoring phases, with several bodies responsible for ensuring successful implementation (ASEAN, 2021, pp. 31–34).

However the RAP is a more detailed version than the ASEAN Framework of Action, it still maintains the nature of the previous policy. It's not designated as regulations or even laws that must be abided by but more of guidance to be followed. The responsibility of following every guidance from the document is fall on each ASEAN country. There aren't any institutions to force or give any sanctions if member countries decided not to follow them. Although there is an interesting addition to the document that mentions the establishment of ASEAN Multi-Sectoral Task Force on

Marine Debris that would receive a status report for the implementation of RAP every year. It also stated that a mid-term review would be done halfway through the full implementation period to assess the progress and impacts of the implementation of RAP against the baseline data and indicators, identify any challenges and recommend solutions and way forward (ASEAN, 2021, p. 34).

Impact of Weak Marine Debris Governance

Marine plastic pollution in Southeast Asia is caused by waste mismanagement and geographic conditions, leading to many agreements being made from IGOs and NGOs alike. ASEAN's Regional Action Plan (RAP) is a promising initiative to tackle this issue, although relatively new compared to similar plans in other regions. COBSEA itself has initiated such an effort involving most of the countries in Southeast Asia since 2008.

However, the initiatives under the ASEAN umbrella have several advantages over those of other organizations. First, ASEAN is a regional organization consisting of all countries in Southeast Asia, which makes it relatively easier to have a common perception of marine plastic pollution as a threat to the environmental security of the region. This shared perspective is crucial for the success of addressing a security issue, considering that security is subjective and depends on the perceptions of those who feel threatened. Based on this similarity, resources, and efforts can be directed jointly to the right place. In this context, regional cooperation is generally more effective than global cooperation in addressing environmental issues. The Clean Sea Campaign, which is international, and COBSEA, which focuses on the eastern sea, stretching from northern Australia to Japan, and includes countries with different agendas and perceptions from Australia to China and Japan, will be much more difficult to collaborate compared to ASEAN member countries that have similar levels of attention and perception of marine plastic pollution as a threat (Putri & Hudaya, 2022, p. 81).

The second advantage is that ASEAN already has a competent institutional system that has relationships with various sectors needed to address marine plastic pollution comprehensively. As a traditional regional forum for Southeast Asian countries to discuss various issues, the initiatives it formulates can be better coordinated. Marine litter is not just a pollution issue that can be addressed through cleanup activities in the field, such as those that make up most of the activities of GGGI and Ocean Clean Up, but is a multi-sectoral phenomenon that requires attention to its value chain, namely the plastic industry (ASEAN, 2021). The ability of ASEAN's institutions to coordinate the decision-making process and the formation of values and norms for the general public is an advantage that cannot be overlooked.

The ASEAN initiative itself is not without obstacles because it cannot yet be said to be fully effective, resulting in weak governance of the handling of marine waste issues in the Southeast Asian region. This weakness is caused by the lack of adequate

policy harmonization. The ASEAN initiative only functions as a guide, with full implementation responsibility being left to member countries, resulting in differences in regulations due to differences in each country's perception. For example, regarding the issue of environmentally friendly plastic bags, although some biodegradable plastics have been recognized in the RAP, they can still be harmful to the environment because they require time to decompose (ASEAN, 2021, p. 14) and can create microplastics. There is no standardization from ASEAN on this issue, resulting in different regulations being applied by some member countries. In some ASEAN countries such as Thailand, existing regulations have strictly banned the use of oxo-degradable plastic products since 2019 (S. Hermawan & Astuti, 2021, p. 19). Malaysia initially gave eco-labeling to photodegradable and oxo-degradable products before planning to withdraw it in phase 1 of *Malaysia's Roadmap Towards Zero Single-Use Plastics 2018-2030* (ERIA, 2022). Meanwhile, in Indonesia, *the Waste Reduction Roadmap* issued by KLHK in 2019 and targeting the release of plastic waste in 2030 does not regulate microbeads and biodegradable plastics such as oxo-degradable, so there is no ban (Fadhilah, 2020).

