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Ecological Justice-Based Waste Management Strategy: Policy Directions to Support Sustainable Development Goals

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Abstract: Waste management in Indonesia remains constrained by a persistent gap between the constitutional guarantee of a good and healthy environment (das sollen) and the empirical reality of reactive law enforcement and unequal service coverage (das sein). This study analyses the concept of justice within Indonesia's waste management system through the lenses of ecological justice and sustainable environmental law, and formulates a justice-based law-enforcement model to support the Sustainable Development Goals (SDGs). Employing a socio-legal method, the study integrates statutory, conceptual, and case-based documentary approaches using secondary data from 2023–2026. The findings show that Indonesia's Extended Producer Responsibility (EPR) regime remains disproportionately focused on packaging waste, short of a comprehensive, life-cycle-based framework, and that reactive enforcement centred on high-profile landfill closures fails to deliver distributive, corrective, and procedural justice to vulnerable communities near disposal facilities. This paper formulates a differentiated law-enforcement model: strict administrative, civil, and criminal sanctions target large-scale corporate offenders and illegal landfill operators, while minor violations by ordinary citizens are addressed through education, corrective measures, and infrastructure development. Policy implications include revising EPR regulations, establishing a dedicated Producer Responsibility Organisation (PRO), and institutionalising mandatory community consultation to advance SDGs 11, 12, 13, and 16.

1. Introduction

Waste management is fundamentally a matter of legal governance rather than a purely technical exercise in collection and disposal. It refers to the entire set of activities involved in handling waste from generation to final disposal collection, transportation, treatment, monitoring, and regulation.[1] Left unmanaged, waste imposes cumulative burdens on both environmental quality and

[1] Rohit Panchal, Anju Singh, and Hema Diwan, "Does Circular Economy Performance Lead to Sustainable Development? – A Systematic Literature Review," *Journal of Environmental Management* 293 (2021), https://doi.org/10.1016/j.jenvman.2021.112811; Suman Mor and Khaiwal Ravindra, "Municipal Solid Waste Landfills in Lower- and Middle-Income Countries: Environmental Impacts, Challenges and Sustainable Management Practices," *Process Safety and Environmental Protection* 174 (2023): 510–30, https://doi.org/10.1016/j.psep.2023.04.014.

public health, and the severity of these burdens is shaped by factors that go beyond technical capacity, including population density, socio-economic conditions, and the behaviour and cultural practices of local communities.[2] In 2024 alone, Indonesia generated 33,541,026.18 tons of waste from households, offices, commercial establishments, markets, public facilities, and other sources. The following chart presents the composition of this waste by source for that year:

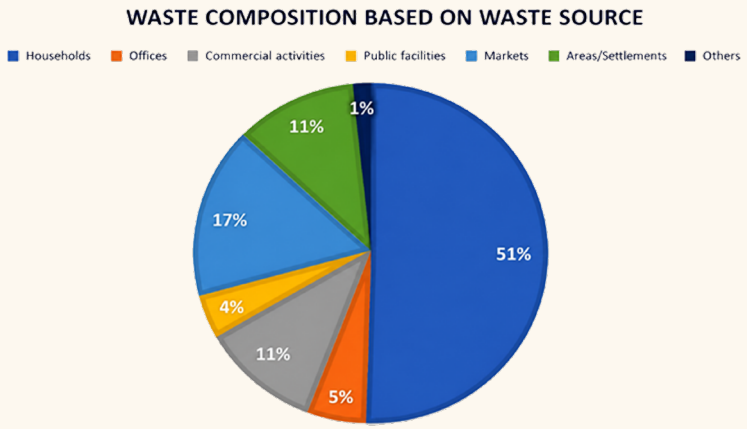

Figure 1. National Waste Composition by Source, 2024
(Source: National Waste Management Information System/SIPSN, Ministry of Environment and Forestry, 2024)

The scale of waste generation must be read alongside the extent to which that waste has actually been reduced and properly managed. The following data, drawn from the National Waste Management Information System (SIPSN) under the Ministry of Environment and Forestry, illustrates the performance of household and household-like waste reduction and handling nationally:

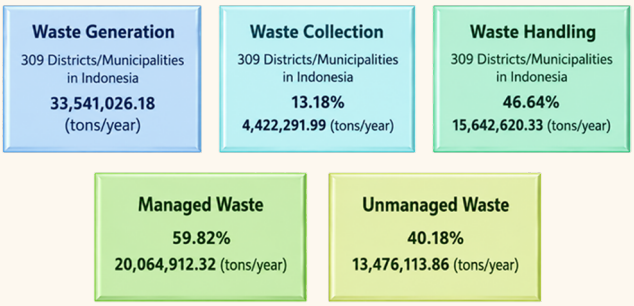

Figure 2. Performance of Reduction and Handling of Household Waste and the Like Nationally, 2024
(Source: SIPSN, Ministry of Environment and Forestry, 2024)

As shown in Figure 2, a substantial share of national waste is still left unhandled despite the government's stated targets. The Minister of Environment and Forestry, Siti Nurbaya Bakar, has emphasised that the Government of Indonesia has adopted firm and progressive policy measures in response to the growing waste problem, including the national target to reduce waste gen-

[2] Velis et al., "Socio-Economic Development Drives Solid Waste Management Performance in Cities," 161913; Mor and Ravindra, "Municipal Solid Waste Landfills in Lower- and Middle-Income Countries," 512; Surahma Asti Mulasari, Adi Heru Husodo, and Noeng Muhadjir, "Analysis of the Situation of Waste Problems in Yogyakarta City and Its Mitigation Policy," *Journal of Public Health (KEMAS)* 11, no. 2 (2016): 260–61, https://doi.org/10.15294/kemas.v11i2.3989.

