



# Tegal Regency Waste Masterplan 2025-2045

*Integrated Sustainable Waste Management (ISWM)*



# Greetings from Tegal Regency

Assalamu'alaikum warahmatullahi wabarakatuh,

The Tegal Regency Government is intensifying its efforts to improve environmental quality, with a particular focus on enhancing waste management. This initiative aligns with one of the key missions of the Regent and Deputy Regent for the 2025–2029 term: strengthening environmental resilience. Specifically, the waste problem in Tegal Regency now demands urgent and extraordinary attention. With daily waste generation reaching approximately 670.38 tons, coupled with low processing capacity and a high rate of waste leakage, the situation not only burdens the environment but also threatens public health and the quality of life of residents. If left unaddressed with proper management, while the population continues to grow and demographic, settlement, and environmental issues become increasingly complex, the risks of public health crises, environmental pollution, and severe pressure on regional finances—due to the high costs of mitigating the impacts of unmanaged waste—will continue to escalate. Therefore, Tegal Regency Government is committed to developing and implementing a comprehensive, well-planned waste management system, starting now.

One of the concrete improvement measures and tangible commitments already undertaken is the formulation of the Tegal Regency Waste Master Plan for 2025–2045. The preparation of the waste masterplan involved all relevant local government agencies, with support from the Clean Ocean through Clean Communities (CLOCC) Program funded by the Norwegian Agency for Development Cooperation (NORAD) and implemented by Indonesia Solid Waste Association (InSWA). This waste masterplan will serve as the primary reference document for planning and budgeting in the waste management sector in Tegal Regency. Its development coincides with the commencement of the new Tegal Regency Long-Term Development Plan (RPJP) 2025–2045 and new Medium-Term Regional Development Plan (RPJMD) 2025–2029, thereby facilitating the synchronization of local planning and budgeting processes.

Furthermore, to facilitate stakeholders' understanding of Tegal Regency Waste Master Plan, an Executive Summary Book has been prepared. This book not only outlines the priorities, targets, and roadmap for improvement, but is also expected to serve as an introductory information resource for parties interested in collaborating to support the transformation of waste management in our region.

We fully recognize that this effort cannot be undertaken by the local government alone. Collaboration, synergy, and support from a wide range of stakeholders— including the national and provincial governments, non-governmental organizations, the business sector, and the community—are essential. Therefore, Tegal Regency Government warmly welcomes any form of support and cooperation that can accelerate improvements in waste management, for the sake of environmental protection and the well-being of the people of Tegal Regency in the future.

In closing, I extend my sincere gratitude and appreciation to Norwegian Agency for Development Cooperation (NORAD), Indonesia Solid Waste Association (InSWA), and all parties who have contributed to the preparation of this Waste Master Plan. May this document mark the starting point for real change toward a Clean, Cultured, and Wonderful Tegal Regency, and Tegal Luwih Apik

Wassalamu'alaikum warahmatullahi wabarakatuh,

Slawi, 21<sup>st</sup> August 2025

Regent of Tegal,

**H. Ischak Maulana Rohman, S.H.**

# List of Content

<b>Greetings from Tegal Regency</b>	<b>i</b>
<b>List of Content</b>	<b>iii</b>
<b>Objective and Target of Waste Management</b>	<b>1</b>
<b>Technical Operational Aspect</b>	<b>5</b>
Waste Technical Developmnet in Tegal Regency 2045	11
<b>Inclusivity</b>	<b>15</b>
<b>Institutional</b>	<b>20</b>
<b>Regulation</b>	<b>31</b>
<b>Funding and Financing</b>	<b>35</b>
Economic Profile of Tegal Regency	36
Funding and Financing Requirements for the Tegal Regency	39
Waste Management System 2025–2045	
Funding and Financing Strategy for Waste Management in Tegal Regency 2025 – 2045	41
<b>Action Plan</b>	<b>43</b>
Phase 1 Foundation Building (2025–2029)	44
Phase 2 Modeling Expansion (2030–2034)	45
Phase 3 Stabilization (2034–2039)	46
Phase 4 Circular (2039–2045)	47

