



IBC
Indonesian Business Council

Building a Waste Management System that Delivers: **Institutional Reform for Circular Economy Transition in Indonesia**

by Indonesian Business Council
June 2026



This White Paper reflects the most relevant information available at the time of publication. As Indonesia's waste management and circular economy landscape continues to evolve, subsequent policy, regulatory, institutional, fiscal, or implementation developments may affect certain analyses and recommendations presented herein.

The analysis is based on desk research, official data, regulatory review, stakeholder consultations, selected city case studies, and benchmarking against domestic and international practices. While the case studies provide valuable insights into recurring challenges and reform opportunities, they are not intended to represent all cities and regencies in Indonesia.

Although the IBC Institute has made every reasonable effort to ensure the accuracy and reliability of the information presented, this White Paper does not constitute legal, financial, technical, or investment advice. Readers are encouraged to exercise their own judgment and seek appropriate professional advice where necessary before making decisions based on this publication.

Table of Contents

Glossary.....	1
List of Figures.....	4
List of Tables.....	5
List of Boxes.....	6
Executive Summary.....	7
1. The Dire State of National Waste Management.....	9
1.1 Where Indonesia's Waste Ends Up and What It Costs Us.....	9
1.2 What Indonesia Loses to Unmanaged Waste.....	10
1.2.1 Forgone Benefits of A Missing Circular Economy.....	10
1.2.2 Environmental Cost to Indonesia's Land, Water, and Air.....	12
1.2.3 Public Health Impact for Communities Bordering Landfills.....	14
2. Circle of Mistrust in Waste Management Rooted in Institutional, Service Delivery, and Implementation Challenges.....	17
2.1 Challenges in Institutional Arrangement for Waste Management.....	19
2.1.1 Existing Institutional Overlap between Regulator and Operator Weakens Waste System.....	19
2.1.2 Unprotected Revenues and The Funding Failures in Waste Management.....	21
2.1.3 Rigid Budgetary Planning System Results in Limited Operational Responsiveness.....	22
2.1.4 Capacity and Capability Gaps Preventing Meaningful Waste Reform.....	23
2.2 Challenges in Service Delivery Model for Household Waste Collection.....	24
2.2.1 Unclear Service Standards and the Accountability Gap in Household Waste Services.....	30
2.2.2 Unmet Financing Needs from Fragmented and Costly Billing for Waste Fees.....	33
2.2.3 Missing Waste Master Plan behind Fragmented Service Delivery.....	38
2.3 Challenges in Waste Policy Implementation.....	40
2.3.1 Regulatory Misalignment in Responsibility for Household Waste Collection.....	40
2.3.2 Compliance Gap Driven by Limited Enforcement Capacity and Inadequate Waste Service.....	41
2.3.3 Permendagri 7/2021 Provides A Comprehensive Framework for Waste Tariff yet Remains Challenging to Adopt.....	42
2.3.4 Limited Political Push and Weak Public Communication Constrains Waste Policy Reform.....	43
3. Turning Mistrust to Trust through Stronger Private Sector Participation in Upstream Waste Management.....	45
3.1 Choosing the Right Institutional Vehicle for Local Waste Management.....	47
3.2 Tailoring Household Waste Service Model to City Capacity.....	54
3.2.1 Service Delivery Model Options for Household Waste Collection.....	54
3.2.2 Synthesizing Institutional Arrangement and Service Delivery Model into Seven Options for Cities/Regencies.....	61
3.2.3 Leveraging Established Billing Mechanism for Effective Waste Fee Collection.....	66
3.2.4 Building Trust through Transparency and Linking Payment with Service.....	67
3.3 Strengthening Regulatory Coherence and Implementation to Close Policy Gap.....	70
3.3.1 Establishing Accountability and Enforcement through Revising PP 81/2012.....	70

3.3.2 Tying Central Government's Fiscal Support to Pemda's Achievement in Waste Reform.....	73
3.3.3 Building a National-Local Synergy on Waste through Measurable Target and Shared Wins.....	76
3.3.4 Winning Public Trust for Waste Reforms through Effective Engagement.....	78
3.4. Aligning the Waste Flow and the Money Flow.....	80
List of Reference.....	83

Glossary

No	Terminology	Definition
1	APBD	Local Government Budget/ <i>Anggaran Pendapatan dan Belanja Daerah</i>
2	APBN	Central Government Budget/ <i>Anggaran Pendapatan dan Belanja Negara</i>
3	Bappenas	National Development Planning Agency/ <i>Badan Perencanaan Pembangunan Nasional</i>
4	BLUD	Regional Public Service Body/ <i>Badan Layanan Umum Daerah</i>
5	BOD	Biological Oxygen Demand
6	BOT	Build-Operate-Transfer
7	BPJS	Social Security Administering Agency/ <i>Badan Penyelenggara Jaminan Sosial</i>
8	BPJS Kesehatan	Social Security Administering Agency for Health/ <i>Badan Penyelenggara Jaminan Sosial untuk Kesehatan</i>
9	BPS	BPS-Statistics Indonesia/ <i>Badan Pusat Statistik</i>
10	BUMD	Regionally Owned Enterprise/ <i>Badan Usaha Milik Daerah</i>
11	BUMDes	Village-Owned Enterprise/ <i>Badan Usaha Milik Desa</i>
12	CBR	Cost-Benefit Ratio
13	CH ₄	Methane
14	CO ₂	Carbon Dioxide/ <i>Karbon Dioksida</i>
15	CO ₂ e	Carbon Dioxide Equivalent/ <i>Karbon Dioksida Ekuivalen</i>
16	COD	Chemical Oxygen Demand
17	CSR	Corporate Social Responsibility
18	DID	Fiscal Benefits/ <i>Dana Insentif Daerah</i>
19	DLH	Environmental Agency/ <i>Dinas Lingkungan Hidup</i>
20	DPA	Budget Implementation Document/ <i>Dokumen Pelaksanaan Anggaran</i>
21	DPRD	Regional House of Representatives/ <i>Dewan Perwakilan Rakyat Daerah</i>
22	EPR	Extended Producer Responsibility/ <i>Kewajiban Produsen dalam Pengurangan Sampah</i>
23	GDP	Gross Domestic Product/ <i>Produk Domestik Bruto</i>

No	Terminology	Definition
24	GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
25	IBC	Indonesian Business Council
26	ILO	International Labour Organisation
27	Jakstrada	Regional Policy and Strategy/ <i>Kebijakan dan Strategi Daerah</i>
28	Kemendagri	Ministry of Home Affairs/ <i>Kementerian Dalam Negeri</i>
29	Kemenkes	Ministry of Health/ <i>Kementerian Kesehatan</i>
30	KemenLH	Ministry of Environment/ <i>Kementerian Lingkungan Hidup</i>
31	KemenPU	Ministry of Public Works/ <i>Kementerian Pekerjaan Umum</i>
32	KPIs	Key Performance Indicators
33	KSM	Community Self-Help Group/ <i>Kelompok Swadaya Masyarakat</i>
34	NEA	National Environment Agency
35	PAD	Local Revenue/ <i>Pendapatan Asli Daerah</i>
36	PDAM	Local Water Company/ <i>Perusahaan Daerah Air Minum</i>
37	PNDM	National Municipal Solid Waste Programme/ <i>Programme National des Déchets Ménagers</i>
38	Pemda	Local Government/ <i>Pemerintah Daerah</i>
39	Perbup	Regent Regulation/ <i>Peraturan Bupati</i>
40	Perda	Regional Regulation/ <i>Peraturan Daerah</i>
41	Pergub	Governor Regulation/ <i>Peraturan Gubernur</i>
42	Perkada	Head of Regional Government Regulation/ <i>Peraturan Kepala Daerah</i>
43	PermenLHK	Regulation of the Minister of Environment and Forestry/ <i>Peraturan Menteri Lingkungan Hidup dan Kehutanan</i>
44	Permendagri	Minister of Home Affairs Regulation/ <i>Peraturan Menteri Dalam Negeri</i>
45	PermenPU	Minister of Public Works Regulation/ <i>Peraturan Menteri Pekerjaan Umum</i>
46	Perpres	Presidential Regulation/ <i>Peraturan Presiden</i>
47	Perwali	Mayoral Regulation/ <i>Peraturan Walikota</i>
48	PLN	State Electricity Company/ <i>Perusahaan Listrik Negara</i>
49	PLTSa	Waste-to-Energy Power Plant/ <i>Pembangkit Listrik Tenaga Sampah</i>
50	PPP	Polluter Pays Principle

No	Terminology	Definition
51	PP	Government Regulation/ <i>Peraturan Pemerintah</i>
52	PSEL	Waste-to-Energy Plant/ <i>Pengolahan Sampah menjadi Energi Listrik</i>
53	PROs	Producer Responsibility Organizations
54	Puskesmas	Community Health Centre/ <i>Pusat Kesehatan Masyarakat</i>
55	QRIS	Quick Response Code Indonesian Standard
56	RBA	Business and Budgetary Plan/ <i>Rencana Bisnis dan Anggaran</i>
57	RDF	Refuse-Derived Fuel
58	Renstra	Strategic Plan/ <i>Rencana Strategis</i>
59	RIPS	Waste Infrastructure and Facilities Development Plan/ <i>Rencana Induk Pengembangan Sistem Persampahan</i>
60	RT	Neighborhood Association/ <i>Rukun Tetangga</i>
61	RW	Community Association/ <i>Rukun Warga</i>
62	SIPSN	National Waste Management Information System/ <i>Sistem Informasi Pengelolaan Sampah Nasional</i>
63	SWM	Solid Waste Management
64	TPA	Final disposal site/ <i>Tempat Pembuangan Akhir</i>
65	TPS	Temporary Storage Facility/ <i>Tempat Penampungan Sementara</i>
66	TPS3R	Reduce, Reuse, Recycle Waste Processing Facility/ <i>Tempat Pengolahan Sampah 3R</i>
67	TPST	Integrated Waste Processing Site/ <i>Tempat Pengolahan Sampah Terpadu</i>
68	UNDP	United Nations Development Programme
69	UPTD	Regional Technical Operating Unit/ <i>Unit Pelaksana Teknis Daerah</i>
70	WHO	World Health Organization
71	WtE	Waste-to-Energy

List of Figures

Figure 1. Cost-Benefit Ratio (CBR) of Circular Economy in Indonesia and Comparison with Other Sectors.....	11
Figure 2. Picture of joint personnel recovering a victim after the landfill slide at Integrated Waste Processing Site (Tempat Pengolahan Sampah Terpadu/TPST).....	14
Figure 3. The Cycle of Mistrust Between Society and Government on Waste.....	17
Figure 4. Disconnected Stakeholders in The Linear Economy.....	18
Figure 5. Diagram of Waste Retribution Flow With and Without Ring-Fencing.....	21
Figure 6. Waste Management Funding In Indonesia.....	24
Figure 7. Polluter Pays Principle (PPP) Implementation for Households and Commercial Actors.....	25
Figure 8. Waste Retribution by Waste Source in Jakarta (2021).....	26
Figure 9. Mayora's Circular Economy Achievements in Solid Waste and PET Recovery.....	26
Figure 10. GGF's Circular Economy Achievements in Pineapple Waste Valorization.....	27
Figure 11. IPRO Mechanism in Indonesia's Packaging Waste Ecosystem.....	28
Figure 12. Indofood EPR Roadmap.....	29
Figure 13. Indofood's Post-Consumer Packaging Achievement.....	30
Figure 14. Mechanism for Household Waste Collection in Indonesia.....	30
Figure 15. Financing Gap in the Current Waste Management System.....	34
Figure 16. Cost Recovery of Waste Retribution to Overall Waste System Cost in Indonesia.....	34
Figure 17. Benchmark of Cost Recovery in Other Countries.....	35
Figure 18. City/Regency Government Obligations for Waste Collection in PP 81/2012.....	40
Figure 19. Example of Data Input Required to Calculate Waste Retribution.....	42
Figure 20. Timeline of Jakarta's Waste Retribution Plan.....	43
Figure 21. Transforming the Waste Management Cycle of Mistrust into a Cycle of Trust.....	45
Figure 22. Transition from Linear Waste Systems to Circular Economy.....	46
Figure 23. Summary of Proposed Recommendations.....	47
Figure 24. Options for Waste Institutional Arrangement.....	49
Figure 25. Nodes and Flow in Waste System.....	54
Figure 26. Government Collection in Qena City, Egypt in 2013.....	56
Figure 27. Collection Contract in Singapore (2025).....	58
Figure 28. Waste Collection Schematics in Dar Es Salaam, Tanzania (2000s).....	60
Figure 29. Picture of Battambang's mobile application for waste billing, service reporting, GPS-based collection verification, and digital payment.....	68
Figure 30. Management Responsibility Person in Shanghai ensuring proper sorting.....	71
Figure 31. Snapshots from The City of San Diego's Environmental Services Department (ESD) website.....	79
Figure 32. Improvement in Waste Flow and Money Flow for Circular Economy.....	80

List of Tables

Table 1. Case Study in Jakarta, Bogor, and Denpasar Cities.....	31
Table 2. Denpasar Case of Tariff Differences.....	32
Table 3. Observed Common Problems of Waste Institutions and Core Principles to Resolve.....	48
Table 4. IBC Analysis on Institutional Arrangement Options.....	49
Table 5. Options for Service Delivery Model.....	55
Table 6. Pairing Institutional Arrangements and Service Delivery Models.....	61
Table 7. Service Delivery Model Options for BLUD.....	62
Table 8. Service Delivery Model Options for BUMD.....	63
Table 9. Service Delivery Model Options for Private Partnership.....	65

List of Boxes

Box 1. Morocco's Public-Private Model for Waste Management.....	20
Box 2: Success Case in Navigating the Overcoming the Limitations of Public Funds through BLUD in health sectors.....	22
Box 3. Benchmarking: How Mayora Sorts and Recycles its Non-Hazardous Solid Waste.....	26
Box 4. Benchmarking: How GGF Transforms Pineapple Waste into Value-Added Outputs.....	27
Box 5. Benchmarking: Indofood's Roadmap and EPR Initiatives on Packaging Waste Management.....	28
Box 6. Case 2: How the Accountability Gap in Jakarta's Household Waste Fee Collection Inflicts Financial Losses.....	32
Box 7. The West Bank and Gaza Benchmarking Case: Increasing Cost Recovery Through World Bank's Results-Based Financing (RBF).....	36
Box 8. France Benchmarking Case: Private EPR Contribution Amounting to 7% Financing Source...	36
Box 9. Learnings from RIPS Denpasar.....	39
Box 10. Learnings from RIPS Depok.....	39
Box 11. Case In Point: Jakarta Waste Retribution Scheme's Pushback.....	43
Box 12. Benchmarking: Partial Transformation through Waste BLUD in Jakarta.....	51
Box 13. Benchmarking: Lessons Learned from Waste BUMD in Bandung City.....	52
Box 14. Benchmarking: Success Case of Private Partnership through Waste-to-Energy Power Plant (Pembangkit Listrik Tenaga Sampah/PLTSa) Benowo in Surabaya.....	52
Box 15. Benchmarking: Lessons from Qena (Egypt)'s Centralized End-to-End Reform.....	56
Box 16. Benchmarking: How Malang Regency Leverages BLUD Model for Fiscal Flexibility and End-to-End Collection.....	57
Box 17. Benchmarking: The Singapore Model for Managing Private Sector Engagement Through Multi-Year Service Contracts and Crystal-Clear Regulatory Frameworks.....	57
Box 18. Benchmarking: Operational Pitfalls in Pekanbaru – Key Lessons on Ensuring Contractual Precision, Fiscal Readiness, and Streamlined Procurement.....	58
Box 19. Benchmarking: How Dar es Salaam (Tanzania) Mobilized Private and Community Operators, but Stumbled on Landfill Compliance.....	59
Box 20. Benchmarking: The Banyumas Model for Minimizing Municipal Fiscal Overhead as a Realistic Entry Point for Resource-Constrained Regencies.....	60
Box 21. Benchmarking: How Battambang City (Cambodia) Fix Trust Gap by Linking Payment to Proof of Service using Digital App.....	68
Box 22. Benchmarking: Designating Clear Accountability and Enforcement Ladder to Implement Waste Reform in Shanghai City (China).....	71
Box 23. Benchmarking: Providing Aid in Improving Waste Service toward Financial Sustainability in Nepal.....	74
Box 24. Benchmarking: Providing Aid Tied to Clear Improvement in Recycling Rate in Ningbo City, China.....	75
Box 25. Benchmarking: Ministry of Health's Push for BLUD Transformation in Health Sector.....	77
Box 26. Benchmarking: Effective Core Message and Public Socialization for Waste Fee Increase in San Diego City (USA).....	78

Executive Summary

Indonesia's waste crisis is felt first by the people who live closest to it. Communities bordering open dumpsites breathe contaminated air, draw water carrying leachate, and absorb the health costs of a system that does not reach them. In March 2026, a landslide at the Integrated Waste Processing Site (Tempat Pengolahan Sampah Terpadu/TPST) Bantargebang took lives. Months earlier, a waste landslide at the final disposal site (Tempat Pembuangan Akhir/TPA) Cipeucang in South Tangerang flooded nearby settlements with foul water and led residents to sue the local government. These are the visible edges of a daily burden that falls hardest on lower-income households, who are most likely to live beside failing sites and least able to avoid the consequences.

The scale behind these incidents is national. In 2025, the Ministry of Environment (Kementerian Lingkungan Hidup/KemenLH) designated 336 of 514 regencies and municipalities, around 65 percent of all regions, as being in a state of waste emergency, and of the 25.8 million tons of waste generated that year only 34.6 percent was managed through formal collection and treatment, with the remaining 16.9 million tons dumped in open sites, burned by households, or leaked into rivers, soil, and coastal waters. Against this backdrop is the core of this report, that fixing waste management is the route to a circular economy. The National Development Planning Agency (Badan Perencanaan Pembangunan Nasional/Bappenas) estimates Indonesia stands to forgo IDR 593 to 638 trillion in Gross Domestic Product (Produk Domestik Bruto/GDP) by 2030 if the transition fails, and that the same transition could create new jobs equal to around 3 percent of today's labor force. For households at the margins, a working waste system means cleaner neighborhoods, fewer health shocks, and formal jobs in collection, sorting, and recycling, so the gains reach furthest among those who currently bear the most.

What keeps this value locked away is a cycle of mistrust between society and government. Households who see sorted waste remixed, funds mismanaged, and incidents at landfill grow less willing to sort waste or pay higher retribution. Low participation is then read by the government as poor public behavior, making reform appear high-risk and low-reward, so reform is delayed to avoid controversy. Each perception reinforces the other and keeps the waste management system fragmented, underfunded, and largely linear.

IBC studied three case cities, Jakarta, Bogor, and Denpasar, benchmarked against national and international practice, and identified three core issues. The first is institutional: Local environmental agencies (DLH) simultaneously act as regulator, operator, and fee collector, with no separation of roles and no ring-fencing of revenue. Waste fees flow into the general regional budget, where they compete with education and social programs and rarely return to waste services. Budgets are rigid and approved a year in advance, leaving agencies unable to respond to operational realities.

The second is service delivery design. At the household level, which generates the majority of Indonesia's waste, collection operates through informal RT/RW arrangements with limited service standards, performance requirements, and connection to downstream waste financing. When sorted waste gets mixed during collection anyway, households lose the incentive to comply. When funds are mismanaged, trust erodes further. The third is implementation: regulations assign responsibility without mandating local action, and weak communication breeds public misunderstanding and resistance.

This creates a cycle of mistrust: households refuse to pay higher fees because they see poor service; local governments avoid reform because they see low public participation; and the system stays fragmented and underfunded as a result.

IBC proposes ten recommendations organized around three interconnected reform priorities.

The first area is institutional restructuring. Cities and regencies should transition waste operations to dedicated legal entities: BLUD (Regional Public Service Body), BUMD (Regionally Owned Enterprise), or private partnerships, chosen based on each city's fiscal capacity and political context. This separates the regulator from the operator, eliminates conflicts of interest, and enables ring-fencing of waste revenues so that fees collected are reinvested into the system rather than absorbed into the general budget.

The second area is service delivery redesign. Cities need to deliberately select a household waste collection model from three options: government collection, collection contracting, or non-government collection, based on their institutional capacity, available fleet and staffing, and the readiness of local private or community operators. Waste fees should be bundled with established billing mechanisms such as water or electricity invoices to reduce collection costs and increase compliance. Digital payment systems should be integrated to create transparent, auditable links between service delivery and fee payment.

The third area is regulatory coherence and implementation. Article 18 of PP 81/2012 should be revised to unambiguously assign household waste collection responsibility to city and regency governments, with provisions for third-party cooperation. Central government fiscal support through Dana Insentif Daerah should be tied to measurable waste reform outcomes rather than distributed without performance conditions. Local governments need technical tools, data support, and training to implement Permendagri 7/2021 on cost-based tariff calculation and to prepare RIPS waste master plans, with adoption targets embedded in the Renstra of both KemenLH and Kemendagri. Any fee reform must be accompanied by proactive public communication that explains what residents will receive in return, before the policy is finalized, not after.

These three areas are interdependent. Institutional reform without service redesign produces better governance of a still-broken service. Service redesign without regulatory backing stalls at the first political obstacle. Regulatory reform without institutional capacity produces rules that exist only on paper.

This white paper is accompanied by an implementation toolkit co-developed with local governments through workshops, providing decision trees, templates, and example KPIs that regions can apply directly.

The ultimate goal is a waste management system where waste flows and financial flows reinforce each other: better collection produces more reliable feedstock for recycling and waste-to-energy; stronger revenue collection finances better infrastructure; and households, having seen the service improve, become willing participants rather than passive bystanders. That is the foundation of a circular economy, and it starts with getting the basics right at the household level.

1

The Dire State of National Waste Management

In 2025, Indonesia generated over 25 million tons of waste.¹ However, the system responsible for managing it remains fragmented, underfunded, and in many regions, barely functional. This chapter examines the current state of Indonesia's waste management crisis and the scale of its impact. Section 1.1 presents the scope of the emergency, drawing on official data and national policy documents to outline how much waste goes unmanaged, why landfill capacity is shrinking, and what structural constraints prevent the system from keeping pace with rising waste generation. Section 1.2 traces the impact of this unmanaged waste across three dimensions to show its broad impact beyond sanitation aspect: the economic costs and missed opportunities it creates; the environmental degradation it causes across land, water, and air; and the public health burden it places on communities living near poorly managed waste sites. Together, these sections present a case to argue that waste management reform goes beyond an environmental priority, but is central to the broader development agenda.

1.1 Where Indonesia's Waste Ends Up and What It Costs Us

Two out of every three Indonesian cities and regencies are now officially living in a state of waste emergency. In 2025, the Ministry of Environment (*Kementerian Lingkungan Hidup/KemenLH*) issued Decree No. 2567, designating around 65% of Indonesia's regencies and municipalities (336 out of 514) as areas experiencing a waste crisis.²

The numbers make the crisis tangible. In 2025, Indonesia generated approximately 25.8 million tons of waste with only 8.9 million tons (34.6%) being managed through formal collection and treatment. The remaining 16.9 million tons went entirely unmanaged, either dumped in open sites, burned by households, or leaked into soil, rivers, and coastal waters. Even among waste that does reach final disposal sites, the picture remains concerning: roughly 64.8% of waste are disposed to open dumping sites, not controlled or sanitary facilities with proper landfill gas management systems.³

¹ Kementerian Lingkungan Hidup, "Sistem Informasi Pengelolaan Sampah Nasional (SIPSN)," data 2025, accessed June 20, 2026, <https://sampahnasional.kemenvh.go.id/>.

² Under the decree, regions may be classified as experiencing a waste emergency when they meet several critical conditions. These include the absence of a Final Waste Processing Facility or TPA, failure to operate waste management systems in accordance with statutory regulations, continued reliance on open dumping practices, a performance score ≤ 60 under the Adipura program, or administrative sanctions related to waste management

³ *Ibid.*

To address this emergency situation, the Indonesian government has responded with a significant policy push. Presidential Regulation (*Peraturan Presiden/Perpres*) No. 109 of 2025 on Urban Waste Management through Waste-to-Energy (WtE) Processing establishes a new national framework for addressing the crisis. WtE is chosen as the priority for the new administration to solve this waste crisis as it's able to significantly reduce the amount of waste that otherwise goes into landfill.⁴ The regulation aims to invigorate Indonesia's pursuit of WtE by appointing Indonesia's new sovereign wealth fund, Danantara, to implement the project. As of March 2026, the government has finalized plans for 30 Waste-to-Energy Plant (*Pengolahan Sampah Menjadi Energi Listrik/PSEL*) projects covering 61 districts and cities, with a combined processing capacity of approximately 14.4 million tons of waste per year.⁵

However, PSEL development is still at an early stage and is not a blanket solution to Indonesia's waste management crisis. The Minister of Environment acknowledged that PSEL would address only 13% of the country's waste emergency.⁶ While this may represent a meaningful improvement, the waste problem will continue to escalate unless upstream systems for waste generation, sorting, and transportation are also improved before waste reaches WtE plants. Without such improvement, this waste crisis could persist and has consequences beyond the waste sector. The following subsections discuss how unmanaged waste cascades harmful impacts across the economy, the environment, and public health.

1.2 What Indonesia Loses to Unmanaged Waste

1.2.1 Forgone Benefits of A Missing Circular Economy

The waste crisis described in the previous section does not stay contained within the waste sector. The most significant loss may actually be the easiest to overlook: the vast economic value that remains unrealized because Indonesia has not transformed its waste management system into a circular economy. Based on the study by National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional/Bappenas*), Indonesia stands to lose approximately IDR 593–638 trillion contribution to GDP (or equivalent to 2.3 - 2.5% of GDP) by 2030 if the circular economy fails to materialize.⁷ That figure represents resources that could have generated value through recovery, recycling, composting, or processing, but instead become a disposal burden. Moreover, a missed circular economy opportunity could also lead to Indonesia missing not only in terms of economic output, but also the multiplier effect on the economy. Bappenas estimates that the same transition to circular economy could create new jobs equal to around 3% of today's labor force⁸.

⁴ U.S. Energy Information Administration, "Waste-to-Energy (MSW) in Depth," EIA, December 28, 2022, <https://www.eia.gov/energyexplained/biomass/waste-to-energy-in-depth.php>.

⁵ Muhammad Naufal, "Menko Pangan Targetkan 30 PSEL Rampung pada 2027," *Tirto*, March 31, 2026, <https://tirto.id/menko-pangan-targetkan-30-psel-rampung-pada-2027-htuX>.

⁶ Sabrina Rhamadanty, "Proyek Waste to Energy Hanya Selesaikan 13% Masalah Sampah Indonesia," *Kontan*, January 27, 2026, <https://nasional.kontan.co.id/news/proyek-waste-to-energy-hanya-selesaikan-13-masalah-sampah-indonesia>.

⁷ Ministry of National Development Planning/Bappenas, United Nations Development Programme, and Embassy of Denmark, *The Economic, Social, and Environmental Benefits of a Circular Economy in Indonesia* (Jakarta: Bappenas, UNDP, and Embassy of Denmark, 2021).

⁸ *Ibid.*

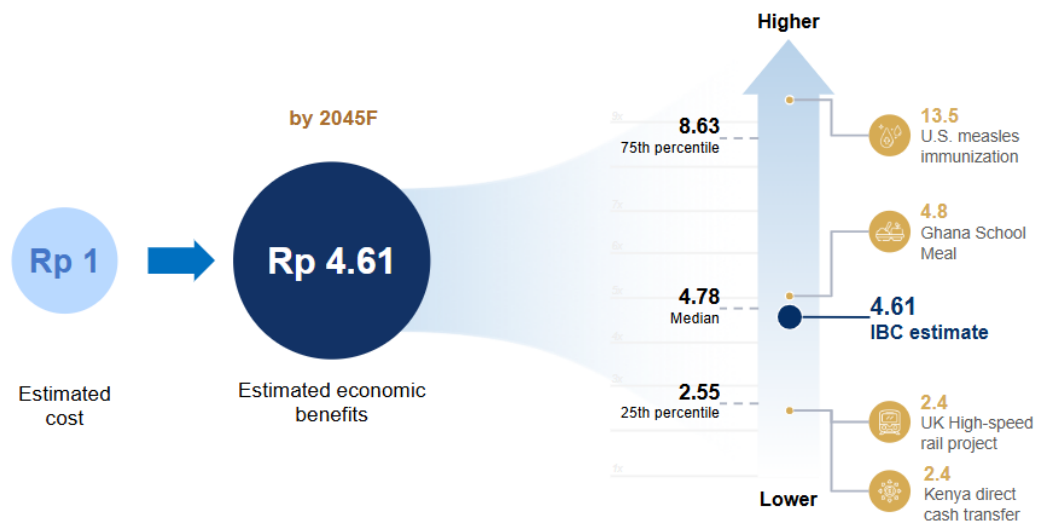


Figure 1. Cost-Benefit Ratio (CBR) of Circular Economy in Indonesia and Comparison with Other Sectors

IBC extends the analysis from Bappenas further to show the significantly more positive cost-benefit ratio for Indonesia when transitioning to a circular economy. Our analysis suggests that every Rp 1 spent on improving waste handling could generate Rp 4.61 (i.e., 4.61x larger) in economic benefits by 2045.⁹ This CBR is not a small number when we look at other public programs. For example, this is higher than high-speed rail projects in the UK at 2.4x and Kenya's direct cash transfer program at 2.4x. Although some public programs show higher CBR returns, waste reform generates benefits that are within the range of established public programs.

Furthermore, the economic case for waste reform is not only about multiplying economic benefits, it is also about reducing the fiscal costs that Pemda must bear due to poor waste management. For example when waste clogs drainage systems and triggers urban flooding, municipalities must spend on disaster response, infrastructure repair, and community support. Additionally, when landfills are poorly managed, the consequences can be severe too. Indonesia has faced this risk in recent cases. In 2025, a waste landslide at the final disposal site (*Tempat Pembuangan Akhir*/TPA) of Cipeucang in South Tangerang blocked and overflowed a nearby river, causing black, foul-smelling floodwater to enter surrounding settlements.¹⁰ As a result, residents of nearby TPA were affected, flooding occurred several times within the same week and some residents subsequently filed a class action suit against the Government of South Tangerang seeking IDR 21.6 Billion in damages.¹¹

⁹ The CBR is calculated by annualizing the expected benefits and costs based on Bappenas projected additional GDP from the circular economy, applying the social discount rate (SDR), and then converting the result into a cost-benefit ratio (CBR).

¹⁰ detikEdu, "Sampah Menggunung di Jalan Utama Tangsel, Pakar Saran Ini buat Kota Besar," December 24, 2025, <https://www.detik.com/edu/detikpedia/d-8274662/sampah-menggunung-di-jalan-utama-tangsel-pakar-saran-ini-buat-kota-besar>.

¹¹ Tim Redaksi, "Dampak Bau Sampah TPA Cipeucang, 5.000 Warga Rawabuntu Gugat BSD dan Pemkot Tangsel Rp21,6 Miliar," Koran Properti, January 29, 2026, <https://koranproperti.com/dampak-bau-sampah-tpa-cipeucang-5-000-warga-rawabuntu-gugat-bsd-dan-pemkot-tangsel-rp216-miliar/>.

Similar cases have also occurred in other countries. The Koshe landfill collapse in Ethiopia in 2017 claimed 116 lives and cost the city approximately USD 6.4 million in compensation and site restoration.¹² In the same year, a landfill failure in Ghazipur, India killed two people and required approximately USD 38.5 million for landfill bioremediation.¹³ When landfills are not properly managed, local government (i.e. Pemda) eventually has to bear the cost of emergency response, compensation, bioremediation, and site restoration. These cases show a consistent pattern in which poorly managed landfills carry risks that, when realized, become public liabilities, with governments left to cover the costs of damage and recovery.

