

The Effectiveness of Plastic Waste Management Based on The Legal System in Indonesia

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ABSTRACT

The increasing use and consumption of plastic in this modern era is causing various problems for the environment. Plastic waste is difficult to decompose and its management is ineffective, resulting in soil pollution which is increasing day by day. The implementation of laws and regulations governing the management of plastic waste was found not to be running effectively. This article will review normatively the various rules regarding waste management, especially plastic waste in Indonesia. The review and analysis of this research was carried out using normative legal research methods by examining various relevant laws and regulations. The purpose of this research is to analyze how Indonesian environmental law regulates plastic waste management in Indonesia as well as the direction of regulatory policies related to plastic waste management in Indonesia to prevent soil pollution. The main findings reveal that there is still a lack of effectiveness in waste management and the absence of laws and regulations that specifically regulate the management of plastic waste. Furthermore, this

article attempts to outline the policy direction of laws and regulations in managing plastic waste to prevent further soil contamination in Indonesia. The absence of special regulations for plastic waste management is an obstacle for the government to implement effective waste management.

Keywords: Plastic Waste Management; Soil Pollution; Laws and Regulations

I. INTRODUCTION

The environment is the space inhabited by living beings along with the lifeless entities within it. It is also a source of support for the life of humans and other living creatures, contributing to their survival and the improvement of the quality of life itself. The relationship between humans and the environment in a spatial context is mutually influential. The degree of this mutual influence is closely related to the knowledge and technological capabilities possessed by humans. Based on their knowledge and technology, there are humans who are highly dependent on the environment, some who can adapt, and others who can manage and utilize it for their well-being.¹ Therefore, the environment is a blessing from the Almighty that deserves to be preserved for the continuity of the current and future generations. By maintaining the balance and harmony among the elements of the environment, it can be preserved if the environmental support and capacity are in good condition. Thus, the environment can absorb substances, energy, and/or other components that enter or are introduced into it. In the end, the environment is capable of supporting the lives of humans, other living beings, and maintaining their balance and harmony. Without good environmental support and capacity, the balance and harmony among these elements of the environment will not occur.²

The environmental issue that is still frequently encountered today is plastic

¹ Sumaatmadja, H. Nursid. *Manusia Dalam Konteks Sosial, Budaya dan Lingkungan Hidup*. Bandung, Alfabeta, 2012, p. 72.

² Ismelina, Mella and Anthon F. Susanto. "Paradigma Relasi Manusia dan Lingkungan Hidup Berbasis Kearifan Lokal di Masa Pandemi Covid-19." *Bina Hukum Lingkungan*, Vol. 5, No. 3, 2021, p. 484, <https://doi.org/10.24970/bhl.v5i3.212>.

waste. Waste is the residue from human daily activities. Improperly managed waste will become a cause of various problems, both directly and indirectly, such as water, air, soil pollution, increase of Greenhouse Gases (GHG), spread of diseases like diarrhea, flooding disasters and other issues.³ Indonesia is estimated to be the second-largest contributor out of 129 countries worldwide regarding plastic pollution.⁴ With a population reaching 275.77 million in 2022, Indonesia generated approximately 20,270,094.62 tons of accumulated waste.⁵ Out of this waste, only 10,009,067.22 tons or around 49.38% of the waste was successfully managed. Approximately 18.4% of the total waste generated in Indonesia is plastic waste, making it the fourth most prevalent type of waste in the country based on waste composition by type.⁶

Based on data from the Indonesia National Action Plan (NPAP) Report, approximately 4.8 million tons of unmanaged plastic waste are recorded in Indonesia each year. It is estimated that 0.62 million tons or 9% of this unmanaged plastic waste ends up in the waters and seas of Indonesia.⁷ A similar situation is also reported by the Lembaga Ilmu Pengetahuan Indonesia (LIPI), which states that approximately 0.27-0.60 million tons of plastic waste enter the waters of Indonesia each year.⁸

Plastic waste that is not properly managed can cause various problems, both directly and indirectly, such as water, air, and soil pollution.⁹ Specifically, for plastic

³ Safitri, Pramudya A., et al. *Statistik Lingkungan Hidup Indonesia 2018: Pengelolaan Sampah*. Jakarta, Badan Pusat Statistik, 2018, p. 5.