eration by 30 percent and to handle 70 percent of waste by 2025.[3] During 2024, the Ministry also pursued multiple enforcement actions, including the sealing of the Sarbagita Suwung landfill in Bali, the Burangkeng landfill in Bekasi Regency, and the Sarimukti landfill in West Java; coercive administrative sanctions against the Cahaya Kencana and Basirih landfills in South Kalimantan; and criminal prosecutions in the Buwek Raya (Bekasi), Tangerang City, and Limo (Depok) illegal-dumping cases.[4]

This combination of persistently high waste volumes and continuing enforcement action reveals a gap between the normative promise of Indonesia's waste-management law and its performance in practice. Indonesia already possesses a fairly comprehensive regulatory architecture, Law No. 18 of 2008 on Waste Management, Government Regulation No. 81 of 2012 on Household and Household-like Waste, Government Regulation No. 101 of 2014 on Hazardous and Toxic Waste, Presidential Regulation No. 97 of 2017 on the National Strategy for Household Waste Management, Presidential Regulation No. 83 of 2018 on Marine Debris, and Government Regulation No. 27 of 2020 on Specific Types of Waste. Under Law No. 18 of 2008 and its implementing regulations, the legal system is meant to achieve the classical objectives of law: justice, legal certainty, and public benefit.[5] What the law commands, is unambiguous: Article 28H paragraph (1) of the 1945 Constitution guarantees every citizen the right to a good and healthy environment, and this constitutional promise is operationalised through producer and government obligations under Law No. 18/2008. The empirical reality, is markedly different: enforcement remains reactive and concentrated on high-profile landfill closures, while ordinary communities living near disposal sites continue to bear disproportionate environmental and health burdens without commensurate legal protection. This divergence between the normative design of the law and its practical operation is the central legal problem this article investigates.

Three strands of prior research illuminate different facets of this problem, and read together they constitute the state of the art against which the present study is positioned. First, Viranda, Novaria, and Soesiantoro examined the implementation of waste policy in Mulyorejo District, Surabaya, using the Van Meter and Van Horn implementation framework, and found that Surabaya City Regional Regulation No. 1 on Waste Management had been implemented effectively through community waste banks that reduced the volume of waste reaching final disposal sites.[6] Second, Haning, Pello, and Yohanes analysed the implementation of Kupang City's Regional Regulation No. 3 of 2011 on environmentally friendly waste management, and found the opposite result: weak technical regulations, poor law enforcement, low public participation, and inadequate infrastructure had left the system largely ineffective, notwithstanding a sound regulatory foundation.[7] Third, a governance assessment of Makassar's community-based waste-reduction programme found that

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3 Ministry of Environment and Forestry, "Implementation of PERMENHUT P.75/2019, Ministry of Environment and Forestry Appreciates Producers in the Implementation of Waste Reduction Roadmap," n.d., accessed April 1, 2025, https://info3r.menlhk.go.id/berita/detail/berita-35-v_berita.

4 Rifka Amalia, "KLH Acts on Waste Management Case: 4 People Detained, 3 Landfills Sealed," *Detik News*, n.d., accessed April 1, 2025.

5 Fatma Afifah and Sri Warjiyati, "Purpose, Function and Legal Position," *Journal of Law Wijaya Putra* 2, no. 2 (2024): 143.

6 Elis Viranda, Rachmawati Novaria, and Adi Soesiantoro, "Implementation of Waste Management Policy as an Effort to Implement Sustainable Development Goals (SDGs) in Mulyorejo District, Surabaya City," *PRAJA Observer: Journal of Public Administration Research* 4, no. 4 (2024): 188–98, https://doi.org/10.69957/praob.v4i04.1603.

7 Paul Imanuel M Haning, Jimmy Pello, and Saryono Yohanes, "Implementation of Environmentally Friendly Waste Management to Realize a Sustainable Kupang City Based on Regional Regulation Number 3 of 2011," *Journal of Caraka Justitia* Law 5, no. 1 (2025): 120–35, https://doi.org/10.30588/jhcj.v5i1.2340.

its effectiveness depended heavily on the presence of pioneering local actors and multi-stakeholder collaboration between government, academia, and community groups, and that governance conditions in most regions remained more restrictive than supportive of such initiatives.[8] Internationally, comparative evidence on Extended Producer Responsibility (EPR), the mechanism through which producers are made legally responsible for the post-consumption fate of their products, shows a similar pattern of promising normative design undermined by weak implementation capacity, whether in India,[9] Nigeria,[10] Lebanon,[11] or the United Arab Emirates.[12] A global cross-city analysis further confirms that solid-waste-management performance correlates closely with a country's broader socio-economic development, meaning that the gap between regulatory intent and outcome documented in Indonesia is not an isolated national anomaly but a structural feature of waste governance across the Global South.[13]

These three domestic studies, taken together, converge on a common finding: the *implementation* of waste-management regulation, not its formal existence, is the decisive variable in determining whether communities actually experience justice in waste governance. What none of them does, however, is examine this implementation gap through the lens of ecological justice theory, connect Indonesia's domestic experience to the comparative international literature on EPR and law-enforcement design, or situate Indonesia against its immediate Southeast Asian neighbours despite ASEAN's own collective instruments on marine-plastic-litter governance. Viranda, Haning, and the Makassar governance study each analyse a single locality using policy-implementation or governance-assessment frameworks; none asks who bears the environmental burden of implementation failure, why that distribution is unjust, or how a justice-oriented enforcement model, rather than a purely administrative one, might close the gap. This is the research gap that the present study addresses.

