

Plastic Tax in Indonesia: A Double Dividend Strategy for Marine Pollution Reduction and Sustainable Revenue Generation

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ABSTRACT

Objective: Indonesia's rapid population growth to 288 million in 2025 has driven total waste generation to 36 million t in 2024, with plastics accounting for 20% (around 7 million t) and 65% of plastic waste entering the environment. Marine plastic leakage declined from 615,000 t in 2018 to 350,000 t in 2024, a 41% reduction that falls short of the 70% target for 2025. **Method:** Employing an explanatory sequential mixed-methods design, this paper first analyzes time-series waste data and conducts document analysis of policy instruments to evaluate a plastic excise tax's viability. **Results:** The Ministry of Finance's proposed Rp30,000/kg rate on plastic tax could generate an estimated IDR 10.50–137.56 trillion in 2024, depending on whether the tax base is defined narrowly around documented marine plastic leakage or more broadly around single-use plastic waste, far exceeding environmental protection allocations that dropped from 18.4% of central spending in 2020 to 0.3% in 2025. **Novelty:** Grounded in the double-dividend hypothesis, the tax internalizes plastic pollution costs while aiming to support marine protection efforts against marine plastic leakage. Recommendations include immediate implementation with a narrow tax base on single-use plastic bags and/or any specified plastics, legally mandated revenue earmarking for waste infrastructure and marine protection, robust monitoring, and integration with extended producer responsibility to promote circular economy practices and align fiscal policy with Indonesia's marine debris goals.

INTRODUCTION

According to the updated Clean Population Data (DKB) for Semester II of 2025, the Directorate General of Population and Civil Registration (Dukcapil) under the Ministry of State Affairs of the Republic of Indonesia recorded that the population of Indonesia reached 288,315,089 people as of December 31, 2025 [1]. As a result, Indonesia is ranked fourth among nations with the greatest populations, behind India, China and The United States [2]. This is undoubtedly a great accomplishment and has the potential to significantly benefit the nation if handled properly. On the other hand, the high population level implies that the population is also consuming more resources and eventually generating more waste. As can be seen in Figure 1, Indonesia has experienced a fluctuating amount of waste generation with a tendency to increase year by year, with the highest data recorded at 36,009,663 t in 2024 [3]. This places Indonesia among the top waste-producing countries in Southeast Asia, followed by Thailand, the Philippines, and Malaysia, and places it among the top countries supplying plastic debris to the ocean worldwide [4], [5].

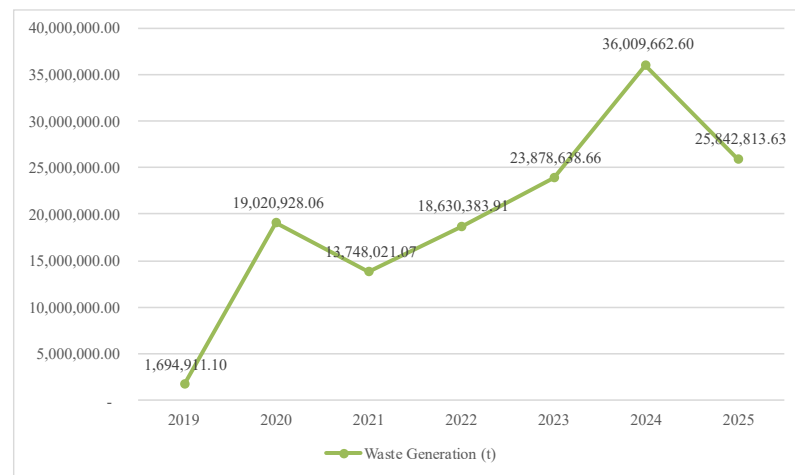


Figure 1. National waste generation.

