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Plastic Waste Management in Indonesia: Current Legal Approaches and Future Perspectives

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Abstract: The ever-increasing domestic consumption of plastic products and materials has forced Indonesia to propel forward the means and approaches in dealing with their disposals. Despite the presence of numerous legal instruments serving as basis justifying actions to deal with plastic waste, Indonesia is still nowhere near success in tackling the issue of mismanagement. This article is devoted to normatively analyze various legal approaches used to govern plastic waste management Indonesia, and to unravel issues related to such approaches. It is carried out using normative-legal research methods in which various legal instruments and other secondary legal materials are analyzed descriptively to point out the emerging legal issues. The main findings reveal that laws and regulations as well as public policies that serve as legal basis and approach to deal with plastic waste governance in Indonesia still possess some weaknesses. Further examinations suggest the needs for improvement in some legal aspects from which some new perspectives could then be shaped to envisage future actions.

Keywords: Environment; Plastic; Waste Management; Legal Approaches; Government

1. Introduction

Plastic industry is growing significantly in Indonesia, triggered by and resulted into an ever-increasing plastic production and consumption. According to Ministry of Environment and Forestry (MoEF), present plastic consumption in Indonesia is estimated at 22.54 kg/capita/ year. The amount is projected to rapidly escalate in future years which will propel the growth of plastic production in order to meet the demand. As reported by Ministry of Industry, plastic consumption in Indonesia is estimated to be around 44–100 kg/capita/year in 2025-2035 while plastic production is expected around 11.04–28.62 million tons.[1] Plastic continues to be one of the most commonly and widely used

[1] Ministry of Environment and Forestry (MoEF), National Plastic Waste Reduction Strategic Actions for Indonesia (Ministry of Environment and Forestry, Republic of Indonesia, 2020).

materials, it comes as preference for many due to its comparatively cheaper, more accessible, durable, lighter in weight, and moldable.[2]

While plastic consumption in Indonesia has been quantitively increasing and plastic materials keeps expanding to an ever-widening range of applications, management of disposals from such consumption remains poor. Several studies have suggested Indonesia to be among the top plastic-polluting countries worldwide.[3] Indonesia generates approximately 7.8 million tons of plastic waste annually, where around 4.8-4.9 million tons of them are mismanaged. It is estimated that around 0.27-0.62 of all unmanaged plastic waste are leaked and ultimately end up in Indonesian waters and marine environment.[4]

There already exist a number of legal instruments -both binding and non-binding- that are and/or could be used by Indonesia to justify actions in handling plastic waste, ranging from international, regional, to national level. While the presence of legal basis and framework is no longer a case, Indonesia still struggle to appropriately manage its domestic plastic waste generation.

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[2] George Bishop, David Styles, and Piet N.L. Lens, "Recycling of European Plastic Is a Pathway for Plastic Debris in the Ocean," Environment International 142 (September 2020): 105893, https://doi.org/10.1016/j.envint.2020.105893; David G. Bucknall, "Plastics as a Materials System in a Circular Economy," Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 378, no. 2176 (July 24, 2020): 20190268, https://doi.org/10.1098/rsta.2019.0268; Martin C Heller, Michael H Mazor, and Gregory A Keoleian, "Plastics in the US: Toward a Material Flow Characterization of Production, Markets and End of Life," Environmental Research Letters 15, no. 9 (August 25, 2020): 094034, https://doi.org/10.1088/1748-9326/ab9e1e; Sarah-Jeanne Royer et al., "Production of Methane and Ethylene from Plastic in the Environment," ed. P. Pardha-Saradhi, PLOS ONE 13, no. 8 (August 1, 2018): e0200574, https://doi.org/10.1371/journal.pone.0200574.

[3] Hans Fredrik Veiteberg Braaten et al., "Plastic Pollution in Indonesia and the Philippines: Current Status and Upcoming Knowledge Needs," 2021, 43; Beatriz Garcia, Mandy Meng Fang, and Jolene Lin, "Marine Plastic Pollution in Asia: All Hands on Deck!," Chinese Journal of Environmental Law 3, no. 1 (August 13, 2019): 11–46, https://doi.org/10.1163/24686042-12340034; Anjar Dimara Sakti et al., "Multi-Scenario Model of Plastic Waste Accumulation Potential in Indonesia Using Integrated Remote Sensing, Statistic and Socio-Demographic Data," ISPRS International Journal of Geo-Information 10, no. 7 (July 13, 2021): 481, https://doi.org/10.3390/ijgi10070481; Paul Vriend et al., "Plastic Pollution Research in Indonesia: State of Science and Future Research Directions to Reduce Impacts," Frontiers in Environmental Science 9 (June 8, 2021): 692907, https://doi.org/10.3389/fenvs.2021.692907.

[4] Muhammad Reza Cordova, "Naskah Akademik Inisiasi Data Sampah Laut Indonesia Untuk Melengkapi Rencana Aksi Nasional Penanganan Sampah Laut Sesuai Peraturan Presiden RI No. 83 Tahun 2018 (Academic Paper of Initiation of Indonesian Marine Debris Data to Complement the National Action Plan for Handling Marine Debris in accordance with Indonesian Presidential Regulation No. 83 of 2018)" (Oceanographic Research Center, Indonesian Institute of Sciences, 2019); National Plastic Action Partnership (NPAP), "Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan National Plastic Action Partnership," Insight Report (World Economic Forum, 2020), https://globalplasticaction.org/wp-content/uploads/NPAP-Indonesia-Multistakeholder-Action-Plan_April-2020.pdf; World Bank, Plastic Waste Discharges from Rivers and Coastlines in Indonesia (World Bank, 2021), https://doi.org/10.1596/35607.