⁴ Jambeck, Jenna R., et al. "Plastic waste inputs from land into the ocean." *Science*, Vol. 34, No. 6223, 2015, pp. 768-771, <https://doi.org/10.1126/science.1260352>.

⁵ Badan Pusat Statistik. "Jumlah Penduduk Pertengahan Tahun 2020-2022." *bps.go.id*, <https://www.bps.go.id/indicator/12/1975/1/jumlah-penduduk-pertengahan-tahun.html>

⁶ Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia (KLHK RI). "Capaian Kinerja Pengelolaan Sampah." *KLHK RI*, <https://sipsn.menlhk.go.id/sipsn/public/data/capaian>, accessed on 13 May 2023.

⁷ National Plastic Action Partnership (NPAP). "Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan National Plastic Action Partnership." *NPAP Insight Report*, April 2020 https://globalplasticaction.org/wp-content/uploads/NPAP-Indonesia-Multistakeholder-Action-Plan_April2020.pdf.

⁸ Cordova, Muhammad Reza, et al. "Naskah Akademik Inisiasi Data Sampah Laut Indonesia Untuk Melengkapi Rencana Aksi Nasional Penanganan Sampah Laut Sesuai Peraturan Presiden RI No.83 Tahun 2018." *Pusat Penelitian Oseanografi Lembaga Ilmu Pengetahuan Indonesia*, 2019, <https://sampahlaut.id/wpcontent/uploads/2020/02/Naskah-Akademik-Inisiasi-Data-Sampah-Laut-Lembaga-Ilmu-PengetahuanIndonesia-LIPI.pdf>.

⁹ World Economic Forum. "The new plastic economy: Rethinking the Future of Plastics." *World Economic Forum Industry Agenda*, January 2016, http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf.

waste on land, this has implications for soil pollution and disrupts soil fertility because plastic waste is difficult to decompose, especially given its rapid degradation into microplastics. This makes it easier to contaminate the environment. The resulting environmental damage can undoubtedly lead to losses for human life and well-being.¹⁰ Besides causing a decrease in the environmental support and capacity for human and other living beings' life.¹¹

According to the Ministry of Environment and Forestry, waste generated by Indonesian citizens reaches 0.8 kg per person per day, with a composition of 15% being plastic waste. Therefore, when accumulated, there are 189 thousand tons of waste every day.¹² This situation certainly suggests that with such high waste production, it is crucial to balance it with waste management at a proportionate percentage. Failure to manage the unprocessed waste can lead to environmental pollution and requires immediate attention.

Observing the phenomenon of plastic waste mentioned above, the government needs to evaluate the policy on plastic waste management in Indonesia. According to Novrizal Tahar, the Director of Waste Management at the Ministry of Environment and Forestry (MEF), there are six fundamental issues related to waste management in Indonesia. First, the low capacity of local governments in managing waste. Second, the indifference of the Indonesian community towards the environment. Third, the increasing trend of waste. Fourth, the low responsibility of industries. Fifth, regulatory issues. Sixth, concerns related to waste imports.¹³

Indonesia has a specific regulation addressing the issue of waste, namely Law No. 18 of 2008 concerning Waste Management. However, this regulation still contains legal loopholes, making it ineffective in addressing the growing problems in plastic waste management, which are increasing rapidly alongside the country's population growth and the concurrent rise in consumer consumption.

¹⁰ Rahayu, Mella Ismelina Farma, et al. "Gerakan Sosial Pemberdayaan Hukum Dalam Pelestarian Fungsi Lingkungan Hidup Melalui Metode Patanjala." *Bina Hukum Lingkungan*, Vol. 2, No. 1, 2017, p. 47, <https://doi.org/10.24970/bhl.v2i1.48>.

¹¹ *Ibid.*

¹² Rafidah and Ahmad Ridho Ismail. "Pemanfaatan Limbah Plastik Menjadi Bahan Bakar Minyak." *Jurnal Sulolipu*, Vol. 18, No. 2, 2018, pp. 216-222, <https://doi.org/10.32382/sulolipu.v18i2.1161>.

¹³ Kementerian Keuangan Republik Indonesia. "Bumi Dalam kantong Plastik." *Media Keuangan Transparansi Informasi Kebijakan Publik*, Vol. 14, No. 144, 2019, p. 15.

