Jurnal Legalitas
Volume 16 Issue 2, 2023
P-ISSN: 1979-5955, E-ISSN: 2746-6094

Human Rights and Justice: Marine Waste Management for Environmental Protection and Ecosystem Sustainability in Indonesia

Ferina Ardhi Cahyani[1], Belardo Prasetya Mega Jaya[2], Dani Wijaya[3]

[1] Faculty of Law, Universitas Sultan Ageng Tirtayasa, Indonesia. E-mail: ferinaac@untirta.ac.id
[2] Faculty of Law, Universitas Sultan Ageng Tirtayasa, Indonesia. E-mail:belardoprasetya@untirta.ac.id
[3] Environmental Technology Division, School of Industrial Technology, Universiti Sains Malaysia, Malaysia. E-mail: dani.wijaya@student.usm.my

Abstract: This article examines marine waste management in Indonesia, focusing on its impact on human rights, justice, and environmental sustainability. The accumulation of waste, particularly plastic, in Indonesia's vast maritime territory, has significant implications for human health, livelihoods, and the environment. As the country relies heavily on marine resources for food security and economic activity, pollution threatens the well-being of coastal communities, often exacerbating inequality and infringing on the right to a healthy environment. The research reveals that plastic waste is the most prevalent type found in Indonesian waters, highlighting the urgency of stronger regulatory enforcement. While Indonesia has regulations, such as Presidential Regulation No. 83 of 2018 concerning Marine Waste Management, their implementation remains insufficient. The study stresses the need for more robust policies addressing upstream and downstream waste management while ensuring accountability and equitable resource access. Effective enforcement requires collaboration between government agencies, private entities, and civil society, ensuring that vulnerable communities, especially those dependent on marine resources, are protected. Strengthening these efforts is crucial for the protection of marine ecosystems and advancing human rights and justice by safeguarding the right to a clean and healthy environment for all.

Keywords: Policy; Marine Waste; Environmental Law; International Law.

1. Introduction

Waste is an item considered no longer useful and discarded by its previous owner or user. However, for some individuals, it can still be utilised if managed properly. According to the World Health Organization (WHO), waste is defined as something unused, not utilised, not desired, or disposed of that originates from human activities and does not occur naturally.[1] Waste has become a problem faced by both Indonesia and the international community. The issue of waste is not limited to land but extends to the sea. Marine debris, also known as marine litter, refers to waste originating from land, bodies of water, and coastal areas that flow into the ocean or waste generated from activities at sea. This aligns with Article 1,

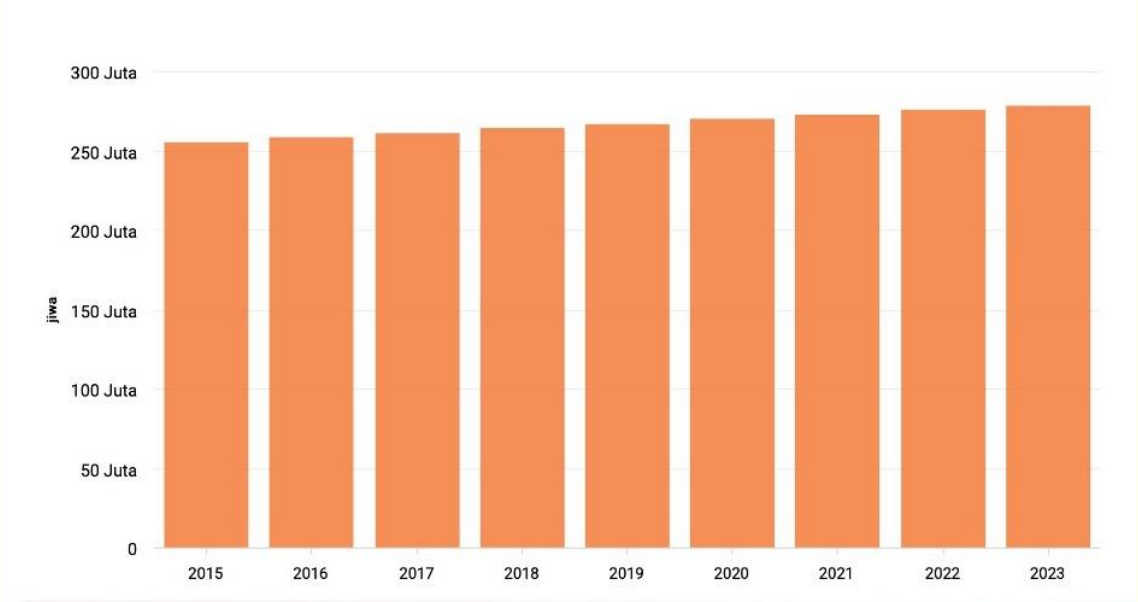
[1] Joflius Dobiki, "Analisis Ketersedian Prasarana Persampahan Di Pulau Kumo Dan Pulau Kakara Di Kabupaten Halmahera Utara," *SPASIAL* 5, no. 2 (2018): 220–28, https://doi.org/10.35793/sp.v5i2.20803.

paragraph (3), of the Republic of Indonesia Presidential Regulation No. 83 of 2018 concerning the Handling of Marine Waste.

The World Population Review estimates that approximately 4.8 to 12.7 million metric tons of plastic annually enter the oceans. According to a 2021 report, five Asian countries contribute the most plastic waste to the world's oceans. These countries include China, Thailand, Vietnam, Indonesia, and the Philippines. Indonesia ranks fifth as a contributor to plastic waste in the oceans. The World Population Review recorded 56,000 tons of plastic waste in Indonesian waters in 2021. Above Indonesia, China contributes around 70,000 tons of plastic waste. Meanwhile, the Philippines is the largest contributor of plastic waste to the oceans, reaching 350,000 tons in 2021.[2] Additionally, India and Malaysia have 126,000 tons and 73,000 tons of plastic waste in the oceans.[3]

The increase in population has become one of the main causes of the emergence of marine litter. According to the latest data from the Central Statistics Agency (BPS), Indonesia's population has reached 278.69 million individuals as of mid-2023. This figure represents a 1.05% increase compared to the previous year (year-on-year). In mid-2022, the population of Indonesia was recorded at 275.77 million individuals. In terms of trend, the population of Indonesia has been steadily increasing from mid-2015 to mid-2023,[4] as shown in the following graph:

Figure 1. Indonesia's population data



Source: *https://databoks.katadata.co.id/datapublish/2023/07/13/penduduk-indonesia-tembus-278-juta-jiwa-hingga-pertengahan-2023*

[2] Indonesiabaik.id, "Indonesia Darurat Sampah Plastik Di Laut," March 2023, https://indonesiabaik.id/infografis/indonesia-darurat-sampah-plastik-laut.