This article aims to provide an overview of existing legal approaches applied by Indonesia in addressing and dealing with the issue of plastic waste, to unravel problems related to such approaches, and further to examine possible improvement in the legal aspect from which new perspectives could proliferate. The first part of this paper will describe the sources and mismanagement conditions of plastic waste in Indonesia. The second part will explicate the legal approaches that Indonesia applies in addressing and combating the plastic waste issue. Lastly, the third part will bring up some analysis on legal issues and other related problem revolving around Indonesia's plastic waste management along with the requisite improvement that are expected to lead to new perspectives in governing plastic waste circulation in Indonesia.

2. Method

This research applies normative-legal research method. The data used are primary legal materials obtained from relevant regulations and secondary legal materials obtained from various related literatures. They are then analyzed descriptively to reveal the issues as described on this paper.

3. Plastic Waste' Source and Mismanagement in Indonesia

According to the periodically updated statistics provided by Ministry of Environment and Forestry (MoEF), annual generation of waste from all across Indonesia in 2021 is recorded at 26.7 million tons, quite significantly decreasing from 2020 generation which is reported at 32.6 tons/year (data taken per 22 April 2022),[5] and extremely dropping in comparison to data compiled by Statistics Indonesia that suggest the number of waste generation in Indonesia reached 65.2 million tons/year in 2016. [6] Recent study by World Bank indicates that total solid waste generation in Indonesia on average is around 42 million ton/year (range 33.4-49.9 million tons/year).[7]

Waste composition in Indonesia is largely dominated by food waste, accounting for 29.85% of overall waste generation in 2021, followed by plastic waste which composes 16.03% of all waste. Municipal solid waste (MSW) in Indonesia is primarily originated from household consumption (41%), followed by consumption in commercial area, traditional

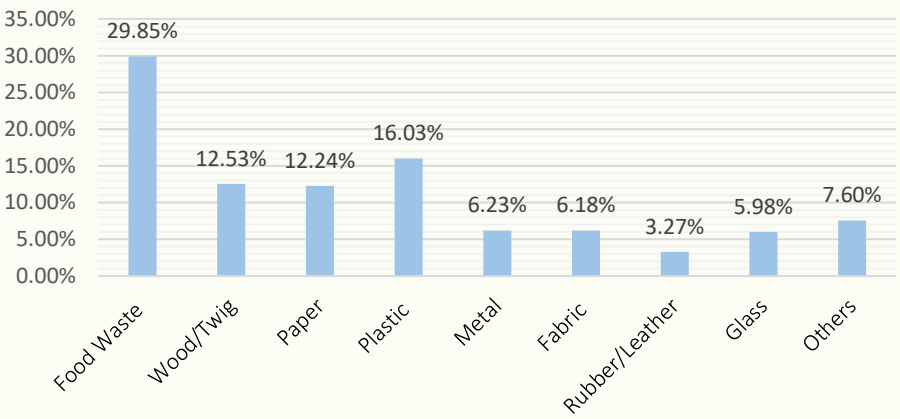
[5] Ministry of Environment and Forestry of Republic of Indonesia (MoEF), "Total Waste Generation," National Waste Management Information System (SIPSN) (blog), 2022, https://sipsn.menlhk.go.id/sipsn/.

[6] Pramudya Ajeng Safitri, Winda Sartika Purba, and Mochamad Zulkifli, Statistik Lingkungan Hidup Indonesia 2018 (Environment Statistics of Indonesia 2018) (Jakarta: Badan Pusat Statistik/BPS–Statistics Indonesia, 2018).

[7] World Bank, Plastic Waste Discharges from Rivers and Coastlines in Indonesia.

markets, public facilities, and offices.[8] By individual, as reported by MoEF, waste produced by the Indonesian citizens reaches 0,8 kg per person daily, which in accumulation equals to 189.000 tons each day, and around 28,4 thousand tons or 15% of these wastes are categorized as plastic waste.[9]

Figure 1. Composition of Waste Generation in Indonesia (2021)



(Source: MoEF, 2022)

Table 1. Municipal Waste Source in Indonesia (2021)

Source of Waste	Proportion (%)
Household	41.01%
Commercial area	19.48%
Traditional market	16.04%
Public facilities	6.77%
Office	6.76%
Other areas	9.94%

(Source: MoEF, 2022)

According to the Indonesia National Plastic Action Partnership (NPAP), around 50- 70% of total plastics in Indonesia end up as MSW post-consumption, which predominantly include plastic packaging, carrier bags, cigarette butts, diapers, toys, and durable household goods. Another 30-50% of plastics which has a longer period of usage are used in a number of applications including in automotive, electronic, and construction

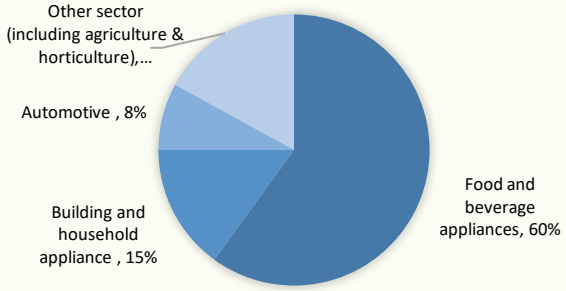
[8] Ministry of Environment and Forestry of Republic of Indonesia (MoEF), "Waste Composition Graphic," National Waste Management Information System (SIPSN) (blog), 2022, https://sipsn.menlhk.go.id/sipsn/.