If the circular economy policy is adopted more widely, valuable waste that ends up in landfills could instead feed recycling, composting, and material recovery industries, generating fiscal revenues that Pemda in Indonesia are currently missing out on. In the United States, for example, the recycling industry in South Carolina accounted for 2.1% of all state and local taxes collected in 2014, more than three times the 0.7% average share of Indonesian provincial budgets allocated to waste management. Meanwhile, the township of South Brunswick cut its waste disposal bill by half after introducing a recycling program, with recycling costing 60% less per ton than landfill disposal.¹⁴ Together, these examples show that a stronger circular economy could both lower disposal costs and generate new revenue streams for local governments.

1.2.2 Environmental Cost to Indonesia's Land, Water, and Air

One of the most direct consequences of unmanaged waste that can be felt immediately is the damage it lays on the natural environment. This degradation occurs through several pathways, including through leachate generation from waste piles, plastic leakage into rivers and oceans, illegal burning leading to air pollution, and methane release from decomposing organic waste.

The first pathway runs underground. When waste sits in open dumping waste disposal sites, rainwater filters through it and picks up a toxic brew of dissolved chemicals, creating a liquid called leachate. That leachate seeps into the soil and groundwater below, carrying heavy metals, microplastics shed by fragmenting plastic, and other contaminants into the water that nearby communities and ecosystems depend on. The impact of ground and soil pollution can already be seen with examples in Pekanbaru and Semarang landfills. The inspection in these sites show Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) levels more than 5–12 times and 10–11 times above recommended thresholds, respectively.¹⁵ This situation leads to harm to the ecosystem by depriving animals and plants of oxygen.

The second pathway flows out to the sea. Mismanaged waste also pollutes rivers, which transports debris and plastic into the ocean. Globally, poor waste separation contributes to an estimated 1.29 million tons of plastic waste into the ocean each year¹⁶, and Indonesia alone accounts for roughly a quarter of these (around 346,500 tons of plastic waste leakage into the ocean annually).¹⁷ The harm runs deeper than visible debris, with marine pollution from mismanaged waste also damaging coral reefs, mangroves, and the coastal biodiversity that fishing communities rely on.

¹² Salem Solomon, "Ethiopia Trash Landslide Victims Receive Compensation," Voice of America, June 14, 2017, <https://www.voanews.com/a/ethiopia-trash-landslide-victims-receive-compensation/3897309.html>.

¹³ Press Trust of India, "Ghazipur Landfill Collapse: NGT Raps Delhi Govt, EDMC for Deaths," Business Standard, September 4, 2017, <https://www.ndtv.com/delhi-news/green-court-raps-delhi-government-over-ghazipur-landfill-collapse-1745767>.

¹⁴ Eco-Cycle, 2024–2025 Annual Report (Boulder, CO: Eco-Cycle, 2025), https://ecocycle.org/content/uploads/2024/11/2025-Eco-Cycle-Annual-report_web_final.pdf.

¹⁵ N. Emalya et al., "Landfill Leachate Management in Indonesia: A Review," IOP Conference Series: Materials Science and Engineering 845, no. 1 (2020): 012032, <https://doi.org/10.1088/1757-899X/845/1/012032>.

¹⁶ Jenna R. Jambeck et al., "Plastic Waste Inputs from Land into the Ocean," Science 347, no. 6223 (2015): 768–71, <https://doi.org/10.1126/science.1260352>.

¹⁷ Gina Sari et al., "Microplastics Contamination in the Aquatic Environment of Indonesia: A Comprehensive Review," Journal of Ecological Engineering 22, no. 10 (2021): 127–40, <https://doi.org/10.12911/22998993/142118>.

Furthermore, the impact of waste on water systems can also be seen through urban flooding. When uncollected garbage clogs drains and waterways, rainwater has nowhere to go. The September 2025 flood in Jakarta shows how unmanaged waste can worsen drainage problems. The flood claimed at least 9 lives and displaced more than 90,000 people from their homes.¹⁸ DKI Jakarta Governor Pramono Anung identified waste accumulation as one of the main causes of Jakarta's flood disaster.

“The local flooding is caused by waste accumulation and insufficient maintenance within Jakarta itself.”

Pramono Anung
DKI Jakarta Governor

Finally the third pathway through which unmanaged waste causes harm is the degradation of air quality. This often happens when households burn waste due to limited collection services. Around 48% of households reportedly burn waste.¹⁹ This practice releases toxic emissions above the World Health Organization (WHO) limits and contributes to methane release into the atmosphere. A recent case in Tangerang Regency illustrates the public health impact of air pollution from waste burning. More than 3,600 acute respiratory infection cases were recorded in Sindang Jaya District between January and September 2025, with air pollution from illegal waste burning identified as one contributing factor.²⁰

Finally, the environmental impact extends to the climate. Open dumpsites and landfills without gas recovery systems allow methane to be released into the atmosphere freely as organic waste decomposes. Methane (CH₄) is extremely bad for the climate, since it traps heat around 80 times more strongly than carbon dioxide (CO₂).²¹ Unfortunately, Indonesia's waste sector is its single largest source of methane emissions. In 2023, Indonesia's waste sector emitted methane around 141 million tons of carbon dioxide equivalent (CO₂e), largely driven by the fact that 55% of Indonesian landfills still operate as open dump sites without gas recovery systems.²² This showcases that the environmental impact of waste mismanagement extends beyond direct environmental conditions.

To counteract methane emissions from open dumping requires Indonesia to shift toward sanitary landfills. Sanitary landfills minimise methane emission through two layers of operations, by systematically filling waste in cells and covering it with soil (as opposed to open dumping without cover) and through methane gas capture system. However, these sanitary landfills are costly to build. As a part of helping finance final waste disposal infrastructure, innovative financing mechanisms, such as carbon credits, can help offset part of this burden by turning methane reduction into a monetizable environmental benefit. For example, Morocco offers a useful precedent. With support from the World Bank, the country upgraded landfill management systems to capture landfill gas and convert it into electricity. By 2020, this program had generated around 1 million carbon credits, showing that landfill reform can create economic value. Morocco's experience offers a relevant benchmark for Indonesia, particularly as the country targets a full transition to sanitary landfills by 2030. If this transition is achieved, IBC estimates that methane reductions from improved landfill management could generate around IDR 45.1 trillion per year. This value is notable because it could help justify and potentially support the high cost of transitioning from open dumping to sanitary landfill systems.²³

¹⁸ TV One News, “Pramono Sebut Jakarta Banjir Karena Sampah, Begini Kondisi Sampah di Pintu Air Manggarai,” September 18, 2025, <https://www.tvonenews.com/berita/nasional/372144-pramono-sebut-jakarta-banjir-karena-sampah-begini-kondisi-sampah-di-pintu-air-manggarai>.

¹⁹ Lloyd's Register Foundation and Gallup, World Risk Poll 2024 Report: A World of Waste—Risks and Opportunities in Household Waste Management (London: Lloyd's Register Foundation, 2024), 20.

²⁰ Primayanti, “Thousands in Tangerang Suffer Respiratory Illness due to Waste Burning,” Antara News, October 5, 2025, <https://en.antaraneews.com/news/384249/thousands-in-tangerang-suffer-respiratory-illness-due-to-waste-burning>.

²¹ Climate Watch, “Methane Emissions by Sector,” Our World in Data, 2023, <https://ourworldindata.org/grapher/methane-emissions-by-sector?tab=discrete-bar&time=2023&country=~IDN>.

²² *Ibid.*

²³ Estimates are based on SIPSN 2024 data on waste disposal by landfill type (TPA/TPST). Results represent a conservative, lower-bound estimate of methane reduction potential. Economic estimates based on Europe Carbon Market Price on 17

The same pathways that damage the environment also reach the people living near them. Open dumpsites, clogged rivers, leachate-contaminated water systems, and illegal waste burning practices are often located close to communities. As a result, waste management can also escalate into a public health crisis, where lives are at cost and the most vulnerable communities bear the heaviest burden. The following section will explore these health impacts in greater detail.

1.2.3 Public Health Impact for Communities Bordering Landfills

The environmental pollution caused by unmanaged waste ultimately affects human health. Communities living near poorly managed waste sites face increased exposure to contaminated air, polluted water, and disease-causing microorganisms. When waste is not managed, its impacts quickly spread beyond the environment and into people's daily lives including their health.

Poor waste management can harm public health by contributing to respiratory illness, gastrointestinal problems, and disease outbreaks. For starters, respiratory illness is one of the most visible health risks. This can be caused by either open burning of waste releasing particulate matter and toxic gases²⁴ or open dumpsites that release bioaerosols that spread into nearby residential areas and expose communities to additional health risks.²⁵ Another potential health risk is water contamination through leachate seeping into water consumed by households using groundwater. This may cause toxic substances to be consumed and associated with long-term health issues such as gastrointestinal disease.²⁶ Lastly, poor waste management in urban cities increases risk of flooding, which carries waste and pollutants into neighborhoods, increasing the risk of disease outbreaks.²⁷



Figure 2. Picture of joint personnel recovering a victim after the landfill slide at Integrated Waste Processing Site (*Tempat Pengolahan Sampah Terpadu/TPST*) Bantargebang, Bekasi, West Java, on 9 March 2026. ANTARA FOTO/Darryl Ramadhan²⁸

December 2025. This estimate assumes a 65% reduction in methane emissions, equivalent to around 26.6 million tons of CO₂e per year and uses European carbon market prices as a valuation proxy.

²⁴ ANTARA News Banten, "Ribuan Warga Tangerang Terdampak ISPA Akibat Pembakaran Sampah," October 5, 2025, <https://banten.antaranews.com/berita/355581/ribuan-warga-tangerang-terdampak-ispa-akibat-pembakaran-sampah>.

²⁵ Rahma Dwi Safitri and Mochammad Fajar Nur, "Sampah Tangsel Menumpuk: Air Tercemar, Kesehatan Warga Terancam," Tirta, December 18, 2025, <https://tirta.id/sampah-tangsel-menumpuk-air-tercemar-kesehatan-warga-terancam-hn43>.

²⁶ Compiled from several sources: Rosmalinda et al. (2025), Nurhasanah et al. (2021), and Sulistyowati et al. (2023).

²⁷ Kompas Lestari, "Menteri LH: Krisis Pengelolaan Sampah Picu Banjir Parah di Bali," September 15, 2025, <https://lestari.kompas.com/read/2025/09/15/093000186/menteri-lh--krisis-pengelolaan-sampah-picu-banjir-parah-di-bali>; Brendan Cooper and Sarah Letsinger, The Impact of Plastic Pollution on Urban Flooding Events: Estimating the Number of People Impacted Globally, final report prepared for Tearfund (Bristol: Resource Futures, May 15, 2023), <https://res.cloudinary.com/tearfund/image/fetch/https://learn.tearfund.org/-/media/learn/resources/research-report/2023/2023-tearfund-research-report-plastic-pollution-and-flooding-full-en.pdf>.

²⁸ ANTARA FOTO, The Progress of the Search for Landslide Victims at TPST Bantargebang, photograph, March 10, 2025, <https://www.antarafoto.com/view/2747099/the-progress-of-the-search-for-landslide-victims-at-tpst-bantargebang>.

Given the scale and complexity of these potential public health impacts caused by unmanaged waste, a separate systematic assessment is needed to estimate them comprehensively. As a starting point, IBC calculated the direct treatment cost for respiratory illness as one of the most visible health problems faced by populations living near dumpsites. The estimated direct cost is approximately IDR 82–587 billion per year for respiratory illness affecting these communities.²⁹ The upper end of this range is equivalent to around 6.14% of the Social Security Administering Agency for Health (*Badan Penyelenggara Jaminan Sosial Kesehatan*/BPJS Kesehatan)'s 2024 deficit of IDR 9.56 trillion.³⁰ This figure is conservative since it captures only one health outcome, covers only populations near formal dumpsites, and excludes indirect costs such as lost productivity and reduced quality of life. Thus, the actual public health burden is almost certainly much higher. Equally important is the question of who bears this cost. Much of this cost would fall on the government as citizens now rely heavily on national health security programs covered by BPJS Kesehatan, translating the health burden into a direct fiscal cost for local and national budgets.

Taken together, the economic, environmental, and public health impacts show that Indonesia's waste crisis is not just a problem that shows up at landfills or problems for sanitation agencies only, but is a systemic challenge affecting government budgets, public health outcomes, and climate conditions. Addressing it will require an equally systemic solution, one that rethinks how waste is collected, financed, processed, and governed across the waste management system.

²⁹ IBC's estimation draws on health risk differentials benchmarked from studies in Nairobi, Dakar, and Mumbai, which found respiratory illness rates 11.4 to 45.46 percentage points higher among populations near dumpsites compared to non-exposed groups. Using SIPSN data on the locations of all final dumping sites, IBC identified approximately 3,077,378 people living within a 2-kilometer radius (with a 1-kilometer buffer). Combined with BPJS outpatient treatment costs ranging from IDR 233,000 to IDR 419,000 per visit, this produces the IDR 82 billion annual estimate. The calculation represents only one of many possible health impacts and is therefore a very conservative lower bound.

³⁰ CNN Indonesia, "Dana Jaminan Sosial Kesehatan Defisit Rp9,56 T pada 2024," February 11, 2025, <https://www.cnnindonesia.com/ekonomi/20250211135653-78-1196978/dana-jaminan-sosial-kesehatan-defisit-rp956-t-pada-2024>. The 6.1 percent figure is calculated by dividing the upper end of the estimated treatment cost range, IDR 587 billion, by BPJS Kesehatan's 2024 deficit of IDR 9.56 trillion.



2

Circle of Mistrust in Waste Management Rooted in Institutional, Service Delivery, and Implementation Challenges

Responding to the economic, environmental, and health stakes laid out in the previous chapter requires a clear focus on where reform can make the most difference. Indonesia's waste management system faces challenges across the full chain, from households to final disposal sites. These challenges persist not only because of gaps in infrastructure or regulation, but because the system is shaped by a deeper cycle of mistrust between society and government.

The Cycle of Mistrust

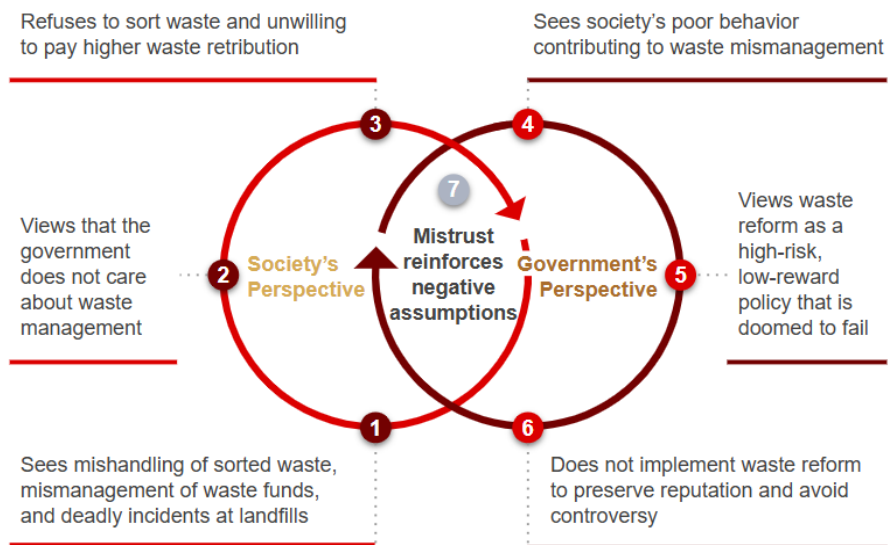


Figure 3. The Cycle of Mistrust Between Society and Government on Waste

From society's perspective, recurring issues such as mishandled sorted waste, mismanagement of waste funds, and deadly landfill incidents weaken confidence that the government is able or willing to manage waste properly. This reduces households' willingness to sort waste or pay higher waste retribution. From the government's perspective, low household participation is often interpreted as poor public behavior that makes waste reform difficult to implement. Waste reform is then viewed as high-risk and low-reward, where efforts to improve the system may still face public resistance, criticism, or limited participation. Over time, these perceptions reinforce each other as society becomes less willing to participate, while the government becomes less willing to push reform.

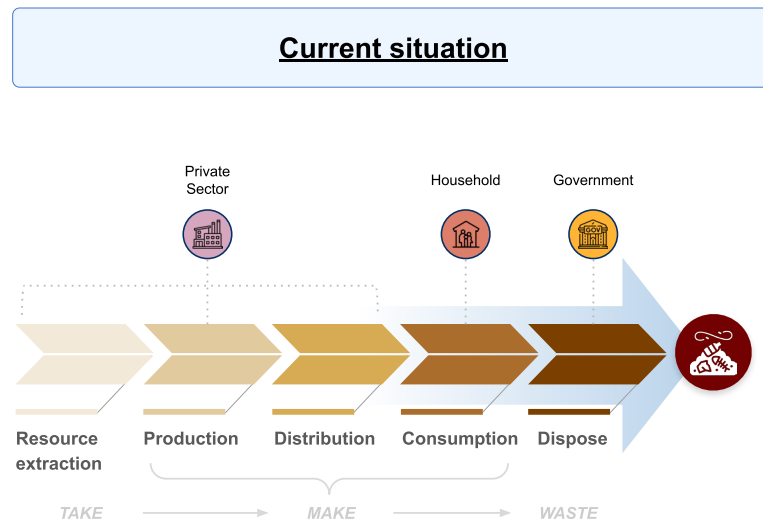


Figure 4. Disconnected Stakeholders in The Linear Economy

As reform continues to stall, this cycle of mistrust keeps Indonesia's waste system largely linear and fragmented. Across the product lifecycle, each stakeholder continues to act within a narrow and separate role. The private sector sources, produces, and distributes products for consumption; households consume and dispose of these products after use; and the government manages household waste collection, transport, and disposal. Because these roles are not connected through a shared system of responsibility, waste is treated mainly as something to be removed, rather than as value added material that can be recovered, recycled, and returned into the economy. As a result, opportunities for circular economy activities remain underdeveloped, and the transition from a linear waste system to a collaborative circular model remains limited.

IBC applied a structured four-step approach to identify which constraints matter most in shaping our situation today through: 1) mapping key issues across the waste value chain, 2) tracking progress of each issue against its target, 3) screening for the most commonly raised barriers among stakeholders, and 4) selecting those with the highest potential impact if addressed. This process points to three root causes that consistently weaken the waste management system which are institutional setup that does not support effective service delivery, service delivery model that is poorly designed, and regulatory environment with significant gaps and weak enforcement.

Building on this, the following chapter is organized into three sections. Section 2.1 examines institutional constraints that weaken accountability and limit financial and operational autonomy. Section 2.2 focuses on weaknesses in household waste collection design and service delivery standards. Section 2.3 assesses regulatory gaps and implementation challenges, highlighting how they impede full-cost waste tariff adoption and hinder effective waste policy implementation.

These findings are validated and iterated by examining waste management system issues across three cities, which are Jakarta, Bogor, and Denpasar.³¹ These case studies illuminate different conditions and challenges faced by each city to implement waste reform.

Although the three cities cannot represent overall Indonesia's waste management conditions, the insights and recommendations can be scaled up and modelled for other cities with similar economic profile (GDP per capita and poverty rate), city scale (population density and waste generation), and government capacity (local revenue capacity).

2.1 Challenges in Institutional Arrangement for Waste Management

How a city organizes its waste institutions has a direct bearing on how well its waste system performs. These institutions are responsible for delivering services, collecting and managing revenue, monitoring the end-to-end waste system, and handling citizen complaints. In Indonesia, city governments generally adopt one of three institutional arrangements: an Environmental Agency (*Dinas Lingkungan Hidup/DLH*), a Regional Technical Implementing Unit (*Unit Pelaksana Teknis Daerah/UPTD*), or a Regional Public Service Agency (*Badan Layanan Umum Daerah/BLUD*). Each arrangement comes with different levels of authority, autonomy, and capacity, which in turn influence how effectively waste services are delivered on the ground.

Today, most cities/regencies in Indonesia manage their waste through DLH or UPTD. However, this arrangement leads to three institutional design challenges: regulator–operator overlap, lack of revenue ring-fencing, and rigid budgeting processes. These constraints weaken accountability, limit reinvestment into waste services, and reduce waste management system responsiveness. Beyond these three institution design challenges, waste institutions are also generally weakened by limited capacity and an organizational culture that is not well suited to waste service delivery. Each of these issues is discussed in more detail in the following subsections.

2.1.1 Existing Institutional Overlap between Regulator and Operator Weakens Waste System

Most Pemda in Indonesia deliver waste service through DLH that performs two roles at once as both a regulator and an operator. The agency sets and monitors waste service standards, while simultaneously delivering the very same services the agency must oversee. Effective public administration requires a clean separation between the entity defining the rules and the entity executing the work. Combining these functions eliminates the necessary check and balances, ultimately institutionalizing low performance across Indonesia's regions.

“Role and functional overlap in the waste management system between operators, money collectors, and regulators weakens the ability to control, monitor, and evaluate.”
Bappenas

The consequences of regulator-operator overlap for waste service delivery are significant. Enforcement tends to weaken, as the agency directs its priorities and resources toward running operations rather than oversight measures. The current arrangement also creates an uneven playing field between government and private waste operators, ultimately risking inefficiencies in service delivery. The result is a competitive landscape that favors the government, discouraging private participation and limiting the innovation, investment, and improved service quality that broader involvement could bring to the sector.

³¹ Jakarta, Bogor, and Denpasar are the three main case cities for IBC in creating this report. However, IBC also gathered additional data and insights from other cities and regencies across Indonesia.

Existing best practices suggest that privatization effectively decouples the regulator-operator overlap, enabling the government and private sector to each play to their respective strengths. Morocco's reform shows how a public-private partnership can sharpen both operational performance and accountable oversight.

Box 1. Morocco's Public-Private Model for Waste Management

Before undergoing systemic reform, just like Indonesia, Morocco's waste institution acted as both regulator and operator. The waste collection and disposal services were underperforming and costly. By 2003, poor waste management resulted in an economic loss of around 0.5% of Morocco's GDP, among the highest levels in the Middle East and North Africa. Service coverage was also limited, with only 40% of urban residents receiving regular waste collection services. Downstream infrastructure was poorly managed as well. Around 300 open dumpsites remained operational,³² while less than 10% of waste was properly managed in sanitary landfills, indicating substantial leakage into the environment. This situation was attributed to Morocco's regulator-operator overlap, which results in unclear accountability and lack of incentive to improve service performance.

Morocco addressed this problem by reforming its waste institution setup, which splits government oversight from day-to-day waste operations. In 2006, the Moroccan government issued its first waste management law to define clearer rules, standards, and responsibilities in its waste management system. The next year, the government launched the National Municipal Solid Waste Programme (*Programme National des Déchets Ménagers/PNDM*), a 15-year reform program to upgrade Morocco's municipal waste services. Public authorities focused toward setting service standards, monitoring performance, and enforcing contracts. Meanwhile, private companies took over waste collection and landfill operations through service contracts. As a result, the Moroccan government has awarded over 120 contracts to private operators.³³

This reform dramatically improved municipal waste management outcomes in Morocco. Urban waste collection coverage rose from 40% (2008) to 96% (2022). The share of waste disposed in sanitary landfills rose from 10% to 44% by 2015. Private-sector participation also expanded, with privately operated services increasing from 44% in 2007 to 86% in 2015. Morocco's success in waste reform illustrates that service improvements are feasible, rapid, and scalable when waste waste services are professionally-managed and well-standardized, which the country achieved through decoupling the regulator-operator overlap.

³² World Bank, "Morocco: Improving Municipal Solid Waste Management through Development Policy Operations," May 22, 2013, <https://www.worldbank.org/en/results/2013/05/22/morocco-improving-municipal-solid-waste-management-through-development-policy-operations>.

³³ World Bank, "World Bank Approves New US\$250 Million Program to Strengthen Morocco's Municipal Solid Waste Management," press release, November 26, 2024, <https://www.worldbank.org/en/news/press-release/2024/11/26/world-bank-approves-new-us-250-million-program-to-strengthen-morocco-s-municipal-solid-waste-management>.

2.1.2 Unprotected Revenues and The Funding Failures in Waste Management

Indonesia's waste sector financing remains underfunded and unsustainable due to the absence of ring-fencing, a legal mechanism that would reserve waste revenue for waste services alone. Without it, the retribution collected from users flow into the general local revenue (*Pendapatan Asli Daerah/PAD*) rather than to the institution that delivers the waste service. Once the waste revenues are pooled and combined with other funds (i.e., non-waste revenues), the waste sector must compete with other sectors for the Local Government Budget (*Anggaran Pendapatan dan Belanja Daerah/APBD*) allocation.

Two problems emerge from APBD, one tied to delay in APBD approval and one tied to the insufficient waste allocation in APBD. When APBD for a city/regency is late to be approved by the Regional House of Representatives (*Dewan Perwakilan Rakyat Daerah/DPRD*), DLH cannot execute programs and spend at all. This forces agencies to scramble to find temporary solutions and, in some cases, reduce service to citizens. Beyond timing, the size of the allocation itself is often a problem. Since local executive and legislative representatives weigh competing priorities across many sectors when setting the APBD, waste tends to be overlooked in favor of more politically salient programs such as education, health and other social welfare programs. The result is a broken link between waste fees collected and the level of service that can actually be delivered.

“Ring-fencing revenue from our operation is important... if the revenue goes to PAD, it risks not being reused for our operational expenses..”

BLUD Official
DK Jakarta

Where does the money flow?

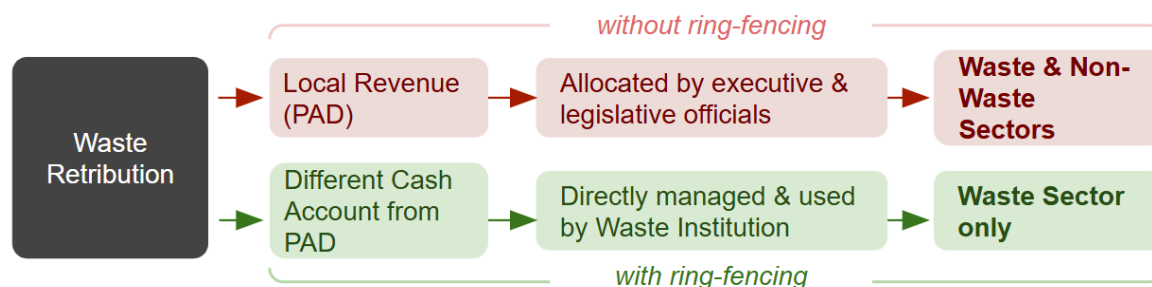


Figure 5. Diagram of Waste Retribution Flow With and Without Ring-Fencing

Transitioning to a ring-fenced financial model is essential to shield local waste revenue from municipal budget fluctuations and competing priorities. Like other public services such as water and electricity in Indonesia, where fees collected from users flow back into the service itself, the waste sector functions more effectively when retribution is collected, managed, and reinvested directly by the institution responsible for delivery. Ring-fencing enables waste institutions to use their own revenue for their operation and service improvement, insulated from the uncertainty and underfunding that come with depending on APBD allocations. In Indonesia, the BLUD model offers exactly this autonomy, and the health sector's experience with BLUD serves as a successful example.

Box 2. Success Case in Navigating the Overcoming the Limitations of Public Funds through BLUD in health sectors

The experience of regional hospitals and Community Health Center (*Pusat Kesehatan Masyarakat/Puskesmas*) in Indonesia from the health sector offers a useful parallel for understanding institutional constraints in waste management. Before gaining BLUD status, these public health facilities operated under strict public financial rules, where all revenue had to be returned to the regional government's general budget and spending could only occur after funds were disbursed through the APBD procedure. Due to this, there was a constant delay between generating revenue and its disbursement for delivering public health services. At the start of each fiscal year, when disbursement had not yet been released, facilities often faced cash flow shortages and sometimes had to rely on short-term borrowing just to maintain operations. The core issue was not revenue generation per se; it was the inability to directly access and deploy the collected revenue.

BLUD arrangement responds to this limitation by amending the authority and governance of service funds. It allowed regional hospitals and Puskesmas to retain revenues, maintain their own accounts, and directly manage both income and expenditure without going through repeated APBD approval processes. This shift meant that revenue collected in one period could immediately finance operations in the next, significantly reducing dependence on disbursement timing.³⁴ This change in structure is reflected in performance outcomes. Evidence shows that BLUD-status hospitals and Puskesmas consistently outperform non-BLUD facilities in service delivery, operational efficiency, and the ability to reinvest revenue into service improvements.³⁵

The lesson for waste management is that effective services rest on a structure that allows revenue retention and spending control. As exemplified from the health sector case, adopting the BLUD model would allow household fees to be retained and reinvested for improving the waste management system.³⁶ Granting waste management this exact financial autonomy ensures that every rupiah collected from household fees goes straight back into upgrading vehicles, processing facilities, and collection networks, thus uninterrupted by competing regional budget priorities.

2.1.3 Rigid Budgetary Planning System Results in Limited Operational Responsiveness

The APBD is approved a full year before the fiscal period it governs, meaning the budgets that DLH operate under may no longer reflect actual needs. This lag limits the ability to respond to frequent yet unforeseeable operational issues, such as fleet breakdowns or sudden surges in waste volumes. Waste volumes can rise unexpectedly during periods such as religious activities, tourism peaks, major public events, or natural disasters. Such events create sudden spikes in waste volumes, requiring additional collection trips, personnel and equipment. These needs may have not been anticipated during the annual budgeting process.

³⁴ Results for Development, "How Countries Are Overcoming Bottlenecks to Get Resources to Primary Care Providers: Experiences from Members of the Joint Learning Network for Universal Health Coverage," blog, accessed April 22, 2026, <https://r4d.org/blog/how-countries-overcoming-bottlenecks-resources-primary-care-providers-experiences-members-joint-learning-network-universal-health-coverage>.

³⁵ Fitri Handayani, Hasan Basri, and Heru Fahlevi, "Does Increasing Public Hospital Financial Autonomy Improve Performance? A Study of Indonesian Public Hospitals," *Management and Economics Review* 4, no. 1 (2019), <https://doi.org/10.24818/mer/2019.06-01>.

³⁶ World Health Organization Indonesia, "Strengthening Primary Health Care Financing through Public Financial Management Reform in Indonesia," January 26, 2026, <https://www.who.int/indonesia/news/detail/26-01-2026-strengthening-primary-health-care-financing-through-public-financial-management-reform-in-indonesia>.

Two features of the APBD process explain this rigidity. The first is how activities are planned. Programs and budget lines are set in detail well before the fiscal year begins, with little room left to revise them once approved. This forces DLH to commit to specific spending plans long before they know what operational conditions will look like, leaving them with limited ability to adapt as service needs evolve during the year.

*“Business and Budgetary Plan (Rencana Bisnis dan Anggaran/RBA) planning follows the APBD cycle because it is embedded in the Budget Implementation Document (Dokumen Pelaksanaan Anggaran/DPA). As a result, **spending flexibility becomes rigid** which must be planned from the start of the year.*

DLH Official
DK Jakarta

The second is the narrow window for budget adjustments. The APBD allows only one revision cycle each year, between August and October³⁷ sharply limiting when agencies can respond to changing conditions. In addition, adjustments also depend on leftover funds from unexecuted projects, and the amount available is often unpredictable. Furthermore, securing approval to reallocate these funds adds another layer of uncertainty leaving DLH and UPTD unable to rely on the mechanism for planning.

2.1.4 Capacity and Capability Gaps Preventing Meaningful Waste Reform

On top of the three design challenges discussed in preceding sections, local waste institutions are further constrained by insufficient capacity and misaligned capabilities to support effective waste service delivery. Delivering waste services end-to-end requires a large workforce across multiple functions. However many government waste agencies remain understaffed. As a result, they struggle to maintain existing services, with little bandwidth left to improve them. Makassar's example makes this point, as the city government delegated the role of providing 1.5 million residents of household waste collection services to subdistrict offices.