Referring to the background as outlined above, the legal issues to be addressed in this research are (1) how is the regulation of plastic waste management based on environmental law in Indonesia? and (2) what is the direction of policies related to the Regulation of Plastic Waste Management to Prevent Soil Pollution in Indonesia?

There are several references based on previous research that are used as supporting materials, including:

A study by Yusma Dewi and Trisno Raharjo titled "Aspek Hukum Bahaya Plastik Terhadap Kesehatan Lingkungan Serta Solusinya" which focuses on the regulations in Law Number 18 of 2008 concerning Waste Management related to the prevention of the use of plastic that can generate hazardous plastic waste. It also addresses the absence of legislation prohibiting the use of environmentally harmful plastics. In this regard, the author examines how regulations in Indonesia govern the effectiveness of waste management.

A study by Ni Putu Pranasari Tanjung and Muhammad Wiman Wibisana titled "Politik Hukum Penanganan Sampah Plastik Sekali Pakai" which focuses on the objectives achieved through the restriction of single-use plastic waste and aims to understand and assess the environmental costs imposed on single-use plastic waste. In this case, the author examines the direction of government policy in plastic waste management in Indonesia.

A study by Chanidia Ari Rahmayani titled "Efektivitas Pengendalian Sampah Plastik Untuk Mendukung Kelestarian Lingkungan Hidup di Kota Semarang" which focuses on the effectiveness of plastic waste control in Semarang City. In this case, the author examines the effectiveness of waste management to prevent soil pollution.

Therefore, the novelty of this research focuses on the regulations of positive law in Indonesia regarding plastic waste management to prevent soil pollution in Indonesia and the direction of policy regulations related to plastic waste management in Indonesia concerning the increasing soil pollution. This study uses a normative juridical research method that applies a legislative approach to plastic waste management using primary legal sources collected from various related legislative products. Secondary legal materials used include published works such as books, journals, reports, and other legal

publications. Consequently, it is expected that this research can serve as a reference for practitioners to prevent soil damage due to plastic waste in the future.

II. DISCUSSION

1. The Regulation of Plastic Waste Management in Indonesia Environmental Law

The regulation regarding waste in Indonesia is governed by the Republic of Indonesia Law Number 19 of 2008 concerning Waste Management. This law provides a definition of waste management as a systematic, comprehensive, and continuous activity that includes waste reduction and handling. Based on its types, the waste that must be managed under this law consists of: a. household waste; and c. specific waste. The goal of environmentally conscious waste management is to improve public health and environmental quality, as well as to turn waste into a resource.

To achieve the goal of environmentally conscious waste management, the tasks of the Central Government and Regional Governments are to ensure the proper and environmentally conscious implementation of waste management. This can be achieved by taking several measures, namely: (a) fostering and increasing public awareness in waste management; (b) conducting research, developing waste reduction technologies, and waste handling; (c) facilitating, developing, and implementing efforts for waste reduction, handling, and utilization; (d) implementing waste management and facilitating the provision of waste management infrastructure and facilities; (e) encouraging and facilitating the development of benefits from waste management outcomes; (f) facilitating the repair of specific local technologies that are emerging in local communities to reduce and handle waste; and (g) coordinating between government agencies, the community, and the business world to ensure integration in waste management.¹⁴

Environmental law enforcement is the last link in the environmental regulation cycle and policy planning.¹⁵ In hierarchy, this cycle begins with legislation as the initial

¹⁴ Rahmayani, Chanidia Ari and Aminah. "Efektifitas Pengendalian Sampah Plastik Untuk Mendukung Kelestarian Lingkungan Hidup di Kota Semarang." *Jurnal Pembangunan Hukum Indonesia*, Vol. 3, No. 1 2021, pp. 18-33, <https://doi.org/10.14710/jphi.v3i1.18-33>.

¹⁵ Hamzah, Andi. *Penegakan Hukum Lingkungan*. Jakarta, Sinar Grafika, 2005, pp. 48-49.

step, followed by the determination of standards, then licensing, after obtaining permission, implementation can be carried out, and if there are violations of the provisions, law enforcement is conducted.¹⁶

Therefore, for plastic waste management in Indonesia, the environmental legal regulation cycle can be used as an analytical tool, namely:

(a) Legislation

The enactment of the Waste Management Law is a concrete step to address the issue of plastic waste management in Indonesia. Article 15 of the Waste Management Law specifically regulates the principle of producer responsibility for managing waste that is difficult to decompose through natural processes. The explanatory part of Article 15 further clarifies that 'managing packaging' includes the retrieval of packaging for recycling and reuse. The obligation for producers to manage the waste they generate is not a negative aspect; rather, it is a manifestation of the long-established principle of 'polluter pays' in International Environmental Law.