[9] Rafidah Rafidah and Ahmad Ridho Ismail, "PEMANFAATAN LIMBAH PLASTIK MENJADI BAHAN BAKAR MINYAK," Sulolipu: Media Komunikasi Sivitas Akademika dan Masyarakat 18, no. 2 (October 15, 2019): 216, https://doi.org/10.32382/sulolipu.v18i2.1161; Nurul Kholidah, Muhammad Faizal, and Muhammad Said, "Polystyrene Plastic Waste Conversion into Liquid Fuel with Catalytic Cracking Process Using Al2O3 as Catalyst," Science and Technology Indonesia 3, no. 1 (January 15, 2018): 1–6, https://doi.org/10.26554/sti.2018.3.1.1-6.

sectors.[10] Majority of plastic consumption that ultimately leads to generation of plastic waste in Indonesia comes from fast moving consumer goods (FMCGs), with plastic packaging taking a dominant portion.[11]

Plastic packaging in particular is accountable for 65% of all plastic consumption nationwide, and of the total demand for plastic packaging, about 60% is absorbed by the food and beverage industry.[12] Investigation and waste audit done by the Global Alliance Incinerator Alternatives (GAIA) in 2018 and Greenpeace in 2016-2019 revealed a number of highly well-known companies, overall identified as FMCGs companies, as the largest waste-polluters in Indonesia. The list includes PT. Indofood Tbk, PT. Unilever Indonesia, PT. Mayora Indah Tbk, Danone Group, of Orang Tua (OT) Group and some other big companies.[13]

Figure 2. Type of Plastic Appliance



(Source: MoEF, 2020)

[10] National Plastic Action Partnership (NPAP), "Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan National Plastic Action Partnership."

[11] Yosi Agustina Hidayat, Saskia Kiranamahsa, and Muchammad Arya Zamal, "A Study of Plastic Waste Management Effectiveness in Indonesia Industries," AIMS Energy 7, no. 3 (2019): 350–70, https://doi.org/10.3934/energy.2019.3.350; Greenpeace Indonesia, "Krisis Belum Terurai: Rekapitulasi Temuan Audit Merek Sampah Plastik tahun 2016-2019 Indonesia (Crisis Unsolved: Recapitulation of Audit Findings for Plastic Waste Brands for 2016-2019 Indonesia)" (Greenpeace Indonesia, 2019); Siti Kardian Pramiati, Tri Edhi Budhi Soesilo, and Haruki Agustina, "Post-Consumer Plastic Packaging Waste Management in Indonesia: A Producer Responsibility Approach," ed. R. Che Omar et al., E3S Web of Conferences 325 (2021): 03005, https://doi.org/10.1051/e3sconf/202132503005.

[12] Greenpeace Indonesia, "Krisis Belum Terurai: Rekapitulasi Temuan Audit Merek Sampah Plastik tahun 2016-2019 Indonesia (Crisis Unsolved: Recapitulation of Audit Findings for Plastic Waste Brands for 2016-2019 Indonesia)"; Ministry of Environment and Forestry (MoEF), National Plastic Waste Reduction Strategic Actions for Indonesia; Greenpeace Indonesia, "Bumi Tanpa Plastik: Perspektif Dan Tuntutan Publik Terhadap Kontribusi Korporasi Dalam Krisis Pencemaran Plastik Di Indonesia (A Plastic-Free Earth: Public Perspectives and Demands on Corporate Contributions in the Plastic Pollution Crisis in Indonesia)," Greenpeace Indonesia, 2021.

[13] Greenpeace Indonesia, "Krisis Belum Terurai: Rekapitulasi Temuan Audit Merek Sampah Plastik tahun 2016-2019 Indonesia (Crisis Unsolved: Recapitulation of Audit Findings for Plastic Waste Brands for 2016-2019 Indonesia)"; Vincentia Sonia and Dina Sunyowati, "The State Liability of Plastic Waste Dumping in Indonesia," 2020, 13.

Despite the increasing number of plastic consumptions which subsequently escalates the number of plastic waste post-consumption, the management of such a waste -and MSW in general- remains poor. Indonesia generates approximately 7.8 million tons of plastic waste annually, where around 4.8-4.9 million tons of all the plastic waste are mismanaged—e.g. uncollected, disposed of in open dumpsites or leaked from formal unsanitary landfills. It is estimated that around 0.27-0.62 million tons of all unmanaged plastic waste are leaked and ultimately end up in Indonesian waters and marine environment.[14] However, recent and more specified study by World Bank suggests that the range of total discharges of plastic waste into the marine environment from land-based sources in Indonesia is estimated between 201.1 kiloton/year and 552.3 kiloton/year, with a midpoint of 346.5 kiloton/year. These suggest that 4.5% of the total plastic waste generated in Indonesia ends up in the marine environment, equal to 1.32 kg/capita/year contribution to plastic marine debris.[15]