“Ten years ago, we delegated the responsibility to the subdistrict level. We provided the infrastructure and equipment to the subdistrict authorities ... our city had around 1.5 million citizens; we struggled serving so many of them, so it's better to delegate ... DLH is limited, and we do not have the human resources.”

Pemda Official
DLH Makassar

Beyond workforce size, capability is the second half of the challenge. There is a mismatch between what good waste management demands and the capabilities available within these agencies. Delivering effective waste services demands skills in areas such as technical service operations, customer-oriented mindsets, and even business or financial skillsets. These skills are largely missing from most civil servants who are trained primarily for administrative functions. This capability gap becomes especially visible when reform requires building support across stakeholders, including DPRD, where waste agencies often struggle to make a convincing case.

Overall, waste institutions are short on both people and the right skills. Without enough people to run existing services, agencies have little bandwidth left to engage stakeholders, develop proper planning,

³⁷ Kementerian Dalam Negeri Republik Indonesia, Peraturan Menteri Dalam Negeri Nomor 14 Tahun 2025 tentang Pedoman Penyusunan Anggaran Pendapatan dan Belanja Daerah Tahun Anggaran 2026, 2025, <https://peraturan.bpk.go.id/Details/331189/permendagri-no-14-tahun-2025>.

or see implementation through. The skills needed to drive service improvement, from operations to financial management, are rarely the ones civil servants are trained for. Together, these capacity and capability gaps leave the institutions most in need of strengthening to be least equipped to lead it, and meaningful waste reform will require deliberate investment in the people running these institutions.

2.2 Challenges in Service Delivery Model for Household Waste Collection

A reliable waste service delivery model ultimately depends on a sustainable financing system. Without stable and predictable funding, Pemda faces difficulties in maintaining regular collection, investing in infrastructure, and ensuring service quality across the waste chain. Existing literature, including the World Bank's What a Waste 3.0 report, recognizes that waste systems are typically financed through a combination of public and user-based sources. However, there is no global benchmark that prescribes the ideal financing burden borne by each stakeholder. Rather, financing arrangements tend to vary depending on local institutional capacity, service models, and fiscal conditions.

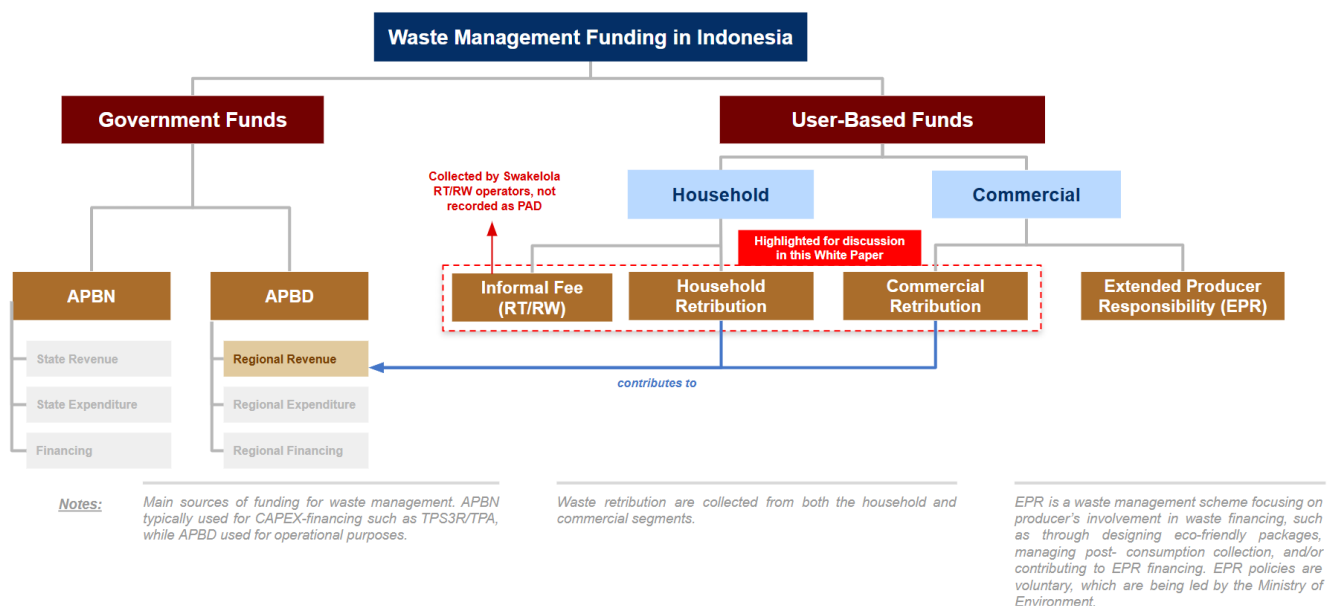


Figure 6. Waste Management Funding In Indonesia

In Indonesia, waste management financing broadly comes from two main sources: government funds and user-based funds (Figure 6). Government financing mainly flows through the Central Government Budget (*Anggaran Pendapatan dan Belanja Negara/APBN*) and APBD. APBN typically finances capital-intensive infrastructure such as the reduce, reuse, recycle waste processing facility (*Tempat Pengolahan Sampah 3R/TPS3R*), integrated waste processing site (*Tempat Pengolahan Sampah Terpadu/TPST*), and TPA development, while APBD primarily supports day-to-day operational expenditures. One of the sources of APBD revenue is waste retribution from household and commercial generators. Currently, what happens instead is that many households pay informal RT/RW fees for their waste to be collected. The issue is that these fees do not enter PAD because they are managed by *swakelola* RT/RW operators. This gap between household payments and formal government revenue is one of the key issues this study aims to discuss.

The allocation of financing responsibilities to household and commercial fields is grounded in the Polluter Pays Principle (PPP) (see Figure 7). This principle holds that every waste producer, from households generating waste or commercial producers whose products or packaging eventually become waste, should bear the costs of managing their environmental impacts. Ideally, these contributions should cover the full service chain, from collection and sorting to treatment, recycling,

and safe disposal.³⁸ Under this principle, waste fees should be sufficient, fair and transparent, linked to the amount or type of waste generated and the level of service received, and sufficient to support the end-to-end waste management system. Aside from waste fees for household and commercial, commercial actors are also contributing to waste financing through EPR mechanism.

PPP can manifest in different models for both households and commercials

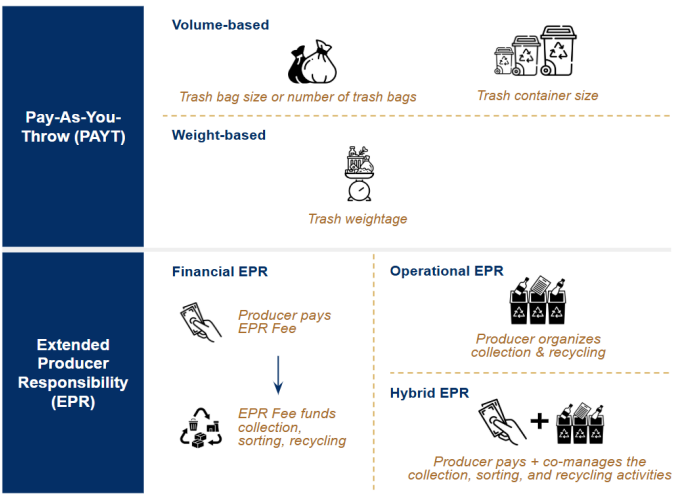


Figure 7. Polluter Pays Principle (PPP) Implementation for Households and Commercial Actors

In current practice in Indonesia, the commercial segment, such as hotels, malls, offices, and industrial facilities, is already more comprehensively integrated into waste financing than households. Formal mechanisms exist through local retribution, where municipal waste fees can be collected by local governments or appointed third-party operators. These fees are easier to link to business size, business type, or estimated waste volume, creating a clearer relationship between waste generated and fees paid. Commercial users are also generally perceived to have greater ability to pay than households. This is reflected in DKI Jakarta as seen in Figure 8, where industrial and commercial waste accounted for approximately 85% of the province's waste retribution revenue in 2021, demonstrating the significant role of non-household users in supporting local waste service financing.³⁹

³⁸ Delia Sanchez Trancon and Xavier Leflaive, The Implementation of the Polluter Pays Principle in the Context of the Water Framework Directive, OECD Environment Working Papers no. 238 (Paris: OECD Publishing, 2024), <https://doi.org/10.1787/699601fc-en>.

³⁹ Dinas Lingkungan Hidup Provinsi DKI Jakarta, Laporan Akhir Penyusunan Kajian Skema Pembiayaan Pengelolaan Sampah Tahun 2022 (Jakarta: Dinas Lingkungan Hidup Provinsi DKI Jakarta, 2022).

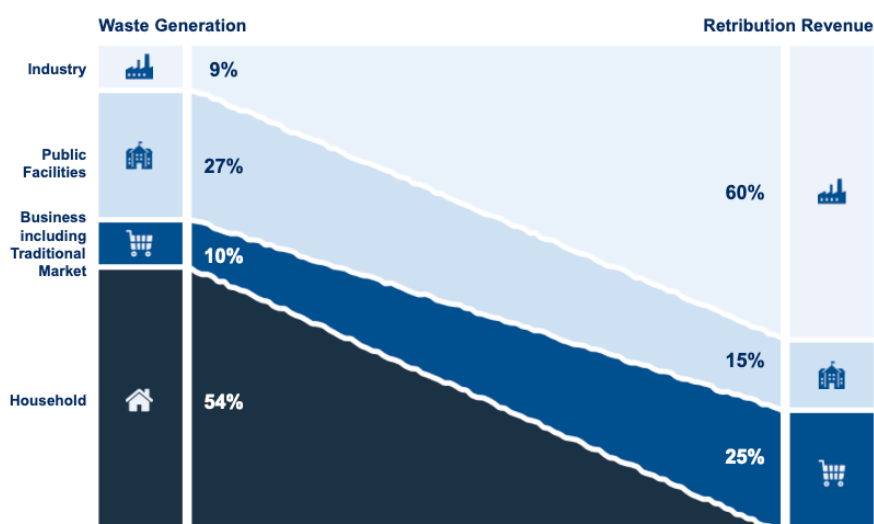


Figure 8. Waste Retribution by Waste Source in Jakarta (2021)

Beyond contributing through waste retribution, private sectors in Indonesia also contributed through several initiatives in waste management. Local champions such as Mayora and Great Giant Foods (GGF) have introduced measures across the product lifecycle, including reducing packaging use, managing post-consumer packaging waste, improving waste segregation at production facilities, and converting recoverable waste into compost or recycled materials. The following benchmarks highlight selected examples of domestic companies' contributions to waste management efforts.

Box 3. Benchmarking: How Mayora Sorts and Recycles its Non-Hazardous Solid Waste

Mayora demonstrates an integrated circular waste management model for combining site-level waste handling with post-consumer PET circularity. Within its company sites, waste generated from operations is sorted through temporary storage and handled based on waste type, with economic waste directed to licensed third parties or recycling and reuse facilities, organic fractions processed into compost, residual waste sent to final disposal, and hazardous waste managed through licensed B3 service providers. Beyond its operations, Mayora supports PET bottle recovery through Le Minerale's *Gerakan Ekonomi Sirkular Nasional* (GESN), where used PET bottles are sorted at household level, collected by formal and informal collectors, transported to the recycling facility, and processed into food-grade recycled PET resin for new packaging or other plastic products.⁴⁰ The results show that Mayora's approach links internal waste management with downstream recycling infrastructure, reflected in 682 tons of solid waste composted in 2025 and a PET recycling capacity of 22,000 tons per year as of 2023.⁴¹



Figure 9. Mayora's Circular Economy Achievements in Solid Waste and PET Recovery

⁴⁰ KumparanBISNIS, "Mayora Group Resmikan Pabrik Daur Ulang PET Berteknologi Food Grade," Kumparan, February 9, 2023, accessed June 11, 2026, <https://kumparan.com/kumparanbisnis/mayora-group-resmikan-pabrik-daur-ulang-pet-berteknologi-food-grade-1zne9zMSkRu>.

⁴¹ PT Mayora Indah Tbk, Laporan Keberlanjutan 2025/Sustainability Report 2025 (Jakarta: PT Mayora Indah Tbk, 2026), accessed June 11, 2026, <https://www.mayoraindah.co.id/assets/upload/file/sr-mayora-2025-30042026-03.pdf>.

Box 4. Benchmarking: How GGF Transforms Pineapple Waste into Value-Added Outputs

Great Giant Foods (GGF) operates a plantation-based closed-loop circular system that converts agricultural by-products into multiple downstream products within its integrated estate by preventing food waste from entering landfills through its connected food production and waste processing estate. In this model, pineapple by-products from plantation and processing activities are redirected into value-added uses, including bromelain enzyme production for health supplement inputs, fiber processing for textile materials, compost and fertilizer production, cattle feed, biogas for power generation, and liquid organic biofertilizer. The system shows what success looks like in practice: waste is not treated as residual material for disposal, but becomes input for energy, agriculture, livestock, fertilizer, and downstream manufacturing. In 2024, GGF's circular economy initiatives reduced food waste sent to landfill by 48%, while 100% of non-hazardous solid waste was diverted from disposal sites by recycling it into cattle feed.⁴²

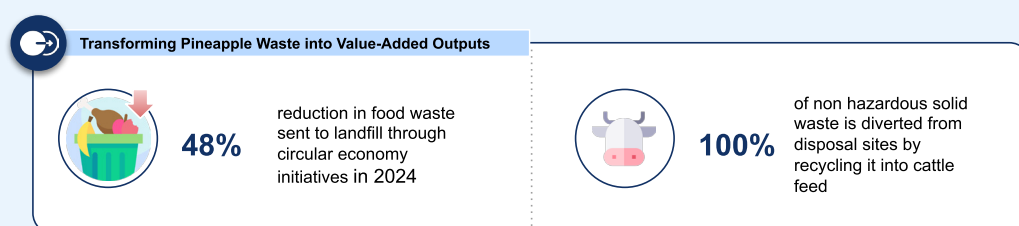


Figure 10. GGF's Circular Economy Achievements in Pineapple Waste Valorization

Furthermore, producers whose products or packaging become waste after consumption could contribute through EPR scheme. Under Regulation of the Minister of Environment and Forestry (*Peraturan Menteri Lingkungan Hidup dan Kehutanan/PermenLHK*) No. 75/2019, relevant producers are required to develop and implement waste reduction roadmaps toward a 30% reduction target by 2029.⁴³ This may involve redesigning packaging, developing long-term waste reduction plans, and collaborating with Producer Responsibility Organizations (PROs) to recover and recycle post-consumer waste.

Commercial waste producer participation under this framework is progressing. By the end of 2025, 26 companies had submitted their waste reduction roadmaps to the Ministry of Environment, while others were finalizing their roadmaps based on the ministry's feedback.⁴⁴ The latest reporting indicates that these companies have begun implementing their roadmaps and submit quarterly progress reports on achieved waste reduction, although broader EPR participation remains limited relative to the wider producer base covered by the regulation.⁴⁵

⁴² PT Great Giant Pineapple, Sustainability Report 2023–2024 (Lampung: Great Giant Foods, 2025), accessed June 11, 2026, https://www.greatgiantfoods.com/wp-content/uploads/2025/08/SR-GGP-2023-2024-ENG_vPublished.pdf.

⁴³ GIZ, Handbook FAQ of Ministry of Environment and Forestry Regulation No. P.75/2019 concerning the Roadmap for Waste Reduction by Producers (Bonn: GIZ, 2023), <https://www.giz.de/en/downloads/giz-en-handbook-faq-of-MoEF-regulation-P75.pdf>.

⁴⁴ JPNN.com, "Dukung EPR, KLH Sarankan Industri AMDK Ganti Labeling Kemasan dengan Metode Emboss," February 6, 2026, <https://www.jpnn.com/news/dukung-epr-klh-sarankan-industri-amdk-ganti-labeling-kemasan-dengan-metode-emboss>.

⁴⁵ ANTARA News, "KLH Ingatkan Produsen Segera Susun Peta Jalan Pengurangan Sampah," February 25, 2025, accessed June 11, 2026, <https://www.antaranews.com/berita/4673449/klh-ingatkan-produsen-segera-susun-peta-jalan-pengurangan-sampah>.

Effective EPR implementation requires a collective mechanism that connects producers with the wider post-consumer packaging recovery ecosystem. In Indonesia, this role is reflected through the Indonesia Packaging Recovery Organisation (IPRO), which was established in August 2020 under the initiative of the Packaging and Recycling Association for Indonesia Sustainable Environment (PRAISE). Through IPRO, companies can channel their EPR efforts through a specialized platform with established recovery networks, technical capacity, and verification mechanisms, while still retaining responsibility for achieving their packaging waste reduction commitments.

As shown in Figure 11, IPRO acts as an intermediary between producers and recovery actors by linking material flows, producer obligations, and financial incentives. Through this mechanism, post-consumer packaging moves from consumers to collectors, waste banks, aggregators, TPST3R facilities, and recyclers, while producers channel their EPR responsibilities through IPRO. IPRO then supports the collection and recycling process, verifies recovery outcomes, and directs financial support to eligible recovery actors based on documented collection or recycling activities.



Figure 11. IPRO Mechanism in Indonesia's Packaging Waste Ecosystem⁴⁶

While EPR implementation in Indonesia is still in its early phase, several companies have already achieved substantial progress. These efforts include Indofood's initiatives to redesign packaging and manage post-consumption packaging, helping to minimize the environmental impact of its products.

Box 5. Benchmarking: Indofood's Roadmap and EPR Initiatives on Packaging Waste Management

Indofood provides a domestic benchmark for producer-led packaging and plastic waste management across the value chain. Since 2021, the company has sought to reduce post-consumer packaging waste through upstream improvements in packaging design, material development, production processes, and delivery systems. These initiatives include reducing packaging size and weight, developing recyclable and mono-material flexible packaging, upgrading production technology to reduce reliance on virgin plastics, and shifting to bulk delivery systems to reduce the use of plastic bags. Together, these measures show how waste prevention can begin before products reach consumers.

⁴⁶ Indonesia Packaging Recovery Organization, "Program," IPRO, accessed June 10, 2026, <https://indonesiapro.org/program>.

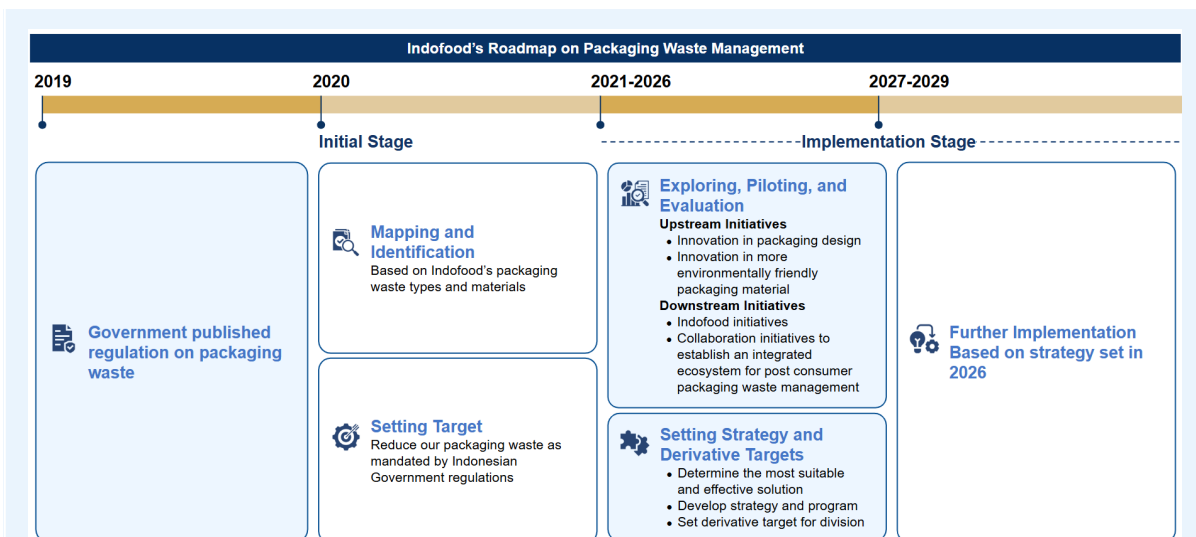


Figure 12. Indofood EPR Roadmap⁴⁷

As shown in Figure 12, Indofood's EPR roadmap is designed as a phased transition from regulatory response to broader implementation. Following the issuance of Indonesia's packaging waste regulation in 2019, Indofood began in 2020 by mapping its packaging waste types and materials, then setting waste reduction targets in line with government requirements. The 2021–2026 implementation stage focuses on exploration, pilot activities, and evaluation, covering both upstream packaging design innovation and downstream post-consumer packaging waste management. By 2027–2029, Indofood plans to scale implementation based on the strategy developed in 2026, indicating that its EPR approach is built on internal data mapping, target-setting, pilot testing, and gradual expansion.⁴⁸

Moving from roadmap to implementation, Indofood has started initiatives to manage packaging and plastic waste across the value chain by combining upstream waste prevention with downstream recovery initiatives. Since 2021, the company has reduced packaging impact through packaging redesign, recyclable and mono-material packaging development, production technology upgrades, and bulk delivery systems that reduce plastic bag use. These upstream efforts are also reflected in its use of recycled and certified paper materials, including 100% recycled paper for all internally produced cartons and certified paper for corrugated packaging.

At the downstream level, Indofood complements these measures with post-consumer initiatives such as community-based waste banks, Green Warmindo, drop box collection points, and collaboration with recyclers, aggregators, TPS3R, NGOs, PRAISE, IPRO, and other partners. In practice, this means waste is sorted at community or MSME level, deposited through drop boxes or waste banks, collected by aggregators, and directed to recycling facilities or final disposal.

⁴⁷ PT Indofood Sukses Makmur Tbk, Sustainability Report 2025 (Jakarta: Indofood, 2026), accessed June 10, 2026, <https://www.indofood.com/uploads/file/SR%20ISM%202025.pdf>.

⁴⁸ *Ibid.*

The results show that Indofood's approach has moved beyond CSR into operational waste management, with more than 7,500 tons of packaging waste avoided since 2020, 76 waste bank partners across 16 provinces, and 78% of post-production plastic waste, equivalent to more than 12,500 tons, managed with collectors and delivered to the recycling industry.

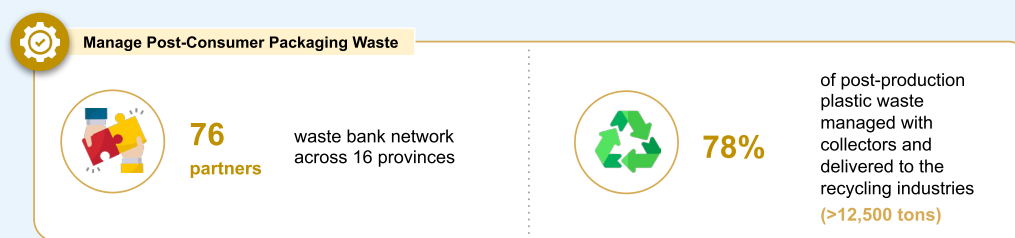


Figure 13. Indofood's Post-Consumer Packaging Achievement

Collectively, these case studies show that EPR becomes more effective when packaging recovery is embedded into the producer's business model, rather than treated as a standalone CSR activity. Indofood demonstrates multi-material recovery through IPRO's verified partner network. These examples indicate that private-sector participation can contribute to waste management when producer obligations are connected to actual collection, verified recovery data, recycling capacity, and circular material reintegration into the packaging value chain.

Producer-led initiatives address only part of the waste financing picture. They cover the waste that comes from products and packaging, but they do not address the much larger challenge of household waste, which still depends on informal arrangements at the RT/RW level. Producers are increasingly operating under clear obligations and recovery targets, while household collection continues to vary widely in how it is priced, billed, and delivered. The next section turns to these challenges on the household side.

2.2.1 Unclear Service Standards and the Accountability Gap in Household Waste Services

Household waste collection in Indonesia largely operates at the Neighborhood Association (*Rukun Tetangga*/RT)/Community Association (*Rukun Warga*/RW) level that collects waste from households and organizes transport to TPS/TPS3R. Under the current household waste collection mechanism (Figure 14), RT/RW committees organize collection from households, most commonly by engaging community-based operators, though private operators or direct collection are also used in some areas. Households pay a monthly fee to RT/RW for that service, and the collected waste is later brought to TPS or TPS3R by the operator before moving further down the waste chain. This arrangement, however, operates without clear technical standards or performance requirements governing how service should be delivered.

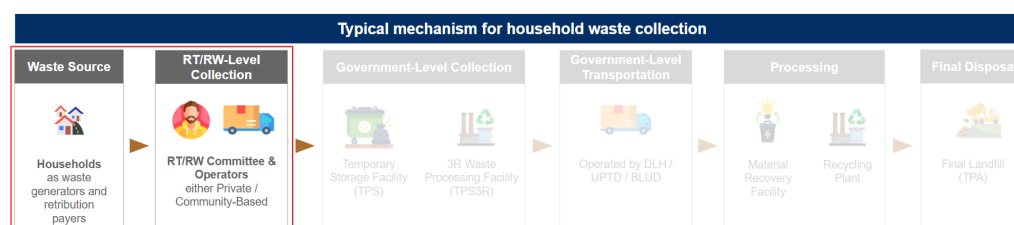


Figure 14. Mechanism for Household Waste Collection in Indonesia

Across the three case study cities of Jakarta, Bogor, and Denpasar, regulations assigning collection responsibilities to RT/RW generally do not specify operational standards, such as collection frequency, required facilities, or service performance requirements for operators. The table below shows how these regulatory gaps appear across the three cities.

Table 1. Case Study in Jakarta, Bogor, and Denpasar Cities

	Jakarta Provincial Government	Bogor City Government	Denpasar City Government
Division of Responsibility for Household Waste Collection	Regional Regulation (<i>Peraturan Daerah/Perda</i>) 3/2013 on Waste Management⁴⁹ Article 29 (1): Waste collection from household to TPS is the responsibility of waste manager at RW level appointed by RW committee	Perda 9/2012 on Waste Management⁵⁰ Article 16 (1) a: transport of household waste from source to TPS/TPST is the responsibility of waste manager institution organized by RT/RW	Perda 8/2023 on Waste Management⁵¹ Article 18: Waste collection are done by area managers, Village/<i>Kelurahan</i> Government, business, and City Government
KPI for Household Waste Collection (e.g. frequency, facilities, etc)	Perda 3/2013 stipulates that waste collection in households has to be done every day for organic waste and at least twice a week for inorganics. However, the requirement above does not appear in implementing regulations such as in Governor Regulation (<i>Peraturan Gubernur/Pergub</i>) 77/2020 (RW-level Waste Management) or in Pergub 95/2021 (Technical Standards for Waste Management Facilities)	Perda 9/2012 does not mention any KPI and requirement for waste collection Furthermore, none of the implementing regulations provide any stipulation on technical requirements for waste transportation by RT/RW	Perda 8/2023 does not stipulate technical KPIs for waste collection, but does include such KPIs for transportation (e.g. collection of organic and inorganic waste on different days of the week. However, implementing regulations such as Mayoral Regulation (<i>Peraturan Walikota/ Perwali</i>) 15/2023 on Culture-based Waste Management does not mention similar requirements. Technical requirements also unavailable in the Perwali's section on village/banjar waste management

⁴⁹ Pemerintah Provinsi Daerah Khusus Ibukota Jakarta, Peraturan Daerah Nomor 3 Tahun 2013 tentang Pengelolaan Sampah, June 11, 2013, <https://pelayanan.jakarta.go.id/download/regulasi/peraturan-daerah-nomor-3-tahun-2013-tentang-pengelolaan-sampah.pdf>.

⁵⁰ Pemerintah Kota Bogor, Peraturan Daerah Kota Bogor Nomor 9 Tahun 2012 tentang Pengelolaan Sampah, October 10, 2012, <https://peraturan.bpk.go.id/Details/207274/perda-kota-bogor-no-9-tahun-2012>.

⁵¹ Pemerintah Kota Denpasar, Peraturan Daerah Kota Denpasar Nomor 8 Tahun 2023 tentang Penyelenggaraan Pengelolaan Sampah, December 27, 2023, <https://peraturan.go.id/id/perda-kota-denpasar-no-8-tahun-2023>.

As shown in Table 1, responsibilities are formally assigned across different levels of government, but the specifics of how services should be delivered and how operator performance should be measured through KPIs are left undefined. This gap between formal rules and practical guidance creates three problems. The first issue is tariffs varying widely without a consistent basis (Table 2), leading households in different areas to pay very different amounts for the same service. This difference can lead to outcomes which are often perceived as unfair. In Case 1 for Denpasar, for example, fees for the same retribution category differ by as much as 84% between two neighboring villages⁵².

Table 2. Denpasar Case of Tariff Differences

Category	Tegal Kertha Village ⁵³	Sumerta Kauh Village ⁵⁴	Difference
Household	IDR 30,000	IDR 20,000	33%
School	IDR 125,000	IDR 20,000	84%
Cultural Activity Waste	IDR 50,000	Free	100%

The second issue is potential embezzlement. This is since RT/RW-managed waste funds are collected in cash, reported inconsistently, and rarely audited. As a result, there is limited visibility over how funds are used, increasing the risk of misuse or unaccounted expenditures, as observed in Case 2.

Box 6. Case 2: How the Accountability Gap in Jakarta’s Household Waste Fee Collection Inflicts Financial Losses

Unregulated waste fee collection in Jakarta demonstrates how a lack of proper oversight cuts off the city’s financial visibility. Under the current RT/RW system, the waste fee collection arrangement relies heavily on trust with little to no standardized tariffs, reporting requirements, or audit mechanisms. As a result, the city has limited visibility over how much money is collected.⁵⁵

One fraud investigation exposed a 73% shortfall in collected household waste fees due to broken institutional remittance channels. The investigation uncovered an IDR 11 million gap between the waste fees recorded as collected by the RT/RW association and the actual amount remitted to the Government as proven by bank receipt. The shortfall was not caused by households failing to pay, but by funds being misused by an irresponsible RW committee before they reached the government.⁵⁶

⁵² Local Government Official, Denpasar City, interviewed by Indonesian Business Council, January 2026.

⁵³ Pemerintah Desa Tegal Kertha, Peraturan Desa Tegal Kertha Nomor 3 Tahun 2023 tentang Iuran Jasa Pengelolaan Sampah, September 13, 2023, <https://jdih.denpasarkota.go.id/produk-hukum/peraturan-perundang-undangan/perdes/peraturan-des-tegal-kertha-nomor-3-tahun-2023-tentang-iuran-jasa-pengelolaan-sampah>.

⁵⁴ Pemerintah Desa Sumerta Kauh, Peraturan Desa Sumerta Kauh Nomor 7 Tahun 2023 tentang Perubahan atas Peraturan Desa Sumerta Kauh Nomor 2 Tahun 2022 tentang Iuran Jasa Swakelola Pengelolaan Sampah, December 31, 2023, <https://jdih.denpasarkota.go.id/produk-hukum/peraturan-perundang-undangan/perdes/peraturan-des-sumerta-kauh-nomor-7-tahun-2023-tentang-perubahan-atas-peraturan-des-sumerta-kauh-nomor-2-tahun-2022-tentang-iuran-jasa-swakelola-pengelolaan-sampah>.

⁵⁵ Waste4Change, “Waste Retribution in Indonesia: How Should It Ideally Work?,” accessed April 22, 2026, <https://waste4change.com/blog/waste-retribution-in-indonesia-how-should-it-ideally-work/>.

⁵⁶ Jacindo News, “Penyelewengan Wewenang oleh Ketua RW ‘AB’ Taman Semanan Indah Sudah Meresahkan Warga,” February 6, 2024, <https://jacindonews.com/2024/02/06/penyelewengan-wewenang-oleh-ketua-rw-ab-taman-semanan-indah-sudah-meresahkan-warga/>.