As the main legal framework and operational basis for waste governance in Indonesia, the Waste Management Law establishes various derivative or implementing regulations. Until now, several derivative legal products have been formulated in accordance with this mandate, including: Government Regulation No. 81 of 2012 on Domestic Waste Management and Similar Waste, Government Regulation No. 27 of 2020 on Specific Waste Management, Presidential Regulation No. 97 of 2017 on National Policies and Strategies on Management of Household Waste and Household-like Waste (Jakstranas), Presidential Regulation No. 83 of 2018 on Marine Debris Management, and Regulation of The Minister of Environment and Forestry Republic of Indonesia in Permen LHK No. 75 of 2019 regarding a waste reduction roadmap by producers.

Apart from national-level regulations, implementing regulations related to waste management are also formulated at the regional level, both at the

¹⁶ *Ibid.*

provincial and district/city levels. Several regions in Indonesia have specific regulations formulated to address the issue of plastic waste. As of September 2020, according to statements from the Ministry of Environment and Forestry, 2 provinces and 35 districts/cities have issued regulations or policies related to the restriction of single-use plastics.¹⁷

Despite the existence of legal instruments as the basis for waste management, along with various implementing rules as mentioned above, Indonesia does not yet have specific legislation governing plastic waste management. The national-level waste management regulations in place hardly mention the term “plastic waste” in their provisions. Identification of plastic waste is mainly done by associating the characteristic of being “difficult to decompose by natural processes”. This is primarily found in Law No. 18 of 2008, PP No. 81 of 2012, and PP No. 27 of 2020.¹⁸

In general, waste management regulated in Law No. 18 of 2008, PP No. 81 of 2012, and PP No. 27 of 2020 is organized through two mechanisms: reduction and handling. The waste reduction mechanism includes three activities: (a) limitation of waste generation; (b) recycling of waste; and/or (c) re-using waste. However, the waste handling mechanism includes five activities, including: (i) segregation of waste; (ii) collection; (iii) transportation; (iv) processing to change the characteristics, composition, and quantity of waste; and/or (v) final waste processing.

Furthermore, in addition to the Waste Management Law, PP No. 81 of 2012, and PP No. 27 of 2020, Indonesia also has Presidential Regulation Number No. 97 of 2017 on National Policies and Strategies on Management of Household Waste and Household-like Waste (Jakstranas). Jakstranas sets targets for reducing household waste and similar waste from 2017 to 2025. Through reduction efforts, the target is set to reduce waste generation by 30%, or about

¹⁷ Puspita, Ratna. “KLHK: Ada Daerah Hanya Ikut-ikutan Aturan Pengurangan Plastik.” *Republika*, <https://www.google.com/amp/s/m.republika.co.id/amp/qgc3hj428>, accessed on 15 May 2023.

¹⁸ Maskun, Hasbi Assidiq, et al. “Tinjauan Normatif Penerapan Prinsip Tanggung Jawab Produsen dalam Pengaturan Tata Kelola Sampah Plastik.” *Jurnal Bina Hukum Lingkungan*, Vol. 6, No. 2, 2022, p. 190, <https://doi.org/10.24970/bhl.v6i2.239>.

20.9 million tons from the projected waste generation in 2025 (end of the period) of approximately 70.8 million tons. Meanwhile, through handling actions, the target is set to handle waste generation by 70%, or about 49.9 million tons from the projected waste generation in 2025.

Regulations on waste management are also specifically addressed for marine debris. Through Perpres No. 83 of 2018 on Marine Debris Management, a National Action Plan (NAP) for Marine Debris Management was designed for an 8-year period from 2018 to 2025. NAP is implemented through several strategies, including: (a) national movement to increase awareness of stakeholders; (b) waste management sourced from the land; (c) prevention of waste in coastal and the sea; (d) funding mechanism, institutional strengthening; (e) research and development. These strategies are then detailed into several program and activity plans listed in the annex, an integral part of Presidential Regulation Number No. 83 of 2018.