## Objective and Target of Waste Management

Waste is a strategic issue that continues to grow in importance alongside population increases, changing consumption patterns, and the intensifying activities of society. This is also a challenge in Tegal Regency, which has a population of 1,654,836 people (BPS, 2024) living across 18 subdistricts, comprising 281 villages and 6 urban villages. In 2024, Tegal Regency generated 670.3 tons of waste per day, of which only about 40%—or 265 tons per day—was managed (34% transported to the Penujah landfill, 5% processed, and 2% recycled).

The condition of waste management system in villages also reflects the significant challenge of providing waste services for all. Currently, 32% of villages still lack of waste management service, 41% have only basic waste services, 26% have proper waste services, and just 2% have achieved safe waste management standards. Achieving comprehensive waste management in villages will require consistent and collaborative action among all stakeholders.

With the vision of Tegal Regency a Clean, Cultured, and Wonderful region in waste management, Tegal Regency Waste Master Plan 2025–2045 has been developed, with the following targets:

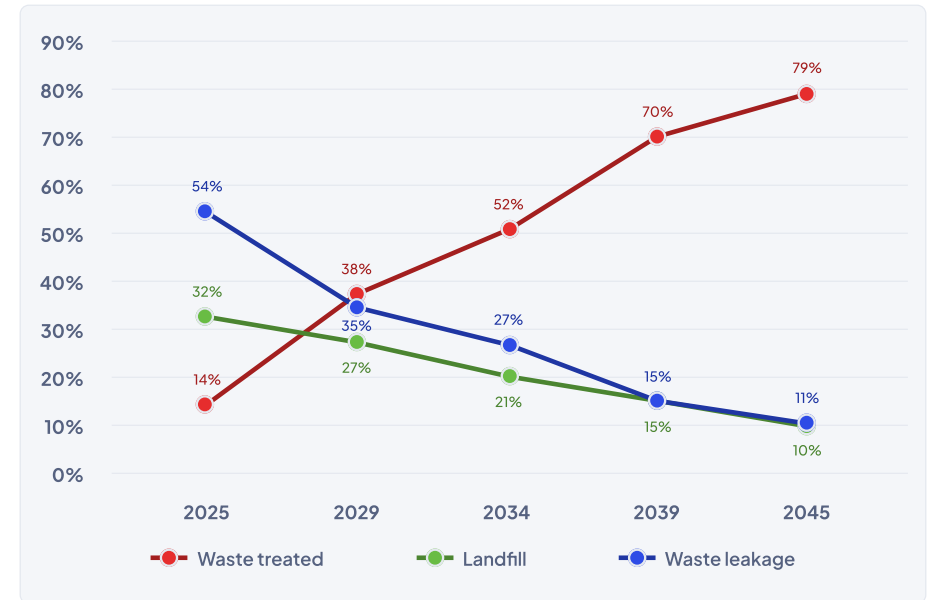


Figure 1. Target of Tegal Regency waste management 2025 – 2045

Table 1. Target detail of Tegal Regency waste management 2025 – 2045

Summary	Unit	Value				
		2025	2029	2034	2039	2045
Waste generation	Ton/day	686.3	714.8	745.7	771.1	795.1
Waste treated	Ton/day	93.1	269.4	388.9	537.1	628.1
Waste goes to landfill	Ton/day	222.2	192.7	155.8	118.9	81.87
Waste leakage	Ton/day	371.1	252.8	201.1	115.1	85.16

In pursuit of Tegal Regency's waste management vision for 2045, the main strategies for waste management in Tegal Regency are as follows:



# Main Strategies of Tegal Regency Waste Management

## Technical Operational of Waste Management

- Waste storage and collection services accessible to all residents of Tegal Regency to prevent waste leakage into the environment.
- Increase waste recycling activities and promote the utilization of processed waste products by potential off-takers from other sectors (agriculture, fisheries, livestock, tourism, and industry).
- Transport and final processing of residual waste (waste remaining after processing) from across the regency shall be the responsibility of the local government, with the landfill operated as a controlled landfill.