The third issue eroded trust from the public on waste programs because of the unclear service schedules and inconsistent handling practices. Loss of trust can also happen when misuse of funds happen as an extension of the previous point related to fund misuse. All of these can lead to households becoming less willing to participate in important programs such as waste segregation or payment of waste fees. Participation of citizens in these programs is shaped by the understanding of the waste management system and confidence that the system functions effectively. For example, City/Regency agencies have conducted multiple public socializations to encourage citizens to segregate waste starting from home. However, these households then see waste get mixed anyway by RT/RW collectors as observed in Bogor.

“Even with segregation campaigns and facilities, waste still gets mixed, because RT/RW collectors often don’t keep it separated during collection.”

DLH Agency

Bogor City Government,

Echoed by Jakarta Environmental Agency

The implication from unclear service standards runs beyond missing regulation. Variable tariffs, unclear collection schedule and practices, and potential loopholes due to cash-based waste fee collections as seen in Jakarta ultimately hurts the entire waste management system as public trust in the waste system weakens. This matters because trust affects participation. When trust in the waste system is low, households become less willing to participate in funding (e.g. by paying waste fees) and in action (e.g. by sorting). For this reason, improving the standard of waste collection starting from the household should be treated as a priority.

2.2.2 Unmet Financing Needs from Fragmented and Costly Billing for Waste Fees

The absence of service standards is a significant challenge for household waste collection that needs to be addressed, but it is not the only gap for household waste service delivery. Beneath them lies a separate economic problem: household waste fees contribute too little to finance the end-to-end waste system, and manual fee collection requires disproportionately high effort and cost.

Financing an entire waste system for a city/regency is a costly process that incurs cost from upstream waste segregation all the way to downstream waste disposal. The Polluters Pays Principle delineates that all producers of waste need to share the burden in financing the waste system, including households. This is also reflected in the Minister of Home Affairs Regulation (*Peraturan Menteri Dalam Negeri*/Permendagri) 7/2021 on Waste Tariff Article 4, which states that the waste tariff levied to all users of waste systems must reflect the entire system cost of waste services.

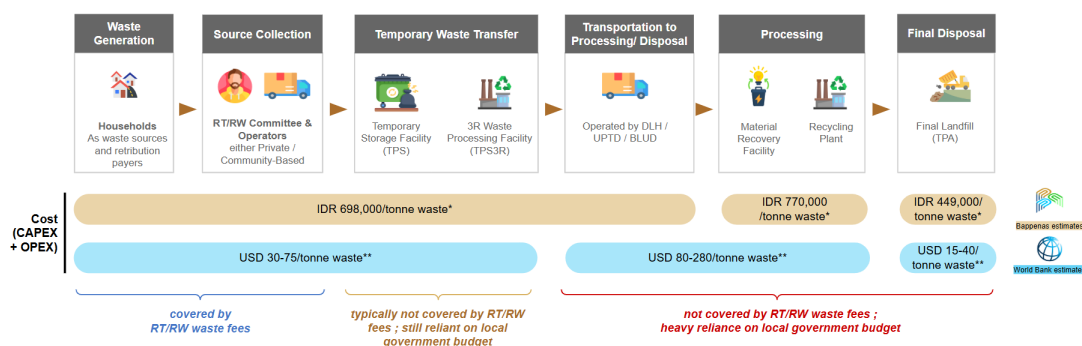


Figure 15. Financing Gap in the Current Waste Management System⁵⁷

However, as seen in Figure 15, waste fees currently collected by RT/RW do not finance the latter stage of the waste system. These fees typically only cover the cost of transporting waste from households to the nearest TPS or TPS3R, which the World Bank estimates at around USD 30 to 75 per tonne.⁵⁸ The subsequent stages of waste management, including further transportation, processing and final disposal, are significantly more expensive than the upstream cost. This higher cost reflects the additional activities required, from operating processing facilities such as material recovery facilities or recycling plants (estimated to cost around USD 80 to 280 per tonne, excluding waste-to-energy facilities) and operating final disposal at TPA (estimated to cost around USD 15 to 40 per tonne).⁵⁹ As a result, Pemda has to bear most of the costs of the remaining stage.

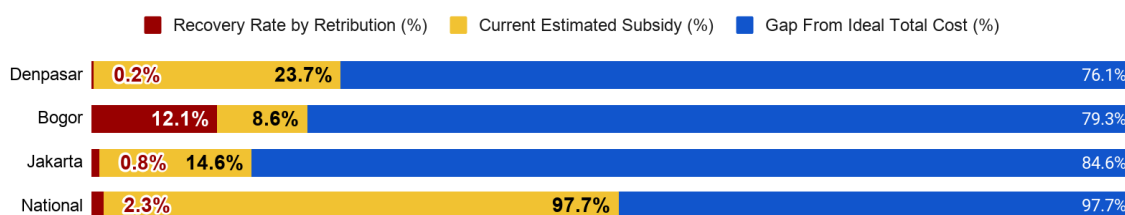


Figure 16. Cost Recovery of Waste Retribution to Overall Waste System Cost in Indonesia

The disconnect between waste fees collected by RT/RW and overall waste financing can be illustrated from the data on waste cost recovery, defined as percentage of waste revenue (e.g. waste fees from households and commercials) divided by waste management costs. As shown in Figure 16, IBC estimates that the national rate for cost recovery is at 2.2%. The situation is worse in two of the case study cities, with cost recovery in Jakarta and Denpasar estimated at 0.8% and 0.2% respectively. Bogor on the other hand has higher cost recovery due to its integration of waste fees with water utility billing.⁶⁰ This indicates that for many cities/regencies across the country the waste

⁵⁷ IDR cost estimates are based on Bappenas unit-cost assumptions for end-to-end waste management under the Collect–Process–Residue scheme. USD cost ranges are World Bank estimates for low-income and lower-middle-income countries

⁵⁸ World Bank, What a Waste 3.0, 2026, <https://www.worldbank.org/en/publication/what-a-waste>.

⁵⁹ World Bank, Project Appraisal Document, Report No. P501986, 2026, <https://documents1.worldbank.org/curated/en/099031926140025768/pdf/P501986-ef2864e0-591b-4258-9e00-75af80be0e56.pdf>.

⁶⁰ The national rate of cost recovery is estimated based on several assumptions and data. Total annual waste cost is derived from total waste generated from SIPSN and CAPEX/OPEX per tonne of waste from Bappenas' calculation using Permendagri 7/2021. Household retribution is calculated using the number of national households from BPS, collection coverage from Bappenas, MoHA retribution compliance rate, assumed average retribution tariff, and estimated capture rate of retribution into government revenue. Commercial retribution is calculated using commercial waste share, percentage of commercial waste with formal fee arrangements, and commercial cost premium. Household and commercial retribution is combined and divided with total cost to obtain cost recovery.

Estimated subsidy is derived from *Realisasi* APBD 2024 multiplied by 0.7% as average allocation of waste (Systemiq study). The model is further cascaded into each city with differences in assumption especially related to formal capture rate of retribution and estimated subsidy using public statement of APBD allocation (Jakarta) and proxy from DinasLH budget (Bogor and Denpasar).

system is not financed by those who generate waste, but instead covered largely by government funding through APBN/APBD.

Overreliance on government funding to finance waste system costs is not ideal, as it makes the system vulnerable to rigid fiscal cycles, competing political priorities, and chronic underfunding. A more sustainable approach should therefore combine government funding, waste retribution, and private contributions through EPR.

Full cost recovery for waste management systems from user fees are difficult to achieve aside from a few developed countries, as seen in Figure 17. Countries such as Denmark and Finland recover 100% of waste system costs through waste fees, illustrating an exceptional case of limited reliance on public budgets which could be difficult for Indonesia to replicate.⁶¹ However, cities in other developing countries, including neighboring cities such as Bangkok, Thailand and Hanoi, Viet Nam, have achieved cost recovery rates higher than ours. Bangkok has reached approximately 7%, while Hanoi has reached almost 25%.⁶²

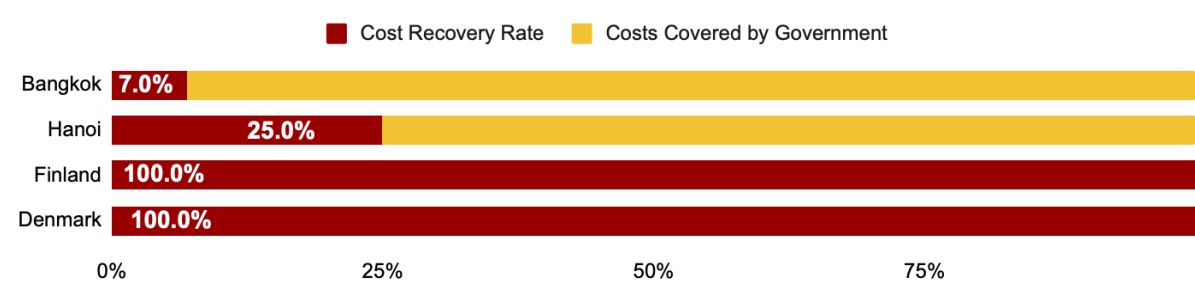


Figure 17. Benchmark of Cost Recovery in Other Countries

The World Bank has also done initiatives such as result-based financing which has shown some success in increasing cost recovery rate such as seen in the West Bank.⁶³

⁶¹ Eunomia Research and Consulting Ltd., Costs for Municipal Waste Management in the EU (Brussels: European Commission, 2002), accessed June 22, 2026, https://ec.europa.eu/environment/pdf/waste/studies/euwastemanagement_annexes.pdf; Avfall Sverige, Swedish Waste Management 2022 (Malmö: Avfall Sverige, 2022), https://www.avfallsverige.se/media/lbdg3vcp/svensk_avfallshantering_2022_en.pdf.

⁶² Khaosod News, “Bangkok Unveils New Policy: Sort Your Trash, Save Your Cash,” April 12, 2025, accessed June 23, 2026, <https://www.khaosodenglish.com/news/bangkok/2025/04/12/bangkok-unveils-new-waste-policy-sort-your-trash-save-your-cash/>; Bao Sai Gon Giai Phong, “Hanoi Increases Garbage Collection Fees Sevenfold: Accurate and Comprehensive Calculation Is Necessary,” accessed June 23, 2026, <https://www.vietnam.vn/en/ha-noi-tang-7-lan-phi-thu-gom-rac-thai-can-phai-tinh-dung-tinh-du>.

⁶³ World Bank, Transitioning to a Circular Economy: An Evaluation of the World Bank Group’s Support for Municipal Solid Waste Management (2010–20) (Washington, DC: World Bank, 2022), <https://doi.org/10.1596/ieg168905>.

Box 7. The West Bank and Gaza Benchmarking Case: Increasing Cost Recovery Through World Bank's Results-Based Financing (RBF)

In 2012, the World Bank launched a Results-Based Financing (RBF) program to improve waste management outcomes across selected regions. The project in the West Bank and Gaza, which kickstarted in 2014, accomplished major improvements in waste fee collection and cost recovery ratio. By the project's conclusion in 2018, the West Bank and Gaza maintained an aggregate of over 84% of cost recovery, surpassing its planned targets. This achievement is evident across municipalities, such as an increase of cost recovery by 20% in Hebron and 79% in Al Dahriyya.⁶⁴

The West Bank and Gaza's success is enabled by billing system optimization. The World Bank worked with local authorities to bundle waste fees into electricity bills, design and implement provincial tariff schemes, and organize capacity-building activities with municipalities. Households can also choose between a monthly billing or a discounted, upfront annual billing for their waste fee payments.⁶⁵ These relatively flexible payment terms allowed municipalities to accommodate different customer preferences without compromising its revenue base and financing streams.

Aside from user charges, the private sector can also help ease the financial burden of waste management through EPR initiatives which allow producers to finance the management of packaging waste as part of the waste system.⁶⁶ As EPR becomes more effective, they can help ease the government's burden in managing packaging-related waste that was previously handled through public funding. France and the Netherlands, for instance, have generated EPR contributions equivalent to around 7% of total waste management costs, while Belgium has reached approximately 9%, demonstrating how private contributions can meaningfully ease the financing burden.⁶⁷

Box 8. France Benchmarking Case: Private EPR Contribution Amounting to 7% Financing Source

France is widely regarded as a frontrunner in the implementation of Extended Producer Responsibility (EPR) schemes, making it a useful benchmark for Indonesia. The EPR principle was first introduced into French legislation in 1975 and has been implemented since the 1980s. Today, France's EPR system consists of more than 20 schemes, each tailored to different product streams.⁶⁸

In 2024, France raised approximately EUR 1.6 billion through EPR implementation. These funds were channeled through Producer Responsibility Organizations (PROs) and then distributed to municipalities to support waste management costs.⁶⁹ With the country's total waste management cost in 2024 estimated at around EUR 22 billion, EPR contributions are equal to approximately 7% of the total waste management costs. This represents a substantial portion that eases the financing burden on government budgets.

⁶⁴ Hyunji Lee, Ibrahim Ali Khan, Amsale Bumbaugh, Vibhu Jain, and Emma Marie Heneine, Results Based Financing for Solid Waste Management: Results and Lessons from the World Bank-Financed Project Experience (Washington, DC: World Bank Group, 2024), accessed June 22, 2026, <http://documents.worldbank.org/curated/en/099102224160594702>.

⁶⁵ Ibid.

⁶⁶ Business Indonesia, "EPR," accessed June 22, 2026, https://business-indonesia.org/waste_management.

⁶⁷ The estimated EPR contribution rate is calculated by comparing total EPR contributions collected by independent organizations, such as PROs in France, Fost Plus in Belgium, and Verpact in the Netherlands, against each country's waste management expenditure as published by the European Union.

⁶⁸ The Switchers, "Extended Producer Responsibility," September 15, 2022, <https://www.theswitchers.org/en/node/78>.

⁶⁹ Packaging Europe, "Citeo CEO on the Steps to Extended Producer Responsibility Success," June 3, 2025, <https://packagingeurope.com/news/citeo-ceo-on-the-steps-to-extended-producer-responsibility-success/12896.article>.

At least three key factors behind the success of France's EPR system. First, the government made EPR mandatory, creating a level playing field by requiring businesses operating in France to obtain an identification number and register with a PRO. Second, the system benefits from broad stakeholder buy-in, with government, companies, municipalities, and citizens working within a collective system. Third, the system creates value across the waste management chain by helping integrate waste collection and recycling activities into the formal system, thereby supporting safer and more decent employment opportunities for workers involved in waste management.⁷⁰

Another economic constraint in waste service delivery is the high administrative cost associated with billing and fee collection. In many areas, fees are collected manually through door-to-door billing, which is operationally costly while often generating limited success at collecting revenue. Conducting door-to-door billing will require additional cost to employ manpower to visit households for every billing cycle.

“(for door-to-door billing) ”collecting door-to-door is difficult...we need to double our manpower, our fleet...thus we’re actively trying to look at solutions for this”

Pemda Official
Malang Regency

To illustrate the potential high cost of conducting door-to-door billing collection, IBC estimates that the process could cost around IDR 45 billion in Jakarta, or equivalent to nearly 80% of household waste retribution revenue in 2021. In Bogor, the same process is estimated to cost around IDR 5 billion annually, or approximately 34% of its IDR 15 billion waste retribution revenue in 2021.⁷¹ These figures indicate that a substantial portion of household fee revenue can be absorbed simply by the cost of collecting it, leaving fewer resources available to support service improvements.

Moreover, unlike other utilities such as electricity or water, access to waste services is difficult to restrict even when households do not pay their bill. Electricity and water providers can usually suspend or limit service for non-payment, creating a direct enforcement mechanism between payment and service access. Waste services are different because uncollected waste creates broader environmental and public health risks, not only for the household that fails to pay, but also for surrounding residents and the wider city. As a result, Pemda and waste operators often cannot simply stop collection without creating new sanitation problems. This weakens the link between payment and service delivery, making waste fee collection more dependent on trust, social compliance, and effective administrative enforcement.

⁷⁰ UN Environment Programme, “By Making Producers Part of the Solution, France Aims to Rein in Plastic Pollution,” May 29, 2025, <https://www.unep.org/news-and-stories/story/making-producers-part-solution-france-aims-rein-plastic-pollution>.

⁷¹ Methodology: Door-to-door billing system relies on outsourcing, thus real OPEX may vary based on third-party operators deployed. The estimated costs are aggregated, calculated, and cross-validated using key assumptions and proxies from common practices in PLN and PDAM door-to-door billing systems.

Some cities have tried to address the high cost and difficulty in collection problem by collecting waste fees indirectly through bundling with utility companies such as local water companies (*Perusahaan Daerah Air Minum*/PDAM), but challenges remain on clarity and transparency for this mechanism. While this approach can improve payment coverage and collection reliability, it still requires clear billing information and transparent communication to the public to gain their acceptance. Without this clarity, households may perceive the mechanism as an additional charge for a service they already pay for. This issue was observed in Denpasar, where waste billing was not fully integrated, leaving some households to believe that they were being charged twice for the same service.⁷² Over time, such confusion can weaken public willingness, as households become dissatisfied with both the payment system and the quality of services received.

*“We used to collect waste retribution through PDAM’s billing system. However, many citizens came to our office **complaining about the hassle of double-charging, once by swakelola, once by the city government.**”*

Pemda Official
Denpasar City

The design for household waste systems, starting from household collection, has a direct implication to the financial sustainability of the overall waste systems. Without linking household waste fees currently collected by RT/RW to the full waste management chain, the system will continue to depend heavily on APBD funding which may be unsustainable. At the same time, the high cost of waste fee billing also needs to be addressed so waste institutions can collect revenue more efficiently and reinvest it into better waste services.

2.2.3 Missing Waste Master Plan behind Fragmented Service Delivery

Behind these service-level failures lies an even more basic absence, that most cities have no master plan for waste at all. Without a city-wide framework that details what service to deliver, who delivers it, how it is funded, and how progress is tracked, household waste services cannot improve in a consistent way. PP No. 81/2012 on Household Waste Management, city/regency governments to prepare exactly such a document, known as RIPS (*Rencana Induk Pengelolaan Sampah*).⁷³

RIPS provides the city/regency government with an assessment of existing conditions, including waste generation, service coverage, infrastructure readiness, institutional arrangements, and current operational challenges. RIPS then uses these findings to create a long-term development plan covering collection, transport, processing, and final disposal. It also defines technical standards, required service levels, implementation programs, investment needs, and funding requirements over time. In this way, RIPS provides the basis for synchronizing APBD planning, clarifying institutional roles, guiding infrastructure investment, and creating a more consistent household service model across areas.

⁷² Kementerian Dalam Negeri Republik Indonesia, “Kemendagri Lakukan Public Expose atas Kajian Perhitungan Biaya Penanganan Sampah dan Penerapan Skema Retribusi untuk Kota Denpasar,” September 28, 2022, https://bangda.kemendagri.go.id/berita/baca_kontent/854/kemendagri_lakukan_public_expose_atas_kajian_perhitungan_biaya_penanganan_sampah_dan_penerapan_skema_retribusi_untuk_kota_denpasar; IBC expert interviews, 2026.

⁷³ Presiden Republik Indonesia, Peraturan Pemerintah Nomor 81 Tahun 2012 tentang Pengelolaan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah Tangga, October 12, 2012, <https://peraturan.bpk.go.id/Details/5295/pp-no-81-tahun-2012>.

In practice, however, uptake remains limited. Based on IBC estimates from publicly available data, only 12 RIPS documents (covering six cities and six regencies) out of 500+ cities/regencies are publicly accessible nationwide.⁷⁴ This limited uptake is driven by two main constraints. First, RIPS is a technically complex document that requires expertise across engineering, finance, institutional design, and regulatory planning, all of which are denoted as the capabilities that many Pemdas lack. Second, the benefits of RIPS are not immediately visible, making it less attractive for Pemda with limited resources to deploy. As a result, most cities continue to operate without an integrated waste management planning framework, leading to poor service delivery. In comparison, for cities that have developed a RIPS, the document provides more concrete guidance for service delivery by translating planning into measurable operational standards, as illustrated by cases such as Denpasar and Depok.

Box 9. Learnings from RIPS Denpasar

Lessons from Denpasar's RIPS can be drawn from its effort to set explicit service standards, an element that had often been unclear in the previous system. It sets a requirement of twice-daily collection for both three-wheeled vehicles and pickup trucks, as well as the adoption of Aerob Composter technology for waste processing.⁷⁵ Before such specifications existed, service quality in Denpasar was largely subjective, with no agreed benchmarks for operators or oversight bodies to measure performance. Thus, by making both service frequency and technology choices explicit, the RIPS shifts the system from informal practices toward measurable operational standards, creating the basis for monitoring and enforcement once formally adopted.

Box 10. Learnings from RIPS Depok

Depok developed its RIPS with a planning horizon from 2009 to 2018, making it one of the earliest Indonesian cities to formalize a waste master plan in this form.⁷⁶ The document introduced a more structured service delivery model by defining three household collection systems, such as communal collection, indirect door-to-door collection, and direct door-to-door collection, each with different service frequencies and operational approaches. It also grouped service areas based on settlement density and local conditions, creating clearer guidance for how waste services should be delivered across different urban contexts.

The impact of this system was significant. In areas where the RIPS-aligned model was implemented and enforced, more than 100,000 households achieved near-complete waste segregation, and the city diverted around 148 tonnes of waste per day from landfills. This included 99 tonnes of household organic waste, 27 tonnes of landscape waste, and 22 tonnes of recyclables sent to waste banks, representing approximately 12% of Depok's total daily waste generation.⁷⁷

⁷⁴ Badan Pemeriksa Keuangan Republik Indonesia, "Database Peraturan," accessed April 22, 2026, <https://peraturan.bpk.go.id/>.

⁷⁵ Pemerintah Provinsi Bali, "Komposter Cepat Jadi Harapan Baru Atasi Sampah Organik di Bali," September 16, 2025, <https://www.baliprov.go.id/web/komposter-cepat-jadi-harapan-baru-atasi-sampah-organik-di-bali/>.

⁷⁶ Depok Bebas Sampah, "Rencana Induk Persampahan Kota Depok," accessed April 22, 2026, <https://depokbebas sampah.wordpress.com/kajian/rencana-induk-persampahan/7-rencana-induk/>.

⁷⁷ Ashwin Subramaniam, "Depok: The Front Line in Indonesia's Fight Against Waste," Sustainable Brands, accessed April 22, 2026, <https://sustainablebrands.com/read/depok-the-front-line-in-indonesia-s-fight-against-waste>.

2.3 Challenges in Waste Policy Implementation

Fixing institutional arrangements is only part of the reform Indonesia's waste management system needs. Even where those arrangements are sound, the rules governing household collection can remain difficult to implement. This section examines four conditions that, together, hamper reform at the household and Pemda level, namely 1) unclear accountability for household waste collection, 2) weak governance for enforcing regulations, 3) national tariff guidelines not translated into local rules, and 4) poor public communication and political resistance to reform.

2.3.1 Regulatory Misalignment in Responsibility for Household Waste Collection

Across cities, Indonesia has taken measures to reform its waste regulatory framework. One of the notable regulatory reforms is aligning the Regional Policy and Strategy (*Kebijakan dan Strategi Daerah/Jakstrada*) with local contexts, ensuring that strategic policy documents are relevant and reflective to each city's waste management system. However, a couple of regulatory gaps persistently constrain waste reform efforts.

The first issue is existing regulations do not designate who is accountable for household waste collection. This void stems from a regulatory amendment, which failed to reconcile roles and responsibility for household waste collection between the old and new policy frameworks. Under Permendagri 33/2010, responsibility for household waste collection was clearly assigned to RT/RW.⁷⁸ This assignment was revoked by PP 81/2012. In Article 18 of PP 81/2012, the responsibility for household waste collection fell back to the city/regency government. However, many Pemda interpret this regulation narrowly by anchoring on Article 19, which begins their duty at the TPS. This creates inconsistent implementation across regions. Some Pemda assume responsibility for household-to-TPS transport, while others leave it to RT/RW, communities, or informal collectors. This ambiguity weakens accountability and creates uneven service quality at the household level.

Article 18 (1) b	"Household waste collection as referred by Article 16 letter b is conducted by City/Regency Government."
Article 18 (3)	"City/Regency Government provide TPS and/or TPS 3R in residential areas."
Article 19 (2) b	"In carrying out waste transport, City/Regency Government ... transport waste from TPS and/or TPS3R to TPA or TPST."

Figure 18. City/Regency Government Obligations for Waste Collection in PP 81/2012

"For initiatives in solid waste management, we still need clearer direction and support from the central government."

DLH Official
Denpasar City Government

⁷⁸ Kementerian Dalam Negeri Republik Indonesia, Peraturan Menteri Dalam Negeri Nomor 33 Tahun 2010 tentang Pedoman Pengelolaan Sampah, April 30, 2010, <https://peraturan.bpk.go.id/Details/175297/permendagri-no-33-tahun-2010>.

The second issue is a fragmented institutional authority and ownership at the national level, resulting in challenging policy coordination. This policy coordination challenge is a substantial issue as many Pemda rely on clear direction from central level ministries even for decentralized sectors such as waste. Currently responsibilities over waste management are distributed across three ministries. The Ministry of Public Works (*Kementerian Pekerjaan Umum/KemenPU*) focuses on constructing waste management infrastructures, particularly in the processing and final disposal sites. KemenLH promotes awareness about the ecological damages caused by waste management failures. Meanwhile, Kemendagri bridges the central government's supervision over Pemda. Despite each institution focusing on different areas, there remains no designated institution to coordinate the cross-agency waste management policy direction. As a consequence, misalignments across government agencies persist at both the horizontal (central–central) and vertical (central–local) levels.

2.3.2 Compliance Gap Driven by Limited Enforcement Capacity and Inadequate Waste Service

On household collection specifically, enforcement has consistently fallen short, especially on waste sorting and illegal burning. Waste segregation is neither rewarded for compliance nor penalized for neglecting. Collectors pick up unsegregated waste without question, whereas when households do sort, collectors combine the separated waste together in their fleets. This predicament is reflected in the data, where only 18.84% of Indonesians sort their waste at home.⁷⁹ Similarly, despite the ban and well-documented harms, households continue practicing open burning. Enforcement is so lacking that roughly 48% of households still burn their waste.⁸⁰

These structural failures are attributed to limited enforcement capacity and waste infrastructure inadequacies. On enforcement, even where obligations exist, Pemda rarely deploys enough trained officers to check whether households sort, pay, or dispose of waste correctly. Semarang's experience clearly illustrates this trouble.

*“Currently we only have **three enforcement officers (pengawas)**, and none of them are certified. This is not ideal, as there should be one dedicated for all 16 regencies.”*

Arwita Mawarti

Head of Environmental Agency, Semarang

Meanwhile, on infrastructure, many waste service facilities are not well-maintained or functional. Nationwide, 32% of TPS3R facilities are idle, so households have nowhere to sort and drop their waste. When the service is not present, households' inability to comply is a rational consequence from the lack of choice, not mere malicious intent.

“Basic service coverage must come before compliance expectations can be set, because asking households to follow rules without providing them with the infrastructure needed to comply makes enforcement ineffective regardless of regulation.”

The World Bank

⁷⁹ BPS-Statistics Indonesia, “Persentase Rumah Tangga Menurut Provinsi dan Perlakuan Memilah Sampah Mudah Membusuk dan Tidak Mudah Membusuk,” 2022, <https://www.bps.go.id/statictable/2014/05/02/1360/persentase-rumah-tangga-menurut-provinsi-dan-perlakuan-%20memilah-sampah-mudah-membusuk-dan-tidak-mudah-membusuk-2013-2014.html>.

⁸⁰ Lloyd's Register Foundation, “Open Burning of Waste a Critical Issue in Indonesia, According to Global Report,” September 17, 2024, <https://www.lrfoundation.org.uk/news/open-burning-of-waste-a-critical-issue-in-indonesia-according-to-global-report>; The Jakarta Post, “Illicit Waste Burning Reaches Alarming Rate of 48% Indonesian Households,” October 3, 2024, <https://www.thejakartapost.com/indonesia/2024/10/03/illicit-waste-burning-reaches-alarming-rate-of-48-indonesian-households.html>.

2.3.3 Permendagri 7/2021 Provides A Comprehensive Framework for Waste Tariff yet Remains Challenging to Adopt

Sound local waste financing needs a clear, reliable basis for setting fees. To address this need, Permendagri 7/2021 was introduced to support Pemda by providing a cost-based tariff formula that reflects actual service costs and local operating conditions.⁸¹ By linking fees more closely to the real cost of waste services, the regulation provides a legal basis to enforce the Polluter Pays Principle in waste retribution design.

However, having a national tariff framework in place does not guarantee that Pemda will implement it. Across the three case cities, only DKI Jakarta has adopted a local regulation aligned with Permendagri 7/2021, while the other two cities have yet to update their tariff regulations⁸².

This slow uptake is mainly driven by unavailable and unreliable data, and limited technical capacity to operationalize the formula.

In terms of lack of data, setting cost-reflective tariffs requires detailed and reliable data across the entire waste value chain, but the availability of data remains a significant constraint. Data inputs needed to calculate a defensible tariff are granular. As seen in Figure 19, for example, for handcart collection (*data gerobak*) alone, a city/regency needs updated information on operator salaries, BPJS health insurance costs, equipment prices, personal protective equipment costs, vehicle capacity, daily trip frequency, and the number of operators per vehicle. These variables are operational and constantly changing, requiring regular updates to remain relevant for planning and budgeting purposes.⁸³

<i>Input Data Gerobak</i>	<i>Input Data Gerobak Motor</i>
• <i>Gaji Operator</i> • <i>Asuransi Kesehatan</i> • <i>Harga Gerobak</i> • <i>Harga APD K3</i> • <i>Kapasitas Gerobak</i> • <i>Jumlah Ritasi</i> • <i>Jumlah Operator per Gerobak</i>	• <i>Gaji Operator</i> • <i>Asuransi Kesehatan</i> • <i>Harga Gerobak Motor</i> • <i>Harga BBM</i> • <i>Harga Perpanjangan Pajak</i> • <i>Kapasitas Gerobak Motor</i> • <i>Jumlah Ritasi</i>

Figure 19. Example of Data Input Required to Calculate Waste Retribution⁸⁴

⁸¹ Kementerian Dalam Negeri Republik Indonesia, Peraturan Menteri Dalam Negeri Nomor 7 Tahun 2021 tentang Tata Cara Perhitungan Tarif Retribusi dalam Penyelenggaraan Penanganan Sampah, January 21, 2021, <https://peraturan.bpk.go.id/Details/163295/permendagri-no-7-tahun-2021>.

⁸² Dinas Lingkungan Hidup Provinsi DKI Jakarta, "Retribusi Pelayanan Kebersihan," accessed April 22, 2026, <https://retribusikebersihan.dinaslhdkj.id/>; Kementerian Dalam Negeri Republik Indonesia, "Kemendagri Lakukan Public Expose atas Kajian Perhitungan Biaya Penanganan Sampah dan Penerapan Skema Retribusi untuk Kota Denpasar," accessed April 22, 2026, https://bangda.kemendagri.go.id/berita/baca_kontent/854/kemendagri_lakukan_public_expose_atas_kajian_perhitungan_biaya_penanganan_sampah_dan_penerapan_skema_retribusi_untuk_kota_denpasar.

⁸³ Waste4Change, "Kemendagri Didukung Waste4Change Menggelar Lokakarya Perhitungan Biaya Penanganan Retribusi Sampah untuk Optimalisasi Pendanaan Pengelolaan Sampah oleh Pemerintah Daerah," January 10, 2023, <https://waste4change.com/blog/kemendagri-didukung-waste4change-menggelar-lokakarya-perhitungan-biaya-penanganan-retribusi-sampah-untuk-optimalisasi-pendanaan-pengelolaan-sampah-oleh-pemerintah-daerah/>.