In addition to the mismanaged plastic waste originated from domestic consumption, smuggled plastic disposals concealed in waste imports mechanism has also aggravated plastic waste problem in Indonesia. The phenomenon especially reached the peak during 2017-2018 when the amount of Indonesia's waste import escalated from 10.000 tons per month to 35.000 tons per month. Waste import ban by People's Republic of China (PRC) in 2018 was suspected to be the cause of the increasing traffic of waste trade in Indonesia, as well as in Southeast Asia countries in general. China used to become the primary destination of waste import from foreign countries, therefore, China closing the door for the import subsequently resulted into other countries welcoming and taking the shift of such a trade. According to Statistics Indonesia, the paper waste partly containing plastic disposal that entered to Indonesia increased from 546.000 tons in 2017 to 739.000 tons in 2018.[16]

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[14] Cordova, "Naskah Akademik Inisiasi Data Sampah Laut Indonesia Untuk Melengkapi Rencana Aksi Nasional Penanganan Sampah Laut Sesuai Peraturan Presiden RI No. 83 Tahun 2018 (Academic Paper of Initiation of Indonesian Marine Debris Data to Complement the National Action Plan for Handling Marine Debris in accordance with Indonesian Presidential Regulation No. 83 of 2018)"; National Plastic Action Partnership (NPAP), "Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan National Plastic Action Partnership"; World Bank, Plastic Waste Discharges from Rivers and Coastlines in Indonesia.

[15] World Bank, Plastic Waste Discharges from Rivers and Coastlines in Indonesia.

[16] Aulia Adam, "Dalih Sampah Impor Demi Industri, Tapi Mengapa Ada Sampah Plastik? (The Pretext of Importing Waste for the Sake of Industry, but Why Plastic Waste?)," Tirto.Id, June 26, 2019, https://tirto.id/dalih-sampah-impor-demi-industri-tapi-mengapa-ada-sampah-plastik-ec6d; Amy L. Brooks, Shunli Wang, and Jenna R. Jambeck, "The Chinese Import Ban and Its Impact on Global Plastic Waste Trade," Science Advances 4, no. 6 (June 2018), https://doi.org/10.1126/sciadv.aat0131; Greenpeace, "Data from the Global Plastics Waste Trade 2016-2018 and the Offshore Impact of China's Foreign Waste Import Ban: An Analysis of Import-Export Data from the Top 21 Exporters and 21 Importers," April 23, 2019; Qiao Huang et al., "Modelling the Global Impact of China's Ban on Plastic Waste Imports," Resources, Conservation and Recycling 154 (March 2020): 104607, https://doi.org/10.1016/j.resconrec.2019.104607; Teddy Prasetiawan, "Ancaman Impor Sampah Terhadap Indonesia," n.d., 6; Sonia and Sunyowati, "The

4. Current Governance for Plastic Waste Management in Indonesia- International, Regional, and National Legal Approaches

4.1. International Legal Approach

Despite the emerging urge from international community to make plastic waste issue brought up and resolved with a binding legal instrument,[17] to this day, there are no legally binding international instruments specifically dealing with plastic waste issue, nor are there any existing international regulations that success to do so. [18] Nevertheless, there are at least two international legal instruments that could serve as basis justifying actions needed to deal with waste issues for international community, and particularly in this case include Indonesia. First, the 2030 Agenda for Sustainable Development (SDGs 2030), and second, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention 1989).

The 2030 Agenda serves as a global benchmark for transitioning to sustainable development. It demands a concerted effort from governments at all levels, civil society, business, and academics to reform existing institutional frameworks in every country.[19] The waste issue is specifically elaborated in several targets under the Agenda, and the plastic waste issue is addressed quite comprehensively by encouraging the improvement of waste management (Targets 11.6, 12.4 and 12.5), encouraging producer and consumer awareness and responsibility (Target 12.3), and resolving the downstream aspect of marine waste pollution (Target 14.1).[20] The most notable target from SDGs 2030 in regards to global waste management would considerably be Target 12.5 which aims, by 2030, to "*substantially reduce waste generation through prevention, reduction, recycling and reuse*".

State Liability of Plastic Waste Dumping in Indonesia"; Imam Tri Wahyudi, Wahyu Anggara, and Muhammad Rizky Zein, "Tinjauan Kebijakan Importasi Limbah di Indonesia (Overview of Waste Import Policy in Indonesia)," Jurnal Perspektif Bea dan Cukai 4, no. 1 (July 2, 2020), https://doi.org/10.31092/jpbc.v4i1.739; Zongguo Wen et al., "China's Plastic Import Ban Increases Prospects of Environmental Impact Mitigation of Plastic Waste Trade Flow Worldwide," Nature Communications 12, no. 1 (December 2021): 425, https://doi.org/10.1038/s41467-020-20741-9; Aya Yoshida, "China's Ban of Imported Recyclable Waste and Its Impact on the Waste Plastic Recycling Industry in China and Taiwan," Journal of Material Cycles and Waste Management 24, no. 1 (January 2022): 73–82, https://doi.org/10.1007/s10163-021-01297-2.

[17] United Nations Environment Programme, "End Plastic Pollution: Towards an International Legally Binding Instrument" (United Nations, March 2, 2022); Karen Raubenheimer and Niko Urho, "Rethinking Global Governance of Plastics – The Role of Industry," Marine Policy 113 (March 2020): 103802, https://doi.org/10.1016/j.marpol.2019.103802.

[18] Luisa Cortat Simonetti Goncalves and Michael G. Faure, "International Law Instruments to Address the Plastic Soup," SSRN Electronic Journal, 2019, https://doi.org/10.2139/ssrn.3405968.

[19] Sabine Weiland et al., "The 2030 Agenda for Sustainable Development: Transformative Change through the Sustainable Development Goals?" Politics and Governance 9, no. 1 (February 26, 2021): 90–95, https://doi.org/10.17645/pag.v9i1.4191.