[3] Ibid.

[4] Cindy Mutia Annur, "Penduduk Indonesia Tembus 278 Juta Jiwa Hingga Pertengahan 2023," July 13, 2023, https://databoks.katadata.co.id/datapublish/2023/07/13/penduduk-indonesia-tembus-278-juta-jiwa-hingga-pertengahan-2023.

Marine debris contributes to environmental pollution, particularly marine pollution.[5] The impact of marine debris extends to the economic and tourism sectors, as it disrupts marine life, coastal ecosystems, and human health. According to reports, many organisms consume (entangle) or become entangled with plastic (ingestion). If plastic waste is not effectively controlled and managed, it undergoes degradation processes, forming microplastics and nanoplastics that can harm coastal ecosystems or be ingested by plankton or fish. Consequently, fisheries productivity may decline, and microplastics can enter the food chain, posing health risks to humans.[6] Therefore, policies addressing marine waste and prevention efforts are crucial to preventing pollution in the marine environment. According to the problems above, this research aims to explain marine waste, its handling policies, and what efforts are made to prevent pollution.

2. Method

This research is categorised into juridical-normative research, prioritising a literature review that is constrained by the norms within legal regulations. These norms are not limited to positive legal rules in Indonesia; they encompass regulations within international law. In this regard, the researcher seeks to ascertain the conformity between legal rules and legal norms.

3. Analysis or Discussion

3.1. Marine Waste and its Handling Policies

The rapid growth in the industrial sector results from increased household incomes and the diversification of consumption patterns and types in society. Such conditions have increased the volume, variety, and characteristics of waste and refuse.[7] According to H.J. Mukono, various characteristics of waste can be particularly identified as follows:[8]

1) Garbage refers to waste left out of processing, consisting of leftover animal or vegetable remains, predominantly composed of easily decomposable substances, moisture, and a significant amount of water.
2) Rubbish consists of combustible and non-combustible waste originating from households, commercial centres, and offices, excluding garbage.

---

[5] Muh Akbar and Aqila Maghfira, "Pengaruh Sampah Plastik Dalam Pencemaran Air Laut Di Kota Makassar," *SENSISTEK: Riset Sains dan Teknologi Kelautan* 6, no. 1 (May 29, 2023): 1, https://doi.org/10.20956/sensistek.vi.24234; See also Muhammad Reza Cordova, "Pencemaran Plastik Di Laut," *OSEANA* 42, no. 3 (2017): 21–30.

[6] Direktorat Pendayagunaan Pesisir dan Pulau-Pulau Kecil (P4K), "Sampah Laut (Marine Debris)," accessed July 15, 2023, https://kkp.go.id/djprl/p4k/page/1994-sampah-laut-marine-debris.

[7] Ina Indriana and Yeni Januarsi, "Manajemen Sampah Rumah Tangga Sebagai Alternatif Pemberdayaan Ekonomi Para Anggota PWRI Kota Cilegon," *Mopolayio : Jurnal Pengabdian Ekonomi* 2, no. 1 (November 24, 2022): 29–32.

[8] Dinarjati Eka Puspitasari, "Dampak Pencemaran Air Terhadap Kesehatan Lingkungan Dalam Perspektif Hukum Lingkungan (Studi Kasus Sungai Code Di Kelurahan Wirogunan Kecamatan Mergangsan Dan Kelurahan Prawirodirjan Kecamatan Gondomanan Yogyakarta)," *Mimbar Hukum - Fakultas Hukum Universitas Gadjah Mada* 21, no. 1 (February 23, 2012): 23, https://doi.org/10.22146/jmh.16254.

Combustible waste primarily consists of organic substances such as paper, torn fabric, wood, and plastic, while non-combustible waste mainly comprises inorganic materials such as metals, minerals, cans, and glass.

3) Ashes are the residual remains from the combustion of easily combustible materials found in homes, offices, and industries.
4) Street Sweeping waste originates from the cleaning of streets and sidewalks, performed either manually or with mechanical assistance, and includes papers and leaves.
5) Dead Animals are carcasses that have died due to natural causes, diseases, or accidents.
6) Household Refuse consists of rubbish, garbage, and ashes originating from residential areas.
7) Abandoned Vehicles refer to the carcasses of cars, trucks, and trains.
8) Industrial Waste comprises solid waste generated by industries and the processing of agricultural products.
9) Demolition Wastes are materials resulting from building demolitions.
10) Construction Wastes are waste materials originating from the remnants of construction, repairs, and renovations of buildings.
11) Sewage solids consist of coarse objects, typically organic matter, filtered at the inlet of a wastewater treatment facility.
12) Special Waste refers to waste that requires special handling, such as paint cans and radioactive substances.

Data from the National Waste Management Information System (SIPSN) of the Ministry of Environment and Forestry in 2022 states that the amount of waste generated in Indonesia is 22.3 million tons per year with the following details:

Table 1. Composition of waste in Indonesia by type of waste

Waste Type	Amount (%)
Leftovers food waste	41,4
Wood/branches/leaves	13,2
Plastic	18,6
Rubber/leather	2
Cloth	2,6
Glass	2
Metal	3
others	6,4

Source: SIPSN KLHK 2022

Various sizes of marine debris are found in waters, from large to small. Of course, this has an impact on various sectors, from the environment, economy, and

society to health.[9] The sustainability of marine flora and fauna is also influenced by marine debris; some penetrate into the body tissues of marine biota organisms, including squid, phytoplankton, fish, shrimp, seaweed, and shellfish.[10] Lack of seriousness in dealing with the problem of marine waste can have negative consequences for flora, fauna and even human survival. The sources of these polluting materials are both land- and marine-based; their origins may be local or distant, and the environmental consequences are many and varied.[11] Waste management can be carried out starting on land by creating a waste reduction processing site, waste reduction building, small waste processing unit, and waste reduction building.[12]