Source: Ministry of environment and forestry

The scale of this problem is alarming, with estimates suggesting Indonesia generates approximately 3.2 million t of mismanaged plastic waste annually, of which between 0.48 to 1.29 million t eventually reaches the ocean [6]. Furthermore, waste management data in Indonesia shows that waste disposed of in the environment has a higher percentage than managed waste, reaching 65.44% in 2025 [3]. This situation is particularly concerning considering Indonesia's distinct geographical and ecological characteristics. The Indonesian archipelago consists of 17,380 islands and 81,000 km of coastline, with a coastal population of roughly 187-190 million people [6]–[8]. Indonesia is also home to some of the world's most biodiverse and significant coral reef systems, with the greatest diversity of reef fish and coral species [8]. Therefore, the pollution or contamination caused by plastic waste in coastal areas of Indonesia will greatly affect the existing marine ecosystem, as well as impact the communities that depend on the surrounding sea.

The plastic pollution problem has already begun to damage the food chain, with research revealing that at least 28% of fish collected from Indonesian markets (Makassar) have plastic contamination, creating major concerns about both ecosystem health and human food safety [9]. To address the severity of marine plastic pollution, Indonesia has committed to reduce plastic waste by 70% by 2025 with several action plans and legislation on plastic pollution and waste reduction that have been implemented, including 1) The National Action Plan on Marine Debris 2018-2018, regulated by Presidential Regulation No 83/2018 on Marine Debris Waste Management; 2) Producers' responsibility for waste reduction, Ministry of Environment and Forestry Regulation No 75/2019 on Roadmap of Waste Reduction by Producers; and 3) Plastic waste management in the tourism sector, Regulation No 5/2020, regulated by the Ministry of Tourism and Creative Economy [10]. However, until 2024, according to the estimations of the National Coordination Team for Marine Debris Management (TKN-PSL), the reduction in plastic trash leakage has only reached 41.68%. This amount remains considerably below the aim specified in Presidential Regulation Number 83 of 2018 for Marine Debris Management [11].

As a result, the Indonesian Ministry of Maritime Affairs and Fisheries, has renewed the target for waste reduction by 70% by 2025 independently through the Clean Sea Program (*Sebasah*). Through this program, the target for marine waste reduction can be 40% (6.4 million t) by 2026, 50% (8 million t) by 2027, 60% (9.6 million t) by 2028, and 70%

(11.2 million t) by 2029 [12]. To achieve the targeted outcomes, the government may adopt various fiscal and non-fiscal policy instruments, including the implementation of a plastic tax aimed at reducing marine plastic pollution. Plastic taxes constitute a subset of Pigouvian taxes, purposefully designed to correct situations where the private costs of economic activity are lower than the true social costs, forcing producers and consumers to internalize the full cost of their actions [13]. The economic logic behind these taxes operates through price signals that drive behavioral change. The tax creates a wedge between what producers receive and what consumers pay, making polluting products more expensive and reducing their consumption [14].

Plastic tax is a tax imposed on the production or consumption of plastic products to reduce environmental degradation by disincentivizing the use of plastic and fostering the adoption of less harmful alternatives [15]. These taxes work by directly raising the price of targeted plastic products to discourage their use, while still maintaining consumer choice rather than outright banning products [16]. The primary mechanism is behavioral change, when consumers face higher prices due to taxes or fees, they are encouraged to reduce consumption or switch to alternatives [17]. Research demonstrates that plastic taxes consistently achieve substantial reductions in targeted plastic consumption across diverse geographic and economic contexts. Plastic bag levies have shown particularly strong results, with Denmark achieving a 66% reduction after implementing their tax in 1993, China seeing a 49% decrease following their plastic bag ban, and Botswana experiencing a 50% reduction after introducing their plastic bag tax [18]. Ireland's plastic bag levy remains the most widely cited success story, with the 15-cent levy reducing plastic bag consumption from 350 to 14 per person between 2002 and 2012 [19].

The objectives of plastic taxation go beyond merely reducing consumption. Such policies are designed to address gaps in waste management systems, lower the economic costs associated with disposal and incineration, and mitigate the environmental and health impacts of plastic pollution [21]. Furthermore, the revenue generated from plastic taxes can be allocated to support waste management infrastructure, public awareness initiatives, and the development of more sustainable alternatives to conventional plastics [19]. This aligns with the theoretical framework of the double dividend hypothesis, which argues for the potential of environmental tax instruments to yield multifaceted benefits. The environmental dividend (the first dividend) involves the internalization of externalities to improve environmental quality, whereas the non-environmental dividend (the second dividend) focuses on neutralizing distortionary taxes to improve employment and overall macroeconomic productivity [20].