The legal product that ultimately becomes an important instrument in achieving the effectiveness of waste management is Permen LHK RI No. 75 of 2019 on the Roadmap for Waste Reduction by Producers. The roadmap for waste reduction for the 2020-2029 period was formulated and implemented to achieve a 30% reduction target in waste generation by producers compared to the amount of waste generated in 2029.¹⁹

The Roadmap for Waste Reduction by Producers is implemented by reducing waste generated from products, product packaging, and/or containers that: (a) are difficult to decompose by natural processes; (b) cannot be recycled; and/or (c) cannot be reused. Products, product packaging, and/or containers covered include plastic, aluminum cans, glass, and paper.²⁰ The technical details for producers are formulated in Annex I of Permen LHK No. 75 of 2019. According to this roadmap, producers reduce waste through a series of activities,

¹⁹ *Ibid.*

²⁰ *Ibid.*

including: (a) planning; (b) implementation; (c) monitoring; (d) evaluation; and (e) reporting²¹

(b) Setting Standards

The establishment of standards is a crucial stage to be implemented in order to determine the criteria or standards for waste products and packaging as waste that cannot or is difficult to decompose through natural processes. This will simplify the classification process in categorizing a type of business that is growing in society and contributes significantly to waste production, especially plastic waste that is challenging to decompose through natural processes. Therefore, this regulation needs to be promptly formulated, encompassing concrete norms, types of plastic/packaging waste produced, and procedures for consumer recall.

(c) Permit

Every construction activity conducted in various forms of businesses or activities fundamentally generates environmental impacts. To mitigate the occurring environmental impacts and ensure sustainable development, efforts are made to control negative impacts and develop positive impacts using the Environmental Impact Assessment (EIA) instrument, as well as Environmental Management Efforts and Environmental Monitoring Efforts (UKL-UPL). Both instruments are prerequisites for obtaining environmental permits, which are also a requirement for the issuance of permits for a particular activity. Without an environmental permit, a business or activity becomes illegal to carry out. Thus, it is expected that this process will help reduce the negative environmental impacts of a specific activity or business.

(d) Implementation

This stage is in the process of carrying out a specific activity or business. At this phase, it is crucial to ensure that each business or activity complies with the provisions of laws and regulations, norms, and standards established for that activity, and that all obligations outlined in the Environmental Impact

²¹ *Ibid.*

Assessment (EIA). and Environmental Management Efforts and Environmental Monitoring Efforts (UKL-UPL) are maximally executed. This is essential so that the EIA and UKL-UPL documents, as environmental control instruments, do not merely become administrative documents for the purpose of obtaining environmental permits.

(e) Law Enforcement

Furthermore, to enforce waste management regulations to comply with the provisions of the Waste Management Law, administrative sanctions and criminal penalties have been stipulated. Local Governments, both regents and mayors, are given the authority to impose administrative sanctions on waste managers who violate the requirements specified in permits, in the form of: (a) government coercion; (b) forced fines; and/or (c) permit revocation. In addition to administrative sanctions, criminal sanctions have also been specified in the form of imprisonment and fines for anyone who unlawfully imports waste into the territory of the Republic. Criminal penalties are also imposed on waste managers who unlawfully and intentionally carry out waste management activities without considering norms, standards, procedures, or criteria that may cause harm to public health, security disturbances, environmental pollution, and/or environmental destruction.²² This law is a method based on the principles of preservation and balance between nature and humans, ensuring the recognition of property rights among fellow humans in their lives.²³

Furthermore, the regulation regarding the management of plastic waste in Indonesia currently lacks specific legal provisions. Although waste management regulations in Law Number 18 of 2008 Concerning Waste Management are comprehensive, involving provisions regarding the duties and authorities that must be carried out by the Central and Regional Governments at the Provincial and District/City levels when managing the environment. It also regulates the obligations of individuals and businesses in managing waste, including their efforts to reduce and address waste issues, including potential administrative and

²² *Ibid.*

²³ Ayu, Bumi and Mella Ismelina F. Rahayu. "Perlindungan Hukum Terhadap Hak Kepemilikan Tanah Adat Kei." *Jurnal Bina Hukum Lingkungan*, Vol. 3, No. 2, p. 289, <https://doi.org/10.24970/bhl.v3i2.81>.

criminal sanctions that can be applied to waste management law violators according to the regulations outlined in this law, there is no specific provision in this law regarding the management of plastic waste. Specific regulations governing the management of plastic waste are crucial to enhance the effectiveness of waste management in Indonesia.