According to the data provided by the Directorate General of Pollution Control and Environmental Damage, the survey results indicate that the composition of marine debris in Indonesia amounts to 11.8 tons. The survey was conducted at 18 coastal points in 18 regencies and cities throughout Indonesia. The findings revealed that plastic waste occupies the first position, accounting for a total of 4.8 tons.[13] Based on the data from TKN-PSL, it is evident that 80 per cent of Indonesia's marine debris originates from land, with 30 per cent of it being comprised of plastic waste.[14] From the aforementioned data, it can be concluded that plastic waste dominates both terrestrial and marine environments. The classification of marine debris based on size is as follows:[15]

1) Mega-debris refers to debris longer than 1 meter, typically found in open waters.
2) Macro-debris represents debris ranging from >2.5 cm to <1 m. Generally, this type of debris is found both on the seabed and on the water's surface.
3) Meso-debris refers to marine debris sized between >5 mm and <2.5 cm. This debris is typically found on the water's surface or mixed with sediments.
4) Micro-debris is a type of extremely small debris ranging from 0.33 to 5.0 mm. Such debris is easily carried by currents and poses a significant

[9] Yar Johan et al., "Analisis Sampah Laut (Marine Debris) Di Pantai Kualo Kota Bengkulu," *JURNAL ENGGANO* 5, no. 2 (September 30, 2020): 273–89, https://doi.org/10.31186/jenggano.5.2.273-289.

[10] Aryuni Yuliantiningsih, Ade Maman Suherman, and Baginda Khalid Hidayat Jati, "Marine Plastic Pollution Handling Based on International and Indonesian Law to Support Sustainable Development Goals," *UNIFIKASI : Jurnal Ilmu Hukum* 10, no. 1 (April 1, 2023): 58–73, https://doi.org/10.25134/unifikasi.v10i1.7498.

[11] Murray R. Gregory, "Environmental Implications of Plastic Debris in Marine Settings—Entanglement, Ingestion, Smothering, Hangers-on, Hitch-Hiking and Alien Invasions," *Philosophical Transactions of the Royal Society B: Biological Sciences* 364, no. 1526 (July 27, 2009): 2013–25, https://doi.org/10.1098/rstb.2008.0265.

[12] Fy Prabawa et al., "Strategy on Marine Debris Reduction in Indonesia: A Review and Recommendation," *IOP Conference Series: Earth and Environmental Science* 925, no. 1 (November 1, 2021): 012027, https://doi.org/10.1088/1755-1315/925/1/012027.

[13] Direktorat Jenderal Pengendalian Pencemaran dan Kerusakan Lingkungan, "Pemantauan Sampah Laut Indonesia Tahun 2017," n.d., https://ppkl.menlhk.go.id/website/filebox/274/180703160900REKAP%20SAMPAH%20LAUT%20INDONESIA%202017.pdf.

[14] Tim Koordinasi Nasional Penanganan Sampah Laut, "Sampah Laut," *Tim Koordinasi Nasional Penanganan Sampah Laut* (blog), accessed October 15, 2023, https://sampahlaut.id/sampah-laut/.

[15] Ibid.

danger as it can easily enter the body organs of marine organisms, such as fish and turtles.

5) Nano-debris represents marine debris in sizes smaller than micro-debris. This type of debris is highly hazardous as it can easily penetrate the body organs of organisms.

The pollution of plastic waste in the ocean is a result of inadequate solid waste management facilities on land.[16] Additionally, awareness of waste separation is still low. The pattern of collection, transportation, and disposal remains the prevailing waste management approach in Indonesia. Society tends to be reluctant to sort the waste it produces, although the waste we generate is our responsibility. Awareness of waste separation should also be carried out by all parties involved, from upstream to downstream, starting from the individual level where waste is sorted to transportation that corresponds to the respective waste type and avoids mixing. However, currently, these aspects are not adequately facilitated.

Upon further understanding, marine debris has significant impacts. These impacts affect marine biota, the marine environment, and humans. Based on data from the Directorate of Coastal and Small Islands Utilisation, Ministry of Marine Affairs and Fisheries, 28 per cent of fish in the Poutere Makassar Fish Market were found to have microplastics ranging from 0.1 to 1.6 mm in their bodies. These microplastics originate from the degradation of plastic, leading to the entry of micro and nanoplastics into the food chain. Furthermore, marine debris also has implications for the tourism sector and the community's economy.[17] To address marine debris, the government has implemented Presidential Regulation of the Republic of Indonesia Number 83 of 2018 concerning Marine Debris Management. This regulation was created because Law Number 18 of 2008 concerning Waste Management did not specifically address marine debris. Therefore, the establishment of this policy provides a clear legal basis for the management of marine debris. When considering the rationale of this regulation, the presence of micro- and nano-sized plastics found in marine biota becomes one of the sociological considerations for the enactment of this regulation.

Another policy established by the government is the Roadmap for Plastic Waste Reduction by Producers, as outlined in the Republic of Indonesia Minister of Environment and Forestry Regulation Number P.75/MENLHK/SETJEN/KUM.1/10/2019. Within this roadmap, one of the key initiatives is the upsizing of packaging to decrease plastic waste generation. The roadmap sets the target of reducing plastic waste by 30 per cent over the next 10 years. The policy's scope, as stated in Article 3, paragraph (1), encompasses businesses engaged in manufacturing, food and beverage services, and retail, with the following details:

---

[16] Direktorat Jenderal Pengendalian Pencemaran dan Kerusakan Lingkungan, "Pemantauan Sampah Laut Indonesia Tahun 2017."

[17] Agrofarm, "Semester I 2022, Realisasi Investasi Bidang Kelautan dan Perikanan Tembus Rp4,04 T," July 29, 2022, https://www.agrofarm.co.id/2022/07/semester-i-2022-realisasi-investasi-bidang-kelautan-dan-perikanan-tembus-rp404-t/.

Table 2. Types of Producers in the Producer's Roadmap for Reducing Waste

Manufacturing Sector	Food and Beverage Service Sector	Retail Sector
a. Food and beverage industry b. Consumer goods industry c. Cosmetics and body care industry	a. Restaurants b. Cafés c. Food stalls d. Catering services e. Hotels	a. Shopping centres b. Modern retail stores c. Traditional markets.