In addition, the formation of NAP (National Action Plan) and other national regulations in the handling of marine waste pollution issues by each member country are not done simultaneously. The speed of each country in implementing the points that have been prepared in the RAP guideline is different from one another. Likewise, the issue of international waste trade, where several ASEAN countries have become a kind of final disposal site. Thailand began banning several types of plastic waste in 2021 and reducing a large amount of imported waste, but gradually (Rujivanarom, 2021). Vietnam plans to do the same in 2025, and Malaysia is considering long-term options after issuing a temporary ban on waste imports in 2018 (Nichols, 2019). Meanwhile, Indonesia and the Philippines have not yet planned to ban all plastic imports but have imposed stricter regulations. For example, in Indonesia, waste imports can only be carried out by entities that have a permit, namely API-P (Importer-Producer Identification Number) issued by the Ministry of Trade, and can only be carried out at certain ports. Likewise, with the existence of RA 10863 regulations in the Philippines and Minister of Trade Regulation no. 84 of 2019, which does not allow hazardous waste imports to enter unless they are safe and used as raw materials for industry (Bueta et al., 2021, pp. 14–16). Each country has also repeatedly repatriated imported waste because it is considered to contain hazardous materials or cannot be recycled at all. Despite this, waste import activities have never been fully banned and continue to be carried out to this day. This causes the resolution of marine waste environmental issues to be hampered.

Another reason for the lack of policy harmonization in ASEAN is the nature of the organization itself. ASEAN is known for its strict non-intervention principle, which is part of its fundamental principles. This rule has become a norm that is internalized within the regional organization, known as ASEAN ways (Yukawa, 2018, p. 2). This

norm creates a condition where every agreement made by the organization is voluntary, or the decision-making process is left to each member state based on non-intervention, fully respecting the sovereignty of member states (Yukawa, 2018, p. 6). Therefore, the formation of agreements and waste pollution handling regimes in ASEAN, starting from the Bangkok Declaration, and Framework, to RAP, are all still voluntary appeals, best practices, and guidelines that are not legally binding and do not have clear enforcement mechanisms (Stoll et al., 2020, p. 9). In the RAP, the plan to form a task force team for supervision and direction is a good breakthrough, although its existence cannot be confirmed yet.

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
National law and/or policy on waste/waste management	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓
National action plan/strategy on waste/waste management	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓
Single Use Plastic (SUP) bans or phase-outs	⦿	⦿	⦿	⦿	⦿	⦿	⦿	⦿	✓	✓
Taxes or levies on SUPs or other waste products	✗	✓	⦿	✗	✓	✓	⦿	✗	✓	✓
Other law and/or regulation of SUPs, plastic products, etc.	✓	✓	✓	✓	✗	✗	✓	✗	✗	✓
National law and/or policy on recycling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
National policies/regulations on waste trade	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Repatriation of illegally imported waste	✗	✓	✓	✗	✓	✗	✓	✗	✓	✓
Signed and ratified the Basel Convention	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ratified the Basel Ban Amendment	✓	✗	✓	✗	✓	✗	✗	✗	✗	✗

LEGEND ✓ National ⦿ Voluntary ⦿ Localized ⦿ Partial

Picture 1. Waste management measures and policies in ASEAN Country

Source: (Bueta et al., 2021, p. 11)

Based on the ASEAN RAP document, it is known that the institutional design is delegative because there are agencies, namely AWGCME, to coordinate the implementation of this agreement. However, the implementation of each agreed point is left to each member state. Furthermore, this agreement is more of an appeal than a regulation because no sentence states the obligation of those who agree to implement each point within a specified time frame, as can be found in some other RAPs such as COBSEA *Regional Action Plan on Marine Litter 2008* or *Regional Plan for Marine Litter Management in the Mediterranean*. The ASEAN RAP, which could be indentify as reigonal regime, is not legally binding in nature. Since there is no ratification, high commitment from member country cannot be expected. Although a legally binding RAP for marine litter management is not new. It has been done since 2013 with the *Regional Plan for Marine Litter Management in the Mediterranean*, which is binding for countries around the Mediterranean Sea (Stoll et al., 2020, p. 9). Despite legally binding does not necessarily mean having enforcement mechanisms through sanctions, including an obligation statement for those who agree to comply with the stipulated

points (Bodansky, 2015, p. 159) still plays a role. A legally binding agreement can provide a greater signal of commitment and assurance of compliance from those who agree (Bodansky, 2015, p. 163).

As a result of weak governance, the issue of marine debris in the Southeast Asia region is not moving to a better direction. Since ASEAN's efforts which started in 2015 (Jambeck et al., 2015) the level of marine debris pollution in the Southeast Asian Region has not changed much, five of its member countries still occupy the top ten polluter positions in 2021 (Meijer et al., 2021). This situation creates environmental insecurity which impacted the national and human security of every country in Southeast Asia Region. Marine debris pollution give a lot of pressure on to fish population in the region. There are some articles and reports, such as (Varley et al., 2020) and (Pomeroy, Parks, Mrakovcich, et al., 2016), which emphasize the scarcity factor causing fish conflicts in the South China Sea due to overfishing or excessive catch. The more fish caught, the more it directly reduces the population stock in the wild. However, environmental degradation caused by marine debris also contributes to the emergence of this scarcity condition (Ferreira et al., 2019). Although no data or research can demonstrate the magnitude or significance of this environmental pollution on the scarcity of marine resources, especially fish populations in the ASEAN region, this pollution does affect the quantity and quality of fish stocks in this area (Cormier et al., 2021, p. 11; Kühn et al., 2015, pp. 93–94).