## Institutional of Waste Management

- Proportional allocation of waste management authority among relevant local government agencies (OPDs).
- Organization of service operators through a licensing and registration system.
- Strengthening the performance of regency-level services through the gradual and professional implementation of the Regional Public Service Agency (BLUD) model.
- Strengthening village-level services (village TPS3R facilities) through the “Waste-Independent Village” program.
- Strengthening sub-district or area-level services to ensure waste services operate across multiple villages.
- Reinforcing shared responsibility among all stakeholders through Working Group and Multi-Stakeholder Waste Management Forum as coordination platforms.

## Regulation of Waste Management

- Formulation of comprehensive policies with phased and collaborative implementation.
- Strengthening legal awareness through the involvement of activists, religious leaders, and community figures.
- Enhancing the monitoring system with the participation of all stakeholders.
- Strengthening legal compliance by establishing systems for social, administrative, and criminal law enforcement.

## Funding – Financing of Waste Management

- Budget commitment to finance the waste management system through an integrated waste management financing plan.
- Promoting funding and financing sustainability through service improvements in line with established standards.
- Creating a conducive business climate, facilitating ease of doing business, and engaging regional banking systems to foster partnerships with the informal sector.
- Providing professional assistance in financial and managerial fields.
- Ensuring investment certainty in the waste management sector.
- Optimizing government funding sources beyond the local government budget.
- Encouraging the intensification of non-government funding sources and establishing financing partnerships, both domestically and internationally.

# 01.

## Technical Operational Aspect



The operational and technical implementation of waste management in Tegal Regency will be pursued as follows:

1. Waste Storage, Collection, and Transfer Subsystem:
  - a. Reduce waste leakage into the environment by ensuring waste collection services are accessible to all residents of Tegal Regency.
  - b. Promote waste segregation and processing as close to the source as possible, with standardized waste containers.
  - c. Ensure waste collection accommodates the participation of all stakeholders, meeting minimum service standards and operating under a registration system.
  - d. Waste processing and transfer at TPS/TPS3R facilities must be completed on the same day.
2. Waste Processing and Recycling Subsystem:
  - a. Increase waste recycling activities and promote the utilization of processed waste products by other sectors (agriculture, fisheries, livestock, tourism, and industry).
  - b. Optimize village-level TPS3R facilities for waste processing and integrate waste banks and the informal sector into the formal waste management system.
  - c. Develop sub-district-level TPS3R/TPST facilities for processing waste from subdistricts and/or across villages, handling both fresh waste and residual waste from village TPS3Rs.
3. Final Processing Subsystem :
  - a. The transportation and final processing of residual waste (post-processing waste) from across the regency shall be the responsibility of the local government.
  - b. The landfill will be developed and operated as a controlled landfill.

The development of physical waste management infrastructure is illustrated as follows



### 1. Waste Storage

- 30.352 Mixed waste storage 40L (household)
- 2.822 Mixed waste storage 240L (non household)
- 7.588 Separate waste storage 40L (household and non household)



### 4. Waste Transporting

- 37 Unit dump truck 8,5m<sup>3</sup>
- 12 Unit arm roll TPS3R to TPA
- 50 Unit TPS3R container



### 3. Waste Treatment

- 50 Unit TPS3R 4 ton/day
- 8 Unit TPS3R subdistrict 40 ton/day
- 6 Unit BSF facility 4 ton/day



### 2. Waste Collection and Transfer

- 224 Unit Tricycle TPS3R village
- 181 TPS (permanent/mobile)