Source: Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.75/MENLHK/SETJEN/KUM.1/10/2019 (The Regulation of Environment and Forestry Minister of the Republic of Indonesia Number P.75/MENLHK/SETJEN/KUM.1/10/2019)

Waste reduction is necessary for products, packaging, and containers that are difficult to decompose naturally, non-recyclable, and non-reusable. These products include plastic, aluminium cans, glass, and paper. This regulation is further supported by various policies implemented by local governments to reduce the use of single-use plastics. The following are the types of plastic packaging that manufacturers need to reduce based on the Roadmap for Plastic Waste Reduction by Producers:

Table 3. Presents The Types of Waste Reduction for Products/Containers/Packaging

Manufacturing sector	Food and beverage services sector	Retail sector
a. PE and PET bottles b. PS and PVC products/ packaging/containers c. PP plastic flexible packaging (sachets) d. Plastic straws in PP plastic beverage packaging e. Aluminium can packaging f. Glass packaging g. Paper/cardboard packaging	a. Single-use plastic made of PS, PP, and PE, such as plastic straws, disposable utensils and drinkware, and plastic bags b. Disposable utensils and drinkware made of paper	Single-use plastic bags made of PE plastic

Source: Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.75/MENLHK/SETJEN/KUM.1/10/2019 (Regulation of Environment and Forestry Minister of the Republic of Indonesia Number P.75/MENLHK/SETJEN/KUM.1/10/2019)

The policies implemented by local governments to address the issue of plastic waste encompass various approaches. For instance, some regulations mandate the production of environmentally friendly shopping bags made from materials such as cardboard or paper. Another approach involves increasing the price of plastic

bags, and some retail stores no longer provide plastic bags to customers.[18] Through these policies, local governments have supported the central government in reducing plastic waste.

All forms of reduction in the aforementioned categories are targeted at 30 per cent by the end of 2029. The implementation of these regulations is expected to prompt businesses to contribute significantly to the reduction of plastic waste, consequently yielding positive impacts on marine waste reduction. Soerjono Soekanto stated that several factors affect the established regulations, specifically:[19]

1) The legal framework itself
2) The law enforcement agencies responsible for formulating and implementing the laws
3) The supporting infrastructure for law enforcement
4) The societal aspect encompassing the environment in which the laws are enforced
5) Cultural factors.

3.2. Efforts to Prevent Pollution

The issue of pollution caused by marine debris has a significant impact on the marine ecosystem, potentially affecting biodiversity in Indonesia.[20] The principles outlined in Law Number 32 of 2009 concerning Environmental Protection and Management should serve as the foundation for environmental pollution prevention efforts. Furthermore, the principles of sustainable development must be applied to ensure legal certainty and the availability of natural resources for future generations. In addition to formulating policies to address marine debris, collaboration is essential, as stated in Article 7, letter c, of Law Number 18 of 2008 concerning Waste Management. This article stipulates that the government has the authority to facilitate and develop cooperation between regions, partnerships, networks, and waste management. Such cooperation may involve establishing joint waste management ventures. The concept of collaborative governance can also be applied to marine waste management. This concept represents a collaborative model involving non-state actors in the decision-making processes, both in the planning and implementation of public policies.[21] Collaboration is also extended to the international level through participation with ASEAN member countries. The

[18] Marsatana Tartila Tristy and Aminah Aminah, "Efektivitas Kebijakan Pengurangan Sampah Plastik Bagi Kelestarian Lingkungan Hidup Di Era Globalisasi," *Lex Librum : Jurnal Ilmu Hukum* 7, no. 1 (November 25, 2020): 43–55, https://doi.org/10.46839/lljih.v0i0.224.

[19] Ridwan HR, *Hukum Administrasi Negara*, Revisi, Cet. 13 (Jakarta: Rajawali Pers, 2018), 293.

[20] Zhen Jing and Sutikno Sutikno, "Legal Issues on Indonesian Marine Plastic Debris Pollution," *Indonesia Law Review* 10, no. 1 (April 30, 2020): 87–110, https://doi.org/10.15742/ilrev.v10n1.592.

[21] Hidayat Chusnul Chotimah, Muhammad Ridha Iswardhana, and Lucitania Rizky, "Model Collaborative Governance Dalam Pengelolaan Sampah Plastik Laut Guna Mewujudkan Ketahanan Maritim Di Indonesia," *Jurnal Ketahanan Nasional* 27, no. 3 (January 1, 2022): 348–76, https://doi.org/10.22146/jkn.69661.

management of transborder marine waste is addressed through The Coordinating Body on the Seas of East Asia (COBSEA).[22]

Furthermore, the pentahelix model can be utilised to address marine waste issues. This concept embodies a collaborative approach to effectively executing a program or policy that requires active involvement from the following stakeholders:[23]

1) Government authorities;
2) Private entities;
3) Academics;
4) Non-governmental organisations;
5) Civil society

Efforts are being undertaken through collaborative endeavours among various parties, including:

1) *Government*: The government is engaged in the formulation of policies to address marine waste and is consistently monitoring the situation. Moreover, they are providing adequate funding for the management of marine waste. The commitment and integrity of the government are crucial in ensuring the effective implementation of policies and programs supported by sufficient funding without any trace of corruption. The prevalence of corruption cases within the government has contributed to public distrust, making governmental integrity paramount for the success of established programs and policies.
2) *Private entities*: Following the Roadmap for Plastic Waste Reduction by Producers, business entities are obliged to reduce waste from products, packaging, and containers by adopting the following measures:
    a) Waste reduction
        i. Utilising products, packaging, and/or containers that are easily biodegradable and generate minimal waste
        ii. Avoiding the use of products, packaging, and/or containers that are difficult to decompose naturally
    b) Recycling
        i. Utilising recyclable raw materials for production and/or using recycled materials in the manufacturing process
        ii. Retrieving waste from products, packaging, and/or containers for recycling purposes
    c) Reutilisation
        i. Utilising reusable raw materials for production
        ii. Retrieving waste from products, packaging, and/or containers for recycling purposes

    Private entities can also carry out corporate social responsibility by carrying out activities that support the reduction of marine waste.