Waste generated from human population centers like cities and ports washed out to sea affecting coastal areas, reducing fish stocks and pushing fisherman to cleaner waters (Nash, 1992, pp. 152–154). This leads to increased competition and conflict among fishermen, who may violate other countries' Exclusive Economic Zones to fish (Pomeroy, Parks, Mrakovcich, et al., 2016, p. 96). The South China Sea, which serves as a border for many countries, is often a location where theft and fishing conflicts occur. Fishing boats in this sea are often targets of attack, harassment, or piracy (Varley et al., 2020). Bateman's report shows that the scarcity of fish in the Southeast Asian region has led to piracy at sea, where Indonesian, Filipino, and Vietnamese fishing boats are hijacked to take money, valuables, or the cargo of fish they carry (Bateman, 2010, p. 18).

Territorial claims, increasing nationalism sentiment, and violations of sovereignty are contributing to the fish conflict in the South China Sea, where countries such as China, Vietnam, and the Philippines are competing for natural resources. Incidents involving civilian and military ships, theft, and collisions between ASEAN member countries continue to occur (ABC News, 2019). On one occasion China sent a group of fishing boats escorted by coast guard ships to waters near the Natuna Islands. Indonesia responded the following month by deploying its fleet consisting of 120 fishing boats (mostly fishermen from the north coast of Java) and warships to fill the waters (Varley et al., 2020). The scarcity of fish stocks due to marine litter pollution is a direct threat to national security, and its long-term effects are more dangerous than overfishing. As competition and conflicts in border areas continue to heat up, incidents

involving military forces may continue to occur, leading to further tensions among the countries involved.

Another equally serious issue is how marine plastic pollution threatens human security from the perspective of food security and health security. According to 2011 data, seafood was the highest contributor of animal protein in Southeast Asia, accounting for approximately 38% of the total food consumed (Chan et al., 2017, p. 12). Additionally, the region has a very high fish consumption rate of 33.4 kg compared to Asia as a whole, which is 21.3 kg, and the lowest rate of 10.9 kg in Africa. Per capita fish consumption in the ASEAN region has more than doubled over the past four decades and is now 1.8 times higher than the global average in 2013 (19.2 kg/person/year) (Chan et al., 2017, p. 12). These numbers indicate a higher potential exposure to toxic substances in microplastics that can be obtained from consuming seafood for ASEAN communities compared to other regions. Although there is limited information or knowledge about the impact of microplastic pollution on the bodies of marine organisms, especially fish consumed by humans, the ability of microplastics to transport toxic compounds and their own hazardous composition should be a concern. A survey conducted on animal showed that the accumulation of microplastic particles caused disturbances to vital organs (Ferreira et al., 2019). The effects of microplastic contamination on the human body will be influenced by the duration and intensity of exposure from contaminated food sources, including fish, as well as daily, weekly, yearly, and even longer consumption patterns (Ferreira et al., 2019).

It must be acknowledged that there is still limited data or research showing the threat of marine plastic pollution to human security in the ASEAN region. Among the existing studies or reports, they are more specifically focused on communities in smaller locations. Furthermore, there are still many knowledge gaps related to this issue, especially regarding its impacts. However, the lack of data or research does not negate the threat it poses. The effects of environmental degradation tend to be gradual and sometimes require a long time before it turns into an uncontrolled ecological disaster. Therefore, stakeholders responsible for environmental issues need to be reminded constantly to pay attention to these issues, so they can anticipate potential adverse conditions that may occur in the future.

Conclusion

To conclude, the weak marine debris governance in the Southeast Asia region has created environmental insecurity by creating resource scarcity which in turn threatens both the national security and human security in the region. Despite ASEAN's effort to formulate a Regional Action Plan (RAP) on combating marine debris, the lack of harmonization and non-legal binding nature of the RAP could result in low commitment between member countries. This has led to the creation of different national regulations based on their perceptions of the RAP. The loss of fish population because of the destruction of their habitat by marine debris pollution rising

tension in the region as it creates several inter-state conflicts. As major food resources in the region are contaminated there is a huge risk of ecological and health disasters to the population. Therefore, ASEAN and its member countries need to strengthen their governance of marine debris and improve their coordination and cooperation to ensure a sustainable future for the region.

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