### 5. Waste Final Processing

- 1 Unit TPST 7,7 Ha wide

Figure 2. Requirement of waste infrastructure per phase

Tabel 2. Requirement of waste infrastructure per phase

Phase 1	Waste Storage	<ul style="list-style-type: none"> <li>Mixed waste storage 40L – 13.276 unit</li> <li>Mixed waste storage 240L – 1.297 unit</li> <li>Separate waste storage 40L – 3.319 unit</li> </ul>
	Waste Collection and Transfer	<ul style="list-style-type: none"> <li>Tricycle TPS3R village – 139 unit</li> <li>TPS : 181 location</li> </ul>
	Waste Treatment	<ul style="list-style-type: none"> <li>TPS3R village (4 ton/hari) – 33 unit</li> <li>TPS3R subdistrict/TPST (40ton/hari) – 3 unit</li> <li>Unit Maggot/kompos (4ton/hari) – 2 unit</li> </ul>
	Waste Transporting	<ul style="list-style-type: none"> <li>Dump truck 8.5 m<sup>3</sup> – 34 unit</li> <li>Armroll – 5 unit</li> <li>Container 6 m<sup>3</sup> – 33 unit</li> </ul>
	Waste Final Processing	<ul style="list-style-type: none"> <li>2.4 Ha</li> </ul>
Phase 2	Waste Storage	<ul style="list-style-type: none"> <li>Mixed waste storage 40L – 6.780 unit</li> <li>Mixed waste storage 240L – 605 unit</li> <li>Separate waste storage 40L – 1.695 unit</li> </ul>
	Waste Collection and Transfer	<ul style="list-style-type: none"> <li>Tricycle TPS3R village – 170 unit</li> <li>TPS : 174 location</li> </ul>
	Waste Treatment	<ul style="list-style-type: none"> <li>TPS3R village (4 ton/hari) – 40 unit</li> <li>TPS3R subdistrict/TPST (40 ton/hari) – 5 unit</li> <li>Unit Maggot/kompos (4 ton/hari) – 3 unit</li> </ul>
	Waste Transporting	<ul style="list-style-type: none"> <li>Dump truck 8.5 m<sup>3</sup> – 34 unit</li> <li>Armroll – 8 unit</li> <li>Container 6 m<sup>3</sup> – 40 unit</li> </ul>
	Waste Final Processing	<ul style="list-style-type: none"> <li>4.4 Ha</li> </ul>

Phase 3	Waste Storage	<ul style="list-style-type: none"> <li>Mixed waste storage 40L 6 – 529 unit</li> <li>Mixed waste storage 240L – 583 unit</li> <li>Separate waste storage 40L – 1.632 unit</li> </ul>
	Waste Collection and Transfer	<ul style="list-style-type: none"> <li>Tricycle TPS3R village – 197 unit</li> <li>TPS : 168 location</li> </ul>
	Waste Treatment	<ul style="list-style-type: none"> <li>TPS3R village (4 ton/hari) – 46 unit</li> <li>TPS3R subdistrict/TPST (40 ton/hari) – 7 unit</li> <li>Unit Maggot/kompos (4 ton/hari) – 5 unit</li> </ul>
	Waste Transporting	<ul style="list-style-type: none"> <li>Dump truck 8.5 m<sup>3</sup> – 34 unit</li> <li>Armroll – 10 unit</li> <li>Container 6 m<sup>3</sup> – 46 unit</li> </ul>
	Waste Final Processing	<ul style="list-style-type: none"> <li>6.4 Ha</li> </ul>
Phase 4	Waste Storage	<ul style="list-style-type: none"> <li>Mixed waste storage 40L – 3.767 unit</li> <li>Mixed waste storage 240L – 336 unit</li> <li>Separate waste storage 40L – 942 unit</li> </ul>
	Waste Collection and Transfer	<ul style="list-style-type: none"> <li>Tricycle TPS3R village – 224 unit</li> <li>TPS : 163 location</li> </ul>
	Waste Treatment	<ul style="list-style-type: none"> <li>TPS3R village (4 ton/hari) – 50 unit</li> <li>TPS3R subdistrict/TPST (40 ton/hari) – 8 unit</li> <li>Unit Maggot/kompos (4 ton/hari) – 6 unit</li> </ul>
	Waste Transporting	<ul style="list-style-type: none"> <li>Dump truck 8.5 m<sup>3</sup> – 37 unit</li> <li>Armroll – 12 unit</li> <li>Container 6 m<sup>3</sup> – 50 unit</li> </ul>
	Waste Final Processing	<ul style="list-style-type: none"> <li>7.7 Ha</li> </ul>