⁸⁴ Bappenas, Template Calculator for Permendagri 7/2021, Google Sheets, accessed June 25, 2026, <https://docs.google.com/spreadsheets/d/13ee1bjapqVNn9KpES8qlgDP5irbnjgp0/edit?gid=1572881170#gid=1572881170>.

The other constraint is capability, particularly in terms of who is responsible for doing the work. Many Pemda officials lack the technical and administrative knowledge and skillsets to apply the tariff formula independently. Consequently, some cities rely on external assistance to apply the tariff formula from several international organizations, such as Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), United Nations Development Programme (UNDP), Waste4Change, Systemiq, the Embassy of Denmark, and the Norwegian Embassy.⁸⁵ This shows that Pemda still needs to rely on outside support to implement Permendagri 7/2021, indicating that core capacity constraints remain unresolved.

2.3.4 Limited Political Push and Weak Public Communication Constrains Waste Policy Reform

Translating the national direction into local policy context is not a straightforward step. This can be caused either by lack of political push for risk-averse city/regency governments and/or DPRD, or by inadequate public engagement (i.e. consultation and communication messaging) prior to policy reform implementation.

Executing bold waste reform necessitates a significant political will, especially from executive and legislative leaderships in the region. Policy changes may attract backlash from RT/RW and *swakelola* operators, who also voted these leaders into power. Furthermore, Pemda often does not have enough incentive to implement these reforms. Existing mechanisms to provide incentives, such as fiscal benefits (*Dana Insentif Daerah/DID*), are not linked with waste reform. Thus, when the policy trade-off appears unrewarding, leaders tend to delay waste reform.

Box 11. Case In Point: Jakarta Waste Retribution Scheme's Pushback



Figure 20. Timeline of Jakarta's Waste Retribution Plan

Jakarta shows how waste financing reform can stall in implementation when political will falls short, even after the analytical and regulatory groundwork were in place. In 2022, Jakarta Government commissioned a study that found, among others, households generate 54% of Jakarta's total waste but contribute almost nothing to the formal financing system, with 60.2% of retribution collected in 2021 coming from industry rather than households.⁸⁶ Based on this study, the city revised its waste retribution formula that's incorporated in Perda 1/2024 on Regional Taxes and Levies in January 2024, which established the legal basis for introducing both household and non-household waste fees.

⁸⁵ Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Waste Management Fee Calculation and Retribution Module for City/Regency Areas (Jakarta and Bonn: GIZ, 2025).

⁸⁶ Dinas Lingkungan Hidup Provinsi DKI Jakarta, Indeks Kualitas Lingkungan Hidup (IKLH) DKI Jakarta Tahun 2022: Laporan Akhir (Jakarta: Dinas Lingkungan Hidup Provinsi DKI Jakarta, December 2022), https://kinerjaps.jakarta.go.id/uploads/images/galary/iklh-2022_20250702125548.pdf.

When the city announced in late 2024 that household retribution would begin in January 2025, the plan met enough political resistance to stall it.⁸⁷ Members from the Commission D mentioned concerns including the risk of public backlash, particularly from middle- and lower-income households facing a new mandatory fee, and the lack of clarity on what service improvements the fee would actually deliver.

“We from Commission D, propose and recommend that the household waste collection fee be postponed until everything is fully ready.”

Yuke Yurike
Commission D, DPRD

Successive delays pushed the earliest rollout to 2026, and as of April 2026 there was no information on whether it would continue. The lesson from this case is clear, that a legal framework is not enough without the political will to carry it through.

Moreover, even where leaders are willing to exercise waste reform, weak public communication can obstruct reform initiatives. New waste retribution policies are often introduced top-down, with little room for households participation. This approach leaves households without a clear understanding of the purpose of the new fees, the differences in existing billing practices through RT/RW collectors, or the service improvements they can expect. Without clarity, households lack the reason to support reform.

“I didn’t know anything about the new policy, only knew that I should pay IDR 15,000 per month as usual..”

Resident of Pulo Gadung
Jakarta City

“There is no need to increase waste fees right now. If the government is actually serious about increasing its revenue, it needs to start by proving it can deliver transparent management and better daily service first.”

Resident of Pasar Kemis
Tangerang

This chapter has examined three challenges that shape Indonesia's waste management system, namely the institutional setup that limits accountability and financial autonomy, the household service delivery model that operates without clear standards, and weak implementation to the waste policies. These challenges are linked and together help sustain the mistrust between society and government that keeps the system fragmented and largely linear. In practice, the fragmentation is reinforced by weak institutional autonomy, as revenue remains tied to uncertain budget allocations thereby limiting the ability of waste agencies to deliver consistent service. Without consistent service, the case for charging fees that match actual costs becomes harder to make, and without those fees, waste agencies remain dependent on the same constrained budgets. Reform efforts that focus on only one of these areas are unlikely to deliver lasting change. The next chapter therefore presents recommendations across all three, beginning with institutional design, followed by service delivery, and ending with regulatory reform.

⁸⁷ Dinas Lingkungan Hidup Provinsi DKI Jakarta, “Pemprov DKI Jakarta Akan Bebaskan Retribusi Kebersihan untuk Warga yang Pilah Sampah,” October 24, 2024, <https://lingkunganhidup.jakarta.go.id/detail-artikel/pemprov-dki-jakarta-akan-bebaskan-retribusi-kebersihan-untuk-warga-yang-pilah-sampah>

3

Turning Mistrust to Trust through Stronger Private Sector Participation in Upstream Waste Management

Chapter 2 showed that Indonesia's waste management challenges are driven by interconnected structural problems in institutions, service delivery, and implementation. These challenges have created a cycle of mistrust between society and government. IBC aims to help transform this cycle of mistrust into a cycle of trust, as seen in Figure 21. When society begins to see tangible improvements (e.g., reliable waste services), people are more likely to trust that waste reform can bring real benefits. From there, households become more willing to sort waste, pay retribution fees, and support waste policies. Conversely, when governments see that households are becoming more compliant and supportive of reform, they can gain greater confidence to implement more ambitious waste management reform initiatives.

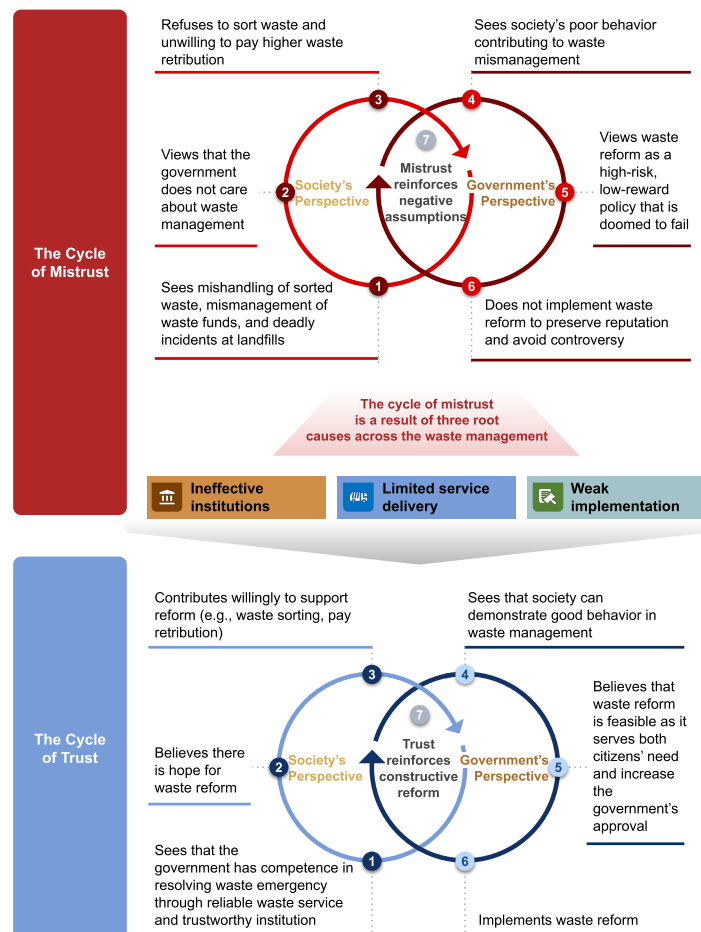


Figure 21. Transforming the Waste Management Cycle of Mistrust into a Cycle of Trust

Breaking the cycle of mistrust into a cycle of trust will help Indonesia transform from linear economy to circular economy. In the envisioned circular economy, waste is no longer treated only as an end-of-pipe disposal burden. Instead, materials are managed across raw material, production, consumption, collection, recycling, and residual waste stages, so that recoverable waste can be processed and brought back into productive use.

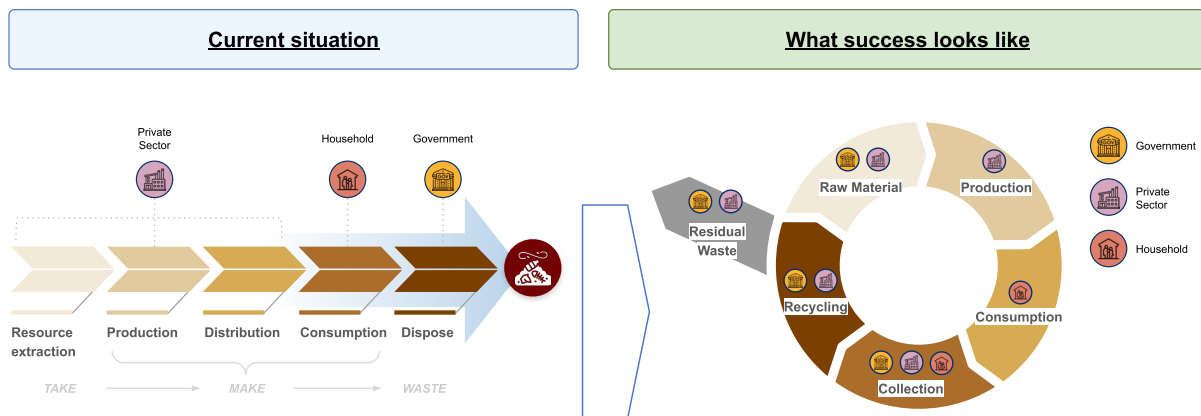


Figure 22. Transition from Linear Waste Systems to Circular Economy

Achieving a circular economy requires a more integrated waste system in which government, private sector, and households can each play clearer and more accountable roles. Government would define and enforce circular economy standards and build enabling infrastructure for this transition; the private sector would source materials, design eco-friendly products, and participate in and/or operate waste collection and waste processing infrastructure (recycling plants, WtE, landfills, ect); while households would consume more responsibly through reducing, reusing, and repairing products, as well as segregating waste properly.

Currently, the private sector has already contributed significantly through waste retribution, EPR initiatives, recycling activities, and other waste management efforts. Despite these existing contributions, many private sector actors are willing to do more to accelerate Indonesia's transition toward a circular economy. This includes supporting upstream waste management, where government and households also play major roles, by bringing operational expertise, innovation, and steady financing to the waste management system.

To enable greater private sector participation and secure greater buy-in from all stakeholders, several enabling conditions must be strengthened, including institutions, service models, and regulatory implementation. As summarized in Figure 23, Chapter 3 therefore presents ten recommendations across three reform areas to help create these conditions and accelerate Indonesia's transition toward a circular economy.

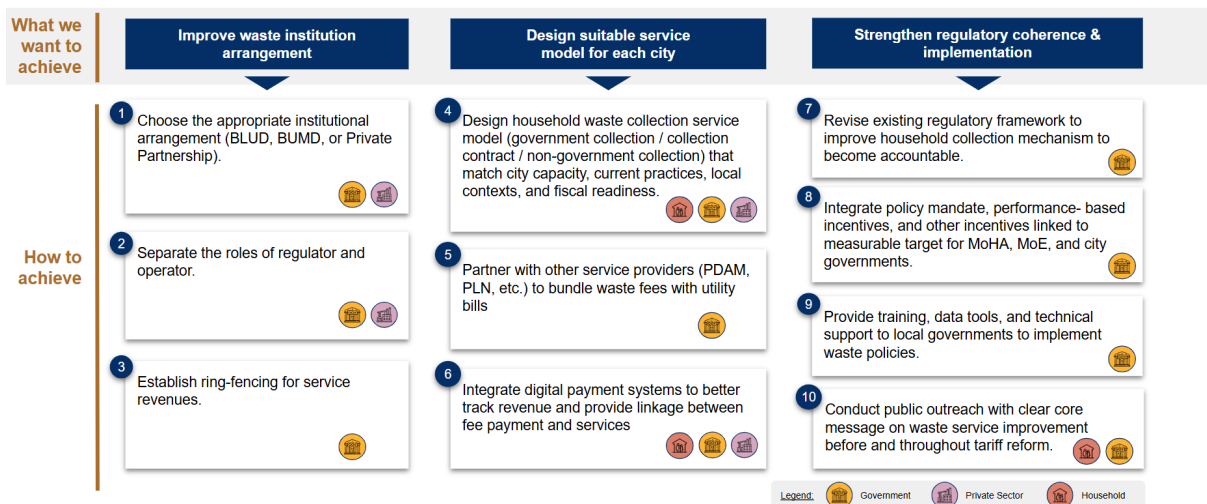


Figure 23. Summary of Proposed Recommendations

3.1 Choosing the Right Institutional Vehicle for Local Waste Management

Ten Recommendations to Improve Upstream Waste Management: Improve Waste Institution Arrangement

- 1. Choose the appropriate institutional arrangement (BLUD, BUMD, or Private Partnership)** for waste management, based on the five principles for healthy waste institutions. Each city/regency will face different situations, thus applying the principles carefully by each city/regency should create different solutions that best fit into the needs of each city/regency.
- 2. Separate the role of regulator and operator.** Through selection of appropriate legal entities, the separation of responsibilities in waste management can be achieved. The role of operator, whether conducted by BLUD, BUMD, or Private Partnership, will be maximized in providing the waste services for citizens. Meanwhile, DLH in each city/regency can focus on its role as regulator, both in creating the regulatory framework (e.g. KPI for waste management service by operator) and enforcement to ensure that the requirements are met by operator.
- 3. Establish ring-fencing for service revenues.** Under BLUD, BUMD, or Public-Private Partnership arrangements, revenues would be managed through separate accounts rather than Pemda's general account. This would help ensure that revenue from waste service fees is dedicated to waste management operations instead of being diverted to other government expenditures.

Resolving the institutional constraints embedded within DLH and UPTD structures requires a fundamental transition. As established in Section 2.1, regional waste services are paralysed by regulator-operator overlap, a lack of revenue ring-fencing, and rigid budgeting mechanisms. These systemic barriers directly weaken accountability, limit the ability to reinvest collected revenues into waste services, and reduce the flexibility needed to respond to changing operational needs.

To systematically resolve these constraints, **five core institutional principles** are defined to build a **healthy and high-functioning waste institution**:

1. **Ring-fencing:** The institution must possess the ability and autonomy to protect collected waste fees and reinvest into waste services.
2. **Financial Sustainability:** It must be able to manage a mix of fundings, including funding from APBD/APBN as waste services are likely unable to achieve complete cost recovery from waste fees.
3. **Operational Excellence:** It must have the institutional agility to effectively and reliably deliver public waste services.
4. **Strategic Collaboration:** It must be legally and structurally equipped to design and execute multi-stakeholder and public-private partnerships.
5. **Regulatory Alignment and Political Support:** It must be fully compliant with national and Pemda and be politically acceptable.

Table 3. Observed Common Problems of Waste Institutions and Core Principles to Resolve

Observed Common Problems	Core Principles for Healthy and High-Functioning Waste Institution
Waste management fees often mixed with general regional treasury (not ring-fenced)	Ring-fencing: Reinvest collected waste fees directly into waste service delivery and improvement
Waste services unable to achieve cost recovery and continue to rely on APBD subsidies	Financing sustainability: Manage a mix of funding sources (e.g. APBD, waste fees, recycling revenues, Corporate Social Responsibility (CSRs), and other sources)
Limited capacity to provide effective waste service delivery	Operational Excellence: Ensure reliable, integrated, and accountable waste service to the citizens
Multiple actors (Community Self-Help Group (<i>Kelompok Swadaya Masyarakat/KSM</i>), Village-Owned Enterprise (<i>Badan Usaha Milik Desa/BUMDes</i>), private sector) but fragmented coordination	Strategic Collaboration: Enable coordination and partnerships across multiple service providers Enable coordination and partnerships for waste service provision across multiple types of service providers
Institutional models are politically sensitive and vulnerable to leadership changes	Regulatory Alignment and Political Support: Remain feasible within local political and regulatory constraints

These principles can be used to assess three institutional options that span along a spectrum from public to private arrangements: BLUD, BUMD, and Private Partnership.

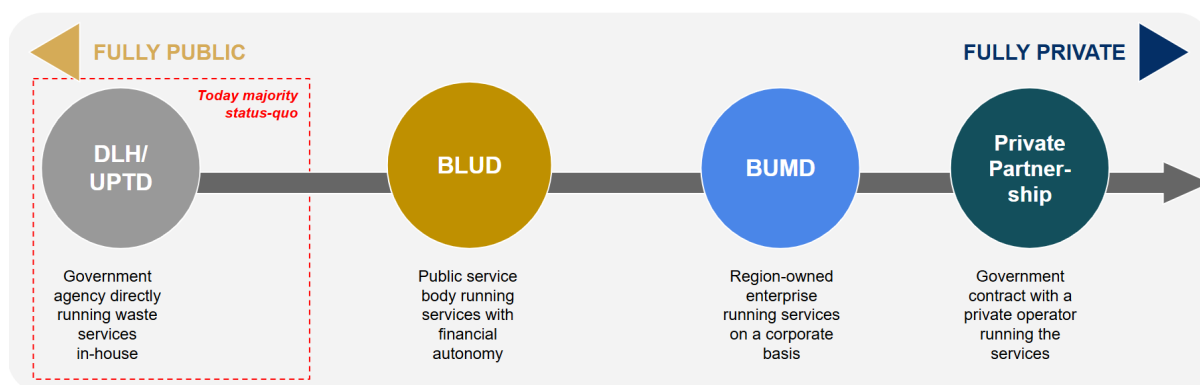


Figure 24. Options for Waste Institutional Arrangement

Each option above comes with its respective benefits and limitations as a waste institution. Our analysis for the institutional options are presented below:

Table 4. IBC Analysis on Institutional Arrangement Options

	BLUD	BUMD	Private Partnership
Ring-fencing	✓	✓	✓
	In terms of capability for ring-fencing, all three options are able to provide ring-fencing to the revenues it collected		
Financial Sustainability	✓	✗	✗
	Allowed to manage mix of funding including APBN/APBD if cost recovery can't be achieved from fee	Allowed to receive support from APBD support (capital injection or subsidies), but a commercial mandate creates a cost-recovery expectations that waste services rarely meet	Private partners may receive support from APBN/APBD, but expectation for commercial sustainability from business operation will be higher
Operational Excellence	✗	✓	✓
	Limited examples of BLUD implementation in the waste sector, with little benchmark data on service delivery improvement	Built for performance-based operations and professional management, though service quality can suffer under expectations of commercial profitability	Private operators bring proven operational expertise with accountability for results built directly into output-based service contracts

	BLUD	BUMD	Private Partnership
Strategic Collaboration	✓	✓	✓
	Allowed for third party cooperation, but require regulatory framework as basis	Operates as business and allowed for cooperation	Operates as business and allowed for cooperation
Regulatory Alignment and Political Support	✓	✗	✗
	Easier to make without legislative approval, though require assessment by a committee to check eligibility to become BLUD	Forming BUMD requires approval from the legislative. Prevalent BUMD poor performances can decrease likelihood of policymakers to choose BUMD	Requires lengthy feasibility process, where many Pemdas lack the capacity to follow through

Using the five assessment principles, the institutional options are evaluated based on their ability to address the key requirements of waste management reform. This assessment helps identify which institutional model is most suitable for strengthening waste management operations while remaining realistic for Pemda to implement. The analysis results are as follows:

Ring-fencing

BLUD, BUMD, and Private Partnership each provide a mechanism to separate and allocate revenues specifically for waste management. This is achieved through BLUD, BUMD, or company cash accounts respectively for each institutional model. In terms of capability for ring-fencing, all three options from BLUD to Private Partnership are able to provide ring-fencing to the revenues it collected. Therefore, all three options are viable as an alternative to waste management institutions in this aspect.

Financing Sustainability

BLUD offers a more sustainable funding model because it can retain public subsidy while managing service revenue directly. This model fits the waste sector needs, where user fees are unlikely to fully cover service costs in the near term. Unlike BUMD or private partnership models, BLUD operates as a semi-public institution. It can receive APBD support while using its own revenue to fund operations. This structure gives Pemda room to keep subsidizing essential waste services, while still improving revenue management, cost recovery, and operational flexibility.

The unlikelihood of full-cost recovery constrains selection for BUMD and Private Partnership. For BUMD, government support typically comes in the form of initial capital injection, such as physical assets, or operational subsidies. However, BUMD is generally expected to become financially self-sufficient in operating its services. Similar challenge persists for Private Partnership, as the expectation for financial self-sustainability from business operation will be higher.

Operational Excellence

For delivering operational excellence, BUMD and Public-Private Partnerships may have an advantage because both models are already widely adopted and have been more widely implemented in Indonesia. For example, several waste management partnerships have already been established, including Private Partnership is implemented for the operation of TPA Benowo operations, which is a partnership through cooperation between the Surabaya City Government and PT Sumber Organik.

On the other hand, due to BLUD's early adoption for the waste management system, and the lack of implementation of BLUD in the waste system, there have not been many examples of waste BLUD that serve as a benchmark for effective waste service delivery. Thus, BLUD remains untested as a solution.

Strategic Collaboration

BLUD can conduct strategic collaboration because it can cooperate with third parties while remaining under Pemda's control. However, cooperation under BLUD usually requires a clear regulatory basis, which formulation process is dependent on Pemda's capacity. BUMD and Private Partnerships models are also open to strategic collaboration as they're generally more flexible for cooperation with external parties. BUMD can operate as a business entity and enter into partnerships more directly, while private partnerships models are designed around cooperation with private operators.

Regulatory Alignment and Political Support

Relative to BUMD and Private Partnership, BLUD has stronger political acceptance and regulatory feasibility. BLUD is more feasible because it can be established through a Head of Regional Government Regulation (*Peraturan Kepala Daerah/Perkada*), such as a Mayor Regulation (*Peraturan Wali Kota/Perwali*) or Regent Regulation (*Peraturan Bupati/Perbup*). Although setting up a BLUD can take up to three years before becoming fully operational, as reported by existing waste-related BLUDs, the process is still more manageable because it does not require legislative approval.

BLUD has an advantage in political and regulatory alignment because it can usually be established through Pemda regulation, such as a governor, mayor, or regent regulation. This makes the approval process relatively simpler compared to BUMD formation or private partnership procurement. BLUD also remains within the public sector, which may make it more politically acceptable for essential services such as waste management. However, Pemda still needs to assess whether the BLUD structure is legally suitable for their waste service model.

BUMD and Private Partnership models face more complex challenges for political and regulatory alignment. Establishing a BUMD typically requires approval from the local legislature, which can create longer timelines and higher political risk. Private partnership models also require a more complex process, including feasibility assessment, procurement, contract design, and long-term performance monitoring, which many Pemdases may not yet have the capacity to manage this process effectively.

Box 12. Benchmarking: Partial Transformation through Waste BLUD in Jakarta

DKI Jakarta became one of the first regional governments to transform its waste management institution by establishing a BLUD in 2021. As the city government was set to complete the construction of its Refuse-Derived Fuel (RDF) facility, Jakarta's environmental agency determined that a BLUD was needed to ensure that revenue generated from the facility could be fully reinvested into waste management programs. To achieve this ring-fencing function, the agency commissioned a feasibility study on BLUD transformation. Once the study was completed, a formal BLUD process was conducted through assessment led by internal relevant agencies in the provincial government. This process was completed in 2021, with the BLUD formally legalized through Governor Decree (Keputusan Gubernur) No. 1593 of 2021.

The establishment of BLUD has achieved its original objective, although its role remains limited to certain aspects of waste management. The BLUD is now able to manage revenue generated from the operation of several facilities, including the Jakarta Recycling Center. The BLUD is also maximizing revenue from the provision of waste collection and transportation services to commercial sectors and gated communities in Jakarta. However, BLUD Jakarta does not yet provide direct household waste services, mainly because its legal basis does not provide this scope and because it currently lacks the capacity to service households directly.⁸⁸

Box 13. Benchmarking: Lessons Learned from Waste BUMD in Bandung City

Bandung City once provided waste services through BUMD called *Perusahaan Daerah* (PD) Kebersihan. The city established PD Kebersihan in 1985 through Perda No. 02/1985.⁸⁹ Under this arrangement, PD Kebersihan was responsible for city cleanliness and waste services, including street sweeping, waste collection, waste transport to TPA Sarimukti, and service fee collection that contributed to Bandung's local revenue (PAD).⁹⁰

However, PD Kebersihan was eventually dissolved in the early 2020s as the BUMD model proved difficult to sustain in Bandung's waste sector. One key issue was its continued reliance on subsidies from the city government, despite being established as a regional company expected to operate with greater financial independence. In 2021, Bandung City formally dissolved PD Kebersihan through Perda No. 8/2021, with waste management responsibilities transferred back to the city government through DLHK.⁹¹

Box 14. Benchmarking: Success Case of Private Partnership through Waste-to-Energy Power Plant (*Pembangkit Listrik Tenaga Sampah/PLTSa*) Benowo in Surabaya

Surabaya pursued a private partnership model to improve waste processing at TPA Benowo and reduce the burden of final disposal on the city government. The city partnered with PT Sumber Organik through a 20-year Build-Operate-Transfer (BOT) arrangement starting in 2012, under which the private partner developed and operated waste processing infrastructure at TPA Benowo.⁹² The facility was later developed into one of Indonesia's first operational waste-to-energy facilities and was officially inaugurated in 2021⁹³.

⁸⁸ IBC interview with BLUD Jakarta, 2025.

⁸⁹ Pemerintah Kota Bandung, Peraturan Daerah Kota Bandung Nomor 02 Tahun 1985 tentang Pembentukan Perusahaan Daerah Kebersihan Kotamadya Daerah Tingkat II Bandung, 1985; Pemerintah Kota Bandung, Peraturan Daerah Kota Bandung Nomor 14 Tahun 2011 tentang Perusahaan Daerah Kebersihan Kota Bandung, 2011.

⁹⁰ Pemerintah Kota Bandung, Peraturan Daerah Kota Bandung Nomor 8 Tahun 2021 tentang Pembubaran Perusahaan Daerah Kebersihan Kota Bandung, 2021.

⁹¹ Pemerintah Kota Bandung, Peraturan Daerah Kota Bandung Nomor 8 Tahun 2021 tentang Pembubaran Perusahaan Daerah Kebersihan Kota Bandung.

⁹² Kementerian Energi dan Sumber Daya Mineral, "PLTSa Benowo Menunggu PLN Tandatangani Kontrak," accessed June 2026, <https://www.esdm.go.id/id/media-center/arsip-berita/pltsa-benowo-menunggu-pln-tandatangani-kontrak>.

⁹³ Kementerian Energi dan Sumber Daya Mineral, "Kementerian ESDM Akselerasi Proyek PLTSa Benowo Jadi Model Pengolahan Sampah Jadi Energi," May 6, 2021, <https://www.esdm.go.id/id/media-center/arsip-berita/kementerian-esdm-akselerasi-proyek-pltsa-benowo-jadi-model-pengolahan-sampah-jadi-energi>.

The partnership is considered successful because Surabaya could guarantee waste supply and provide government-backed payments (e.g. tipping fee), creating a bankable revenue base for the private partner.⁹⁴ PT Sumber Organik processes around 1,600 tons of municipal waste per day from Surabaya, helping secure a consistent feedstock for the facility.⁹⁵ The project is also supported by revenue from tipping fees paid by the government and electricity sales to the State Electric Company (*Perusahaan Listrik Negara/PLN*), providing a more predictable income stream for long-term operations.⁹⁶

Recap on Institutional Arrangements

After assessing all five principles, cities and regencies need to select institutional arrangements based on their respective benefits and limitations.. BLUD, BUMD, and Private Partnership each offer different strengths and limitations. The most suitable option depends on each city's ability to ring-fence revenues, manage mixed funding sources, deliver reliable services, collaborate with third parties, and navigate political and regulatory requirements.

In many scenarios, BLUD may offer the most feasible starting point because it can ring-fence revenues, accommodate subsidies when cost recovery cannot yet be achieved, and be established without legislative approval. However, BUMD and Private Partnership may outperform BLUD where stronger cost recovery and bankable revenue can be provided. IBC will formulate a toolkit to support cities and regencies in selecting and designing the institutional arrangement that best fits their local context.

Specific Recommendations for Responsible Stakeholders

Pemda



- Implement selection of institutional arrangement for waste using 5 principles of healthy waste institutions tailored to the local context of each cities/regencies.
- Prepare the legal and regulatory basis as needed, including coordinating with DPRD and/or other relevant agencies depending on selected institutional arrangement.

KemenLH and Kemendagri



- Provide stronger mandate (e.g., regulations/instructions) for selection of waste institutions by cities/regencies using 5 principles of healthy waste institutions.
- Provide technical assistance as needed by cities/regencies to establish selected institutional arrangements.

Private Sector



When available, the private sector can participate as operators for waste management services (e.g., for waste collection, transport, or facility operations).

⁹⁴ PT Sumber Organik, "Waste is an under-developed native energy-source waiting to be discovered," accessed June 2026, <https://www.sumberorganik.com/>

⁹⁵ Kementerian Energi dan Sumber Daya Mineral, "Kementerian ESDM Akselerasi Proyek PLTSa Benowo Jadi Model Pengolahan Sampah Jadi Energi," May 6, 2021, <https://www.esdm.go.id/id/media-center/arsip-berita/kementerian-esdm-akselerasi-proyek-pltsa-benowo-jadi-model-pengolahan-sampah-jadi-energi>

⁹⁶ detikNews, "Eddy Soeparno Puji PLTSa Benowo Surabaya Sulap Sampah Jadi Listrik," March 20, 2025, <https://news.detik.com/berita/d-7832419/eddy-soeparno-puji-pltsa-benowo-surabaya-sulap-sampah-jadi-listrik>.

3.2 Tailoring Household Waste Service Model to City Capacity

Ten Recommendations to Improve Upstream Waste Management: Design Suitable Service Model for Each City

4. Design the service model (government collection, collection contract, or non-government collection) for household waste services that best fits each city's institutional capacity and third party readiness while considering existing household waste collection mechanisms. This entails assessment of the capacity and capability of internal city/regency governments in providing direct household waste collection, identification of experienced and reliable private/KSM as operators, and evaluation of existing scale of *RT/RW* and *swakelola* operation and feasibility of integrating these stakeholders into the upgraded waste collection service model.

As outlined in Sections 2.3.1 and 2.3.2, the existing household waste service delivery model (largely operated by RT/RW/*Swakelola*) suffers from unclear service standards that resulted ultimately in lack of public trust toward the waste system. Furthermore, waste fees collected in the current status quo are not financing end-to-end waste systems. This challenge is further compounded by inadequate billing mechanisms, both in terms of coverage and payment convenience. Therefore, Section 3.2 discusses solutions to these challenges, focusing on how cities and regencies can improve household waste collection service design and delivery, as well as billing mechanisms.

Section 3.2 presents three service delivery models for household waste collection. Paired with the three institutional arrangements from Section 3.1, they give cities and regencies seven workable options to match their local context. This section also discusses how fee collection mechanisms can be integrated into service delivery models through partnerships with utility providers and digital payment channels.