The experiences of other countries in successfully implementing plastic taxes and/or excise provide valuable insights that can be carefully examined and adapted for application in Indonesia. Adapting the double dividend hypothesis, this research investigates the prospective fiscal gap from plastic tax implementation as a multifaceted instrument to bolster state revenues while nudging behavioral shifts that curb plastic consumption and mitigate environmental waste, especially marine plastic pollution in Indonesia's waters. Furthermore, this study adopts an explanatory sequential mixed-methods design to examine quantitative national waste generation, estimating annual plastic waste projections as the foundation for proposed tax rates. On the other hand, document analysis elucidates these results alongside estimated plastic tax revenues, government environmental protection funding, prospective marine conservation financing to offset ocean plastic damages, and the potential for plastic waste reduction in Indonesia through tax implementation.

METHODOLOGY

This study adopts a mixed method with explanatory sequential design by utilizing exclusively secondary data to evaluate plastic taxation's viability for addressing Indonesia's marine plastic pollution. The explanatory sequential design of mixed methods research prioritizes the quantitative phase first, followed by a qualitative phase. The purpose of the second qualitative phase is often to explain the results discovered in the first quantitative phase, and sometimes to explain outliers that are not entirely consistent with the collected data [22]. This method was chosen for its ease in designing and reporting straightforward results [23].

The quantitative phase involves time-series descriptive statistics and scenario-based projections derived from National Waste Management System by Ministry of Environment and Forestry, the National Coordination Team for Marine Debris Management (TKN-PSL), Statistics of Indonesia datasets (2018-2025) for estimating plastic waste volumes, environmental disposal rates, and marine leakage trends. Plastic tax revenue is estimated by converting each year's estimated plastic waste volume from tones to kilograms and applying the Ministry of Finance's proposed rate of Rp30,000/kg. Because no official breakdown of single-use versus non-single-use plastic exists in the available data, two complementary estimates are reported. First, an upper-bound estimate applying a 65% single-use proportion, adapted from sectoral plastic-use for packaging, shopping bags, and styrofoam categories [24]. Second, a lower-bound, more conservative estimate based solely on documented marine plastic leakage volumes, which represents the narrowest and most directly policy-relevant tax base.

The qualitative phase follows with systematic document analysis from various sources including government policies, official government websites, academic literature and news report to elucidate policy gaps, behavioural responses to fiscal incentives, and sectoral impacts. Findings integrate through joint interpretive matrices that align quantitative trends (rising waste, partial leakage reductions) with qualitative themes, triangulating revenue potentials against State Budget of Indonesia environmental spending declines to strengthen causal inferences for policy recommendations.

RESULTS

1.1 Findings

1.1.1 Plastic Waste in Indonesia

Based on data obtained from Indonesia's National Waste Management Information System, plastic waste in Indonesia shows a significant increase from 2019 to 2025. Although the system does not provide absolute data for total plastic waste, this study estimates both the total volume of plastic waste and the amount disposed into the environment using the available percentage data.

Table 1. Plastic waste in Indonesia

Year	Waste Generation (t)	Plastic Waste (%)	Estimated Plastic Waste (t)	Disposed Into the Environment (%)	Estimated Plastic Waste in Environment (t)
2019	1,694,911	13.62%	230,847	65%	150,050
2020	19,020,928	16.15%	3,071,880	26.06%	800,532
2021	13,748,021	17.56%	2,414,153	33.40%	806,327
2022	18,630,384	18.64%	3,472,704	25.98%	902,208
2023	23,878,639	18.59%	4,439,039	50.30%	2,232,837
2024	36,009,663	19.59%	7,054,293	61.87%	4,364,491
2025	25,842,814	20.49%	5,295,193	65.44%	3,465,174