To date, legislation governing the management of plastic waste is only at the level of Regional Regulations or Mayor Regulations, such as the Semarang Mayor Regulation Number 27 of 2019 concerning Plastic Usage Control. The existence of this major regulation ensures certainty about the implementation of plastic waste management specifically. The Semarang major regulation on plastic waste management has been well complied with and implemented by modern shops and supermarkets, enhancing the effectiveness of waste management in the city of Semarang, albeit not significantly.²⁴ Thus, the existence of specific regulations serving as legal frameworks for both the public and the government can somewhat improve the effectiveness of plastic waste management and mitigate the growth of plastic pollution.

2. Direction of Policy Regulation Regarding Plastic Waste Management to Prevent Soil Pollution in Indonesia

Indonesia is one of the countries with a high population and a penchant for food shopping.²⁵ One type of waste is plastic bags used during shopping in supermarkets and convenience stores. According to Selke & Culter, most packaging products are also made of plastic.²⁶ The significant environmental impact of plastic waste is reflected in its non-biodegradable nature. The decomposition of plastic waste into the soil, until it fully decomposes, takes 100-500 years.²⁷

²⁴ Rahmayani, Chanidia Ari and Aminah, *Op.Cit.*

²⁵ Kuswardhani and Zulhelfa. "The Effect of Government Policy on Using Fewer Plastic Bags Towards Society's Awareness of Going Green." *Proceedings of The Asia Tourism Forum: 2016-The 12th Biennial Conference of Hospitality and Tourism Industry in Asia*, 2016, pp. 535-540.

²⁶ Selke, Susan E M and John D. Culter. *Plastics Packaging In: Plastic Packaging: Properties, Processing, Applications, and Regulations*. Cincinnati, Ohio, USA, Hanser Publication, 2016.

²⁷ Karuniastuti. "Danger of Plastic Waste on Human Health and Environment." *Forum Technology*, Vol. 3, No. 1, 2012, pp. 6-14.

The causes of high plastic waste pollution in Indonesia include limited technical knowledge, poor implementation capabilities, and limited investments by both central and local governments.²⁸ Plastic waste management is known for its complexity, involving not only the provision of adequate funds and facilities but also multiple cross-sectoral activities, including government, private sector, business entities, and the community. Research by Pertiwi et al. in 2018 revealed that waste separation at the source is not practiced by households, and some even dispose of their waste improperly, burning it or throwing it into rivers.²⁹ In practice, producers can collaborate to fulfill their Extended Producer Responsibility (EPR) obligations through collective waste collection, sorting, and processing systems, known as "Collective EPR."³⁰

On the other hand, the recycling process for plastic waste involves a lengthy procedure, starting from the collection by scavengers, sorting, and selling to waste plastic factories for use as raw materials in primary manufacturing. However, the chain of plastic waste management in Indonesia for recycling is relatively small compared to the plastic waste that ends up polluting the environment.

Plastic waste buried in the soil is challenging to decompose, leading to a reduction in soil minerals, impacting soil fauna such as worms and microorganisms. Additionally, oxygen levels in the soil decrease, making it difficult for soil fauna to breathe and survive, affecting both soil fauna and surrounding plant life.

Waste management is a systematic, comprehensive, and sustainable activity covering waste reduction and handling (Law Number 18 of 2008). According to Waste Management (2021), waste management involves activities from waste collection, transportation, treatment, and disposal, accompanied by monitoring and waste management regulations.

²⁸ Syarif, R., et al. "Pengenalan Konsep Ekonomi Sirkular Melalui Webinar —Ekonomi Sirkular: Solusi Masalah Persampahan di Indonesia." *Celebes Journal of Community Services*, Vol. 1, No. 1, pp. 28–35. <https://doi.org/10.37531/celeb.v1i1.176>.

²⁹ Pertiwi, Andarani, et al. "Preliminary Study on Plastic Waste Handling in Semarang City-Indonesia: Estimated Generation and Existing Management." *E3S Web of Conferences*. Vol. 73, 2018. pp. 1-5, <https://doi.org/10.1051/e3sconf/2018730>.