3.2.1 Service Delivery Model Options for Household Waste Collection

Waste management in Indonesia goes through four nodes: waste source, temporary waste collection point (*Tempat Pembuangan Sementara/TPS*), processing (e.g. recycling, Waste-to-Energy, RDF), and final disposal. Each of these nodes are linked with a system (*flow*) that transports and finances waste between these nodes (Figure 25).



Figure 25. Nodes and Flow in Waste System

Section 2.2 has highlighted the challenges especially in collection of waste from household to TPS faced in service delivery for household waste collection, originating from an unclear service model operated by RT/RW without clear technical requirements or KPIs.

Systemic reform must begin at the upstream stage, as household waste collection directly determines the quality and volume of inputs entering downstream infrastructure. Improving the household waste collection system delivers three preconditions for effective processing: a predictable and steady supply of material, minimal cross-contamination, and ideal moisture levels. Ultimately, these upstream improvements act as a direct catalyst to maximize downstream operational performance.

Reform in the upstream stage is also about ensuring that waste fees are formally collected through government institutions. This creates a more reliable pool of funds that can be reinvested into waste system improvements. These funds can also support the construction of infrastructure and facilities, while also enabling the involvement of private operators to professionally manage downstream facilities. Ultimately, upstream reform not only improves collection performance, but also creates a stronger financial foundation for the overall waste management system.

Therefore, to improve upstream waste management, the following sub-sections focus on improving the transport and payment flows between the waste source (Node 1) and TPS (Node 2). Three service delivery model options are offered for this stage: (1) government collection, (2) collection contracts, and (3) non-government collection.

Table 5. Options for Service Delivery Model

3 Options for Service Delivery Model		
Option 1 <i>Government Collection</i>	Option 2A <i>Collection Contract</i>	Option 2B <i>Non-Government Collection</i>
- Pemda (through BLUD/BUMD) directly collects waste from households and delivers them to TPS - Household pays retribution directly to Pemda (of via Pemda-authorized billing channel (e.g. PDAM, BLUD, BUMD))	- Pemda awards a service contract to Private/KSM for household waste collection - Private/KSM collects waste from households and delivers waste to TPS - Households pays retribution directly to Pemda - Pemda pays Private/KSM service fee for collection	- Private/KSM collects waste from households and delivers waste to TPS - Households pays waste fee to Private/KSM operators - Private/KSM operator remits tipping fee (e.g. retribution, tax) to Pemda when using services in the downstream such as TPS3R/TPA

Option #1 - Government Collection: Centralizing the Handling of Trash and Cash

The first is the government collection model, where Pemda is responsible for waste collection and for collecting fees from households. Payments are made directly to Pemda, either through its own system or through an authorized channel such as PDAM or BLUD. The government then uses this revenue to fund waste services.

Box 15. Benchmarking: Lessons from Qena (Egypt)'s Centralized End-to-End Reform

At the international level, the Qena City of Egypt shows how a centralized government collection model can work when supported by strong institutional reform. With technical assistance from GIZ and funding from the European Union, Egypt implemented the National Solid Waste Management Programme in Qena as one of four pilot governorates to establish a dedicated waste management system.⁹⁷ Under this model, the municipality controls the entire waste value chain, including collection. In practice, the city determines fixed waste truck routes to ensure regular and predictable collection. At the same time, local neighborhood heads (similar to RTs in Indonesia) are responsible for monitoring household behavior, supporting street cleaning, and reporting violations. Enforcement is applied both to households that dispose of waste improperly and to service workers who fail to meet standards. This combination of structured routes and local-level monitoring helps maintain consistent service delivery.

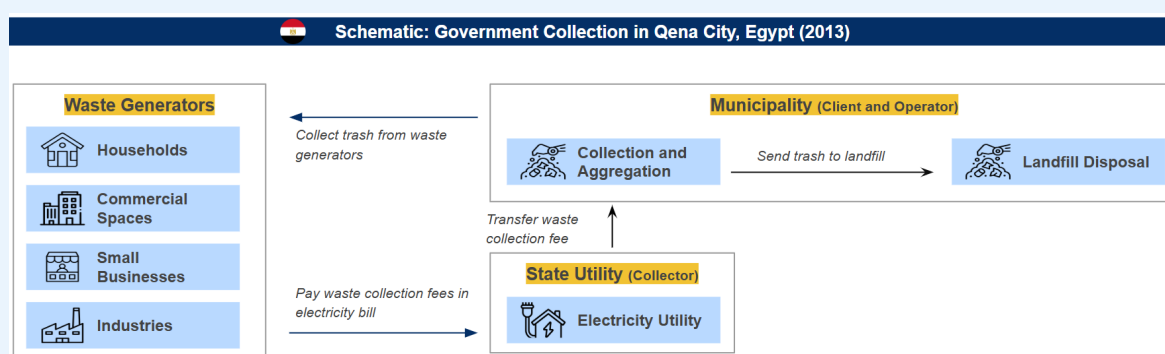


Figure 26. Government Collection in Qena City, Egypt in 2013

Two key lessons emerge from Qena that can be applied to Indonesia: 1) Linkage between payment and service quality, and 2) integration of pricing and service delivery within one institution. First, end-to-end reform must overcome a basic coordination problem: households are unwilling to pay when service quality is low, but service quality cannot improve without stable fee revenue. Breaking this cycle requires significant upfront investment to improve service quality to a level where payment becomes more acceptable. This is what the GIZ-assisted and EU-funded programmes enabled in Qena. Second, combining pricing authority and service delivery within the same institution improves accountability. The same institution that sets the fee is also responsible for delivering the service, making performance easier to monitor and enforce. For Indonesia, Malang's BLUD model already reflects this direction. However, scaling it across cities would require similar upfront investment to establish service quality and build public willingness to pay consistently.⁹⁸

⁹⁷ European External Action Service (EEAS), "European External Action Service," accessed April 22, 2026, https://www.eeas.europa.eu/node/18585_en.

⁹⁸ Pemda Official, Malang City, interviewed by Indonesian Business Council, 2026.

Box 16. Benchmarking: How Malang Regency Leverages BLUD Model for Fiscal Flexibility and End-to-End Collection

Malang Regency offers one of the clearest examples of the government collection model in practice. The city manages household waste collection directly through a BLUD, which conducts door-to-door collection and charges households between IDR 18,000 and IDR 30,000 per month in certain areas of the regency. Unlike a standard DLH, which relies on annual APBD allocations, a BLUD has its own financial structure. It can manage revenues and expenditures directly, meaning collected fees can be used immediately to fund operations instead of going through the broader government budgeting process. This financial flexibility is what makes the end-to-end model more operationally viable in Malang compared to a conventional agency setup.⁹⁹

Key Takeaway from Benchmarking for Option 1

Among the three options, this model has a key advantage on increasing waste financing and, when supported by clear service standards, adequate billing infrastructure, and ring-fenced revenues as discussed in Sections 2.1 and 2.2, it can help standardize services consistently across areas. However, this model may face resistance from existing *swakelola* operators, who currently manage waste collection and earn fees at the RT/RW level.¹⁰⁰ This is because the government collection model would disrupt *swakelola*'s roles in the collection system, which in turn diminishes their potential and revenues and employment opportunities. Furthermore, feasibility of implementing Option 1 is determined by the capacity of the waste institution to deliver waste collection services directly to households, such as availability of trucks/carts, manpower, and truck to transport to TPS.

Option #2A - Collection Contract: Decoupling the Handling of Trash and Cash

The second is the collection contract model, which clearly separates two functions: waste collection is carried out by a private or community-based (*Kelompok Swadaya Masyarakat/KSM*) service provider, while Pemda is responsible for collecting household fees. The collected fees are then used to pay the service provider.

Box 17. Benchmarking: The Singapore Model for Managing Private Sector Engagement Through Multi-Year Service Contracts and Crystal-Clear Regulatory Frameworks

Singapore provides a clear example of the collection contract model supported by highly structured contract governance. The National Environment Agency (NEA) is the central authority responsible for designing the system, including running competitive tenders, setting household waste fees, and monitoring contractor performance. In this case, Singapore is divided into six geographic zones, a structure that was refined in 2018 to improve efficiency from originally nine zones in 1999.¹⁰¹ Private companies bid for 7–8 year contracts to collect waste in each zone.

⁹⁹ Alliance to End Plastic Waste, "Bersih Indonesia: End-to-End Household Waste Management System Trials Start in Malang Regency," accessed April 22, 2026, <https://www.endplasticwaste.org/insights/news/bersih-indonesia-end-to-end-household-waste-management-system-trials-start-in-malang-regency>

¹⁰⁰ *Ibid*

¹⁰¹ National Environment Agency (NEA), Public FAQs on Revised Refuse Collection Fees for Households 2024, March 27, 2024, https://www.nea.gov.sg/docs/default-source/wcd/public-faqs-on-revised-refuse-collection-fees-for-households-2024_27-mar-20244889a3692bb04f9e99db76a7217f612a.pdf.

Each operator is assigned an exclusive service area during the contract period. This gives operators stable revenue, allowing them to invest in equipment, staff, and compliance systems.¹⁰²

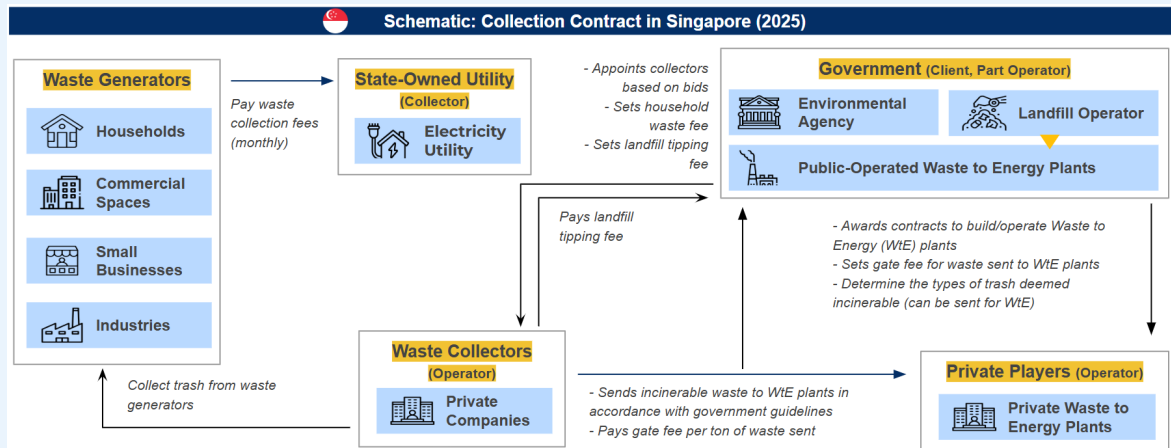


Figure 27. Collection Contract in Singapore (2025)

Household waste fees are collected centrally through SP Services, a state-owned utility that also handles electricity and water billing. The revenue is then passed directly to private operators, ensuring that funds are ring-fenced for waste services rather than absorbed into general government budgets. Contracts also include detailed service standards covering collection frequency, vehicle requirements, staff certification, and reporting obligations, all of which are closely monitored by NEA.

Box 18. Benchmarking: Operational Pitfalls in Pekanbaru – Key Lessons on Ensuring Contractual Precision, Fiscal Readiness, and Streamlined Procurement

Pekanbaru ran a collection contract arrangement where the city appointed a private contractor to handle waste collection from households, funded through retribution fees charged to households. Under this setup, the city retained responsibility for billing and revenue collection, while the physical work of collecting and transporting waste was delegated to a private provider. This separation between fee collection and waste collection is the core feature of the collection contract model. The arrangement continued until June 2025, when the private operator's contract expired and the city shifted toward a self-managed approach. Pekanbaru's experience shows that this model was difficult to sustain due to unclear contract terms between the environmental agency and the private operator, limited budget capacity to enforce service standards, and slow tender processes caused by difficulties in delegating authority and attracting qualified bidders.¹⁰³

¹⁰² Recyclopediasg, "Public Waste Collectors," accessed April 22, 2026, <https://recyclopediasg/resources/pwc>.

¹⁰³ Zainal et al., "Article View 7947," MIMBAR: Jurnal Sosial dan Pembangunan, accessed April 22, 2026, <https://ejournal.unisba.ac.id/index.php/mimbar/article/view/7947>.

Key Takeaway from Benchmarking for Option 2A

The key lesson for Indonesia is that the collection contract model only works well when the government can set clear and enforceable standards, run competitive and transparent tenders, and consistently monitor performance. Pekanbaru's experience shows that without these capabilities, outsourcing collection can hinder the success of the collection contract model.

An advantage of this arrangement is that it creates a more flexible system where services are designed by contractual terms rather than rigid regulatory mandates. This option simultaneously improves waste financing and accommodates existing *swakelola* operators,¹⁰⁴ resulting in less political resistance compared to a full government collection system as with Option 1. However, the disadvantage is that managing contracts between the government and private operators adds a layer of complexity, requiring technical and administrative capacity that many Pemas have not yet developed, as reflected in the capacity and capability challenges discussed in Section 2.2.

Option #2B - Non-Government Collection: Decentralizing the Handling of Trash and Cash

The third is the non-government collection model, where a private or community-based operator collects waste from households and bills them directly. The operator then sends part of the fees to Pemas in the form of tipping fees and keeps the rest as payment for its services.

Box 19. Benchmarking: How Dar es Salaam (Tanzania) Mobilized Private and Community Operators, but Stumbled on Landfill Compliance

Dar es Salaam in Tanzania shows both the potential and the limitations of this model, and its reform history is instructive. Until the early 1990s, waste management was fully handled by the city council, but service performance was very low. In response, with support from the UNDP and the International Labour Organisation (ILO), the city introduced a new by-law in 1993 that opened the sector to private and community-based operators. Its implementation began in 1994 with eleven wards and gradually expanded across the city. By 1999, fifteen private companies and 55 community-based organisations were operating. As coverage expanded, service performance improved, with waste collection increasing from 21% in 2001 to 40% by 2007.¹⁰⁵ Under this arrangement, operators collect fees directly from households and recover their costs without receiving direct payments from the city government. The municipality's financial role is limited to operating the landfill and charging a tipping fee of 1,500 TZS per tonne for waste delivered to the site.¹⁰⁶

¹⁰⁴ IBC Expert Interviews, 2026.

¹⁰⁵ Envirowise, "What a Waste: Summary of Waste Management Practices in Dar es Salaam," accessed April 22, 2026, <https://www.envirowise.co.tz/what-a-waste-summary-of-waste-management-practices-in-dar-es-salaam/>.

¹⁰⁶ Richa Singh, "Dar es Salaam's Waste Management Needs a Complete Revamp," Down To Earth, February 1, 2023, <https://www.downtoearth.org.in/africa/dar-es-salaam-s-waste-management-needs-a-complete-revamp-87428>.



Figure 28. Waste Collection Schematics in Dar Es Salaam, Tanzania (2000s)

Although operators collect fees directly from households and do not receive payment from the government, municipalities still play a regulatory role by setting the maximum monthly fee that operators may charge, thereby separating price-setting from service delivery. This ceiling is determined based on estimated operating costs and household ability to pay.

In addition, private firms and community-based organizations compete through the same bidding process to be selected as waste collectors in an area, provided they meet the required technical and financial eligibility criteria. The system therefore combines competitive selection, clear eligibility requirements, and defined service obligations to improve competition and accountability.

Nonetheless, Dar es Salaam's experience also highlights the limitations of this model. Even as household collection improved, accountability broke down further along the chain. Where intermediate facilities went unsupervised, operators could quietly bypass formal disposal. Dumping waste illegally or burning it on site was cheaper than paying the tipping fee at the landfill. This means despite the household waste being collected, proper disposal was not guaranteed.

Box 20. Benchmarking: The Banyumas Model for Minimizing Municipal Fiscal Overhead as a Realistic Entry Point for Resource-Constrained Regencies

Banyumas most closely reflects the non-government collection model because the regency delegates household waste collection and fee collection to community groups/*Kelompok Swadaya Masyarakat* (KSM). These community groups operate TPS3R facilities, where valuable waste is recovered and processed into fertilizers, Refuse Derived Fuel (RDF) pellets, and plastic roofing materials. Residual waste from TPS3R is then transported to TPST facilities managed by the Banyumas Government. In return, the community groups pay fees to the government for the use of TPS3R land and trucks to transport residual waste to TPST. This model has helped the Banyumas Government significantly reduce its waste management costs, from around IDR 30 billion to IDR 10 billion per year.

Key Takeaway from Benchmarking for Option 2B

For Indonesia, three conditions are critical for the non-government collection model to work effectively. First, the municipality needs to set a clear maximum household fee to prevent excessive pricing. Second, Indonesia needs to adjust its existing waste transport mechanisms and enforce tipping fees for disposing waste at TPS3R/TPA. Third, the contractor selection process must be genuinely competitive, with transparent criteria and verified qualifications, to ensure capable operators enter the system from the start. This can be done through setting regulations for private/KSM waste collection.¹⁰⁷

In terms of advantages, this model is the closest to how waste collection already operates under the current RT/RW arrangement described in Section 2.2.1. This means existing operators can continue their current roles, and households do not face major changes in how they pay the household waste collection fee. At the same time, it brings more revenue into the formal waste financing system than the current arrangement allows, as operators are required to send a share of the fees they collect to the government.¹⁰⁸ However, the disadvantages are that upstream service improvement can be difficult to achieve, and stronger enforcement is needed to ensure tipping fee payments, including restricting operators from disposing of waste at TPS/TPA facilities if fees are unpaid.

3.2.2 Synthesizing Institutional Arrangement and Service Delivery Model into Seven Options for Cities/Regencies

Choosing how waste services are delivered and choosing who manages them are two related but separate decisions. When combined, the three institutional models, BLUD, BUMD, and private partnership, with the three service delivery models produce a set of possible arrangements that cities and regencies can adopt, depending on their conditions. As illustrated in Table 6, the combination results in seven possible arrangements, each of which will be individually detailed in the subsequent analysis.

Table 6. Pairing Institutional Arrangements and Service Delivery Models

		Service Delivery Models		
		Government Collection	Collection Contract	Non-Government Collection
Institutional Arrangements	BLUD	Option 1 BLUD + Government Collection	Option 2 BLUD + Collection Contract	Option 3 BLUD + Non-Government Collection
	BUMD	Option 4 BUMD + Government Collection	Option 5 BUMD + Collection Contract	Option 6 BUMD + Non-Government Collection
	Private Partnership	N/A	Option 7 Private Partnership + Collection Contract	N/A

¹⁰⁷ Global Alliance for Incinerator Alternatives (GAIA), "GAIA," accessed April 22, 2026, <https://www.no-burn.org/>.

¹⁰⁸ IBC Expert Interviews, 2026.

BLUD and its Service Delivery Model Options

Under BLUD, a city can directly operate the full government collection model, conducting both waste collection and billing households for their waste fees. It can also use a collection contract model, where the BLUD manages billing and financing while outsourcing collection to private operators. Alternatively, it can focus only on processing and disposal under the non-government collection, while private/KSM handle collection.

Table 7. Service Delivery Model Options for BLUD

	BLUD Government Collection (Option 1)	BLUD Collection Contract (Option 2)	BLUD Non-Government Collection (Option 3)
Option Description	BLUD conducts waste collection from household and billing waste fees to household directly or indirectly (e.g. through bundling with utility companies)	BLUD contracts with private/KSM operators to collect waste from households. Household pays waste fees to BLUD and pays private/KSM operator for waste collection based on agreed contract	Household waste collection and waste fee billing continues to be conducted by private/KSM operators. Private/KSM operators pays to BLUD tipping fee (e.g. retribution, tax, etc.) for operating waste processing or disposal facilities
Option Scheme	<u>Waste Flow</u> <pre> graph TD H[Households] -- "Collects fee" --> BLUD[BLUD] BLUD -- "Collect waste and billing agency" --> A[TPS/TPS3R/TPA] </pre>	<u>Waste Flow</u> <pre> graph TD H[Households] -- "Collects fee" --> BLUD[BLUD] BLUD -- "Collect waste" --> P[Private/KSM] P -- "Payment for service based on contract (e.g. SLA)" --> BLUD BLUD -- "Collect waste and billing agency" --> A[TPS/TPS3R/TPA] </pre>	<u>Waste Flow</u> <pre> graph TD H[Households] -- "Collects fee" --> BLUD[BLUD] BLUD -- "Collect waste" --> P[Private/KSM] P -- "Tipping fee" --> BLUD BLUD -- "Collect waste and billing agency" --> A[TPS/TPS3R/TPA] </pre>
Infrastructure(e.g. Truck, Collection Pickup)	Infrastructure needed for service owned by BLUD	Infrastructure needed for service owned by private/KSM	Infrastructure needed for service owned by private/KSM
Operational	BLUD handles door-to-door pickup and deliver to TPS/TPS3R	BLUD procures a private partner or KSM to run the waste collection	Private/KSM handle door-to-door pickup and deliver to TPS/TPS3R
Revenue Scheme	Household waste fees collected by BLUD and recorded in BLUD cash account	Household waste fees collected by BLUD and BLUD pays the operator per contract based on route, house serviced, etc	Household waste fees collected by private/KSM and private/KSM pays tipping fee (e.g., retribution) to BLUD

	BLUD Government Collection (Option 1)	BLUD Collection Contract (Option 2)	BLUD Non-Government Collection (Option 3)
Dinas LH Role	Sets KPIs and monitors performance, provides assets but stays out of operations	Sets KPIs and monitors performance as reflected in contract between BLUD and operator	Sets KPI, monitors performance, and coordinates waste collection coverage across the city
Disclaimer	Viable only where DLH/UPTD have adequate fleet and staff to cover household waste services	Suitable where local fleet is insufficient but qualified private operators or formalized community cooperatives already exist in the area	Works where community-based collection is already functioning and government can enforce restriction of access to TPS3R/TPA if Private/KSM does not pay tipping fee

BUMD and its Service Delivery Model Options

BUMD refers to a government-owned enterprise that operates with a more commercial structure than a BLUD. Under BUMD, the same three models can be applied, namely government collection, collection contract arrangements, and non-government collection, with a government-owned company taking the institutional role instead of the BLUD.

Table 8. Service Delivery Model Options for BUMD

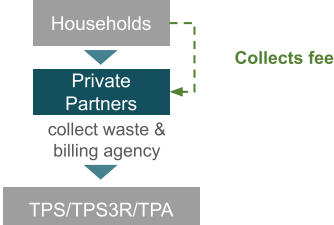
	BUMD Government Collection (Option 4)	BUMD Collection Contract (Option 5)	BUMD Non-Government Collection (Option 6)
Option Description	BUMD conducts waste collection from household as well as billing waste fees to household directly or indirectly (e.g. through bundling with utility)	BUMD contracts with private/KSM operators to collect waste from households. Household pays waste fees to BUMD and pays private/KSM operators for waste collection based on agreed contract	Household waste collection and waste fee billing continues to be conducted by private/KSM operators. Private/KSM operators pays to BUMD retribution for operating waste processing or disposal facilities
Option Scheme	<u>Waste Flow</u> <pre> graph TD H[Households] -- "Collects fee" --> BUMD[BUMD] BUMD -- "Collect waste and billing agency" --> TPS[TPS/TPS3R/TPA] </pre>	<u>Waste Flow</u> <pre> graph TD H[Households] -- "Collects fee" --> BUMD[BUMD] BUMD -- "Billing agency" --> P[Private/KSM] P -- "Collect waste" --> BUMD BUMD -- "Payment for service based on contract (e.g. SLA)" --> P BUMD -- "Collect waste and billing agency" --> TPS[TPS/TPS3R/TPA] </pre>	<u>Waste Flow</u> <pre> graph TD H[Households] -- "Collects fee" --> BUMD[BUMD] BUMD -- "Billing agency" --> P[Private/KSM] P -- "Collect waste" --> BUMD BUMD -- "Payment for service based on contract (e.g. SLA)" --> P BUMD -- "Collect waste and billing agency" --> TPS[TPS/TPS3R/TPA] </pre>

	BUMD Government Collection (Option 4)	BUMD Collection Contract (Option 5)	BUMD Non-Government Collection (Option 6)
Infrastructure (e.g. Truck, Collection Pickup)	Infrastructure needed for service owned by BUMD	Infrastructure needed for service owned by private/KSM	Infrastructure needed for service owned by private/KSM
Operational	BUMD handles door-to-door pickup, TPS transfer, and TPS3R delivery	BUMD procures a private or KSM as operator to run the waste collection (pickup and deliver to TPS/TPS3R)	Private/KSM manages process from household waste collection to the TPS directly
Revenue Scheme	Household waste fees collected by BUMD	Household waste fees collected by BUMD and pays the operator (private/KSM) fee based on contract	Household waste fees collected by Private/KSM pays tipping fee (e.g., retribution) to BUMD
Dinas LH Role	Sets KPIs but has no say in daily operations, monitors performance to ensure alignment with KPIs	Sets KPIs but has no say in daily operations, monitors performance to ensure alignment with KPIs	Sets KPIs, monitor performance, coordinates coverage across the city and ensures enough waste volume reaches the facility
Disclaimer	Need to establish a BUMD with strong corporate governance and operational capacity. Pemda need to ensure at least cost recovery for BUMD for sustainable business operation	Requires ability to effectively monitor and supervise third parties for household waste collection. Pemda need to ensure at least cost recovery for BUMD for sustainable business operations	Works where community-based collection is already functioning and BUMD can enforce restriction of access to TPS3R/TPA if Private/KSM does not pay tipping fee

Private Partnership and its Service Delivery Model Options

Private partnership refers to a public–private partnership arrangement where the private sector participates in providing public service delivery through cooperation agreements with the government. Under this scheme, the government collection and non-government collection models are not applicable. Government collection requires full institutional self-operation of the household waste collection, which is not compatible with a partnership structure. Meanwhile non-government collection is not applicable as the collection continues to follow the existing system with private/KSM operators. Private partnership is therefore limited to the collection contract model.

Table 9. Service Delivery Model Options for Private Partnership

	Private Partnership Collection Contract (Option 7)
Option Description	Dinas LH contracts with private partners as operators to collect waste from households. For the service provided, households pay waste fees to private/KSM.
Option Scheme	<u>Waste Flow</u>  <pre> graph TD Households[Households] --> PrivatePartners[Private Partners] Households -.-> Collects fee PrivatePartners PrivatePartners --> TPS[TPS/TPS3R/TPA] PrivatePartners --- Billing[collect waste & billing agency] </pre>
Infrastructure (e.g. Truck, Collection Pickup)	Infrastructure needed for service owned by private partners
Operational	Private partners handles door-to-door pickup and transport with its own staff/fleet
Revenue Scheme	Household waste fees collected by private partners to fund operation of household waste collection
Dinas LH Role	Set KPI and monitor performance, conducts waste collection service cooperation with private partner
Disclaimer	Requires effective monitoring and supervising for household waste collection. Pemda need to ensure at least cost recovery for private partners for sustainable business operations

Recap on Suitable Service Delivery Model

Indonesia's household waste collection operates through different arrangements across cities, and the previous section argues that this variation should be deliberately designed rather than arbitrarily determined. There are three service-delivery models that are viable. The first is government collection, where the city's own institution runs the service. The second is collection contracting, where the city pays a private or community operator under formal terms and agreements. The third is non-government collection, where independent operators serve households directly and the city collects only the tipping fees downstream. The most appropriate model depends on existing local conditions, including the fleet and staff capacity of DLH or UPTD, the availability of qualified private operators or formalized community cooperatives, and the strength of existing RT/RW and *swakelola* arrangements.

Specific Recommendation for Responsible Stakeholders

Pemda



- Conduct assessment to determine suitable service delivery model for household waste collection.
- Select and formalize service delivery model for household waste collection through issuance of implementing Perkada.
- Through DLH, oversee performance of household waste collection.

Central Government (Kemendagri and KemenLH)



- Provide regulatory basis for selection of household waste service delivery model (e.g. instruction for city/regencies for selecting household service delivery model).
- Provide support (e.g. technical assistance, guidelines and toolkit) to the city/regency government to select best-fit model for household waste collection.

Private Sector



Private sector can operate household waste collection services where the collection contract or non-government collection model is selected.

Households



- Participate in waste programs, such as waste sorting.
- Provide feedback on service quality, including collection reliability, schedule adherence, and service issues.

3.2.3 Leveraging Established Billing Mechanism for Effective Waste Fee Collection

Ten Recommendations to Improve Upstream Waste Management: Design Suitable Service Model for Each City

5. When feasible, **bundle waste fee with established billing mechanisms (e.g. water, electricity or property tax)**. With established capability to reach households and collect fees, bundling waste fees with other established billing mechanisms can be leveraged to increase collectability of waste fees. To ensure smooth implementation of the bundling, ensure a clear cost/revenue-sharing mechanism as well as transparently showcasing differences in waste and other fees.

One of the most effective ways to expand billing coverage and reduce collection costs is to integrate waste retribution into existing utility billing systems. Public utilities such as PDAM (water) and PLN (electricity) already maintain extensive customer databases, established billing cycles, and proven payment infrastructure. By adding a waste fee line item to these existing invoices, Pemda can reach a far larger share of households without building a parallel billing operation from scratch.

Bogor City provides the clearest Indonesian example of how this approach works in practice. The city integrated waste retribution billing into PDAM's monthly invoice. Customers receive a single bill covering both their water usage and their waste fee. The system applies tiered waste retribution rates based on household economic groups, and it covers all households that are jointly serviced by PDAM and DLH Kota Bogor. Households outside this joint coverage area continue to pay through door-to-door collection.

The results have been striking. Before the integration, waste retribution in Bogor City was collected separately from essential services, meaning households faced few consequences for non-payment. As a result, payment compliance remained low. After bundling waste fees with PDAM, the city collected IDR 15 billion in waste retribution, achieving 10% cost recovery against its IDR 150 billion APBD allocation for waste management, and reaching 101% of its 2025 retribution target. The improvement was driven primarily by PDAM's existing penetration and household coverage, which gave the waste fee access to a billing channel that most residents already used and trusted. Though bundled billing does not guarantee full coverage and collectability, it significantly improves billing efficiency and minimizes the need for door-to-door billing.

Bogor City's case demonstrates a straightforward principle: partnering with public service operators that already have well-established billing systems increases collectability and minimizes the operational costs of retribution collection. For cities considering this approach, the key implementation steps involve designing a cost- and revenue-sharing arrangement with the utility partner. Similarly, Maputo, Mozambique offers an example where the municipality's waste fee was collected through electricity bills, while the utility company retained 5% of the collected revenue as part of the partnership fee.¹⁰⁹ This illustrates the importance of clearly defining how much the utility retains for billing and collection, how much is remitted to the waste authority, and what data must be shared for verification.

Furthermore, transparently breaking down waste and utility cost components on the invoice is also essential so households understand what they are paying for, as is synchronizing data between the waste agency and the billing utility. For example, Denpasar's experience illustrates this clearly. When the city attempted to collect waste retribution through PDAM's billing system, residents perceived it as a double payment on top of the informal fees they already paid for their RT/RW operators.¹¹⁰ The backlash ultimately led the government to reverse the policy, resulting in zero household contribution to formal waste retribution. The Denpasar case underscores that any billing reform must be accompanied by clear public communication that explains the difference between community-level fees and formal retribution, and what residents receive in return for each.

3.2.4 Building Trust through Transparency and Linking Payment with Service

Ten Recommendations to Improve Upstream Waste Management: Design Suitable Service Model for Each City

- 6. Integration with Digital Payment Services (Quick Response Code Indonesian Standard (QRIS), e-wallet, bank transfer).** Digitalizing payment of waste fees will allow city/regency governments to track revenue and close potential loopholes where waste fees are unaccounted. Digitalization will also help reduce cost of collection, compared to door-to-door billing. Furthermore, digitalization of waste fees, when provided with link to services can result in higher public trust on waste service delivery.