Source: National waste management information system

Based on Table 1, total waste generation fluctuates but tends to rise overall, with a significant increase from 1.69 million t in 2019 to a peak of 36.01 million t in 2024, before declining to 25.84 million t in 2025. In line with this, the proportion of plastic waste also steadily increases from 13.62% in 2019 to 20.49% in 2025, indicating that plastic is becoming a larger component of total waste. As a result, the estimated volume of plastic waste grows significantly, from 230,847 t in 2019 to 7.05 million t in 2024, then slightly decreasing to 5.29 million t in 2025. In addition, the percentage of plastic waste disposed into the environment shows significant fluctuation but remains high, especially in later years. After a relatively lower level in 2020 (26.06%), the figure increases to 65.44% by 2025. As a result, the estimated amount of plastic waste entering the environment rises dramatically from 150,050 t in 2019 to over 4.36 million t in 2024, before slightly decreasing to 3.47 million t in 2025. In general, Table 1 indicates a rising trend in plastic waste generation, accompanied by an increasing proportion being released into the environment. This pattern reflects intensifying environmental pressure and highlights the need for more robust waste management policies, including measures such as plastic taxation and enhanced recycling systems.

Furthermore, more detailed data on plastic pollution in Indonesia's oceans are provided by the National Coordination Team for Marine Debris Management (TKN-PSL) for the period 2018 to 2022, as shown in Table 2. In addition, the trend of marine plastic waste leakage from 2018 to 2024 is illustrated in Figure 2.

Table 2. Percentage of marine plastic waste leakage

Year	Land-based Plastic Waste (t)	Sea-based Plastic Waste (t)	Total Plastic Waste (t)
2018	538,182.77	77,491.86	615,674.63
2019	518,357.16	47,717.78	566,074.94
2020	508,755.70	12,784.97	521,540.67
2021	407,217.62	32,889.08	440,106.70
2022	309,625.52	88,374.63	398,000.15

Source: National coordination team for marine debris management

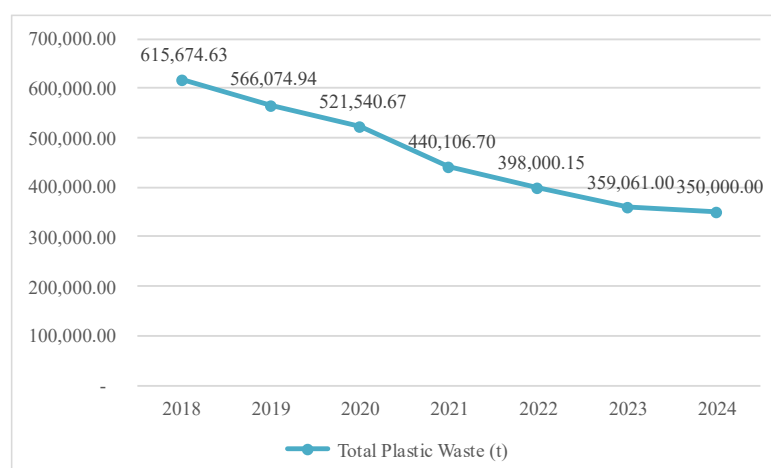


Figure 2. Marine plastic waste leakage.

Source: National coordination team for marine debris management

The data from Table 2 and Figure 2 demonstrate a consistent decline in total plastic waste leakage into the marine environment over the period 2018 to 2024. The total volume decreases from 615,674.63 t in 2018 to 398,000.15 t in 2022, and further to 350,000 t in 2024, indicating a gradual improvement in marine pollution control. In terms of sources, land-based plastic waste remains the predominant contributor, despite a notable reduction from 538,182.77 t in 2018 to 309,625.52 t in 2022. In contrast, sea-based plastic waste exhibits considerable variability, declining sharply from 77,491.86 t in 2018 to 12,784.97 t in 2020, before increasing to 88,374.63 t in 2022. Furthermore, there is a data gap regarding land-based and sea-based plastic waste for 2023 and 2024 between Table 2 and Figure 2. Therefore, to provide updated figures, this study incorporates total marine plastic waste leakage data of 359,061 t for 2023 [26] and 350,000 t for 2024 [27].