---

[22] Edta Muhammad Fadilah, Windy Dermawan, and Arfin Sudirman, "Kompleks Keamanan Lingkungan Regional Kawasan Asean Dalam Menghadapi Ancaman Polusi Sampah Laut," *Jurnal Inovasi Penelitian* 3, no. 3 (July 29, 2022): 5575–88, https://doi.org/10.47492/jip.v3i3.1917.

[23] Sapto Hermawan and Wida Astuti, "Penggunaan Penta Helix Model Sebagai Upaya Integratif Memerangi Sampah Plastik Di Laut Indonesia," *Bina Hukum Lingkungan* 5, no. 2 (May 17, 2021): 237–61, https://doi.org/10.24970/bhl.v5i2.164.

3) *Academic Institution*: The academic institution carries out research and community engagement with a focus on marine debris management. Community engagement, which essentially involves disseminating research findings, can also involve relevant stakeholders in waste management. For example, through education on waste segregation, promoting zero-waste practices, and facilitating composting.
4) *Non-Governmental Organisation*: Non-governmental organisations operating in environmental conservation, specifically in marine debris areas, need to be involved in decision-making, policy development, program implementation, and monitoring.
5) *Society*: The involvement of the community is essential in public discussions that facilitate the gathering of public opinions, which subsequently influence the government's policy-making process. The community also requires access to open information to actively participate in marine debris management efforts. When the community is engaged in such activities, they become contributing members in preventing marine pollution.

The efforts mentioned above not only support marine pollution prevention but also contribute to sustainable development, encompassing 17 goals, one of which is life below water, representing goal 14. With 70 per cent of its territory comprising oceans, Indonesia plays a significant role in achieving this objective. According to data from UNDP, 13,000 pieces of plastic waste are found per square kilometre of ocean.[24] The SDGs aim to protect marine ecosystems and promote conservation, fostering international cooperation. One such initiative focuses on ship-generated waste, which is regulated by Marpol 73/78. Marpol, short for Marine Pollution, represents the International Convention for the Prevention of Pollution from Ships, wherein ship-generated waste is addressed and regulated as a component of marine litter.

Plastic waste in Indonesia is found on coastlines, floating on the surface of the seas and oceans, floating in the air and becoming waste that lives on the ocean's bottom.[25] Marine is one of the goals of the SDGs with economic, social and environmental elements therein. Marines also have the ability to accommodate liquid waste produced by human activities.[26] Therefore, marine sustainability is paramount and must be maintained. One study states that plastic waste dominates marine waste. This will affect not only the SDGs but also marine tourism, considering that there is a lot of marine tourism in Indonesia as an archipelagic country.[27]

---

[24] United Nations Development Programme, "Goal 14: Life Below Water," UNDP, accessed July 15, 2023, https://www.undp.org/sustainable-development-goals/below-water.

[25] Devi Dwiyanti Suryono, "Sampah Plastik Di Perairan Pesisir Dan Laut : Implikasi Kepada Ekosistem Pesisir Dki Jakarta," *Jurnal Riset Jakarta* 12, no. 1 (September 30, 2019): 17–23, https://doi.org/10.37439/jurnaldrd.v12i1.2.

[26] Nurul Najmi et al., "Sosialisasi Bahaya Sampah Plastik Terhadap Ekosistem Laut Bagi Remaja Desa Ujong Pulau Rayeuk, Aceh Selatan," *J-ABDI: Jurnal Pengabdian Kepada Masyarakat* 2, no. 2 (June 28, 2022): 3855–62, https://doi.org/10.53625/jabdi.v2i2.2628.

[27] Tirza I. A. Poluan et al., "Identifikasi Jenis Sampah Laut Dengan Fokus Kajian Indeks Kebersihan Pantai Di Pantai Karang Ria Tuminting," *Jurnal Ilmiah PLATAX* 11, no. 1 (2023): 95–104.

The following international regulations include UNCLOS 1982, the London Dumping Convention, the 1996 Protocol, and the FAO Code of Conduct on Responsible Fisheries.[28] According to UNCLOS 1982, pollution of the marine environment refers to the introduction, directly or indirectly, of substances or energy into the marine environment, including estuaries, which may cause or are likely to result in harmful effects such as damage to marine biodiversity and life, threats to human health, disruption of activities at sea, including fishing and other legitimate uses of the sea, deterioration of the quality of seawater, and a decrease in comfort.[29] States must ensure effective protection of the marine environment against detrimental consequences that may arise from these activities.[30]

Article 194 of UNCLOS 1982 regarding Actions to Prevent, Reduce, and Control Pollution of the Marine Environment stipulates the following:

1) States shall take all necessary measures by the Convention, both individually and collectively as required, to prevent, reduce, and control pollution of the marine environment caused by any source, using the most practical means available to them and in line with their capabilities. At the same time, these States shall endeavour earnestly to harmonise their policies in this regard.
2) States shall take all necessary actions to ensure that activities under their jurisdiction or control are conducted in such a manner as not to cause damage through pollution to other States and their environment. They shall also ensure that pollution arising from activities under their jurisdiction or control does not spread beyond areas under their sovereign rights following this Convention.
3) The actions taken under this chapter must encompass all sources of marine environmental pollution. These actions shall include, among other things, planned measures to minimise to the fullest extent possible:
    a) The release of toxic, hazardous, or noxious substances, especially persistent substances, originating from land-based sources, air emissions, or dumping;
    b) Pollution from vessels, particularly measures to prevent accidents and address emergencies, ensure maritime safety, prevent intentional or accidental discharges, and regulate the design, construction, equipment, operation, and crewing of vessels;
    c) Pollution from installations and equipment used in the exploration or exploitation of marine natural resources and subsoil thereof, with particular focus on preventive and emergency measures, ensuring operational safety at sea, and regulating the design, construction, equipment, operation, and crewing of said installations or equipment;
    d) Pollution from other installations and equipment operated in the marine environment, especially measures to prevent accidents and

[28] L. E. Fleming et al., "Oceans and Human Health: A Rising Tide of Challenges and Opportunities for Europe," *Marine Environmental Research* 99 (August 1, 2014): 16–19, https://doi.org/10.1016/j.marenvres.2014.05.010.