## Waste Technical Development in Tegal Regency 2045

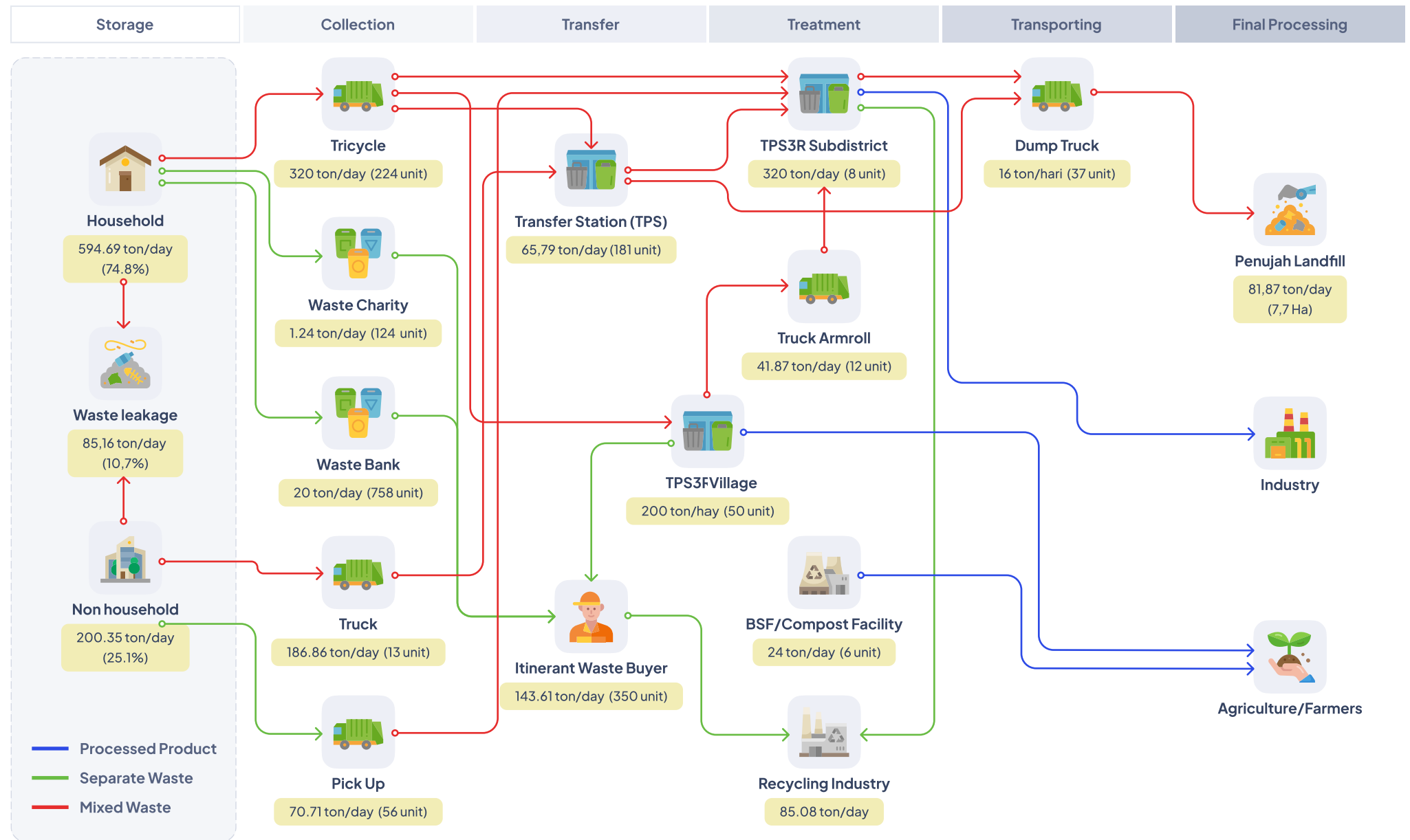


Figure 3. Waste technical development in Tegal Regency 2045

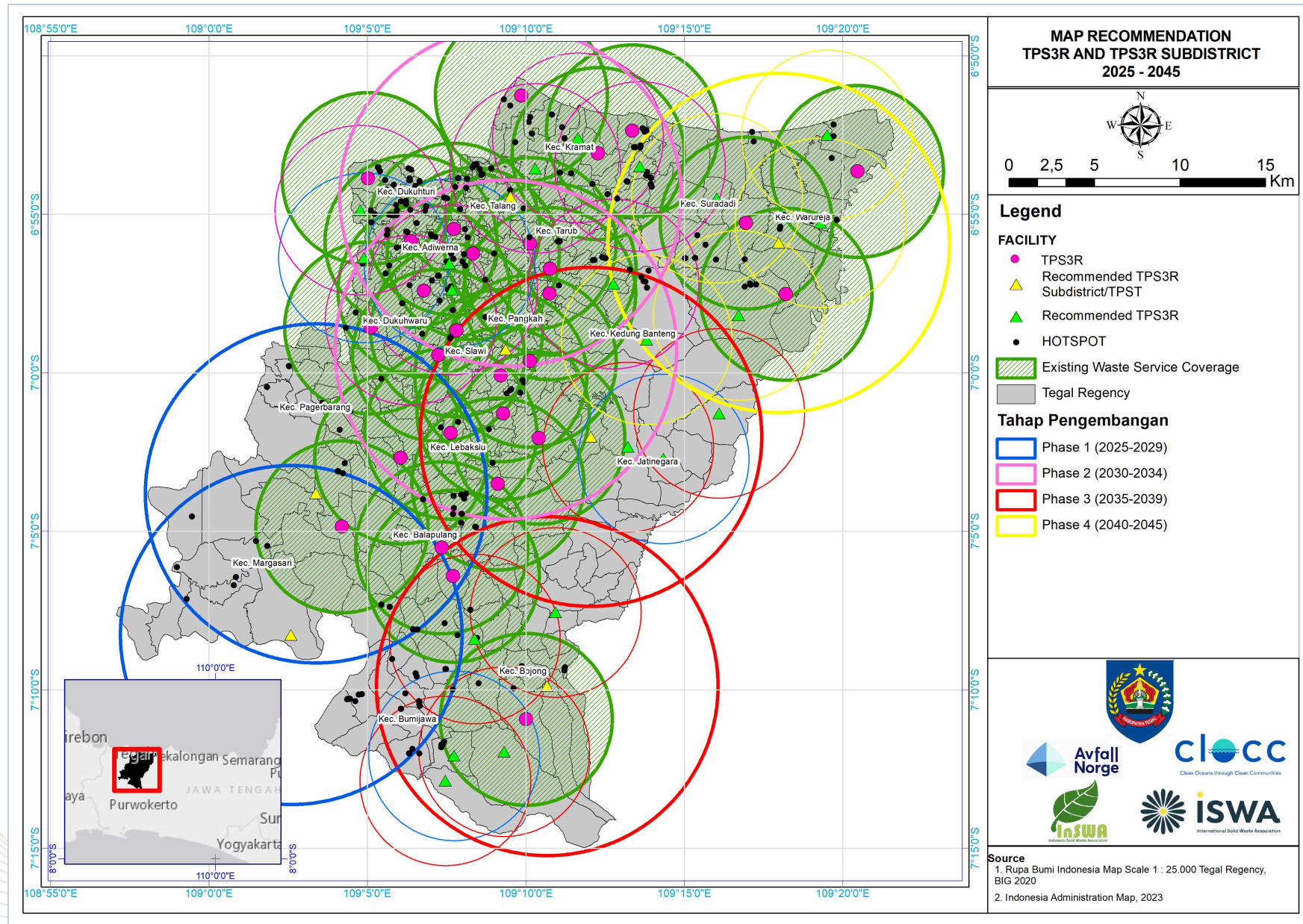


Figure 4: Waste service development area

## 02.

# Inclusivity



Tegal Regency Government recognizes that successful waste management cannot be achieved solely through policies or infrastructure. The key to success lies in the active involvement of the community and all stakeholders—across the stages of planning, implementation, and monitoring of the waste management system. Such participation is expected to take various forms, including involvement in service planning, willingness to segregate waste at source, compliance in placing waste according to standards, payment of service fees, and providing feedback for service improvement.

In waste management ecosystem of Tegal Regency, stakeholders are broadly divided into two main groups:

- Service providers include the Environmental Agency, private sectors, Village-Owned Enterprises (BUMDes), Community Groups (KSM), as well as the informal sector such as unlicensed individual waste collectors.
- Service users include households, non-household facilities such as schools and hospitals, and other public facilities.

These two groups interact with one another through the exchange of services and payments.

In addition to these two main groups, there are also key supporting actors, namely:

- **The informal recycling sector** such as waste pickers, aggregators, and recycling industries, which help extend the material lifecycle.