1.1.2 Potential Plastic Tax Revenue

While the government has not yet formally established a plastic tax rate through statutory regulation, Indonesia's Ministry of Finance has proposed a tax and/or excise rate of Rp200 per plastic bag, or approximately Rp30,000/kg, assuming 150 plastic bags/kg [28]. Based on this premise, the potential state revenue generated from the implementation of a plastic tax can be estimated as follows.

Table 3. Potential plastic tax revenue.

Year	Estimated Plastic Waste (t)	Single-Use Base (65%) Revenue (IDR trillion)	Total-Waste Base Revenue (IDR trillion, upper bound)	Estimated Ocean Plastic Leakage (t)	Marine-Leakage Base Revenue (IDR trillion, lower bound)
2018	-	-	-	615,674.63	18.47
2019	230,847	4.50	6.93	566,074.94	16.98
2020	3,071,880	59.90	92.16	521,540.67	15.65
2021	2,414,153	47.08	72.42	440,106.70	13.20
2022	3,472,704	67.72	104.18	398,000.15	11.94
2023	4,439,039	86.56	133.17	359,061.00	10.77
2024	7,054,293	137.56	211.63	350,000.00	10.50
2025	5,295,193	103.26	158.86	-	-

Source: Data processed by Author

The data shown in Table 3 presents plastic tax revenue projections for 2018-2025 under two scenarios. Under the single-use-adjusted scenario, projected revenue rises from approximately IDR 4.50 trillion in 2019 to a peak of IDR 137.56 trillion in 2024, before declining to IDR 103.26 trillion in 2025, tracking the same growth trajectory observed in total plastic waste generation. Under the more conservative marine-leakage-based scenario, projected revenue declines steadily from IDR 18.47 trillion in 2018 to IDR 10.50 trillion in 2024, reflecting Indonesia's gradual, if insufficient, progress in reducing ocean-bound plastic leakage. The substantial gap between the two scenarios (IDR 137.56 trillion versus IDR 10.50 trillion in 2024) illustrates the high sensitivity of revenue estimates to how the tax base is defined, and underscores the importance of a statutory single-use-plastic classification before implementation, since the choice of base, not the tax rate itself, is the dominant driver of revenue uncertainty.

Nevertheless, this estimation remains a rough approximation, as several limitations affect the application of the proposed tariff. The rate is intended to apply only to petroleum-based plastic bags made from polyethylene and polypropylene, which are characterized by slow degradation. Furthermore, the estimated plastic waste generation comprises various types of plastic waste, and there is no detailed classification available to determine the proportion of single-use plastics that would serve as the basis for the application of this tax rate. To address this gap, an upper-bound estimate is derived by applying a 65% single-use proportion adapted from sectoral plastic-use data reported by [24]. However, this proportion reflects a different national time period and plastic-type scope and has not been independently verified for Indonesia's current waste composition, so it should be treated as an approximation pending disaggregated single-use plastic data.

1.1.3 Central Government Expenditure for Environmental Protection

From year to year, the Government of Indonesia presents the realization of the State Budget (APBN). Based on this information, it is possible to examine government expenditure outcomes, particularly Central Government Expenditure by function, including allocations for environmental protection as reflected in the reported percentages and data. The estimated calculations are presented in Table 4 below.

Table 4. Central government expenditure for environmental protection

Year	Actual Government Revenue (Billion Rupiah)	Central Government Expenditure (Billion Rupiah)	CGE For Environmental Protection (%)	CGE For Environmental Protection (Billion Rupiah)
2020	1,647,783	1,683,500	18.4%	309.764
2021	2,011,347	1,954,500	0.9%	16.731
2022	2,635,843	1,944,500	0.7%	14.117
2023	2,783,930	2,246,500	0.58%	13.030
2024	2,802,294	2,467,500	0.6%	14.163
2025	2,865,502	2,701,400	0.3%	8.509