[29] Article 1 Letter H, United Nations, "United Nations Convention on the Law of the Sea (UNCLOS)" (1982).

[30] Article 145, Ibid.

address emergencies, ensure maritime safety, and regulate the design, construction, equipment, operation, and crewing of such installations or equipment.

4) In undertaking measures to prevent, reduce, or control marine environmental pollution, States should refrain from unwarranted interference in the affairs of other States as they exercise their rights and fulfil their obligations following this Convention.
5) The actions taken under this section must encompass measures necessary to protect and preserve rare or vulnerable ecosystems and habitats for endangered, scarce, or transitioning marine life forms, among other marine life forms.

Article 201 of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) stipulates that States shall cooperate, either directly or through competent international organisations, to establish appropriate scientific criteria for formulating and elaborating provisions, standards, recommended practices, and procedures for the prevention, reduction, and control of marine environmental pollution.[31] Concerning pollution from land-based sources, Article 207 of UNCLOS 1982 further states the following:[32]

1. *States shall establish legislative and regulatory measures to prevent, reduce, and control marine environmental pollution from land-based sources, including rivers, estuaries, pipelines, and disposal structures while taking into account the agreed international provisions and standards as well as recommended practices and procedures.*
2. *States shall undertake any other measures that may be necessary to prevent, reduce, and control such pollution.*
3. *States must make earnest efforts to harmonise their policies in this regard at an appropriate regional level.*
4. *States, particularly through competent international organisations or diplomatic conferences, must diligently strive to establish global and regional regulations, standards, recommended practices, and procedures to prevent, reduce, and control land-based marine pollution, taking into account distinctive regional characteristics, the economic capabilities of developing countries, and their needs for economic development. The aforementioned provisions, standards, recommended practices, and procedures should be periodically reviewed as necessary.*
5. *Laws, regulations, actions, provisions, standards, recommended practices, and procedures, as referred to in paragraphs 1, 2, and 4, should also encompass similar measures aimed at minimising the release of harmful and hazardous toxic substances, especially persistent substances, into the marine environment.*

The London Dumping Convention is one of the earliest global conventions established in 1972 to safeguard the marine environment from anthropogenic activities. Its primary objective is to promote effective control of all sources of marine pollution and take practical measures to prevent such pollution by disposing of waste and other materials. The Convention aims to regulate all marine

[31] Article 201, Ibid.
[32] Article 207, Ibid.

pollution sources and prevent marine pollution through the regulation of waste dumping into the oceans.[33] Further, on November 17, 1996, a special meeting of the Parties agreed upon the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol), which would replace the 1972 Convention. Aligned with UNCED's Agenda 21, the 1996 Protocol reflects the global trend towards preventive and precautionary actions, with the Parties agreeing to transition from controlled dispersal of various land-based wastes into the oceans to integrated land-based solutions for most waste and controlled ocean disposal.[34] The Code of Conduct for Responsible Fisheries by FAO also stipulates that countries must make special efforts to protect fishing resources from pollution and other tangible impacts resulting from human activities that jeopardise the health and sustainability of those resources.[35]

Environmental pollution in Indonesia is regulated in Law Number 32 of 2009 concerning Environmental Protection and Management. Determination of the occurrence of environmental pollution is measured through environmental quality standards.[36] Everyone is allowed to dispose of waste (dumping) into environmental media with the following requirements:[37]

1) Meeting environmental quality standards; and
2) Obtaining permits from the Minister of Environment and Forestry, governors, or regents/mayors in accordance with their authority.

The act of indiscriminately dumping waste into environmental media without permission by individuals or business entities is prohibited. In the sense that if you want to carry out dumping, you are legally obliged to have a permit.[38] There is a dynamic relationship Between the environment and humans. Changes, however, will occur in the environment, which has the potential to cause humans to adapt to the environment.[39]

According to Law Number 32 of 2009 concerning Environmental Protection and Management, Dumping is an activity of disposing, placing and/or entering waste and/or materials in a certain quantity, concentration, time and location with certain requirements into certain environmental media.[40] Environmental quality standard means a limit measure or content of living creatures, substances, energy, or components that exist or must exist and/or pollutant elements whose presence

---

[33] United Nations, "Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention)" (1972).

[34] United Nations, "London Protocol 1996" (1996).

[35] Article 6.8., Food and Agriculture Organization of the United Nations, *Code of Conduct for Responsible Fisheries* (Rome: Food and Agriculture Organization of the United Nations, 1995).

[36] Article 20 paragraph (1), Republic of Indonesia, "Law of the Republic of Indonesia Number 32 of 2009 Concerning Environmental Protection and Management" (2009).

[37] Article 20 paragraph (3), Ibid.

[38] I Made Arya Utama and I Ketut Suardita, "Pengaturan Tata Kepemerintahan Yang Baik Dalam Pemberian Izin Usaha Industri Untuk Mencegah Pencemaran Lingkungan Hidup Di Kota Denpasar," *Kertha Negara* 04, no. 02 (February 2016): 1–5.

[39] Laura Medd and Putu Ade Harriestha, "Pertanggungjawaban Pidana Terhadap Pelaku Tindak Pidana Dumping Limbah (B3) Tanpa Izin," *Kertha Wicara : Journal Ilmu Hukum* 9, no. 11 (October 12, 2020): 1–10.

[40] Article 20 paragraph (2), Republic of Indonesia, Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management.

is tolerated in seawater.[41] Dumping can only be carried out with a permit from the Minister of Environment and Forestry, the governor, or the regent/mayor in accordance with their authority.[42] Dumping can only be done in a predetermined location.[43]

So, according to that regulation, dumping is permissible as long as it does not violate environmental quality standards and obtains a permit from the Minister of Environment and Forestry, governor or regent/mayor according to their authority.[44] Any person who dumps waste and/or materials into environmental media without a permit shall be subject to imprisonment for a maximum of 3 (three) years and a fine for a maximum of Rp. 3,000,000,000.00 (three billion rupiahs).[45] Law Number 32 of 2009 concerning Environmental Protection and Management has Government Regulation Number 101 of 2014 concerning the Management of Hazardous and Toxic Waste as the delegated regulation. Article 175 states that every person is prohibited from dumping hazardous and toxic (B3) waste into environmental media without permission.[46] Environmental crimes regarding dumping hazardous and toxic (B3) waste into environmental media occur if the elements in this article are fulfilled to hold the parties concerned liable.[47]

4. Conclusion

In Indonesia, the management of marine waste is conducted by the government through the establishment of various regulations. However, these regulations will not be effectively implemented without involving relevant stakeholders, including the public, non-governmental organisations (NGOs), central and local governments, private entities, and academics. Although these stakeholders have tasks differing from the others, they are interconnected. Regulations concerning marine waste also play a significant role as legal frameworks and sources of positive law. The implementation of these regulations, along with other relevant regulations, needs to be consistently performed to achieve a significant waste reduction, thus preventing marine pollution. The government should also recognise the necessity of monitoring after-policy and programme implementation to measure the success of the implemented policies. This will yield results indicating whether the policies formulated for marine waste management have been effective.