Aside from utility bundling, Pemda can also improve waste fee collection through digitalizing the billing system. The digitalization allows households to pay waste fees through familiar and trusted channels, including mobile banking, e-wallets, and other digital payment platforms. Digital billing also lowers the operational costs of manual and labor-intensive cash collection.

¹⁰⁹ Adelina Mocubela, "Financial Sustainability of Solid Waste Management (SWM)," presentation at the Knowledge-Sharing Seminar on Waste Management and Preparatory Meeting for Establishing the African Clean Cities Platform, April 25, 2017, slide 20.

¹¹⁰ Pemda Official, Denpasar City, interviewed by Indonesian Business Council, January 2026.

This method would record all services delivered and payments collected, enabling a convenient, transparent, and auditable waste management system.

Box 21. Benchmarking: How Battambang City (Cambodia) Fix Trust Gap by Linking Payment to Proof of Service using Digital App

In Battambang City of Cambodia, waste billing system digitalization dramatically improved payment compliance, service quality, and public trust to the overall waste management system. For many years before billing reform, Battambang City relied on door-to-door cash collection with no digital records. When residents believed that the waste collection service skipped their neighborhood areas, many refused to pay. In turn, operators lost revenue and struggled maintaining their waste transport fleet, which further reduced degraded service quality. This created a reinforcing cycle: weak service reduced public trust, low trust reduced payments, and declining revenue further lower payments weakened service delivery.

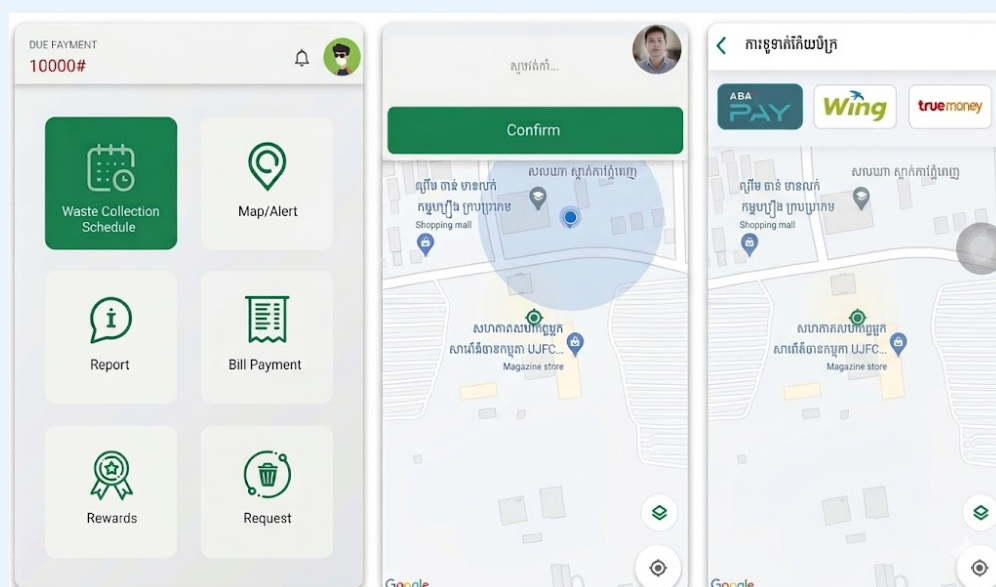


Figure 29. Picture of Battambang's mobile application for waste billing, service reporting, GPS-based collection verification, and digital payment.¹¹¹

Battambang City broke this cycle in 2023 by linking digital billing with waste service verification. The city introduced a platform built on three core features. First, it replaced manual fee collection with a mobile application for waste management retribution. Each bill is timestamped, logged, and auditable. Second, the app created a real-time dashboard for the City Hall to track the bills distributed and paid, which can be grouped by service area and operator. Third, it equipped a GPS tracking device on every waste collection truck. Whereas there was no way to settle disputes between households and operators, the introduction of tracking devices allowed the City Hall to verify whether the truck had actually visited the address. If GPS data did not confirm the pickup, the City Hall has a clear case to uphold citizens' complaints and hold the operator accountable.

¹¹¹ Asian Development Bank, Battambang Smart Solid Waste Financial Management Option Analysis Report, August 31, 2022, <https://events.development.asia/materials/20220831/battambang-smart-solid-waste-financial-management-option-analysis-report>.

Battambang City's digital billing model worked because it linked payment with proof of service. The system closed the trust gap between households, operators, and the City Hall. Bridging the trust gap improved payment compliance and service coverage. By 2025, the waste service coverage rose from around 22–33% to up to 80% of Battambang's 32,000 households. The city is now targeting an ambitious 90–95% coverage, and Cambodia is replicating the platform to improve waste service delivery across the nation.¹¹²

Learning from Battambang's success, Indonesian cities can also adopt a similar service-linked billing system. Battambang's case showed consistent and scalable lessons that digital billing works best when households can verify the services they pay for. To support billing digitalization and integration, cities can also explore commercial partnerships with financial services institutions, such as banks, fintech providers, or payment gateways. As a result, waste fee collection can transform from fragmented informal channels into a unified, convenient, and scalable payment system.

Specific Recommendation for Responsible Stakeholders

Pemda



- **Utility Bundling:** Create an integrated billing scheme with clear cost-sharing rules and transparency to cover operational costs.
- **Strategic Communication:** Provide clear public messaging regarding the bundled fee policy.
- **Digital Accountability:** Transition to traceable digital payment methods that link it directly to visible service execution.
- **Payment Integration:** Secure formal agreements with banking and fintech providers to fully digitize waste fee billing.

Private Sector



- Serve as payment gateway to support digital waste fee billing.
- Ensure payment data is linked to service delivery records to improve billing accountability.

Households



Report payment issues or billing discrepancies through established feedback mechanisms to support billing accountability.

¹¹² Asian Development Bank, "Cambodia: Digital Solutions Improve Solid Waste Service," accessed April 22, 2026, <https://www.adb.org/news/videos/cambodia-digital-solutions-improve-solid-waste-service>.

3.3 Strengthening Regulatory Coherence and Implementation to Close Policy Gap

Section 3.3 sets out four ways to close the gap between Indonesia's waste regulations and what actually happens on the ground: revising PP 81/2012 to establish clear accountability and laddered enforcement (Section 3.3.1), tying central fiscal support to local performance through output-based incentives (Section 3.3.2), making local adoption of key regulations a Renstra target backed by a practical toolkit (Section 3.3.3), and conducting better public communication for sensitive waste reform program such as waste fee reform (Section 3.3.4). Each addresses a specific failure diagnosed in Section 2.3, including rules without enforcement, national policies that stall before reaching local implementation, local agencies without the technical capacity to carry them out, and stalled implementation due to minimal political and public support. Without these, Indonesia's regulatory environment will continue to produce rules on paper that rarely translate into consistent practice.

3.3.1 Establishing Accountability and Enforcement through Revising PP 81/2012

Ten Recommendations to Improve Upstream Waste Management: Strengthen Regulatory Coherence and Implementation

- 7. Revise the Regulatory Framework to Establish Clear Accountability on Household Waste Collection.** Article 18 of PP 81/2012 should be revised so that responsibility for household waste collection clearly remains with city or regency governments. The revision should also include provisions allowing cooperation with third parties to accommodate potential collaboration for household waste collection. As the ministry in charge of supervising Pemda, Kemendagri should ensure that this responsibility is consistently reflected in regional regulations across all cities and regencies.

As discussed in Section 2.3.1, a significant regulatory misalignment remains related to household waste collection. Although PP 81/2012 has reinstated the responsibility for household waste collection back to the city/regency government, in practice many Pemda still limit their responsibility starting at TPS. Aside from the impact to the unclear service delivery, this has also weakened the accountability chain. When household waste services are not properly delivered (e.g. collection not done properly, waste fees not paid, or sorting rules ignored), it becomes difficult to determine who is responsible and who should lead corrective action.

Therefore, to solidify the reform in waste services, city/regency governments should be clearly assigned responsibility not only for waste management from TPS onward, but also for setting and enforcing household-level service standards. This should include a unified minimum standard for waste services such as pick-up schedules, service coverage, collection frequency, and service quality. By doing so, household waste collection would no longer depend on fragmented arrangements that vary across neighborhoods, and Pemda would have a clearer basis to supervise service delivery and correct non-compliance.

However, assigning responsibility for household-level waste services to city and regency governments does not mean that the service must be delivered entirely by the government. As discussed in Section 3.2, governments can contract waste services to third parties while still retaining responsibility for setting and maintaining service standards. Therefore, the regulation should also provide a clear basis for city and regency governments to cooperate with third-party service providers.

With a clear mandate to set and enforce service standards, and with the flexibility to improve household-level waste services through different delivery models, city and regency governments can translate their responsibility into concrete operational arrangements. This means that regulation should not only define responsibility in broad terms, but also specify how it applies at the neighborhood, building, settlement, and TPS levels. A stronger regulatory framework could designate responsible persons or entities for each collection area, clarify their relationship with DLH, and establish a clear escalation pathway when households, collectors, or service providers fail to comply.

Closing this gap requires revising Article 18 of PP 81/2012 to achieve three objectives. First, it should confirm that responsibility for household waste collection sits with city and regency governments. Second, it should mandate city/regency government to define accountability at specific operational levels, including neighborhoods, buildings, settlements, and TPS. Third, it should explicitly permit cooperation with third-party providers so the mandate is workable in practice. The revision should also specify an escalation pathway when households, collectors, or providers fail to comply, including what each accountable party can do and what they must report upward.

Creating clear accountability and escalation pathway are some of the key lessons from Shanghai's waste reform, which can be a reference case for Indonesia:

Box 22. Benchmarking: Designating Clear Accountability and Enforcement Ladder to Implement Waste Reform in Shanghai City (China)

Shanghai strengthened household waste enforcement by assigning responsibility and instruments to specific individuals at specific locations, known as "management responsibility persons." In 2019, the Shanghai City Government released the Regulations of Shanghai Municipality on Municipal Solid Waste Management. The regulation offers two lessons for Indonesia. First, it creates a specific and location-based accountability for waste compliance. In rural settlements, this role falls to village committees; in public places, it falls to management entities. Government sub-district offices then supervise whether these responsible persons are fulfilling their duties within each jurisdiction.

Second, the regulation empowers the management responsibility persons with an escalation pathway. Management responsibility persons must correct improper sorting by residents. Collection agencies can also refuse collection if waste is not properly sorted, and further report to the government if there's refusal to correct sorting practices.



Figure 30. Management Responsibility Person in Shanghai ensuring proper sorting (Xinhuanet)¹¹³

¹¹³ *People's Daily Online*, "上海垃圾分类半年考: 定时定点有争议 后端处理待加强 [Six-Month Review of Shanghai's Waste Classification: Timed Disposal Remains Controversial, Back-End Processing Needs Strengthening]," January 7, 2020, <http://js.people.com.cn/n2/2020/0107/c360302-33696426.html>.

Furthermore, Shanghai's regulation also establishes a layered set of disincentives. Management responsibility persons can issue corrective orders and fines (up to RMB 200/USD 29 for individuals and RMB 5,000/USD 750 for business units). The government can impose heavier fines on collection and transport agencies that mix sorted waste, use improper vehicles, or operate outside authorized schedules, and can revoke their operating licenses in serious cases. For individuals or businesses that refuse to comply after receiving initial correction, the violation can lead to social credit deductions.

Shanghai's ladder enforcement mechanism operates through five sequential steps, as explained below:

1. **At-source supervision:** the management responsibility person instructs and monitors waste producers at the site, corrects improper sorting, and reports refusals to the local sub-district government.
2. **Service-chain enforcement:** collectors and haulers check whether waste meets sorting criteria before accepting it. Collectors are enforced and can refuse collection if waste does not meet proper sorting standards.
3. **Municipal or district government enforcement:** Government authorities issuing formal correction orders and fines for non-compliance, and triggering license revocation for repeat offenders.
4. **Incentives and disincentives to reinforce compliance:** credit-system integration and public disclosure of inspection outcomes.
5. **Citizen complaint and reporting channel:** mechanism allowing any individual to lodge complaints through a public hotline, and authorities are required to respond.

An important caveat is that Shanghai's enforcement, especially in its early stages, relied heavily on "soft enforcement," such as education, community governance, and social pressure, rather than aggressive fines and penalties. Police and formal enforcement officers were used mainly for escalation.

The results were promising. In the first six months of 2019, authorities handled 5,549 waste cases, primarily targeting business units. Between June and July of that year, recyclables collected increased by 10.1%, while residual waste decreased by 11.7%.

Translating this into Indonesia's reform of PP 81/2012 requires three changes. First, the revised Article 18 should mandate Pemda to designate accountable parties at each operational level, similar to Shanghai's tiered structure of village committees, building managers, and management entities, rather than leaving "city/regency government" as the only named actor. Second, RT/RW structures should be formalized within this accountability ladder rather than displaced by it. Third, the regulation should specify the escalation pathway, including what an accountable party can do, whom they report to, and what sanctions apply if non-compliance is not corrected. Shanghai also shows that enforcement can begin with education and community pressure before escalating to formal penalties, an approach that fits Indonesia's existing community-governance structures better than a punitive-first model.

Specific Recommendation for Responsible Stakeholders

Kemendagri



- Propose a revision to existing PP 81/2012 to establish accountability for collection.
- Ensure that responsibility for household waste collection by city/regency governments is codified in regional regulations.

KemenLH



- Propose a revision to existing PP 81/2012 to establish accountability for collection.

Pemda



- Revise existing regulation on waste management to include responsibility for household collection by city/regency.
- Revise Perkada on waste management to incorporate ladder enforcement design.

3.3.2 Tying Central Government's Fiscal Support to Pemda's Achievement in Waste Reform

Ten Recommendations to Improve Upstream Waste Management: Strengthen Regulatory Coherence and Implementation

- 8. Integrate Policy Mandates, Performance-Based Incentives, and Disincentives Linked to KPIs for Kemendagri, KemenLH, and Pemda.** Many waste programs and regulations, such as Permendagri 7/2021 and RIPS, exist on paper but are not effectively implemented. To address this, the central government through Kemendagri and KemenLH should provide financial incentives to Pemda through programs that are designed to link measurable progress, such as increases in recycling rates, service coverage, and financial sustainability, with financial support such as Regional Incentive Funds (*Dana Insentif Daerah/DID*).

At the same time, city governments can also link achievement with incentives and disincentives to support implementations such as for operators, RT/RW, even to households. Soft enforcement, including education and household-level incentives, should be prioritized first, while serious fines should be prepared for serious breaches of regulations.

As discussed in Sections 2.3.2 to 2.3.4, regulation alone does not ensure implementation when Pemda lacks the incentives to put national mandates into practice. Fiscal incentives are particularly important, as many city and regency governments may not have sufficient fiscal space to implement fiscal reforms. Waste reform often requires city and regency governments to expand services, improve collection systems, introduce sorting, modernize billing mechanisms, and increase supervision. These reforms require upfront spending, technical capacity, and political commitment, while the benefits may only become visible over time. Without such incentives from the central government, Pemda may choose to delay reforms that could carry political costs, especially when the perceived costs of implementation outweigh the expected benefits.

Thus, to support Pemda in implementing waste reform, the central government needs to develop and expand incentives such as *Dana Insentif Daerah (DID)/Dana Insentif Fiskal (DIF)* based on achievement related to waste reforms. Under this approach, the central government could create a dedicated waste-management performance category within the Insentif Fiskal framework. Pemda could be rewarded based on measurable indicators such as expansion of household waste collection coverage, improvement in waste fee collection, reduction of unmanaged waste, increase in waste sorting participation, increase in recyclable recovery, and compliance with minimum service standards.

Providing support for achievement in waste reform has been implemented in several cities by World Bank, either for expanding waste services in Nepal or improving recycling in China:

Box 23. Benchmarking: Providing Aid in Improving Waste Service toward Financial Sustainability in Nepal

In Nepal, the World Bank applied an output-based aid scheme to help five municipalities improve waste services while gradually building their financial independence. The program was introduced in a context where waste services were still weak. Nationally, only around 31% of annual waste generation was being collected, meaning that most of the country's roughly 700,000 tons of waste per year remained unmanaged and was often dumped openly.¹¹⁴ Pemda also had limited technical and financial capacity, low public willingness to pay, and weak service systems.

To address this, the World Bank introduced a program with subsidies designed to decline over time as municipal waste management systems became stronger. The subsidy was designed to bridge the initial gap between the cost of service improvement and the revenues available to municipalities, while achievement was tracked through technical scorecards and external verification. Importantly, the subsidy was structured to decline over four years, creating pressure for municipalities to move toward greater financial sustainability.¹¹⁵ The improvement was visible both in service coverage and in financial performance. Between 2013 and 2017, waste collection services were expanded to 120,000 households, helping raise service coverage to 70% across the five participating cities.¹¹⁶ Financial improvement was also significant. At the start of the program, household waste fee revenue covered only 1% of total waste management costs, while 44% came from government subsidies, and the remaining 55% remained as an unfunded gap. By year five, household waste fee revenue had increased to cover 50% of operating costs, while the remaining 50% was financed by Pemda, eliminating the funding gap entirely.¹¹⁷

¹¹⁴ World Bank, Results-Based Financing for Municipal Solid Waste, Urban Development Series Knowledge Paper no. 20 (Washington, DC: World Bank, 2014).

¹¹⁵ *Ibid.*

¹¹⁶ World Bank, Clean Cities, Bright Futures: Accelerating Investment and Reforms in Solid Waste Management in Developing Countries, Results Briefs, May 5, 2025.

¹¹⁷ Global Partnership on Output-Based Aid (GPOBA), Output-Based Aid for Municipal Solid Waste Management in Nepal, Lessons Learned Note 15, June 2018.

Box 24. Benchmarking: Providing Aid Tied to Clear Improvement in Recycling Rate in Ningbo City, China

Another lesson can be seen in Ningbo, China, where incentives were tied to measurable improvements in sorting and recycling performance. The program used clear output targets and tracked performance through baseline surveys, training, public outreach, random checks, and scorecards before incentives were calculated.¹¹⁸ This approach helped produce visible improvements. The number of households participating in waste sorting increased from an initial target of 636,000 households to 828,000 households, and the program later benefited more than 900,000 households overall.¹¹⁹

The share of household waste sorted increased from the original target of 15% to 17.5%.¹²⁰ The amount of recyclable material sorted also increased sharply, from a target of 39,000 tons per year to 71,600 tons per year.¹²¹

As can be seen from both Nepal and China, the incentive can be designed as transitional support rather than a permanent subsidy. In the early stage, fiscal incentives could help city and regency governments cover the upfront costs of reform, including household data collection, service expansion, public outreach, billing system improvements, and monitoring capacity. Over time, however, the incentive should encourage greater local fiscal independence by rewarding improvements in waste fee collection, APBD allocation, and local revenue mobilization.

Together, these cases show that financial support is more effective when it is tied to clear and verifiable outputs, rather than provided as general assistance with no measurable target. For Indonesia's waste sector, this means that national support for reforms such as cost-based tariff adoption, RIPS preparation, and service standard enforcement should be linked to measurable progress. Cities and regencies should not only receive guidance, but also be incentivized to meet clear implementation milestones.

Specific Recommendation for Responsible Stakeholders

Kemendagri/KemenLH



Develop and expand existing program to provide financial incentives for local governments that can achieve significant improvement in waste service performance (e.g. financial sustainability, increase service coverage, etc)

Local Government



- Create clear incentives and disincentives to push for regulatory compliance
- Increase capacity of waste institutions for enforcement (e.g. funding, manpower for enforcement)

¹¹⁸ World Bank, Results-Based Financing for Municipal Solid Waste, Urban Development Series Knowledge Paper no. 20 (Washington, DC: World Bank, 2014).

¹¹⁹ World Bank, Implementation Status & Results Report: Ningbo Municipal Solid Waste Minimization and Recycling Project (P123323), Seq No. 13, February 26, 2020

¹²⁰ *Ibid.*

¹²¹ *Ibid.*

3.3.3 Building a National-Local Synergy on Waste through Measurable Target and Shared Wins

Ten Recommendations to Improve Upstream Waste Management: Strengthen Regulatory Coherence and Implementation

- 9. Provide Training, Data, Tools, and Technical Support to Pemda to Implement waste programs such as Permendagri 7/2021 and RIPS, with adoption targets by Pemda as measurable targets in the Renstra of both Kemendagri and KemenLH.** Pemda often lacks the capacity and capability to implement existing regulations. To accelerate adoption, KemenLH and/or Kemendagri should set adoption of crucial waste programs (e.g. Permendagri 7/2021, RIPS) as a measurable KPI in their ministry Renstra. This is similar to how the incorporation of regional hospitals and Puskesmas transformation into BLUD was included in Kemenkes' strategic plan. With this target in place, both ministries can allocate resources and programs to support regions to adopt Permendagri 7/2021 or to produce RIPS, including providing financial transfers to conduct comprehensive studies, practical training on using Permendagri 7/2021, and publication program to disseminate best practices from RIPS development.

In addition to incentives, as discussed in the previous section, city/regency governments may also require technical support to strengthen their capability to implement waste programs and policies mandated by the central government. As explained in Section 2.2.3, many Pemdads are still unable to prepare their own waste master plan or develop RIPS without support from external parties. Similarly, in relation to the adoption of cost-based tariff under Permendagri 7/2021, as discussed in Section 2.3.3, Pemda often faces difficulties translating the regulation's complex requirements into practical implementation. Without practical support for Pemda, the adoption of waste reform initiatives will happen at a slower pace and depend largely on the initiatives of individual regions, rather than implemented systematically across the country.

To support Pemda in adopting complex and technical waste programs such as RIPS and Permendagri 7/2021, the central government can systematically orchestrate and coordinate implementation through a phased adoption target set to a specific ministry. These targets could include, for example, the number of city/regency governments that have adopted Permendagri 7/2021 or number of city/regency governments that have produced RIPS. These targets should then be supported by a structured assistance package, including standardized templates, calculation tools, model regulations, training modules, help desks, and direct technical assistance for Pemda with lower capacity.

This is exactly what the Ministry of Health (*Kementerian Kesehatan/Kemenkes*) has done when they have a goal to support transformation of regional hospitals and puskesmas into BLUD, as they provide various assistance to Pemda to achieve this target:

Box 25. Benchmarking: Ministry of Health's Push for BLUD Transformation in Health Sector

Indonesia's health sector offers a useful example of how clear targets can accelerate local adoption. Although BLUD establishment is formally regulated under Kemendagri, Kemenkes accelerated adoption by making BLUD transition a formal annual target within their ministry. Set under the Strategic Plan/*Rencana Strategis (Renstra)* of Directorate General Public Health, BLUD has a clear target of adoption in Pemda from 40%, 60%, to 90% between 2022 and 2024. Once BLUD adoption became an official target, it was translated into budget allocation and implementation support. Kemenkes then used this support to fund workshops, assistance meetings, handbooks, and other practical guidance for Pemda.

This helped accelerate adoption, with BLUD coverage reaching 66% of regional hospitals and 51% of puskesmas in 2024, up from 43% of puskesmas in 2023.¹²² Though milestones in the *Renstra* were not met, defining the targets establishes a regulatory mandate for administrative and financing support. This in itself accelerates institutional reform toward BLUD formation in the health sector.

Kemenkes' experience offers a transferable lesson: a regulation can spread at scale when it becomes a named institutional target, supported by a budget and translated into tangible programs. For Permendagri 7/2021 and RIPS, this means KemenLH and Kemendagri should embed derivative policy implementation as an explicit and measurable KPI in their respective *Renstra* and further implement them in practical programs. Without this institutional anchor, both policies will continue to depend on Pemda independently seeking external assistance, which is exactly the pattern Section 2.3.3 identified as the binding constraint on adoption.

Specific Recommendation for Responsible Stakeholders

Kemendagri/KemenLH



- Incorporate adoption of waste policies (e.g. Permendagri 7/2021, RIPS) by Pemda as a measurable target in their *Rencana Strategis/Renstra*.
- Allocate budget to provide funding and training to increase capacity and capability of Pemda to adopt waste policies.

¹²² Direktorat Tata Kelola Pelayanan Kesehatan Primer, "Sosialisasi dan Advokasi Fleksibilitas BLUD di Puskesmas 3," YouTube video, uploaded 2023, <https://www.youtube.com/watch?v=35NmPg9ckTl>.

3.3.4 Winning Public Trust for Waste Reforms through Effective Engagement

Ten Recommendations to Improve Upstream Waste Management: Strengthen Regulatory Coherence and Implementation

- 10. Conduct public outreach with a clear core message centered on waste service improvement before and throughout waste fee reform.** Before reform launches, Pemda should develop clear messaging on why the reform is needed, what residents will receive, and how the funds will be used. This stage should also prioritize listening by collecting public input before final recommendations are announced. Communication should be delivered through multiple channels to reach diverse groups of citizens, with opportunities for policy-shaping incorporated in public communication channels through citizen feedback.

Waste fee reform fails when households do not understand why they need to pay at the very first place. Policies related to waste fees are sensitive matters, especially as the government may increase the waste tariff and enforce more compliance to paying retribution to attain higher cost recovery. Without sufficient public communication campaigns, citizens may object as they are unable to understand the objective of the policy reform.

Jakarta's experience, as outlined in Section 2.3.4, illustrated how weak and delayed public communication can derail reform efforts. Although Jakarta has published a comprehensive study and a regulatory basis for retribution reform, the provincial government eventually reversed course following public concerns that were later amplified by Jakarta's parliament members. Given public concerns over the additional burden of waste retribution, effective engagement should anticipate potential backlash and build public buy-in early.

Public skepticism often arises when households interpret waste fees as a new burden, not a building block for service improvement. This happens when governments introduce fee reforms without aligning its communication strategy to the affected citizens. A successful waste reform depends not only on tariff design, but also on how governments proactively involve households in the policy process and implementation.

Box 26. Benchmarking: Effective Core Message and Public Socialization for Waste Fee Increase in San Diego City (USA)

Lessons from the city of San Diego's waste fees reform illustrate the centrality of public communication to mobilize political acceptance. For more than a century, San Diego provided household waste collection at no direct fees. The waste service costs were entirely borne by the city's general funds.¹²³ Despite the political sensitivity of tariff reform, San Diego successfully adopted a fee-based system in less than five years.¹²⁴

¹²³ Office of the Independent Budget Analyst, City of San Diego, IBA Review and Analysis of the Solid Waste Collection Cost of Service Study and Proposed Fees, IBA Report No. 25-10, April 9, 2025.

¹²⁴ *Ibid.*

San Diego built public acceptance through clear messaging, transparent information, and direct household engagement. First, the policy messages were simple, consistent, and based on three core pillars. The waste fees would fund the service improvements residents had requested, apply to every serviced household, and recover only the actual cost of waste operations, with no profit or cross-subsidy. Second, as illustrated in Figure 31, the city leveraged structured and accessible public dissemination channels, including a centralized website, press releases, and formal engagement invitations. Third, the city involved residents directly through open houses, community events, and neighborhood presentations. These measures allowed the city to gather and address households' concerns early on, which is an important prerequisite for securing acceptance for the waste fees reform.

As a result, San Diego city successfully approved and implemented the waste fees reform with little opposition. Around 80% out of San Diego's 226,495 homeowners did not formally complain about the new waste fees, allowing the city to approve and implement reform with little opposition. The government approved the new waste fee and has adopted it starting from July 2025, roughly 16 months after the campaign began in March 2024.

Select Optional Additional Containers

35-Gallon Trash bin – additional (\$6.89 each)	-	1	+	\$6.89
65-Gallon Trash bin – additional (\$13.06 each)	-	1	+	\$13.06
95-Gallon Trash bin – additional (\$17.78 each)	-	1	+	\$17.78
95-Gallon Recycling bin – additional (\$9.67 each)	-	1	+	\$9.67
95-Gallon Organics bin – additional (\$13.01 each)	-	1	+	\$13.01
Total Monthly Cost:				\$104.01

Collection Frequency

- Black trash bins: once a week
- Green organic waste recycle bins: once a week
- Blue recycle bins: every other week

What Goes Where: San Diego's Three

ORGANIC WASTE RECYCLE BIN

GRAY TRASH

35-GALLON BIN
24" deep x 11" wide x 35" tall

65-GALLON BIN
27" deep x 21" wide x 67" tall

95-GALLON BIN
33" deep x 23" wide x 67" tall

BLUE RECYCLE

GREEN ORGANIC WASTE

35-GALLON BIN
24" deep x 11" wide x 35" tall

65-GALLON BIN
27" deep x 21" wide x 67" tall

95-GALLON BIN
33" deep x 23" wide x 67" tall

Who qualifies?

- You own and live in your home as your primary residence.
- Your home receives City trash and recycling service.
- AND you meet one of these:
 - Household income is at or below 60% of California's State Median Income (Example: One person – \$12,500 annually; Four people – \$16,400 annually)
 - Someone in your household is enrolled in Medi-Cal, CalFresh, CalWORKs or the Low Income Home Energy Assistance Program (LIHEAP).

What's available:

- Half the fee: **\$241.00**
- Full fee: **\$482.00** (Must meet criteria above AND be on payment plan for past due County property taxes)

Apply today!

- Assistance is first-come, first-served through April 2026. The program will then consider applications for assistance through the fiscal year 2027 fee.
- Customers can apply for assistance whether they have already paid part or all of this year's fee.
- In-person help available at upcoming community clinics.

Figure 31. Snapshots from The City of San Diego's Environmental Services Department (ESD) website¹²⁵

The San Diego case shows that Indonesia must treat public engagement as a core part of waste fee reform. Pemda should start the conversation early, before they finalize the policy. They should explain what households will receive in return for their fees, including better collection coverage, more reliable pickup schedules, cleaner neighborhoods, or improved complaint handling. More importantly, Pemda should let residents shape what the policy actually delivers. This can be done by creating real channels for public input, not just one-way announcements. San Diego's fees funded the service improvements residents themselves had asked for, and the city's open houses and neighborhood presentations were genuine input channels, not branding exercises. This approach reduces resistance, builds trust, and makes politically sensitive reform viable.

¹²⁵ City of San Diego Environmental Services Department, "Environmental Services Department," accessed April 22, 2026, <https://www.sandiego.gov/environmental-services>.

Specific Recommendation for Responsible Stakeholders

Local Government



- Craft core messages for waste fee socialization that are relevant to households (e.g. increase in waste service quality, cost recovery).
- Conduct multi-channel community engagement (e.g. digital, door-to-door, community meeting) before and during implementation.
- Establish public feedback and grievance mechanisms.
- Coordinate community-level outreach, including door-to-door socialization where needed.

Households



Participate in public consultations and multi-channel community engagement (digital, RT/RW meetings) before and during policy implementation to provide feedback on proposed fee reform.

3.4. Aligning the Waste Flow and the Money Flow

Indonesia's transition to a circular economy depends on two flows working together, the movement of waste and the movement of money. Waste has to travel reliably from the household to the collection point, through sorting, to final treatment. The fees collected along the way have to travel back, funding the trucks, the facilities, and the people who keep the system running.

The ten recommendations proposed in this report are designed to create that connection. At the household level, clearer service standards, stronger accountability, and better enforcement can improve collection, segregation, and compliance. On the financing side, ring-fenced revenues, bundled billing, and digital payment systems can strengthen revenue collection and make waste services less dependent on uncertain annual budget allocations.