[20] Maskun et al., "Normative Review of Plastic Waste Management in Indonesia," in E-Proceeding of Tuanku Ja'afar Conference and Workshop 2021 (TJC 2021) (Tuanku Ja'afar Conference and Workshop 2021 (TJC 2021), Selangor: Fakulti Undang-undang, Universiti Kebangsaan Malaysia, 2021), 651–72.

While the 2030 Agenda addresses waste issues in a very large yet less specified context, Basel Convention 1989 is mainly rooted for waste trade issue. During its 14th Conference of the Parties (COP) on April 29th – May 10th 2019, parties of Basel Convention amended the instrument to include plastic waste in a legally-binding framework, making global plastic waste trade more transparent and regulated, as well as ensuring that its management is safer for humans. The Convention's Annex II, VIII, and IX have been amended to increase control over the movement of plastic waste across national borders and to define the extent of the convention that applies to such waste (decision BC-14/12). This modification is known as the "Plastic Waste Amendment".[21]

The Plastic Waste Amendment puts plastic waste listed in Annex II, VIII, and IX as subject to a number of waste trade restriction under Basel Convention, including required conditions set out in Art. 4 Par. 9 of the Convention which states that the transboundary movements of waste in question can only be implemented if:

(a) *The State of export does not have the technical capacity and the necessary facilities, capacity or suitable disposal sites in order to dispose of the wastes in question in an environmentally sound and efficient manner; or*
(b) *The wastes in question are required as a raw material for recycling or recovery industries in the State of import; or*
(c) *The transboundary movement in question is in accordance with other criteria to be decided by the Parties, provided those criteria do not differ from the objectives of this Convention.*

The Amendment also puts several categories of plastic waste as subject to Prior Informed Consent (PIC) procedures (applied to plastic waste listed in Annex VIII), also to "Basel Ban" which is a ban on export-import of waste from Annex VII countries (OECD member countries, EU countries and Liechtenstein) to non-Annex VII countries, and any other restrictions as regulated by the Convention and its Plastic Waste Amendment. The Amendment took effect on January 1, 2021. The modifications apply to all nations that have not yet filed a non-acceptance notification to the Convention (decision BC-14/12). Indonesia in particular has adopted the amendment and will follow the new restrictions governing the movement of plastic waste across borders.

4.2. Regional Legal Approach

When it comes to the legal framework in controlling and managing plastic waste within the regional context, which in this case refers to Southeast Asia, special attention should be paid to the two most recent and detailed legal instruments on the subject to which the members of Association of Southeast Asian Nations (ASEAN) are engaged: the ASEAN

[21] Secretariat of the Basel Convention, "Amendments to Annexes II, VIII and IX to the Basel Convention" (Secretariat of the Basel Convention, 2019).

Framework of Action on Marine Debris (ASEAN Framework) and the Bangkok Declaration on Combating Marine Debris in the ASEAN Region (Bangkok Declaration). Despite not specifically stressing on the issue in question, the ASEAN Framework and Bangkok Declaration sets a particular attention to plastic waste, especially ones circulating in waters and marine environment within the region.

The Framework is divided into four priority areas, which are: (I) "Policy Support and Planning", mainly focuses on the establishment and reinforcement of requisite policies emphasizing prevention and reduction of marine debris; (II) "Research, Innovation, and Capacity Building", focuses on building capacity at the local, national, and regional levels from which national action plans then can be developed and implemented subsequently; (III) "Public Awareness, Education, and Outreach", aims to raise public awareness about the negative effects of marine debris and microplastic contamination.; and (IV) Private Sector Engagement, focuses on encouraging private sector participation in taking concrete efforts to handle marine plastic waste.

The ASEAN Framework includes 13 actions and about 44 suggested activities, some of which are aimed specifically at addressing plastic debris, such as developing and implementing extended producer responsibility (EPR) (contained in Framework I), undertaking research and studies on marine plastic and microplastic waste, the result is expected to serve as a scientific foundation for numerous decisions and policies connected to marine debris prevention and management (contained in Framework II), establishing ASEAN information platform to exchange information and share innovative solution and best practices (contained in Framework III), and promoting private sector investment in redesigning products/packaging and alternative materials (contained in Framework IV).

In alignment with the ASEAN Framework, Bangkok Declaration focuses on prioritizing techniques such as circular economy and 3R (reduce, reuse, recycle) to promote new solutions in increasing plastics value chains and improving resource efficiency. The Declaration also encourages the ASEAN member states (AMS)' efforts to create capacity and share best practices, as well as external partners' assistance in this respect. The Declaration serves as a joint follow-up by ASEAN countries towards the ASEAN Community Vision 2025 and global commitments previously agreed upon in the 2030 Agenda for Sustainable Development, particularly to achieve Sustainable Development Goal 14 'Conserve and sustainably use the Oceans, seas and marine resources for sustainable development', and in specific, Target 14.1, which aspires to "*prevent and significantly reduce marine pollution of all kinds*".

4.3. National Legal Approach

To this day, Indonesia has not had a single legal instrument specifically aimed to govern plastic waste management. However, there are already a variety of laws and regulations in place that encompass legal framework as to how the waste in general has to be treated and managed. It is important to note that, none of these existing legal instruments explicitly adopt the term 'plastic waste'. Using the virtue of the explanation found in the annex part, the character of '*difficult to be decomposed under natural processes*' which appears throughout articles and paragraphs of the legal instruments explained below, as well as the terms '*reusable waste*' and '*recyclable waste*' could be of use in identifying the rules applied for plastic waste.