The novelty of this study is threefold, and each element addresses a distinct gap left open by the domestic literature reviewed above. First, it integrates ecological justice theory, particularly Bullard's distributive-justice framework and Méndez-Barrientos and colleagues' applied account of procedural and reparational dimensions[14] with sustainable environmental law theory to reconceptualise waste-management law enforcement in Indonesia as a matter of justice rather than mere administrative compliance. Second, it draws on comparative international EPR experience to iden-

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8 Michael Denny Latanna et al., "Governance Assessment of Community-Based Waste Reduction Program in Makassar," *Sustainability* 15, no. 19 (2023): 14371, https://doi.org/10.3390/su151914371; Fatmawati Fatmawati et al., "Waste Bank Policy Implementation through Collaborative Approach: Comparative Study—Makassar and Bantaeng, Indonesia," *Sustainability* 14, no. 13 (2022): 7974, https://doi.org/10.3390/su14137974.

9 Dipti Gupta and Satya Dash, "Challenges of Implementing Extended Producer Responsibility for Plastic-Waste Management: Lessons from India," *Social Responsibility Journal* 19, no. 9 (2023): 1595–1612, https://doi.org/10.1108/SRJ-08-2022-0326; Utsav Bhadra and Prajna Paramita Mishra, "Extended Producer Responsibility in India: Evidence from Recykal, Hyderabad," *Journal of Urban Management* 10, no. 4 (2021): 430–439, https://doi.org/10.1016/j.jum.2021.07.003.

10 Obiora B. Ezeudu, "Harnessing the Drivers and Barriers to Implementation of Extended Producer Responsibility for Circular Economy in Nigeria," *Circular Economy and Sustainability* 4 (2024): 1461–86, https://doi.org/10.1007/s43615-023-00340-8.

11 Rimaz Hammoud et al., "Exploring the Feasibility of Extended Producer Responsibility for Efficient Waste Management in Lebanon," *Scientific Reports* 15 (2025): 15444, https://doi.org/10.1038/s41598-025-00029-y.

12 Enas Mohammed ALqodsi, "Extended Producer Responsibility in E-Waste Recycling: A Secure Path to a Sustainable Future for UAE," *Sustainable Development* 33, no. 1 (2025): 309–18, https://doi.org/10.1002/sd.3107.

13 Costas A. Velis et al., "Socio-Economic Development Drives Solid Waste Management Performance in Cities: A Global Analysis Using Machine Learning," *Science of the Total Environment* 872 (2023): 161913, https://doi.org/10.1016/j.scitotenv.2023.161913.

14 Robert D. Bullard, *Environmental Justice and Communities of Color* (San Francisco: Club Books, 1994); L. E. Méndez-Barrientos et al., "Assessing Environmental Justice Contributions in Research and Public Policy: An Applied Framework and Methodology," *Journal of Environmental Policy & Planning* 26, no. 2 (2024): 1–16, https://doi.org/10.1080/1523908X.2024.2321183.

tify concrete regulatory content that can strengthen Indonesia's still-partial producer-responsibility regime, an element largely absent from the three domestic studies discussed above. Third, and directly responsive to this journal's regional mandate for Southeast Asian comparative legal scholarship, this study situates Indonesia's regulatory trajectory against Malaysia's more centralised Extended Producer Responsibility institutionalisation and against ASEAN's collective, still uneven, enforcement record on marine-plastic-litter policy a comparative Southeast Asian dimension that none of the three domestic studies discussed above, nor the broader India–Nigeria–Lebanon–UAE comparison this article also draws upon, engages at all. The urgency of this inquiry is reinforced by the data presented earlier: with national waste generation still rising and enforcement still concentrated on reactive, high-profile interventions, communities near landfills and informal disposal sites continue to absorb health and environmental risks that a justice-based framework is specifically designed to redistribute and mitigate.

Building on this foundation, this study seeks to answer two research questions. First, how should the concept of justice in Indonesia's waste-management system be understood from the perspective of ecological justice and sustainable environmental law? Second, what law-enforcement model, grounded in the values of justice and informed by comparative international practice, can be formulated to support the achievement of the SDGs? Accordingly, this study aims to (1) analyse the concept of justice in Indonesian waste management from the perspective of ecological justice and sustainable environmental law, and (2) formulate a justice-based law-enforcement model for waste management capable of supporting the achievement of the Sustainable Development Goals.

2. Method

This study employs a socio-legal research method, examining law not as an isolated set of norms but in relation to the social phenomena it purports to regulate.[15] The research combines three complementary approaches. The *statutory approach* involves systematic analysis of Law No. 18 of 2008 and its implementing regulations (Government Regulation No. 81/2012, Government Regulation No. 101/2014, Presidential Regulation No. 97/2017, Presidential Regulation No. 83/2018, Government Regulation No. 27/2020, Ministerial Regulation No. 75/2019, and Law No. 32/2009), assessing the coherence between these norms and the broader legal objectives of justice, certainty, and benefit as formulated by Marzuki.[16] The *conceptual approach* draws on the theoretical literature on ecological justice, sustainable environmental law, and law enforcement to construct the analytical framework applied throughout the discussion. The *case-based documentary approach* analyses secondary data and documented enforcement practice for the period 2023–2026, comprising: (a) national waste-composition and handling-performance data published by the National Waste Management Information System (SIPSN) of the Ministry of Environment and Forestry for the 2024 reporting year; (b) official ministerial statements and enforcement records concerning landfill closures, administrative sanctions, and criminal prosecutions reported between 2024 and 2025; and (c) the comparative international EPR literature identified through a systematic search of Scopus-indexed journals published between 2023 and 2026.