---

[41] Article 20 paragraph (2) point c, Ibid.

[42] Article 61 paragraph (1), Ibid.

[43] Article 20 paragraph, Ibid.

[44] Dimas Hutomo, "Sanksi Membuang Limbah ke Lingkungan Laut Tanpa Izin - Klinik Hukumonline," hukumonline.com, December 20, 2018, https://www.hukumonline.com/klinik/a/sanksi-membuang-limbah-ke-lingkungan-laut-tanpa-izin-lt5bc2bcf68f29f/.

[45] Article 104, Republic of Indonesia, Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management.

[46] Article 75, Republic of Indonesia, "Republic of Indonesia Government Regulation Number 101 of 2014 Concerning Management of Hazardous and Toxic Waste." (2014).

[47] Badrudin Kurniawan, "Pengawasan Pengelolaan Limbah Bahan Berbahaya Dan Beracun (B3) Di Indonesia Dan Tantangannya," *Dinamika Governance : Jurnal Ilmu Administrasi Negara* 9, no. 1 (April 26, 2019): 39–49, https://doi.org/10.33005/jdg.v9i1.1424.

References

Agrofarm. "Semester I 2022, Realisasi Investasi Bidang Kelautan dan Perikanan Tembus Rp4,04 T," July 29, 2022. https://www.agrofarm.co.id/2022/07/semester-i-2022-realisasi-investasi-bidang-kelautan-dan-perikanan-tembus-rp404-t/.

Akbar, Muh, and Aqila Maghfira. "Pengaruh Sampah Plastik Dalam Pencemaran Air Laut Di Kota Makassar." *SENSISTEK: Riset Sains dan Teknologi Kelautan* 6, no. 1 (May 29, 2023): 1–6. https://doi.org/10.20956/sensistek.vi.24234.

Annur, Cindy Mutia. "Penduduk Indonesia Tembus 278 Juta Jiwa Hingga Pertengahan 2023," July 13, 2023. https://databoks.katadata.co.id/datapublish/2023/07/13/penduduk-indonesia-tembus-278-juta-jiwa-hingga-pertengahan-2023.

Chotimah, Hidayat Chusnul, Muhammad Ridha Iswardhana, and Lucitania Rizky. "Model Collaborative Governance Dalam Pengelolaan Sampah Plastik Laut Guna Mewujudkan Ketahanan Maritim Di Indonesia." *Jurnal Ketahanan Nasional* 27, no. 3 (January 1, 2022): 348–76. https://doi.org/10.22146/jkn.69661.

Cordova, Muhammad Reza. "Pencemaran Plastik Di Laut." *OSEANA* 42, no. 3 (2017): 21–30.

Direktorat Jenderal Pengendalian Pencemaran dan Kerusakan Lingkungan. "Pemantauan Sampah Laut Indonesia Tahun 2017," n.d. https://ppkl.menlhk.go.id/website/filebox/274/180703160900REKAP%20SAMPAH%20LAUT%20INDONESIA%202017.pdf.

Direktorat Pendayagunaan Pesisir dan Pulau-Pulau Kecil (P4K). "Sampah Laut (Marine Debris)." Accessed July 15, 2023. https://kkp.go.id/djprl/p4k/page/1994-sampah-laut-marine-debris.

Dobiki, Joflius. "Analisis Ketersedian Prasarana Persampahan Di Pulau Kumo Dan Pulau Kakara Di Kabupaten Halmahera Utara." *SPASIAL* 5, no. 2 (2018): 220–28. https://doi.org/10.35793/sp.v5i2.20803.

Dwiyanti Suryono, Devi. "Sampah Plastik Di Perairan Pesisir Dan Laut : Implikasi Kepada Ekosistem Pesisir Dki Jakarta." *Jurnal Riset Jakarta* 12, no. 1 (September 30, 2019): 17–23. https://doi.org/10.37439/jurnaldrd.v12i1.2.

Fadilah, Edta Muhammad, Windy Dermawan, and Arfin Sudirman. "Kompleks Keamanan Lingkungan Regional Kawasan Asean Dalam Menghadapi Ancaman Polusi Sampah Laut." *Jurnal Inovasi Penelitian* 3, no. 3 (July 29, 2022): 5575–88. https://doi.org/10.47492/jip.v3i3.1917.

Fleming, L. E., N. McDonough, M. Austen, L. Mee, M. Moore, P. Hess, M. H. Depledge, et al. "Oceans and Human Health: A Rising Tide of Challenges and Opportunities for Europe." *Marine Environmental Research* 99 (August 1, 2014): 16–19. https://doi.org/10.1016/j.marenvres.2014.05.010.

Food and Agriculture Organization of the United Nations. *Code of Conduct for Responsible Fisheries*. Rome: Food and Agriculture Organization of the United Nations, 1995.

Gregory, Murray R. "Environmental Implications of Plastic Debris in Marine Settings—Entanglement, Ingestion, Smothering, Hangers-on, Hitch-Hiking and Alien Invasions." *Philosophical Transactions of the Royal Society B:*

Biological Sciences 364, no. 1526 (July 27, 2009): 2013–25. https://doi.org/10.1098/rstb.2008.0265.

Hermawan, Sapto, and Wida Astuti. "Penggunaan Penta Helix Model Sebagai Upaya Integratif Memerangi Sampah Plastik Di Laut Indonesia." *Bina Hukum Lingkungan* 5, no. 2 (May 17, 2021): 237–61. https://doi.org/10.24970/bhl.v5i2.164.