³⁰ Atasu, Atalay. "Operational Perspectives on Extended Producer Responsibility." *Journal of Industrial Ecology*, Vol. 23, No. 6, 2018, p. 747. <https://doi.org/10.1111/jiec.12816>.

Waste management is considered a 'gateway' to achieving sustainable development goals, impacting various aspects of society and the economy. However, waste management can also be seen as a 'system impediment.' Factors influencing it include population density, socio-economic and physical environmental characteristics, attitudes, behaviors, and cultures in society.³¹

Nationally, waste management legislation has been strengthened with the enactment of Presidential Regulation Number 97 of 2017 concerning Household Waste Management Policies and Strategies (Presidential Regulation Number 97 of 2017), as a follow-up to Government Regulation Number 81 of 2012 concerning Household Waste Management (SRT) and Similar Household Waste (SSRT). Article 2 of Presidential Regulation Number 97 of 2017 outlines the 2017-2025 policy direction for waste reduction and handling, along with clear guidance on strategies, programs, and reduction and handling targets.

The waste management issue is also related to the 7 (seven) development agendas in the RPJMN 2020-2024, namely agenda 5 regarding the strengthening of economic development infrastructure and basic services, as well as agenda 6 to build the environment, improve disaster resilience, and address climate change. The national waste management is reflected in the government's target to improve households occupying residences with better-managed waste access. Additionally, the government aims to increase the number of households served by landfill facilities with standard sanitary landfill methods, 3R waste disposal sites, and waste treatment facilities (TPST)."

In the future, waste management will no longer adhere to the principle of 'collect-transport-dispose' but will prioritize efforts to reduce and handle waste. The reduction strategy is intended to decrease the volume of waste entering Recycling Centers or 3R Waste Disposal Sites (TPS 3R). Looking ahead, a decrease in the per capita generation of Household Waste (SRT) and Similar Household Waste (SSRT) is expected by cultivating habits of using reusable items. This includes policies to reduce the use of plastic packaging with the support of the government and industry

³¹ Sahil, J, et al. "Sistem Pengelolaan dan Upaya Penanggulangan Sampah di Kelurahan Dufa Dufa Kota Ternate." *Jurnal Bioedukasi*, Vol. 4, No. 2. 2016, pp. 478-487, <https://doi.org/10.33387/bioedu.v4i2.160>.

stakeholders. In line with the government's policy to enhance the infrastructure of waste management systems, such as 3R Waste Disposal Facilities (TPST 3R), programs to increase the quantity of recyclable SRT and SSRT at the source of waste are anticipated to grow. This can be achieved by enhancing the capacity of mechanisms and the number of Waste Banks directly managed by communities, which are currently spread across the archipelago with assistance from the Ministry of Environment and Forestry (KLHK) and private entities. The planned increase in the quantity of SRT and SSRT reused at the source of waste is also programmed to continue to rise. In the future, an increase in the capacity of mechanisms and the number of community-managed waste banks is expected.

The synergistic involvement of various stakeholders with roles in multiple sectors is crucial for crafting policies with wide-ranging impacts. This involves the government, businesses, investors, academics, and civil society as contributors to developing such policies.³² The government plays a role in regulation by supporting legal frameworks, governance, and funding mechanisms. Businesses and investors participate in designing sustainable business models and products, implementing sustainable production practices, and marketing strategies. Academics contribute through research on environmentally friendly technology innovations, providing knowledge-based recommendations. Meanwhile, civil society oversees and evaluates policies, acting as a link in cooperation networks.³³

Plastic waste on land and in the sea has gained serious attention from the government through the National Action Plan for Marine Debris Pollution in Indonesia 2017-2025, overseen by the Ministry of Environment and Forestry (KLHK). This aligns with various policies for marine conservation to protect the marine environment in Indonesia. Inter-ministerial cooperation will be key to the success of planned efforts. In the National Medium-Term Development Plan (RPJMN) 2020-2024, the government targets a 60% reduction in marine waste by 2024 compared to the amount

³² Hysa, E., et al. "Circular economy innovation and environmental sustainability impact on economic growth: An integrated model for sustainable development." *Sustainability*, Vol. 12, No. 12, 2020, pp. 1–16, <https://doi.org/10.3390/su12124831>.