The Law of the Republic of Indonesia Number 18 Year 2008 on Waste Management (Law 18/2008) is the basic legal underpinning for waste management in Indonesia. For the sake of further elaboration and implementation, several derivative regulations, such as Government Regulation of the Republic of Indonesia Number 81 Year 2012 on Household Waste and Household-like Waste Management (GR 81/2012) and Government Regulation of the Republic of Indonesia Number 27 Year 2020 on Specific Waste Management (GR 27/2020) were then enacted to complement the Law 18/2008. While the aforementioned legal instruments may have varied specific rules depending on the sort of waste they deal with, these laws in principle share a similar framework and core provisions. Together these instruments establish a uniform legal framework applied and adopted by the later regulations, and all national legal instruments concerning waste management as a whole.

Approaches and strategies to reduce and handle waste as outlined in the aforementioned laws and regulations are then directed toward achieving the goals set forth in the National Policy and Strategy for Household Waste and Household-like Waste Management (known as Jakstranas in Indonesian), which was enacted through Presidential Regulation Number 97 Year 2017 (PR 97/2017). Jakstranas is an eight year-term master plan containing several important targets for waste reduction and handling in Indonesia.

In addition to the aforementioned legal instruments which set forward general rules of waste management in Indonesia, some legal instruments with more particular regulatory objectives are also enacted in Indonesia. One of the instruments in question is the Presidential Regulation of the Republic of Indonesia Number 83 Year 2018 on Marine Waste Management (PR 83/2018), a forward-thinking legal instrument explicitly enacted to deal with marine debris. The most important part of PR 83/2018 is situated in its annex that sets out an eight-year term National Action Plan (NAP) containing strategies, programs, and activities that serves as a guidance for the mandated ministries or other

related government' non-ministerial institutions as well as references for community and business actors in advancing towards effective management of marine waste.

Another highly important instrument with specific regulatory object that deals with waste—including and especially plastic waste—issue in Indonesia is the Ministry of Environment and Forestry of the Republic of Indonesia Regulation Number 75 Year 2019 on the Roadmap of Waste Reduction by Producers (MoEFR 75/2019). This instrument embodies the idea of Extended Producers Responsibility (EPR) Principle by requiring businesses to take greater responsibility for their products and/or product packaging until it reaches the end of its life cycle and becomes waste.[22] According to Art. 4 Par. (1)-(2) of MoEFR 75/2019, the reduction mechanism set under the instrument is to be implemented for waste generated from products, product packaging, and/or containers which: (a) are difficult to decompose by natural processes; (b) cannot be recycled; and/or (c) cannot be reused. Products, product packaging, and/or containers in question include plastics, aluminium cans, glass and paper. The roadmap on waste reduction by producers in detail is formulated in the Annex I of MoEFR 75/2019. The following table lists important provisions of the above-mentioned legislations relating to the management of waste in general and plastic waste in particular in Indonesia (Table 2).

The government powers and functions to formulate policy and implement laws and regulations relating to waste management in Indonesia are not only held by national-central government, but also extend to the regional administration. According to Law 18/2008, regional-level government in Indonesia, in collaboration with the central government, are responsible for ensuring the implementation of a good and environmentally sound waste management. Powers to establish policies and strategies is one of the main competences that regional governments have in relation to fulfilling the responsibility to regulate government affairs in the environmental sector including waste management.

With the authority and responsibilities conferred by several legislative instruments to carry out governmental actions in the environmental sector including waste management -e.g. the Law 18/2008 as mentioned above, along with the Law on Regional Government (revised), and the Law on Environmental Protection and Management (revised), a number of regional governments both at the provincial and municipal levels in Indonesia have established legal instruments specifically aimed to regulate the use of plastic goods and the management of plastic disposals within their area of administration, some of them even impose either partial or total ban for plastic usage, primarily plastic bags as the most commonly used plastic product in daily basis.

[22] Maskun et al., "Tinjauan Normatif Penerapan Prinsip Tanggung Jawab Produsen Dalam Pengaturan Tata Kelola Sampah Plastik Di Indonesia (A Normative Review of the Implementation of the Principles of Producer Responsibility in the Management of Plastic Waste in Indonesia)" 6, no. 2 (February 2022).

Table 2. Core Provisions of Indonesia's National Legal Instruments Concerning Waste Management