- **Local development partners**, including religious leaders, community leaders, community organizations, and educational institutions, which play a role in education and behavior change.
- **External partners** such as NGOs and donor agencies, which provide technical support, financing, and knowledge transfer.

Tegal Regency Government recognizes that public and stakeholder participation is influenced not only by awareness, but also by the accessibility of services available to them and the ease with which they can provide input for the development of waste management service system. Therefore, the regency government will develop institutional support, infrastructure, technology, facilities, and foster a positive culture to internalize waste minimization behaviors and responsible waste management practices into the daily lives of Tegal Regency residents over the next twenty years of implementing the Waste Master Plan.

To trigger and sustain the active engagement of the community and stakeholders in waste management, the Regency Government has developed the following key strategies:

Tabel 3. Strategi pelibatan pemangku kepentingan sebagai pengguna layanan

No.	Strategic Priorities	Strategic Actions
1	Development of a Participatory Waste Management Planning System	Implemented through musrenbang (development planning forums) at the village or urban village level, ensuring the representation of all groups— including women, youth, and persons with disabilities— while providing transparent information and facilitating consensus between service users and service providers.
2	Inclusive Capacity Building	Carried out through the development of equal access to training or coaching, the provision of specialized training for marginalized groups, and the creation of communication media that are accessible and user-friendly for all audiences.

3	Facilitating Behavioral Change in Waste Management	Aimed at fostering a positive culture that internalizes waste minimization behaviors and responsible waste management practices in the daily lives of residents. This is pursued through the strengthening of environmental programs such as STBM Pillar 4, Waste-Independent Villages, Adiwiyata Schools, and Eco-Pesantren, as well as enforcing waste minimization regulations at every meeting and public event, both at the community level and within Tegal Regency Government.
4	Strengthening Service Users' Access and Capacity	Implemented through the gradual and equitable provision of services and facilities, strengthening regulations on waste collection and transportation, providing waste management education at the source based on local wisdom, and enhancing service users' participation in the planning and monitoring of waste management services.
5	Strengthening Service Providers' Access and Capacity	Implemented through the adoption of a service system that is open to all types of enterprises, both formal and informal, with mechanisms for registration, licensing, and transparent procurement. The regency government will also facilitate business development to enable compliance with standards, establish financing standards that ensure sustainability, and prepare clear service guidelines.