[15] Hari Sutra Disemadi, "Lenses of Legal Research: A Descriptive Essay on Legal Research Methodologies," *Journal of Judicial Review* 24, no. 2 (2022): 289, https://doi.org/10.37253/jjr.v24i2.7280.

[16] Peter Mahmud Marzuki, *Legal Research* (Jakarta: Kencana Prenada Media Group, 2019), 35–60.

Data analysis follows a qualitative-descriptive method: statutory provisions are interpreted using systematic and teleological legal-interpretation techniques, while the documentary case data are analysed through content analysis to identify recurring patterns in enforcement practice (for example, the balance between sanction-based and prevention-based interventions). The three data streams are then triangulated, the normative content of the statutes, the empirical pattern of enforcement documented in secondary sources, and the theoretical framework of ecological justice, to test whether current law-enforcement practice in Indonesian waste management is consistent with, or departs from, the requirements of ecological justice, and to derive the regulatory recommendations summarised in Table 1. Because this study relies on documented secondary sources rather than direct field interviews, its conclusions regarding specific local implementation dynamics are necessarily inferential; researchers seeking to verify site-specific enforcement behaviour are encouraged to complement this analysis with primary ethnographic fieldwork.

3. Analysis and Discussion

3.1. The Concept of Justice in Indonesian Waste Management from the Perspective of Ecological Justice and Sustainable Environmental Law

Law functions as a guideline that regulates social order and behaviour with the aim of protecting human interests.[17] Gustav Radbruch identified justice, legal certainty, and benefit as the three interrelated objectives of law: a law is deemed certain if it fosters justice and benefit, beneficial if it satisfies fairness and compliance, and just if certainty and benefit are met.[18] Because what one person considers fair may not be perceived equally by another, justice must be understood as a principle that places everything in proportion and grants each individual their due rights, while affirming that everyone stands equally before the law.[19] Assessing whether a particular treatment is just therefore requires measuring it against applicable norms, an assessment that can vary depending on whose interests, class position, or social context is taken as the reference point.[20]

Fair and equitable application of the law is essential to environmental protection and compliance,[21] and several concepts have developed from the broader theory of justice to address this domain, including environmental justice, or ecological justice. Ecological justice can be understood through four dimensions: distributive justice, corrective justice, procedural justice, and social justice meaning that environmental protection concerns not only the distribution of environmental benefits and burdens, but also remedies for harm, fair decision-making processes, and protection for social groups affected by environmental problems.[22] Méndez-Barrientos and colleagues argue that ecological justice requires environmental rights and benefits to be distributed fairly across social groups regardless of race, class, or income, and that procedural justice, particularly public involvement in environmental decision-making, is itself part of the substantive right to a fair

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17 Fatma Afifah and Sri Warjiyati, "Purpose, Function and Legal Position," *Journal of Law Wijaya Putra* 2, no. 2 (2024): 143.

18 Gustav Radbruch, *Einfuhrung in Die Rechtswissenschaft* (Stuttgart: K.F. Koehler, 1961), quoted in Satjipto Rahardjo, *Ilmu hukum* (Bandung: Citra Aditya Bakti, 2000).

19 Afifah and Warjiyati, "Purpose, Function and Legal Position," 144.

20 Elly Kristiani Purwendah, "The Concept of Ecological Justice and Social Justice in the Indonesian Legal System Between Idealism and Reality," *Journal of Legal Communication (JKH)* 5, no. 2 (2019): 143, https://doi.org/10.23887/jkh.v5i2.18425.

21 Nur Insani and Suud Sarim Karimullah, "Justice for Nature: Integrating Environmental Concerns into Legal Systems for Adequate Environmental Protection," *Jurnal Hukum Dan Peradilan* 12, no. 1 (2023): 129–58, https://doi.org/10.25216/jhp.12.1.2023.129-158.

22 Purwendah, "The Concept of Ecological Justice and Social Justice."

distribution of environmental burdens.[23] Meaningful access to remedies is likewise a constitutive element of environmental justice, since a right without an accessible mechanism for enforcement offers little practical protection to the communities it is meant to serve.[24] Bullard identifies five core elements of ecological justice: the right to be protected from pollution; the priority of pollution prevention; placing the burden of proof on polluters; addressing disparate impacts through evidence-based assessment rather than uniform treatment; and managing risk distribution through targeted intervention.[25]

Applied to waste management, ecological justice requires fair access to waste services, proportional allocation of responsibility, and protection for socially or environmentally vulnerable communities. Collection and processing facilities should be available equitably across well-developed urban areas as well as suburban and marginalised ones, and responsibility for waste management should reflect each actor's contribution to waste generation, a principle operationalised through the Extended Producer Responsibility (EPR) mechanism, which requires producers to take responsibility for waste arising from the products and packaging they place on the market.[26] Communities living near landfills, by contrast, often suffer disproportionate pollution and health impacts without adequate protection or compensation, an inequitable distribution of environmental burden that ecological justice requires public policy to redress.