³³ Fasa, A. W. H. "Aspek Hukum Dan Kebijakan Pemerintah Indonesia Mengenai Ekonomi Sirkular Dalam Rangka Mencapai Tujuan Pembangunan Berkelanjutan." *Rechtsvinding*, Vol. 10, No. 3, 2021, pp. 339–357. <http://dx.doi.org/10.33331/rechtsvinding.v10i3.774>.

of plastic waste dumped in 2019.

Challenges lie ahead, with each region needing valid and reliable data on waste generation and composition. This includes having mass balances at each operational stage of waste management. This data becomes the basis for the National Medium-Term Development Plan (RPJMN) and the action plan for addressing marine plastic pollution, especially for measurement, reporting, and validation of the targets and suggestions for each program. Therefore, the accurate management of reduced and treated waste can be precisely known, leading to appropriate strategies and policies for increasing the percentage of waste reduction and management in Indonesia.

Various regulations related to plastic waste management to prevent soil pollution are in place. Another approach taken by the government to regulate waste management policy is the development of regulations on single-use plastics. Before enforcing regulations on single-use plastics, the government should conduct its own baseline assessment to understand which single-use plastic products are most common and problematic in their country. This assessment should identify the sources of these plastics, why they are problematic, and the social, economic, and environmental impacts (UNEP 2018d).

In the assessment, the government should strive to determine consumer, industry, and other stakeholder perceptions of single-use plastics and their willingness to accept regulatory interventions. This is crucial to anticipate potential implementation challenges or public reactions. Setting baselines will also facilitate monitoring important outcomes to measure the effectiveness of policy interventions in combating plastic waste and pollution.

Baseline assessments ensure that laws target the most problematic plastic products and determine known and available alternatives. For example, the EU Directive 2019/904 on reducing the impact of specific plastic products on the environment identifies a list of single-use plastic products that will no longer be marketed in the region based on the most common sources of plastic waste in the Union. The plastics in this list are estimated to contribute to 86% of plastic waste on European beaches. For some other plastics, a ban is not considered a feasible option as sustainable alternatives are not yet available. In these cases, the directive adopts an

alternative regulatory approach. It is important to combine considerations of which products are hazardous with considerations of how much change consumers can realistically handle.

Another crucial tool for policymakers is a regulatory impact assessment, mapping the potential impacts of proposed policy approaches. Best practices dictate that the assessment examines the potential economic, social, and environmental consequences of proposed regulatory changes, including who is likely to benefit and who will bear the costs. It also identifies the mix of policies needed to achieve the identified public policy goals (Organisation for Economic Co-operation and Development (OECD), 2012).

In general, the government should be mindful of relevant international agreements that bind them, such as the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention) and the Basel Convention. Countries may have responsibilities under these agreements to take measures to minimize plastic waste production, ensure environmentally friendly plastic waste management, and oversee the cross-border movement of hazardous plastic waste.

EU members also have obligations under Directive 2019/904, 2019 on reducing the impact of certain plastic products on the environment. Beyond their international commitments, policymakers must decide what they want to achieve through the law. The main objectives will vary depending on domestic factors such as local policy priorities, environmental and pollution issues, consumer habits, industry and business issues, central and regional government goals, and political situations.

Clear definitions of policy goals and approaches are crucial when choosing a regulatory approach that will help achieve goals while reflecting government priorities. Goals and principles can be included in the introduction or specified in the regulation's objectives section to guide the interpretation and further implementation of the law. These principles can also help place the law in a broader policy framework, informing the direction of government policies and strategies accompanying the development of the law.

III. CONCLUSION

Plastic waste is no longer a new issue in Indonesia, but in the surrounding environment, we often encounter accumulations of plastic waste. Normatively, Indonesia has several legal products and regulations that can serve as a legal basis and reference in encouraging the involvement of companies/producers/business stakeholders in waste management, especially the final waste or disposal of their products. Indonesia even has a Roadmap for Reducing Waste by Producers. However, the implementation of producer responsibility based on this roadmap is likely to encounter various challenges. Clearer legal efforts are needed in a more varied scheme to facilitate companies/producers/business stakeholders in managing the final waste of their products. By adopting the polluter pays principle and Extended Producer Responsibility (EPR), one alternative effort is to include the obligation of managing waste, especially plastic waste, in the Environmental Management Effort (UKL) component as a requirement to be fulfilled by several stakeholders such as companies/producers/business stakeholders. Thus, periodic evaluations can also be conducted by government agencies.

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