Source: Statistics of Indonesia, Ministry of finance

The data reveal a concerning trend in Indonesia's fiscal allocation for environmental protection over the 2020-2025 period. Although both actual government revenue and central government expenditure show a generally increasing trajectory, the proportion allocated to environmental protection declines significantly. In 2020, environmental protection expenditure accounted for 18.4% of central government spending, equivalent to IDR 309,764 billion. However, this proportion drops sharply to 0.9% in 2021 and continues to decline to 0.3% by 2025. In absolute terms, environmental spending decreases drastically from IDR 309.764 billion in 2020 to only IDR 8.509 billion in 2025. This indicates a substantial reduction in the prioritization of environmental protection within the national budget. The declining allocation is particularly concerning given the simultaneous rise in environmental challenges, including increasing plastic waste and pollution levels. The mismatch between growing environmental pressures and diminishing fiscal commitment suggests potential risks to the effectiveness of environmental management and sustainability efforts in Indonesia.

DISCUSSION

Indonesia's waste generation has risen sharply, peaking at 36 million t in 2024, with the share of plastic increasing to 20.5% (approximately 7 million t) and the proportion disposed into the environment climbing to 65% by 2025 [3]. However, marine plastic leakage has shown only a modest decline, from 615,674 t in 2018 to 350,000 t in 2024 [25]-[27]. Despite variations in calculation methods for plastic waste volumes, the available figures still indicate substantial amounts in the environment, particularly in marine ecosystems. This is evident in the total reduction of marine plastic waste, which reached just 41.68% in 2024 compared to the initial target of 70% in 2025 based on Presidential Regulation No. 83 of 2018 concerning marine debris management [11]. This gap reveals

that ongoing plastic leakage continues to pose a major environmental threat, with effects extending beyond ecological harm to wider socio-economic repercussions.

Marine plastic pollution does not only directly impact marine life, but also negatively affects the fishing industry, tourism, and local businesses [36]. The annual leakage of approximately 484,000 t of plastic waste from human activities into the oceans between 2018 and 2023 is also associated with estimated national losses ranging from IDR 125 trillion to IDR 225 trillion per year (approximately USD 7-15 billion), reflecting impacts across sectors such as fisheries, tourism, and public health [37]. Over a seven-year period, the cumulative economic damage is projected to exceed IDR 2,000 trillion. More specific calculations show that as the country with the second largest contribution of marine plastic waste after China at 1.3 million t, Indonesia faces losses of approximately IDR 4 billion per year due to the destruction of ocean ecosystems [38]. In addition, the fishing sector experiences severe economic impacts from marine plastic pollution across Indonesia. Severe changes on fishing grounds were recorded by litter accumulation, and fishing gear types were identified as the main component of marine litter, with debris accumulation causing negative impacts on the artisanal fishery sector [39]. In tourism sectors, the presence of marine debris can spoil the beauty of the coastal environment, which in turn leads to economic loss if the coastal area is a tourist destination [40]. A specific example from Kendari city shows that marine plastic waste has a negative effect on GDP per capita, where an increase in the amount of marine plastic waste per kilometre of beach reduces the city's GDP per capita and negatively affects the socio-economy of local communities and beach tourism visitors [41].

Therefore, a new instrument in the form of regulations is needed that can be applied to address this marine plastic pollution issue, one of the approaches that could potentially be adopted in Indonesia is the implementation of a plastic tax [42]. Such a tax belongs to the Pigouvian tax category, which aims to internalize the external costs of plastic production and consumption, thereby creating the double dividend effect actions which the tax internalises the externality (environmental dividend) while providing revenue that can be redirected to remediation (non-environmental dividend) [13], [20]. Although generally referred to as a plastic tax, if we referring to the Provisions on Taxable Goods are regulated in Law No. 39 of 2007 concerning Amendments to Law No. 11 of 1995 on Excise, the plastic tax is more appropriately classified as a plastic excise tax due to the increasingly high and excessive dependence on plastic bags, therefore, their consumption needs to be controlled [43].