Indonesian law has already accommodated the principle of producer responsibility to a degree. Article 15 of Law 18/2008 obliges producers to manage packaging and goods that are difficult to decompose naturally, and this is elaborated in Government Regulation No. 81/2012 Article 13, Producers are required to recycle waste by: (a) developing a waste-recycling programme as part of their business activities; (b) using recyclable production raw materials; and/or (c) withdrawing waste from products and packaging for recycling. (2) Producers may appoint another party to carry out this recycling. (3) Any such party must hold a business or activity permit. (4) Recycling waste for food-packaging purposes must comply with drug- and food-supervision regulations.

Article 14: Producers are required to reuse waste by: (a) preparing plans for waste reuse consistent with waste-management policy; (b) using reusable production raw materials; and/or (c) withdrawing waste from products and packaging for reuse. This framework was reinforced by Ministerial Regulation No. 75/2019, which establishes a roadmap for producer-led waste reduction. Yet, as international comparative research demonstrates, formally adopting an EPR obligation is not the same as implementing one effectively. In India, Gupta and Dash found that stakeholders confront persistent ambiguity over urban local bodies' approval procedures, inconsistent

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[23] Méndez-Barrientos et al., "Assessing Environmental Justice Contributions."

[24] Clare E. B. Cannon, "Advancing Sustainable Transitions: A Spatial Analysis of Socio-Environmental Dynamics of Landfills across the United States," *Elementa: Science of the Anthropocene* 12, no. 1 (2024): 00101, https://doi.org/10.1525/elementa.2023.00101.

[25] Robert D. Bullard, *Environmental Justice and Communities of Color* (San Francisco: Club Books, 1994); Ina Lehmann et al., "Implications of Global Distributive Justice Principles for Implementation of the Kunming-Montreal Global Biodiversity Framework," *Conservation Biology* (2025), https://doi.org/10.1111/cobi.70167.

[26] Muchammad Fauzi et al., "Green Logistics and Extended Producer Responsibility for Food and Beverage Packaging Waste Management at Widyatama University: A Model for Green Campus," *Journal of Environmental Technology* 25, no. 1 (2024): 39; Dhea Septianingrum, Kosuke Mizuno, and Herdis Herdiansyah, "Extended Producer Responsibility for Waste Management Policy," *Jurnal Penelitian Pendidikan IPA* 9, no. 5 (2023): 2686–2692, https://doi.org/10.29303/jppipa.v9i5.3469; Waluyo and Dona Budi Kharisma, "Circular Economy and Food Waste Problems in Indonesia: Lessons from the Policies of Leading Countries," *Cogent Social Sciences* 9, no. 1 (2023): 2202938, https://doi.org/10.1080/23311886.2023.2202938; Maskun Maskun et al., "Plastic Waste Management in Indonesia: Current Legal Approaches and Future Perspectives," *Hasanuddin Law Review* 9, no. 1 (2023): 106–125, https://doi.org/10.20956/halrev.v9i1.3683.

definitions of key technical terms, and unclear registration requirements for recyclers, gaps that blunt the practical force of an EPR mandate that, on paper, closely resembles Indonesia's.[27] Ezeudu's analysis of four end-of-life product streams in Nigeria similarly found that the absence of dedicated Producer Responsibility Organisations, unreliable waste and economic data, and under-resourced small and medium producers were the principal barriers to translating EPR policy into practice, notwithstanding genuine institutional interest in adopting the scheme.[28] Hammoud, Massoud, Chalak, and Abiad reached a comparable conclusion for Lebanon, where a large informal waste sector, economic instability, and weak governance, rather than any deficiency in the underlying legal concept of EPR, were identified as the principal obstacles to adoption.[29] By contrast, Alqodsi's study of the United Arab Emirates shows that EPR for electrical and electronic waste can operate effectively when paired with clear institutional responsibility and a supportive national environmental strategy, while a comparative study of Japan and Canada found that whether EPR is designed as a *physical* responsibility (as in Japan, which drives producers toward simpler, more recyclable product design) or a purely *financial* one (as in Canada, which tends to shift cost-saving pressure downstream) materially changes producer behaviour and recovery outcomes.[30][31]

Read against this comparative evidence, Indonesia's EPR regime displays the same structural weakness identified in India and Nigeria: Law 18/2008 provides only a general normative basis for producer obligations, Government Regulation 81/2012 narrows the scope to specific products and packaging, and Ministerial Regulation 75/2019 further concentrates the obligation on packaging and inorganic waste. The result is an EPR concept that remains, in practice, oriented toward packaging waste rather than constructed as a comprehensive responsibility system covering all waste types generated from production activities. The international evidence discussed above suggests that closing this gap requires more than expanding the letter of the regulation: it requires, as in the UAE case, clearer institutional responsibility for monitoring compliance, and, as in the Japan-Canada comparison, an explicit policy choice about whether Indonesia's EPR obligation should be designed around physical take-back responsibility or financial contribution, since this design choice shapes producer incentives in materially different ways.

Within Southeast Asia specifically, the comparative picture is more direct and, for this journal's regional focus, more consequential. A dedicated legal comparison between Indonesia and Malaysia's plastic-waste governance found that although both countries share a broadly similar statutory architecture general framework legislation supplemented by sector-specific implementing regulations Malaysia's stronger central coordination through a single lead agency and its more advanced producer-responsibility roadmap produce more consistent enforcement outcomes than Indonesia's more fragmented, multi-level regulatory structure.[32] A parallel review of Malaysia's

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27 Dipti Gupta and Satya Dash, "Challenges of Implementing Extended Producer Responsibility for Plastic-Waste Management: Lessons from India," *Social Responsibility Journal* 19, no. 9 (2023): 1595–1612, https://doi.org/10.1108/SRJ-08-2022-0326.