HR, Ridwan. *Hukum Administrasi Negara*. Revisi, Cet. 13. Jakarta: Rajawali Pers, 2018.

Hutomo, Dimas. "Sanksi Membuang Limbah ke Lingkungan Laut Tanpa Izin - Klinik Hukumonline." hukumonline.com, December 20, 2018. https://www.hukumonline.com/klinik/a/sanksi-membuang-limbah-ke-lingkungan-laut-tanpa-izin-lt5bc2bcf68f29f/.

Indonesiabaik.id. "Indonesia Darurat Sampah Plastik Di Laut," March 2023. https://indonesiabaik.id/infografis/indonesia-darurat-sampah-plastik-laut.

Indriana, Ina, and Yeni Januarsi. "Manajemen Sampah Rumah Tangga Sebagai Alternatif Pemberdayaan Ekonomi Para Anggota PWRI Kota Cilegon." *Mopolayio : Jurnal Pengabdian Ekonomi* 2, no. 1 (November 24, 2022): 29–32.

Jing, Zhen, and Sutikno Sutikno. "Legal Issues on Indonesian Marine Plastic Debris Pollution." *Indonesia Law Review* 10, no. 1 (April 30, 2020): 87–110. https://doi.org/10.15742/ilrev.v10n1.592.

Johan, Yar, Person Pesona Renta, Ali Muqsit, Dewi Purnama, Leni Maryani, Pinsi Hiriman, Fahri Rizky, Anggini Fuji Astuti, and Trisela Yunisti. "Analisis Sampah Laut (Marine Debris) Di Pantai Kualo Kota Bengkulu." *JURNAL ENGGANO* 5, no. 2 (September 30, 2020): 273–89. https://doi.org/10.31186/jenggano.5.2.273-289.

Kurniawan, Badrudin. "Pengawasan Pengelolaan Limbah Bahan Berbahaya Dan Beracun (B3) Di Indonesia Dan Tantangannya." *Dinamika Governance : Jurnal Ilmu Administrasi Negara* 9, no. 1 (April 26, 2019): 39–49. https://doi.org/10.33005/jdg.v9i1.1424.

Medd, Laura, and Putu Ade Harriestha. "Pertanggungjawaban Pidana Terhadap Pelaku Tindak Pidana Dumping Limbah (B3) Tanpa Izin." *Kertha Wicara : Journal Ilmu Hukum* 9, no. 11 (October 12, 2020): 1–10.

Nurul Najmi, Endah Anisa Rahma, Mai Suriani, Rita Hartati, Friyuanita Lubis, and Giovanni Oktavinanda. "Sosialisasi Bahaya Sampah Plastik Terhadap Ekosistem Laut Bagi Remaja Desa Ujong Pulau Rayeuk, Aceh Selatan." *J-ABDI: Jurnal Pengabdian Kepada Masyarakat* 2, no. 2 (June 28, 2022): 3855–62. https://doi.org/10.53625/jabdi.v2i2.2628.

Poluan, Tirza I. A., Joudy R. R. Sangari, Ferdinand F. Tilaar, Lawrence J. L. Lumingas, Wilmy E. Pelle, and Ridwan Lasabuda. "Identifikasi Jenis Sampah Laut Dengan Fokus Kajian Indeks Kebersihan Pantai Di Pantai Karang Ria Tuminting." *Jurnal Ilmiah PLATAX* 11, no. 1 (2023): 95–104.

Prabawa, Fy, Ns Adi, Ws Pranowo, Ss Sukoraharjo, Bg Gautama, and Ir Suhelmi. "Strategy on Marine Debris Reduction in Indonesia: A Review and Recommendation." *IOP Conference Series: Earth and Environmental Science* 925, no. 1 (November 1, 2021): 012027. https://doi.org/10.1088/1755-1315/925/1/012027.

Puspitasari, Dinarjati Eka. "Dampak Pencemaran Air Terhadap Kesehatan Lingkungan Dalam Perspektif Hukum Lingkungan (Studi Kasus Sungai Code Di Kelurahan Wirogunan Kecamatan Mergangsan Dan Kelurahan Prawirodirjan Kecamatan Gondomanan Yogyakarta)." *Mimbar Hukum - Fakultas Hukum Universitas Gadjah Mada* 21, no. 1 (February 23, 2012): 23. https://doi.org/10.22146/jmh.16254.

Republic of Indonesia. Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management (2009).

———. Republic of Indonesia Government Regulation Number 101 of 2014 concerning Management of Hazardous and Toxic Waste. (2014).

Tim Koordinasi Nasional Penanganan Sampah Laut. "Sampah Laut." *Tim Koordinasi Nasional Penanganan Sampah Laut* (blog). Accessed October 15, 2023. https://sampahlaut.id/sampah-laut/.

Tristy, Marsatana Tartila, and Aminah Aminah. "Efektivitas Kebijakan Pengurangan Sampah Plastik Bagi Kelestarian Lingkungan Hidup Di Era Globalisasi." *Lex Librum : Jurnal Ilmu Hukum* 7, no. 1 (November 25, 2020): 43–55. https://doi.org/10.46839/lljih.v0i0.224.

United Nations. Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) (1972).

———. London Protocol 1996 (1996).

———. United Nations Convention on the Law of the Sea (UNCLOS) (1982).

United Nations Development Programme. "Goal 14: Life Below Water." UNDP. Accessed July 15, 2023. https://www.undp.org/sustainable-development-goals/below-water.

Utama, I Made Arya, and I Ketut Suardita. "Pengaturan Tata Kepemerintahan Yang Baik Dalam Pemberian Izin Usaha Industri Untuk Mencegah Pencemaran Lingkungan Hidup Di Kota Denpasar." *Kertha Negara* 04, no. 02 (February 2016): 1–5.

Yuliantiningsih, Aryuni, Ade Maman Suherman, and Baginda Khalid Hidayat Jati. "Marine Plastic Pollution Handling Based on International and Indonesian Law to Support Sustainable Development Goals." *UNIFIKASI : Jurnal Ilmu Hukum* 10, no. 1 (April 1, 2023): 58–73. https://doi.org/10.25134/unifikasi.v10i1.7498.