National Laws and Regulations	Core Provisions
Law of the Republic of Indonesia Number 18 Year 2008 on Waste Management (Law 18/2008) Government Regulation of the Republic of Indonesia Number 81 Year 2012 on Household Waste and Household-like Waste Management (GR 81/2012) Government Regulation of the Republic of Indonesia Number 27 Year 2020 on Specific Waste Management (GR 27/2020)	Waste management is carried out using 2 mechanisms: 1. Reduction mechanism, consists of 3 activities: (a) Limitation of waste generation; (b) Waste recycling; and/or (c) Reuse of waste. 2. Handling mechanism, comprises 5 actions: (i) Waste sorting; (ii) Waste collecting; (iii) Waste transporting; (iv) Waste processing; and/or (v) Waste final processing
Presidential Regulation of the Republic of Indonesia Number 97 Year 2017 on National Policy and Strategy for Household Waste and Household-like Waste Management (PR 97/2017 or Jasktranas)	• 30% target or about 20.9 million tons waste reduction by 2025, and • 70% target or 49.9 million tons waste handling by 2025
Presidential Regulation of the Republic of Indonesia Number 83 Year 2018 on Marine Waste Management (PR 83/2018)	• Commitment to handling plastic waste debris up to 70% in 2025 • Comprises 5 strategies: i) National movement to raise awareness among stakeholders; ii) Land-based waste management; iii) Handling of waste in coastal and marine areas; iv) Funding mechanisms, institutional reinforcement, supervision, and law enforcement; and v) Research and development. • Comprises 13 programs and about 57 activities
Ministry of Environment and Forestry of the Republic of Indonesia Regulation Number 75 Year 2019 on the Roadmap of Waste Reduction by Producers (MEF Regulation 75/2019)	• Withdrawal or recollection of waste from post-consumption of product, product packaging, and/or container for recycling and/or reusing purposes by producers (Art. 7(1)) • Obligation to provide collection facilities by producers (Art. 7(2)) • Waste reduction by producers is arranged in 5 stages of action: 1) Planning; 2) Implementation; 3) Supervision; 4) Evaluation; and 5) Report, actions to be carried out within 2020-2029 period

Data Source: Law 18/2008; GR 81/2012; GR 27/2020; PR 97/2017; PR 83/2018; MoEFR 75/2019.

According to MoEF,[23] as of January 2021, at least 2 provinces and 39 regencies/ municipalities across Indonesia have passed legislations and/or policies restricting or prohibiting the use of single-use plastics.

5. Legal Issues and Future Perspectives

5.1. Enforcing the Plastic Waste Amendment of Basel Convention

As a main legal basis of waste management in Indonesia, the Law 18/2008 stipulates that the act of bringing plastic waste into Indonesia is categorized as a felony punishable by a

[23] Anisyah Al Faqir, "41 Daerah Sudah Terapkan Larangan Penggunaan Kantong Plastik," Liputan 6, January 11, 2021, https://www.liputan6.com/bisnis/read/4454331/41-daerah-sudah-terapkan-larangan-penggunaan-kantong-plastik.

minimum of four years to a maximum of twelve years in prison, with a minimum fine of 300 million Rupiah and a maximum fine of 5 billion Rupiah. Furthermore, the category of corporate crime has also been included in Art. 42 of this legislation if the crime is done in the pursuit of corporate goals and is perpetrated by authorized management to make decisions on behalf of the corporation.

However, some significant distinctions regarding the imposition of criminal sanction for insertion of waste to Indonesia are found in Ministry of Trade of the Republic of Indonesia Regulation Number 31 Year 2016 on Provisions for the Import of Non-Hazardous and Toxic Wastes (MTR 31/2016). Art. 19, 20, and 21 of MTR 31/2016 in essence regulate that if the imported non-hazardous and toxic waste are proven to contain any hazardous or toxic waste, the importing corporation must repatriate the waste within 90 days. If the importing company fails to meet this obligation, the company's importing permission will be suspended for 30 days, beginning with the date of issue. Only after the company has met its obligations may the permit be reactivated.

The disparity of rules regarding the insert of waste regulated by the two aforementioned legal instrument has been portrayed as a legal loophole for the entry of plastic waste imports in Indonesia. The mechanism of company license suspension established under MTR 21/2016 in fact does not in alignment and contradicts with the norms relating to the governance of hazardous and toxic waste import as incorporated in contained in the Law 18/2008. As a state party to the Basel Convention, Indonesia needs to undertake some legal reforms in monitoring human rights and environmental controls on the negative impact of imported waste. The government must adhere to the Basel Convention's rigorous standards for waste import policy. In order to ensure successful application of the norms, clear oversight is required in addition to definite norms and standards.[24]

5.2. Strengthening the Policy Making Powers of Regional Government

As mentioned earlier regional-level government in Indonesia has the authority to formulate waste management policies and strategies. Following the waste reduction mechanism in accordance to framework built under the Law 18/2008 and other derivative regulations, regional government could shape some eco-legal framework relevant with, for example, (a) Determining more ambitious waste reduction targets; (b) Detailed definitions and facilitation instruments; (c) Norms, standards, procedures, and

[24] Muhammad Busyrol Fuad, "Tanggung Jawab Negara Dan Korporasi Terhadap Kasus Impor Limbah Plastik Di Indonesia (Perspektif Konvensi Basel Dan Prinsip-Prinsip Panduan Bisnis Dan HAM) (State and Corporate Responsibility for Plastic Waste Import Cases in Indonesia (Basel Convention Perspective and Guiding Principles on Business and Human Rights)" 6, no. 1 (October 2019): 97–125, https://doi.org/10.38011/jhli.v6i1.90.

criteria in the context of waste reduction; (d) Establishing regional regulations that are delegated in the context of waste reduction.[25]

In the context of waste handling mechanism, regional governments may devise some novel legislative instruments, ones that deal with, for example, (a) guiding and supervising waste management performance by third parties. (b) Determining locations for temporary storage, integrated waste processing sites, and/or final waste processing; (c) Periodical monitoring and evaluation of the final waste processing site with an open disposal system that has been closed every 6 (six) months for 20 (twenty) years; and (d) Compiling and implementing an emergency response system for waste management in accordance with their respective authorities every 6 (six) months for 20 (twenty) years.