28 Obiora B. Ezeudu, "Harnessing the Drivers and Barriers to Implementation of Extended Producer Responsibility for Circular Economy in Nigeria," *Circular Economy and Sustainability* 4 (2024): 1461–86, https://doi.org/10.1007/s43615-023-00340-8.

29 Rimaz Hammoud et al., "Exploring the Feasibility of Extended Producer Responsibility for Efficient Waste Management in Lebanon," *Scientific Reports* 15 (2025): 15444, https://doi.org/10.1038/s41598-025-00029-y.

30 Enas Mohammed ALqodsi, "Extended Producer Responsibility in E-Waste Recycling: A Secure Path to a Sustainable Future for UAE," *Sustainable Development* 33, no. 1 (2025): 309–18, https://doi.org/10.1002/sd.3107.

31 Mika Kaibara Portugaise, Lára Jóhannsdóttir, and Shinsuke Murakami, "Extended Producer Responsibility's Effect on Producers' Electronic Waste Management Practices in Japan and Canada: Drivers, Barriers, and Potential of the Urban Mine," *Discover Sustainability* 4, no. 1 (2023): 8, https://doi.org/10.1007/s43621-023-00124-y.

32 Hanim Kamaruddin et al., "Legal Aspect of Plastic Waste Management in Indonesia and Malaysia: Addressing Marine Plastic Debris," *Sustainability* 14, no. 12 (2022): 6985, https://doi.org/10.3390/su14126985.

electronic-waste regime alongside India, China, and the United Kingdom similarly found that Malaysia's move toward a government-backed, mandatory Extended Producer Responsibility framework offers a more institutionally advanced model than Indonesia's still-voluntary, packaging-focused approach.[33] At the regional level, a comparative assessment of ASEAN member states' marine-plastic-litter policies found that, notwithstanding collective instruments such as the Bangkok Declaration on Combating Marine Debris and the ASEAN Framework of Action, national implementation remains uneven and is weakest precisely on the indicators most relevant to this article: government expenditure on enforcement and the stringency of regulatory sanctions.[34] This regional pattern reinforces rather than isolates the argument advanced here: the gap this article identifies between Indonesia's normative design and its enforcement practice is not a peculiarity of Indonesian law but a structural feature shared across ASEAN waste governance one that a justice-based, differentiated enforcement model, of the kind developed in this article, is better positioned to address than the largely administrative approaches Malaysia and its neighbours have so far relied upon.

Ecological justice in waste management also requires attention to the principle of sustainability as it relates ecological justice to social justice.[35] Sustainable development is defined in Article 1(3) of Law No. 32 of 2009 on Environmental Protection and Management as a deliberate and planned effort integrating environmental, social, and economic considerations into development strategies to preserve environmental integrity and ensure the safety, capability, welfare, and quality of life of both current and future generations. As Gilbert puts it, rights-of-nature approaches to justice recognise that all aspects of nature are legal subjects with inherent rights that must be upheld[36] a formulation that reinforces the constitutional character of the right to a healthy environment under Article 28H(1). Waste management bears directly on SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 13 (climate action), and SDG 16 (peace, justice, and strong institutions); ineffective waste management worsens urban environmental conditions and undermines public trust in environmental governance, while a fair and functioning system supports sustainable urban development and strengthens legal accountability.[37] This connection is not merely theoretical. A global analysis of city-level waste-management performance against the SDG 11.6.1 indicator found that controlled recovery and disposal rates average only around 45 percent in low-income cities, compared to 100 percent in upper-middle and high-income cities, confirming that socio-economic development, and not regulatory design alone, remains a major determinant of whether the SDG target is actually met.[38] For Indonesia, this comparative benchmark underscores that closing the ecological-justice gap in waste governance is not only a constitutional and statutory obligation but also a precondition for credible progress toward SDG 11.6.

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[33] Heta Sanghvi, "Electronic Waste Taking Over the Globe: An Overview of the Law in Malaysia, India, China and the United Kingdom," *Asian Journal of Law and Policy* 3, no. 3 (2023): 105–117, https://doi.org/10.33093/ajlp.2023.8.

[34] Sapto Hermawan and Wida Astuti, "Analysing Several ASEAN Countries' Policy for Combating Marine Plastic Litter," *Environmental Law Review* 23, no. 1 (2021): 9–22, https://doi.org/10.1177/14614529219917 31.

[35] Purwendah, "The Concept of Ecological Justice and Social Justice."

[36] Jérémie Gilbert, "Creating Synergies between International Law and Rights of Nature," *Transnational Environmental Law* 12, no. 3 (2023): 671–692, https://doi.org/10.1017/S2047102523000195.

[37] Insani and Karimullah, "Justice for Nature."

[38] Velis et al., "Socio-Economic Development Drives Solid Waste Management Performance in Cities," 161913; Manisha Ram and Enrico Bracci, "Waste Management, Waste Indicators and the Relationship with Sustainable Development Goals (SDGs): A Systematic Literature Review," *Sustainability* 16, no. 19 (2024): 8486, https://doi.org/10.3390/su16198486.