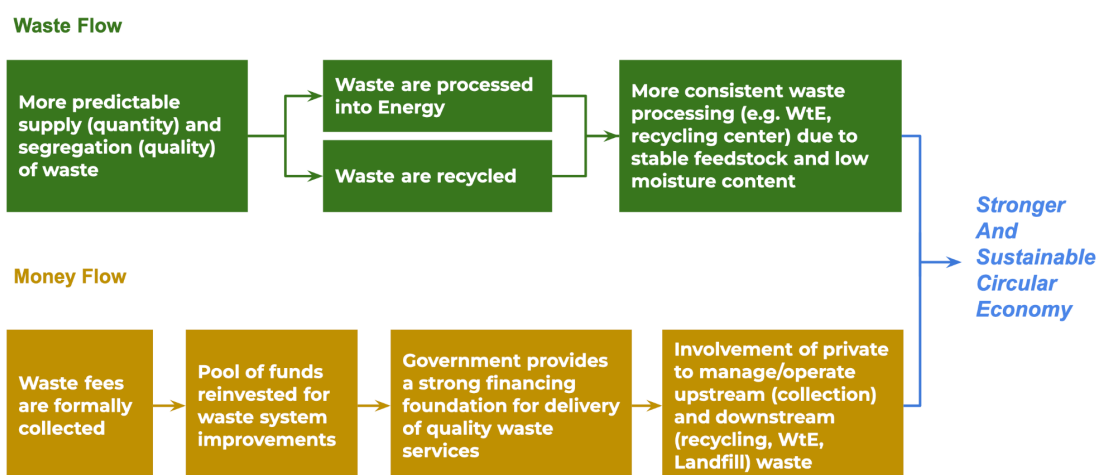


Figure 32. Improvement in Waste Flow and Money Flow for Circular Economy

To achieve this outcome, Indonesia's waste reform requires three foundations: institutions that can deliver, an improved service delivery model, and systematic implementation of policies from the central government adapted to local contexts and needs.

The first foundation is an institution that can deliver waste services accountably. This requires restructuring waste institutions by adopting clearer legal entities such as BLUD, BUMD, or private partnerships, and separating the roles of regulator and operator to eliminate conflicts of interest. These options also strengthen waste financing by ring-fencing waste revenues and ensuring they are reinvested into waste services.

The second foundation is a stronger household service delivery model. By choosing the most suitable model, whether Government Collection, Collection Contract, or Non-Government Collection, local governments can deliver services that are more standardized, accountable, and responsive to citizens' needs. Better service delivery can rebuild public trust while creating an opportunity to redesign waste fees so that collected revenues finance the full system, making waste management more financially sustainable and less dependent on political commitments.

The third foundation is strengthening policy implementation through clearer stakeholder accountability, performance-based incentives, and capacity-building support for local governments. National policy direction must be translated into clear local action. Thus, local governments are not only required to reform, but are also equipped with the authority, incentives, and capacity needed to carry it out.

To support stronger implementation, as well as the other two foundations, IBC is committed to ensuring that this whitepaper does not stop at the level of recommendation. IBC will provide further assistance through an implementation toolkit co-developed with local governments through workshops. The toolkit will translate the policy recommendations in this report into practical operational guidance, including templates, decision trees, and example KPIs, that regions can apply directly to drive their own reforms.

Together, these three foundations reinforce one another: clear institutions create accountability, reliable financing keeps resources tied to service improvement, and effective implementation turns policy direction into action. Combined, they shift waste reform from fragmented interventions into an accountable public service system. Delivering this shift requires a coordinated ecosystem involving central ministries, local governments, community structures, RT/RW networks, utility providers, private operators, and producers. Each actor has a distinct role, making cross-institutional coordination essential. Through this collective effort, the cycle of mistrust can become a cycle of trust, enabling Indonesia to move from a fragmented linear waste system toward a functioning circular economy.



List of Reference

- Adelina Mocubela, "Financial Sustainability of Solid Waste Management (SWM)," Knowledge-Sharing Seminar on Waste Management and Preparatory Meeting for Establishing the African Clean Cities Platform, 25 April 2017, slides 20
- Alliance to End Plastic Waste, "Bersih Indonesia: End-to-End Household Waste Management System Trials Start in Malang Regency," accessed April 22, 2026, <https://www.endplasticwaste.org/insights/news/bersih-indonesia-end-to-end-household-waste-management-system-trials-start-in-malang-regency>
- ANTARA FOTO, The Progress of the Search for Landslide Victims at TPST Bantargebang, photograph, March 10, 2025. <https://www.antarafoto.com/view/2747099/the-progress-of-the-search-for-landslide-victims-at-tpst-bantargebang>
- ANTARA News Banten, "Ribuan warga Tangerang terdampak ISPA akibat pembakaran sampah," October 5, 2025, <https://banten.antaranews.com/berita/355581/ribuan-warga-tangerang-terdampak-ispa-akibat-pembakaran-sampah>
- ANTARA News. "KLH Ingatkan Produsen Segera Susun Peta Jalan Pengurangan Sampah." ANTARA News, 25 Feb. 2025, <https://www.antaranews.com/berita/4673449/klh-ingatkan-produsen-segera-susun-peta-jalan-pengurangan-sampah>. Accessed 11 June 2026.
- Ashwin Subramaniam, "Depok: The Front Line in Indonesia's Fight Against Waste," Sustainable Brands, accessed April 22, 2026, <https://sustainablebrands.com/read/depok-the-front-line-in-indonesia-s-fight-against-waste>
- Asian Development Bank, "Cambodia: Digital Solutions Improve Solid Waste Service," accessed April 22, 2026, <https://www.adb.org/news/videos/cambodia-digital-solutions-improve-solid-waste-service>.
- Asian Development Bank/Development Asia, "Battambang Smart Solid Waste Financial Management Option Analysis Report," 31 August 2022, <https://events.development.asia/materials/20220831/battambang-smart-solid-waste-financial-management-option-analysis-report>
- Badan Pemeriksa Keuangan Republik Indonesia (BPK RI), "Database Peraturan," accessed April 22, 2026, <https://peraturan.bpk.go.id/>
- BPS-Statistics Indonesia (Badan Pusat Statistik/BPS), "Persentase Rumah Tangga Menurut Provinsi dan Perlakuan Memilah Sampah Mudah Membusuk dan Tidak Mudah Membusuk," 2022, <https://www.bps.go.id/statictable/2014/05/02/1360/persentase-rumah-tangga-menurut-provinsi-dan-perlakuan-%20memilah-sampah-mudah-membusuk-dan-tidak-mudah-membusuk-2013-2014.html>
- The CBR is calculated by annualizing the expected benefits and costs based on Bappenas projected additional GDP from the circular economy, applying the social discount rate (SDR), and then converting the result into a cost-benefit ratio (CBR).
- City of San Diego Environmental Services Department, "Environmental Services Department," accessed April 22, 2026, <https://www.sandiego.gov/environmental-services>

- Climate Watch. "Methane Emissions by Sector." Our World in Data, 2023,
<https://ourworldindata.org/grapher/methane-emissions-by-sector?tab=discrete-bar&time=2023&country=~IDN>
- CNN Indonesia. "Dana Jaminan Sosial Kesehatan Defisit Rp9,56 T pada 2024." CNN Indonesia, February 11, 2025.
<https://www.cnnindonesia.com/ekonomi/20250211135653-78-1196978/dana-jaminan-sosial-kesehatan-defisit-rp956-t-pada-2024>; The 6.1% figure is calculated by dividing the upper end of the estimated treatment cost range, IDR 587 billion, by BPJS Kesehatan's 2024 deficit of IDR 9.56 trillion
- Depok Bebas Sampah, "Rencana Induk Persampahan Kota Depok," accessed April 22, 2026,
<https://depokbebassampah.wordpress.com/kajian/rencana-induk-persampahan/7-rencana-induk/>
- detikEdu, "Sampah Menggunung di Jalan Utama Tangsel, Pakar Saran Ini buat Kota Besar," 24 December 2025,
<https://www.detik.com/edu/detikpedia/d-8274662/sampah-menggunung-di-jalan-utama-tangsel-pakar-saran-ini-buat-kota-besar>
- detikNews, "Eddy Soeparno Puji PLTSa Benowo Surabaya Sulap Sampah Jadi Listrik," March 20, 2025,
<https://news.detik.com/berita/d-7832419/eddy-soeparno-puji-pltsa-benowo-surabaya-sulap-sampah-jadi-listrik>.
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Waste Management Fee Calculation and Retribution Module for City/Regency Areas (Jakarta and Bonn: GIZ, 2025).
- Dinas Lingkungan Hidup Provinsi DKI Jakarta, Indeks Kualitas Lingkungan Hidup (IKLH) DKI Jakarta Tahun 2022, Laporan Akhir, Desember 2022,
https://kinerjaps.jakarta.go.id/uploads/images/galery/iklh-2022_20250702125548.pdf
- Dinas Lingkungan Hidup Provinsi DKI Jakarta, Laporan Akhir Penyusunan Kajian Skema Pembiayaan Pengelolaan Sampah Tahun 2022 (Jakarta: Dinas Lingkungan Hidup Provinsi DKI Jakarta, September 27, 2022).
- Dinas Lingkungan Hidup Provinsi DKI Jakarta, Laporan Akhir Penyusunan Kajian Skema Pembiayaan Pengelolaan Sampah Tahun 2022, 2022.
- Dinas Lingkungan Hidup Provinsi DKI Jakarta, "Pemprov DKI Jakarta Akan Bebaskan Retribusi Kebersihan untuk Warga yang Pilah Sampah," October 24, 2024,
<https://lingkunganhidup.jakarta.go.id/detail-artikel/pemprov-dki-jakarta-akan-bebaskan-retribusi-kebersihan-untuk-warga-yang-pilah-sampah>
- Dinas Lingkungan Hidup Provinsi DKI Jakarta, "Retribusi Pelayanan Kebersihan," accessed April 22, 2026, <https://retribusikebersihan.dinaslhdkj.id/>; Kementerian Dalam Negeri Republik Indonesia, "Kemendagri Lakukan Public Expose atas Kajian Perhitungan Biaya Penanganan Sampah dan Penerapan Skema Retribusi untuk Kota Denpasar," accessed April 22, 2026,
https://bangda.kemendagri.go.id/berita/baca_kontent/854/kemendagri_lakukan_public_expose_atas_kajian_perhitungan_biaya_penanganan_sampah_dan_penerapan_skema_retribusi_untuk_kota_denpasar
- Dinas Lingkungan Hidup Provinsi DKI Jakarta, "Simulasi Potensi Penerimaan Retribusi Kebersihan," Retribusi Pelayanan Kebersihan, accessed June 12, 2026,
<https://retribusikebersihan.dinaslhdkj.id/#infografis>

- Direktorat Tata Kelola Pelayanan Kesehatan Primer, “Sosialisasi dan Advokasi Fleksibilitas BLUD di Puskesmas 3,” YouTube, uploaded 2023, video available at:
<https://www.youtube.com/watch?v=35NmPg9ckTl>
- Eco-Cycle, 2024–2025 Annual Report (Boulder, CO: Eco-Cycle, 2025),
https://ecocycle.org/content/uploads/2024/11/2025-Eco-Cycle-Annual-report_web_final.pdf
- Envirowise, “What a Waste: Summary of Waste Management Practices in Dar es Salaam,” accessed April 22, 2026,
<https://www.envirowise.co.tz/what-a-waste-summary-of-waste-management-practices-in-dar-es-salaam/>
- Estimates are based on SIPSN 2024 data on waste disposal by landfill type (TPA/TPST). Results represent a conservative, lower-bound estimate of methane reduction potential. Economic estimates based on Europe Carbon Market Price on 17 December 2025. This estimate assumes a 65% reduction in methane emissions, equivalent to around 26.6 million tons of CO₂e per year and uses European carbon market prices as a valuation proxy.
- Estimates from World Bank’s What A Waste 3.0. World Bank, What A Waste 3.0, 2026
<https://www.worldbank.org/en/publication/what-a-waste>
- Eunomia Research & Consulting Ltd., Costs for Municipal Waste Management in the EU: Annexes, final report to Directorate-General Environment, European Commission (2002), A-13–A-15, https://ec.europa.eu/environment/pdf/waste/studies/euwastemanagement_annexes.pdf; Swedish Environmental Protection Agency, “Municipal Waste Management in Sweden,” last reviewed October 28, 2025,
<https://www.naturvardsverket.se/en/topics/waste/municipal-waste-management-in-sweden/>
- European External Action Service (EEAS), “European External Action Service,” accessed April 22, 2026, https://www.eeas.europa.eu/node/18585_en
- Fitri Handayani, Hasan Basri, and Heru Fahlevi, “Does Increasing Public Hospital Financial Autonomy Improve Performance? A Study of Indonesian Public Hospitals,” June 15, 2019,
<https://doi.org/10.24818/mer/2019.06-01>. Accessed 6 Dec. 2019.
- GIZ, Handbook FAQ of Ministry of Environment and Forestry Regulation No. P.75/2019 concerning the Roadmap for Waste Reduction by Producers, 2023,
<https://www.giz.de/en/downloads/giz-en-handbook-faq-of-MoEF-regulation-P75.pdf>
- Global Alliance for Incinerator Alternatives (GAIA), “GAIA,” accessed April 22, 2026,
<https://www.no-burn.org/>
- Global Partnership on Output-Based Aid (GPOBA), Output-Based Aid for Municipal Solid Waste Management in Nepal, Lessons Learned Note 15, June 2018.
- Indonesia Packaging Recovery Organization, “Program,” IPRO, accessed 10 June 2026,
<https://indonesiapro.org/program>
- Jacindo News, “Penyelewengan Wewenang oleh Ketua RW ‘AB’ Taman Semanan Indah Sudah Meresahkan Warga,” February 6, 2024,
<https://jacindonews.com/2024/02/06/penyelewengan-wewenang-oleh-ketua-rw-ab-taman-semanan-indah-sudah-meresahkan-warga/>
- Jakarta, Bogor, and Denpasar are the three main case cities for IBC in creating this report. However, IBC also gathered additional data and insights from other cities and regencies across Indonesia
- Jambeck, J. R. “Plastic Waste Inputs from Land into the Ocean.” *Science*, vol. 347, no. 6223, 13 Feb. 2015, <https://doi.org/10.1126/science.1260352>.

- JPNN.com, “Dukung EPR, KLH Sarankan Industri AMDK Ganti Labeling Kemasan dengan Metode Emboss,” 6 February 2026,
<https://www.jpnn.com/news/dukung-epr-klh-sarankan-industri-amdk-ganti-labeling-kemasan-dengan-metode-emboss>
- Kemendagri Republik Indonesia, Peraturan Menteri Dalam Negeri Nomor 7 Tahun 2021 tentang Tata Cara Perhitungan Tarif Retribusi dalam Penyelenggaraan Penanganan Sampah, 21 Januari 2021, <https://peraturan.bpk.go.id/Details/163295/permendagri-no-7-tahun-2021>
- KemenLH, National Waste Management Information System (Sistem Informasi Pengelolaan Sampah Nasional/SIPSN), data 2025 (timbulan sampah nasional dan capaian pengelolaan), <https://sampahnasional.kemenlh.go.id/>
- KemenLH, Sistem Informasi Pengelolaan Sampah Nasional (SIPSN), data 2025 (timbulan sampah nasional dan capaian pengelolaan), <https://sampahnasional.kemenlh.go.id/>
- Kementerian Dalam Negeri Republik Indonesia, Peraturan Menteri Dalam Negeri Nomor 14 Tahun 2025 tentang Pedoman Penyusunan Anggaran Pendapatan dan Belanja Daerah Tahun Anggaran 2026, 2025,
<https://peraturan.bpk.go.id/Details/331189/permendagri-no-14-tahun-2025>
- Kementerian Dalam Negeri Republik Indonesia, Peraturan Menteri Dalam Negeri Nomor 33 Tahun 2010 tentang Pedoman Pengelolaan Sampah, 30 April 2010,
<https://peraturan.bpk.go.id/Details/175297/permendagri-no-33-tahun-2010>
- Kementerian Dalam Negeri Republik Indonesia, “Kemendagri Lakukan Public Expose atas Kajian Perhitungan Biaya Penanganan Sampah dan Penerapan Skema Retribusi untuk Kota Denpasar,” September 28, 2022,
https://bangda.kemendagri.go.id/berita/baca_kontent/854/kemendagri_lakukan_public_expose_atas_kajian_perhitungan_biaya_penanganan_sampah_dan_penerapan_skema_retribusi_untuk_kota_denpasar; IBC Expert Interviews, 2026
- Kementerian Energi dan Sumber Daya Mineral, “Kementerian ESDM Akselerasi Proyek PLTSa Benowo Jadi Model Pengolahan Sampah Jadi Energi,” May 6, 2021,
<https://www.esdm.go.id/id/media-center/arsip-berita/kementerian-esdm-akselerasi-proyek-pltsa-benowo-jadi-model-pengolahan-sampah-jadi-energi>.
- Kementerian Energi dan Sumber Daya Mineral, “PLTSa Benowo Menunggu PLN Tandatangani Kontrak,” accessed June 2026,
<https://www.esdm.go.id/id/media-center/arsip-berita/pltsa-benowo-menunggu-pln-tandatangi-ni-kontrak>
- Kompas Lestari, “Menteri LH: Krisis Pengelolaan Sampah Picu Banjir Parah di Bali,” September 15, 2025,
<https://lestari.kompas.com/read/2025/09/15/093000186/menteri-lh--krisis-pengelolaan-sampah-picu-banjir-parah-di-bali>; Brendan Cooper and Sarah Letsinger, The Impact of Plastic Pollution on Urban Flooding Events: Estimating the Number of People Impacted Globally, final report prepared for Tearfund (Bristol: Resource Futures, May 15, 2023),
<https://res.cloudinary.com/tearfund/image/fetch/https://learn.tearfund.org/-/media/learn/resources/research-report/2023/2023-tearfund-research-report-plastic-pollution-and-flooding-full-en.pdf>.
- Kumparan BISNIS. “Mayora Group Resmikan Pabrik Daur Ulang PET Berteknologi Food Grade.” Kumparan, 9 Feb. 2023,
<https://kumparan.com/kumparanbisnis/mayora-group-resmikan-pabrik-daur-ulang-pet-berteknologi-food-grade-1zne9zMSkRu>. Accessed 11 June 2026.

- Lee, Hyunji, Ibrahim Ali Khan, Amsale Bumbaugh, Vibhu Jain, and Emma Marie Heneine. Results Based Financing for Solid Waste Management: Results and Lessons from the World Bank-Financed Project Experience. Washington, DC: World Bank Group, 2024. Accessed June 22, 2026. <http://documents.worldbank.org/curated/en/099102224160594702>.
- Lloyd's Register Foundation and Gallup, World Risk Poll 2024 Report: A World of Waste – Risks and Opportunities in Household Waste Management (London: Lloyd's Register Foundation, 2024), 20.
- Lloyd's Register Foundation, "Open Burning of Waste a Critical Issue in Indonesia, According to Global Report," September 17, 2024, <https://www.lrfoundation.org.uk/news/open-burning-of-waste-a-critical-issue-in-indonesia-according-to-global-report>; The Jakarta Post, "Illicit Waste Burning Reaches Alarming Rate of 48% Indonesian Households," October 3, 2024, <https://www.thejakartapost.com/indonesia/2024/10/03/illicit-waste-burning-reaches-alarming-rate-of-48-indonesian-households.html>.
- Local Government Official, Denpasar City, interviewed by Indonesian Business Council, January 2026
- Ministry of National Development Planning/Bappenas, United Nations Development Programme (UNDP), and Embassy of Denmark, The Economic, Social, and Environmental Benefits of a Circular Economy in Indonesia (Jakarta: Bappenas, UNDP, and Embassy of Denmark, 2021).
- Muhammad Naufal, "Menko Pangan Targetkan 30 PSEL Rampung pada 2027," Tirto.id, March 31, 2026, <https://tirto.id/menko-pangan-targetkan-30-psel-rampung-pada-2027-htuX>.
- N Emalya, et al. Landfill Leachate Management in Indonesia: A Review. Vol. 845, no. 1, 1 May 2020, pp. 012032–012032, <https://doi.org/10.1088/1757-899x/845/1/012032>.
- National Environment Agency (NEA), Public FAQs on Revised Refuse Collection Fees for Households 2024, March 27, 2024, https://www.nea.gov.sg/docs/default-source/wcd/public-faqs-on-revised-refuse-collection-fees-for-households-2024_27-mar-20244889a3692bb04f9e99db76a7217f612a.pdf.
- Office of the Independent Budget Analyst, City of San Diego, IBA Review and Analysis of the Solid Waste Collection Cost of Service Study and Proposed Fees, IBA Report No. 25-10, April 9, 2025.
- Pemda Official, Denpasar City, interviewed by Indonesian Business Council, January 2026.
- Pemda Official, Malang City, interviewed by Indonesian Business Council, 2026.
- Pemerintah Kota Bandung, Peraturan Daerah Kota Bandung Nomor 02 Tahun 1985 tentang Pembentukan Perusahaan Daerah Kebersihan Kotamadya Daerah Tingkat II Bandung, 1985; Pemerintah Kota Bandung, Peraturan Daerah Kota Bandung Nomor 14 Tahun 2011 tentang Perusahaan Daerah Kebersihan Kota Bandung, 2011.
- Pemerintah Kota Bandung, Peraturan Daerah Kota Bandung Nomor 8 Tahun 2021 tentang Pembubaran Perusahaan Daerah Kebersihan Kota Bandung, 2021.
- Pemerintah Kota Bogor, Peraturan Daerah Kota Bogor Nomor 9 Tahun 2012 tentang Pengelolaan Sampah, 10 Oktober 2012, <https://peraturan.bpk.go.id/Details/207274/perda-kota-bogor-no-9-tahun-2012>
- Pemerintah Kota Denpasar, Peraturan Daerah Kota Denpasar Nomor 8 Tahun 2023 tentang Penyelenggaraan Pengelolaan Sampah, 27 Desember 2023, <https://peraturan.go.id/id/perda-kota-denpasar-no-8-tahun-2023>

- Pemerintah Provinsi Bali, “Komposter Cepat Jadi Harapan Baru Atasi Sampah Organik di Bali,” September 16, 2025, <https://www.baliprov.go.id/web/komposter-cepat-jadi-harapan-baru-atasi-sampah-organik-di-bali/>
- Pemerintah Provinsi Daerah Khusus Ibukota Jakarta, Peraturan Daerah Nomor 3 Tahun 2013 tentang Pengelolaan Sampah, 11 Juni 2013, <https://pelayanan.jakarta.go.id/download/regulasi/peraturan-daerah-nomor-3-tahun-2013-tentang-pengelolaan-sampah.pdf>
- People’s Daily Online, “上海垃圾分类半年考：定时定点有争议 后端处理待加强 [Six-Month Review of Shanghai’s Waste Classification: Timed Disposal Remains Controversial, Back-End Processing Needs Strengthening],” January 7, 2020, <http://js.people.com.cn/n2/2020/0107/c360302-33696426.html>
- Peraturan Desa Sumerta Kauh Nomor 7 Tahun 2023 tentang Perubahan atas Peraturan Desa Sumerta Kauh Nomor 2 Tahun 2022 tentang Iuran Jasa Swakelola Pengelolaan Sampah (Desa Sumerta Kauh: 31 Desember 2023), <https://jdih.denpasarkota.go.id/produk-hukum/peraturan-perundang-undangan/perdes/peraturan-desa-sumerta-kauh-nomor-7-tahun-2023-tentang-perubahan-atas-peraturan-desa-sumerta-kauh-nomor-2-tahun-2022-tentang-iuran-jasa-swakelola-pengelolaan-sampah>
- Peraturan Desa Tegal Kertha Nomor 3 Tahun 2023 tentang Iuran Jasa Pengelolaan Sampah (Denpasar: Desa Tegal Kertha, 13 September 2023), <https://jdih.denpasarkota.go.id/produk-hukum/peraturan-perundang-undangan/perdes/peraturan-desa-tegal-kertha-nomor-3-tahun-2023-tentang-iuran-jasa-pengelolaan-sampah>
- Presiden Republik Indonesia, Peraturan Pemerintah Nomor 81 Tahun 2012 tentang Pengelolaan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah Tangga, 12 Oktober 2012, <https://peraturan.bpk.go.id/Details/5295/pp-no-81-tahun-2012>
- Press Trust of India, “Ghazipur Landfill Collapse: NGT Raps Delhi Govt, EDMC for Deaths,” Business Standard, September 4, 2017, <https://www.ndtv.com/delhi-news/green-court-raps-delhi-government-over-ghazipur-landfill-collapse-1745767>
- Primayanti. “Thousands in Tangerang Suffer Respiratory Illness due to Waste Burning.” Antara News, ANTARA, 5 Oct. 2025, en.antaranews.com/news/384249/thousands-in-tangerang-suffer-respiratory-illness-due-to-waste-burning.
- PT Great Giant Pineapple. Sustainability Report 2023–2024. Great Giant Foods, 2025, https://www.greatgiantfoods.com/wp-content/uploads/2025/08/SR-GGP-2023-2024-ENG_vPublished.pdf. Accessed 11 June 2026.
- PT Indofood Sukses Makmur Tbk. Sustainability Report 2025. Indofood, 2026, accessed 10 June 2026, <https://www.indofood.com/uploads/file/SR%20ISM%202025.pdf>
- PT Mayora Indah Tbk. Laporan Keberlanjutan 2025/Sustainability Report 2025. PT Mayora Indah Tbk, 2026, <https://www.mayoraindah.co.id/assets/upload/file/sr-mayora-2025-30042026-03.pdf>. Accessed 11 June 2026.
- PT Sumber Organik, “Waste is an under-developed native energy-source waiting to be discovered,” accessed June 2026, <https://www.sumberorganik.com/>

- Rahma Dwi Safitri and Mochammad Fajar Nur, "Sampah Tangel Menumpuk: Air Tercemar, Kesehatan Warga Terancam," *Tirto.id*, December 18, 2025, <https://tirto.id/sampah-tangel-menumpuk-air-tercemar-kesehatan-warga-terancam-hn43>
- Recyclopedia.sg, "Public Waste Collectors," accessed April 22, 2026, <https://recyclopedia.sg/resources/pwc>
- Results for Development (R4D), "How Countries Are Overcoming Bottlenecks to Get Resources to Primary Care Providers: Experiences from Members of the Joint Learning Network for Universal Health Coverage," blog, accessed April 22, 2026, <https://r4d.org/blog/how-countries-overcoming-bottlenecks-resources-primary-care-providers-experiences-members-joint-learning-network-universal-health-coverage>
- Richa Singh, "Dar es Salaam's Waste Management Needs a Complete Revamp," *Down To Earth*, February 1, 2023, <https://www.downtoearth.org.in/africa/dar-es-salaam-s-waste-management-needs-a-complete-revamp-87428>
- Sabrina Rhamadanty, "Proyek Waste to Energy Hanya Selesaikan 13% Masalah Sampah Indonesia," *Kontan.co.id*, January 27, 2026, <https://nasional.kontan.co.id/news/proyek-waste-to-energy-hanya-selesaikan-13-masalah-sampah-indonesia>
- Salem Solomon, "Ethiopia Trash Landslide Victims Receive Compensation," *Voice of America*, June 14, 2017, <https://www.voanews.com/a/ethiopia-trash-landslide-victims-receive-compensation/3897309.html>
- Sanchez Trancon, Delia, and Xavier Leflaive. 2024. *The Implementation of the Polluter Pays Principle in the Context of the Water Framework Directive*. OECD Environment Working Papers No. 238. Paris: OECD Publishing. <https://doi.org/10.1787/699601fc-en>.
- Sari, Gina, et al. "Microplastics Contamination in the Aquatic Environment of Indonesia: A Comprehensive Review." *Journal of Ecological Engineering*, vol. 22, no. 10, 1 Nov. 2021, pp. 127–140, <https://doi.org/10.12911/22998993/142118>.
- Tim Redaksi, "Dampak Bau Sampah TPA Cipeucang, 5.000 Warga Rawabuntu Gugat BSD dan Pemkot Tangel Rp21,6 Miliar", 29 Januari 2026, <https://koranproperti.com/dampak-bau-sampah-tpa-cipeucang-5-000-warga-rawabuntu-gugat-bsd-dan-pemkot-tangel-rp216-miliar/>
- TV One News. "Pramono Sebut Jakarta Banjir Karena Sampah, Begini Kondisi Sampah Di Pintu Air Manggarai.", 18 Sept. 2025, www.tvonenews.com/berita/nasional/372144-pramono-sebut-jakarta-banjir-karena-sampah-begini-kondisi-sampah-di-pintu-air-manggarai
- US EIA, "Waste-To-Energy (MSW) in Depth - U.S. Energy Information Administration (EIA)." *Eia.gov*, 28 Dec. 2022, www.eia.gov/energyexplained/biomass/waste-to-energy-in-depth.php.
- Waste4Change, "Kemendagri Didukung Waste4Change Menggelar Lokakarya Perhitungan Biaya Penanganan Retribusi Sampah untuk Optimalisasi Pendanaan Pengelolaan Sampah oleh Pemerintah Daerah," January 10, 2023, <https://waste4change.com/blog/kemendagri-didukung-waste4change-menggelar-lokakarya-perhitungan-biaya-penanganan-retribusi-sampah-untuk-optimalisasi-pendanaan-pengelolaan-sampah-oleh-pemerintah-daerah/>

- Waste4Change, "Waste Retribution in Indonesia: How Should It Ideally Work?," accessed April 22, 2026,
<https://waste4change.com/blog/waste-retribution-in-indonesia-how-should-it-ideally-work/>
- World Bank, Clean Cities, Bright Futures: Accelerating Investment and Reforms in Solid Waste Management in Developing Countries, Results Briefs, May 5, 2025.
- World Bank, Implementation Status & Results Report: Ningbo Municipal Solid Waste Minimization and Recycling Project (P123323), Seq No: 13, February 26, 2020
- World Bank, Project Appraisal Document, Report No. P501986, 2026,
<https://documents1.worldbank.org/curated/en/099031926140025768/pdf/P501986-ef2864e0-591b-4258-9e00-75af80be0e56.pdf>
- World Bank, Results-Based Financing for Municipal Solid Waste, Urban Development Series Knowledge Paper No. 20, 2014.
- World Bank, Solid and Industrial Hazardous Waste Management Assessment: Options and Action Areas to Implement the National Strategy (2018), 24,
<https://documents1.worldbank.org/curated/en/352371563196189492/pdf/Solid-and-industrial-hazardous-waste-management-assessment-options-and-actions-areas.pdf>
- World Bank. *Transitioning to a Circular Economy: An Evaluation of the World Bank Group's Support for Municipal Solid Waste Management (2010-20)*. World Bank, Washington, DC eBooks, 2022. <https://doi.org/10.1596/ieg168905>.
- World Bank, "Morocco: Improving Municipal Solid Waste Management through Development Policy Operations," May 22, 2013,
<https://www.worldbank.org/en/results/2013/05/22/morocco-improving-municipal-solid-waste-management-through-development-policy-operations>
- World Bank, "World Bank Approves New US\$250 Million Program to Strengthen Morocco's Municipal Solid Waste Management," press release, November 26, 2024,
<https://www.worldbank.org/en/news/press-release/2024/11/26/world-bank-approves-new-us-250-million-program-to-strengthen-morocco-s-municipal-solid-waste-management>
- World Health Organization (WHO) Indonesia, "Strengthening Primary Health Care Financing through Public Financial Management Reform in Indonesia," January 26, 2026,
<https://www.who.int/indonesia/news/detail/26-01-2026-strengthening-primary-health-care-financing-through-public-financial-management-reform-in-indonesia>
- Zainal et al., "Article View 7947," MIMBAR: Jurnal Sosial dan Pembangunan, accessed April 22, 2026, <https://ejournal.unisba.ac.id/index.php/mimbar/article/view/7947>



IBC
Indonesian Business Council

Indonesian Business Council (IBC)

Sequis Center 3rd Floor, Room 304

Jalan Jenderal Sudirman Kav. 71

Jakarta Selatan 12190

Indonesia

 business-council.id

 [businesscouncil.id](https://www.instagram.com/businesscouncil.id)

 [Indonesian Business Council](https://www.linkedin.com/company/Indonesian-Business-Council)

 [businesscouncil_id](https://www.youtube.com/channel/UC...)