Considering the plastic tax rate of Rp30,000/kg proposed by the Ministry of Finance, applying this rate to a single-use-adjusted plastic waste base could generate approximately IDR 137.56 trillion in 2024, while a more conservative estimate based strictly on documented marine plastic leakage yields approximately IDR 10.50 trillion. Both figures substantially exceed the dwindling environmental-protection allocation, which fell from 18.4% of central spending in 2020 to just 0.3% in 2025 [30]-[35]. These estimates are broadly consistent in order of magnitude with Saputra et al. [24], who estimate approximately IDR 10.05 trillion in net plastic excise revenue (after recycling-credit incentives) using a comparable single-use proportion and per-kilogram rate, and with [43], who estimates IDR 3.18 trillion using 2016 plastic bag consumption data. The convergence across these independent estimates, despite differing data years and base definitions, lends credibility to the trillion-rupiah order of magnitude, while the wide range within this study's own two scenarios highlights that the precise revenue figure remains highly sensitive to how narrowly the taxable base is defined.

Given the projected annual ocean-plastic damage of IDR 125-225 trillion [37], allocating tax proceeds to marine-conservation programs, such as blue-bond financing or coastal clean-up, could substantially offset economic losses and support biodiversity [38], [44]. In contrast to conventional bonds issued merely to fulfill government or corporate financing requirements, blue bonds represent debt instruments purposefully created to secure funding for sustainable development objectives tied to marine ecosystems, with revenue earmarked exclusively for initiatives like marine conservation, sustainable fisheries management, waste management, water pollution mitigation, and ocean habitat rehabilitation [38]. This approach aligns with strategies for financing sustainable marine management, which include market-based instruments like plastic excise duties, capable of generating substantial revenue for environmental administration and infrastructure development [28], [45]. Moreover, the implementation of such fiscal mechanisms, like taxes on ocean industry profits or payments for ecosystem services, would internalize external environmental costs and fund multi-sector ocean governance strategies [36], [47].

However, plastic tax policies often face significant implementation failures that subvert their environmental objectives. In Botswana, for instance, the plastic levy collapsed due to institutional failures, as the government could not collect revenues from business owners, prompting researchers to urge its immediate suspension amid claims it enriched a few at environmentalism's expense [48]. Across Africa, weak enforcement, coupled with stakeholder resistance and scarce viable substitutes, undermines plastic bag laws and waste management [49], resulting in policies that exist nominally but lack practical impact. Compounding these issues, inherent design shortcomings further erode the tax effectiveness, conventional taxes typically target isolated plastic items without tracing the full plastic lifecycle, yielding vast discrepancies between modelled marine waste reductions and reality (where actual declines hit just 1% of projections), while failing to address root microplastics pollution [50]. Therefore, the plastic tax must be meticulously designed from upstream to downstream to preempt potential issues that could arise at any time. Thus, Indonesia should prioritize the urgent necessity of excise duties for managing marine plastic waste, the objectives of plastic excise policies, the scope of taxable plastic products, appropriate tariff rates, and earmarking arrangements [28].

CONCLUSIONS

Fundamental Finding: This study demonstrates that Indonesia faces a severe plastic waste crisis, with annual plastic waste generation exceeding 5 million t by 2025 and 65% entering the environment. The findings further indicate that a proposed plastic excise tax of Rp30,000/kg could generate substantial revenue while internalizing pollution costs and encouraging the adoption of more sustainable alternatives. **Implication:** The results suggest that implementing a plastic excise tax, accompanied by comprehensive legislation, strong upstream-to-downstream enforcement, and earmarked funding for waste management infrastructure, marine conservation, and public awareness, could simultaneously reduce plastic pollution and strengthen environmental financing. **Limitation:** The proposed revenue estimates are based on scenario projections and policy assumptions rather than actual post-implementation evidence, meaning the realized environmental and fiscal impacts may vary depending on policy design, enforcement effectiveness, and stakeholder responses. **Future**

Research: Future research should evaluate the real-world implementation of a plastic excise tax, assess its long-term environmental and economic impacts, examine behavioral responses among producers and consumers, and compare alternative fiscal instruments for reducing plastic pollution in Indonesia.

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