3.2. A Justice-Based Law Enforcement Model for Waste Management in Indonesia

According to 2024 SIPSN data compiled from the 274 regencies and cities that submitted complete annual reports that year, a narrower and more conservative base than the national generation estimate cited in the Introduction, Indonesia generated approximately 27.74 million tons of waste nationally, equivalent to roughly 76,000 tons per day.[39] Households remain a principal source, typically generating food leftovers, plastics, paper, and other dry materials,[40] while commercial areas such as markets and shops generate substantial volumes of perishable and packaging waste due to the density of daily activity, and weak law enforcement against illegal dumping compounds these pressures on receiving waterways and disposal sites.[41] Improperly managed waste of this magnitude carries serious consequences for public health and environmental quality, disrupting terrestrial and aquatic ecosystems and imposing costs that are rarely distributed evenly across the population most exposed to them.

Sustainable environmental law theory frames the government's role as ensuring that natural resources remain available to meet present needs without compromising the ability of future generations to meet theirs. Law No. 18 of 2008, Article 29(1)(e), accordingly prohibits disposing of waste outside designated locations, including rivers, waterways, gutters, and railway lines. The government also bears responsibility for providing Temporary Disposal Sites (TPS) and Final Disposal Sites (TPA)[42] and for ensuring that transportation, sorting, and processing systems function effectively. Law enforcement understood, following Rahardjo, as the process of implementing legal regulations within everyday social life[43] is the mechanism through which these obligations are translated from statute into practice. Yet a justice-oriented model of law enforcement in waste management cannot be reduced to punishing offenders; it must equally strengthen public awareness, encourage community involvement, and build collective responsibility for environmental protection, consistent with the broader direction of national legal policy toward participatory, rather than purely coercive, regulation.[44]

Although Indonesia already possesses a substantial body of waste-management regulation, its implementation still lacks a clear normative framework that integrates ecological justice, institutional accountability, and sustainable development. Table 1 synthesises the regulatory content this study identifies as necessary to close that gap.

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39 Faisal Javier, "Waste Handling in Indonesia," *Tempo*, 2025.

40 Sri Hutomo, "Law Enforcement for Waste Management in Bekasi City," *To-Ra Law Journal: Laws to Govern and Protect Society* 10, no. 1 (2024): 106, https://doi.org/10.55809/tora.v10i1.330.

41 Loso Judijanto, Rabith Madah Khulaili Harsya, and Yana Priyana, "The Implementation of Environmental Law in Law Enforcement Against River Pollution in Bandung," *Journal of Law and Human Rights Wara Sains* 2, no. 12 (2023): 1204, https://doi.org/10.58812/jhhws.v2i12.874; Muhammad Ma'arij Harfadli, Bimastyaji Surya Ramadan, and Iva Rachman, "Challenges and Characteristics of the Informal Waste Sector in Developing Countries: An Overview," *Journal of Material Cycles and Waste Management* 26 (2024): 1294–1309, https://doi.org/10.1007/s10163-024-01929-3.

42 Satjipto Rahardjo, *Dissecting Progressive Law* (Jakarta: Kompas, 2008), 175–83.

43 Rahardjo, *Dissecting Progressive Law*, 176.

44 Bintang Sekarningrum and Netta Gaus, "Community Knowledge and Participation for Sustainable Waste: The Case of Bandung, Indonesia," *International Journal of Sociology and Social Policy* (2026), https://doi.org/10.1108/IJSSP-06-2025-0367.

Table 1. Regulatory Framework for Sustainable Waste Management Based on Ecological Justice

Aspect	Recommended Normative Content	Regulatory Objective	Expected Impact
Institutional roles and coordination	The regulation should clarify the roles of central government, local governments, communities, private actors, producers, and waste management institutions.	To strengthen coordination and prevent fragmented implementation among stakeholders.	More effective governance and stronger institutional accountability in waste management.
Community participation	The regulation should provide mechanisms for public consultation, community-based waste management, complaint systems, and involvement in environmental decision-making.	To strengthen procedural justice and ensure that affected communities can participate in waste governance.	Increased public trust, awareness, and collective responsibility in waste management.
Waste reduction and source separation	The regulation should require waste reduction at source, waste sorting, reuse, recycling, composting, and circular economy-based practices.	To reduce the volume of waste sent to final disposal sites and promote responsible consumption.	Reduced landfill burden and improved sustainability of waste management systems.
Producer responsibility	The regulation should strengthen producer obligations to reduce, take back, reuse, recycle, or manage waste from products and packaging, and clarify whether the obligation is physical or financial in nature.	To ensure that waste responsibility is not borne only by consumers and government.	More proportional responsibility among producers, consumers, and public authorities.
Feasibility and environmental risk assessment	The regulation should require feasibility studies and environmental, social, and health risk assessments before developing waste management facilities.	To identify risks, prevent environmental harm, and protect affected communities.	Reduced environmental damage, health risks, and potential disputes.
Monitoring, evaluation, and public transparency	The regulation should set key performance indicators, reporting obligations, technical audits, environmental audits, and publicly accessible information systems.	To strengthen transparency, accountability, and compliance with environmental standards.	Periodic improvement of waste management performance and stronger public oversight.
Law enforcement and corrective measures	The regulation should provide administrative, civil, and criminal sanctions, as well as corrective and educational measures for violations.	To ensure compliance while also encouraging behavioural change and environmental awareness.	Law enforcement becomes not only punitive, but also preventive, corrective, and educational.
Protection of vulnerable communities	The regulation should provide special protection, compensation, health safeguards, and complaint mechanisms for communities affected by landfills, illegal dumping, or pollution.	To realise ecological justice by addressing unequal environmental impacts.	Reduced environmental injustice and stronger protection of the right to a good and healthy environment.
Adaptive governance and service continuity	The regulation should allow limited policy adjustment, emergency response, transition planning, and continuity mechanisms when waste services are disrupted.	To ensure that waste management remains responsive to social, environmental, and regulatory changes.	Waste services become more resilient, adaptive, and sustainable in the long term.