In ensuring the effective policy making and implementation by regional-level government, it is important to eradicate obstacles that will significantly create obstacles to the progress. One of the major difficulties that frequently complained by regional government is the lack of funding attributed to waste management which is included in the environmental protection budgeting category. According to Statistics Indonesia, in 2017, the average allocation of regional revenue and expenditure budget (APBD) for the environment was less than 1%, with only DKI Jakarta budgeting more than 2%.[26] By having adequate financial resource, the prospect of more optimal and effective waste management under regional government authority is expected to increase.

5.3. Realizing EPR

The principle of extended producer responsibility (EPR) has actually been long embodied in the Law 18/2008, particularly in its Art. 15 which stipulates: *"Producers are obliged to manage the packaging and/or goods they produce which cannot or are difficult to decompose by natural processes"*. However, it is only after the enactment of MoEFR 78/2019 that the EPR Principle is the actualized within Indonesia's waste governance. Despite the progressive move towards the effort of embracing business actors to achieve effective waste management, there are some legal loopholes found in this instrument which would likely affect its implementation.

Although producers are expected to develop a waste-reduction strategy, the authority to oversee the implementation of this clause is somewhat ambiguous. As explained in the legal approaches part, MoEFR 75/2019 requires producers to undertake the waste

[25] M Quina, Fajri Fadhillah, and A Vania, "Kewenangan Pemerintah Daerah Dalam Pengelolaan Sampah (Local Government Authority in Waste Management)," Kertas Kebijakan Seri Pengelolaan Sampah, 2019, https://icel.or.id/wp-content/uploads/190730-Lembar-Informasi-2-Kewenangan-Pemda-dalam-Pengelolaan-Sampah.pdf.

[26] Safitri, Purba, and Zulkifli, Statistik Lingkungan Hidup Indonesia 2018 (Environment Statistics of Indonesia 2018).

reduction activities outlined in 5 stages of actions: planning, implementation, monitoring, evaluation, and report. In accordance with their respective authorities, the minister, governor, and regent/mayor will receive the report on the waste reduction implementation as part of their supervisory powers. However, a major question potentially arising from this strategy is the rule set forth in Art. 19 of the MoEFR 75/2019, which states that if the governor and the regent/mayor '*does not undertake*' any monitoring as required by the regulation, the minister will take over and exercise the supervisory authority. Despite the fact that regions are the pioneers in optimally executing this legislation, this provision undoubtedly provides an opportunity for the regions to not pay any more attention to it. In other words, the gap created by such a provision will loosen the control and supervision by regional authorities over the mandated responsibility held by producers.

5.4. Enhancing Control over Marine Debris

The enactment of PR 83/2018 along with the National Action Plan (NAP) demonstrates the Indonesian government's initial commitment to addressing the issue of marine waste. In normative realm, there are still a number of issues that will put the implementation of this legislation into difficulties. The first issue is concerning the coordination of this legislation with other related regulations. There have been various extant regulations dealing with waste management, ranging from laws to derivative implementing regulations such as from government regulations, ministerial regulations, and regional regulations, but the fact is that many of these regulations do not necessarily solve the problem. In essence a major commitment from authority holders (including state officials/executors of authority) is required to harmonize all the existing and later developed instruments, keeping in mind that efforts in creating such commitment will frequently be hampered by inter-agency or sectoral ego.[27]

The second issue is related to budget allocation in regards to the realization of all programs and activities set out under the NAP. It would likely be impossible for the NAP to be effective if it is not supported by an adequate budget. One of the most common barriers in faced especially by regional-level government is that numerous projects to be executed are hampered by financial constraints.[28] The third worth-addressing matter is

[27] Evi Hastuti, Fence Wantu, and Lusiana Margareth Tijow, "Penyelesaian Disharmoni Peraturan Perundang-Undangan Melalui Mediasi (Settlement of Disharmonious Legislation Through Mediation)" 3, no. 2 (Oktober 2020): 16; Pusat Studi Hukum dan Kebijakan Indonesia, ed., Menggagas arah kebijakan reformasi regulasi di Indonesia: prosiding Forum Akademik Kebijakan Reformasi Regulasi 2019, Cetakan pertama (Forum Akademik Kebijakan Reformasi Regulasi, Jakarta: Pusat Studi Hukum dan Kebijakan Indonesia, 2019).

[28] Rohani Budi Prihatin, "Pengelolaan Sampah di Kota Bertipe Sedang: Studi Kasus di Kota Cirebon dan Kota Surakarta," Aspirasi: Jurnal Masalah-masalah Sosial 11, no. 1 (June 30, 2020): 1–16, https://doi.org/10.46807/aspirasi.v11i1.1505.

the transparency of information and monitoring structure that will allow the community to collaboratively monitor program implementation rather than solely relying on the government effort. The existence of various information and communication portals such as *Sampah Laut* as the information media of the National Coordination Team for Marine Debris Management's is unquestionably a progressive strategy that should be commended. The availability of adequate information will open up space for valuable criticisms and suggestions that can help maximize problem solving. With more individuals being aware and involved in implementation of any regulations, the more likely it is that the aims of such legal instruments be successful.

6. Conclusion

Despite the existence of adequate legal instruments justifying actions in tackling waste issues, Indonesia is struggling to effectively manage its domestic plastic waste generation and circulation. It will take some improvement and transformation in legal aspect envisaging some new perspectives. Enforcing the legal framework established through plastic waste amendment of Basel Convention, strengthening the policy making powers of regional government, and realizing the principle of extended producer responsibility are some progressive steps that could be put into consideration in advancing the eco-legal system for plastic waste management in Indonesia.

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