Source: Processed by the author (2026), informed by comparative EPR practice in India, Nigeria, Lebanon, and the United Arab Emirates.[45,46,47,48]

[45] Gupta and Dash, "Challenges of Implementing Extended Producer Responsibility."
[46] Ezeudu, "Harnessing the Drivers and Barriers."
[47] Hammoud et al., "Exploring the Feasibility of Extended Producer Responsibility."
[48] ALqodsi, "Extended Producer Responsibility in E-Waste Recycling."

Read together, the eight aspects in Table 1 operationalise the four dimensions of ecological justice developed in Section 3.1 into concrete regulatory content rather than leaving them as abstract standards. Institutional roles and coordination, producer responsibility, and waste reduction and source separation give distributive justice institutional form by clarifying who bears responsibility for which portion of the waste stream; community participation and monitoring, evaluation, and public transparency operationalise procedural justice by guaranteeing affected communities a voice in decisions that concern them; feasibility and environmental risk assessment, together with law enforcement and corrective measures, embed corrective justice by requiring harm to be anticipated before it occurs and remedied when it does; and protection of vulnerable communities most directly instantiates social justice by targeting the redistribution of risk toward those least able to bear it. Adaptive governance and service continuity cuts across all four dimensions, ensuring that the framework remains responsive rather than static. None of these elements is drawn from abstract principle alone: institutional clarity reflects the UAE experience, the physical-versus-financial design choice reflects the Japan–Canada comparison, and dedicated compliance coordination reflects the Nigerian experience, so that the framework translates international lessons into content that fits Indonesia's existing statutory architecture rather than displacing it.

Read alongside the differentiated enforcement model proposed above, Table 1 supplies the institutional architecture within which that model can actually operate. A differentiated approach to enforcement, distinguishing corporate and organised offenders from ordinary citizens, presupposes precisely the elements catalogued in the table: clear institutional roles to determine which authority initiates enforcement action, monitoring and transparency mechanisms to detect violations before they escalate into landfill crises, and community-participation channels through which minor violations can be addressed educationally rather than punitively. Without this surrounding architecture, a differentiated enforcement model risks collapsing back into the same reactive, high-profile pattern documented in the Introduction: sanctions applied only after harm has already occurred, and only to violators visible enough to attract ministerial attention. The regulatory framework therefore answers the second research question this study set out to address, not by proposing enforcement in isolation, but by embedding a justice-oriented enforcement logic within the wider regulatory ecosystem that determines whether such logic can be applied consistently.

The practical significance of this framework extends beyond Indonesia's domestic enforcement gap. As the comparative discussion in Section 3.1 demonstrated, the tension between well-designed statutes and under-resourced implementation recurs across EPR regimes in the Global South and, closer to home, within Malaysia's more centralised system and ASEAN's collective marine-litter commitments. A framework that pairs institutional clarity with community-based procedural safeguards is therefore relevant beyond the case examined here: it offers content that other jurisdictions confronting the same gap between normative design and enforcement capacity could adapt to their own statutory architecture. Whether this framework succeeds in practice, however, depends on a factor this study's documentary method cannot fully verify, namely the political will to fund the monitoring and institutional-coordination mechanisms that Table 1 identifies as preconditions for its other elements to function.

4. Conclusion

Waste management in Indonesia is a matter of legal justice, not merely technical administration, bound up with the constitutional right to a good and healthy environment under Article 28H(1). This study has shown that a persistent gap separates that normative promise from empirical

reality: Extended Producer Responsibility remains only partially implemented, and enforcement stays reactive rather than distributively fair. Comparative evidence from India, Nigeria, Lebanon, and the United Arab Emirates confirms that Indonesia's regulatory design is not unique in this respect, but the gap's persistence after more than a decade under Law No. 18 of 2008 signals that incremental amendment alone will not resolve it. Ecological justice, understood through its distributive, corrective, procedural, and social dimensions, offers a more complete standard against which to measure and reform Indonesia's waste-management enforcement than administrative compliance alone. The regulatory framework in Table 1, together with the differentiated enforcement model developed in this article, translates that standard into implementable content. Enforcement should balance sanctions, prevention, and community empowerment: strict administrative, civil, and criminal measures for large-scale corporate and organised offenders, and educational, corrective approaches for ordinary citizens whose non-compliance often stems from inadequate infrastructure rather than wilful violation. This differentiated approach reflects substantive rather than merely formal justice, since it accounts for the conditions underlying a violation, not only the act itself.

Three recommendations follow. For policymakers: revise Government Regulation 81/2012 and Ministerial Regulation 75/2019 to extend EPR beyond packaging toward a comprehensive, life-cycle-based system; establish a dedicated Producer Responsibility Organisation to coordinate compliance and reduce free-riding; and formalise community-consultation and complaint mechanisms as a standing licensing requirement rather than a discretionary practice. For theoretical development: future scholarship should treat ecological justice as an organising framework for waste governance rather than a purely administrative field, with comparative research linking Indonesia's socio-legal tradition to EPR experience across the Global South, beginning with its ASEAN neighbours. For future research: primary field-based studies, combining interviews with landfill-adjacent communities, waste-bank operators, and regional agencies, are needed to test empirically whether the framework proposed here narrows the gap between *das sollen* and *das sein*, and how the differentiated enforcement model performs across regions of varying institutional capacity.

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