the Tegal Regency Government hopes to , With this approach establish a waste management system that is not only widely accepted by the , but also inclusive, technically effective The participation of . and implemented sustainabl y, community all parties will serve as the foundation for fostering a wasteminimization culture embedded in the daily lives of resident

## 03.

### Institutional



In realizing the vision of Tegal Regency's Waste Management to become a Clean, Cultured, and Wonderful region by 2045, Regency Government is developing an inclusive and collaborative waste management institutional model in which all stakeholders can and must be involved. This institutional model positions waste management as a shared responsibility. Through this model, it is expected that the ideal division of roles among parties—as stipulated in Articles 11–13 and Articles 46–47 of Regional Regulation No. 6 of 2017, as well as Article 7 of Regent Regulation No. 26 of 2021—can be achieved. An illustration of this ideal role distribution can be seen in Figure 5.

The Regency Government strives to ensure that all stakeholders within this waste management institutional model can participate effectively through the strategic directions for strengthening waste management institutions, which are based on the following efforts:

1. Strengthening the balance of roles and authority in waste management through the proportional distribution of waste management responsibilities among various regional government agencies (OPDs) and villages aims to: 1) ensure that waste management duties are not solely concentrated within the Environmental Agency (DLH); and 2) ensure that the ten waste management functions can be effectively managed and implemented by OPDs with clear mandates, resources, facilities, and budgets. This needs to be carried out at the beginning of Stage I and subsequently adjusted in line with the development of the regional institutional framework. Taking into account the authorities and nomenclature of OPDs as regulated under national legislation, the distribution of waste management roles required over the next 20 years is presented in Table 5.
2. Strengthening the institutional and human resource capacity for waste management services at the regency, sub-district, and village/urban ward levels. In reinforcing the shared responsibility within the established institutional model, Regency Government is designing a tiered and integrated waste management service system that encourages stakeholders beyond the regency government to participate actively.

This design is considered the most efficient and realistic approach to ensure that operational responsibilities are distributed across various institutions, while also promoting waste processing at the source/village/area level, rather than relying solely on large centralized facilities. The service levels for waste management and their potential institutional arrangements are presented in the table 5.



Figure 5. Institutional model of collaborative waste management system



### Government (Regency, Subdistrict and Village level)

Responsible for regulating, supervising, and guiding the implementation of waste management; providing waste processing facilities; and organizing, mentoring, monitoring, controlling, and carrying out waste management operations at TPS/TPS3R at the subdistrict level or at landfills.



### Societies (Individual, Household, Resident Manager, Religious/Community/Social Group and Producers (business which generate waste))

**Society:** Responsible for reducing, recycling, and sorting waste; organizing the transportation of waste from the source to TPS/TPS3R/TPST; paying waste fees; participating in socialization and monitoring activities; and complying with responsible and sustainable waste management regulation

**Producers:** Responsible for waste reduction and the collection of waste from the products or packaging they generate.



### Waste Provider Business Sector

Formal or informal business units (including informal waste workers) involved in providing waste management services—whether in waste reduction, collection, transportation, processing, or residue processing at landfills—within their competence and in compliance with the terms of cooperation with the Regency Government.



### University, Academician and Experts

Plays a role primarily, but not exclusively, in strengthening the assessment and development of innovative waste management services, preventing waste leakage, and improving the quality of waste management in accordance with environmental quality standards.



### Pers / Press

Plays a role in strengthening awareness-raising functions, providing education, assisting in the monitoring of waste management violations, and enhancing public oversight to improve the performance of waste management service.






Table 4. Division of roles in waste management

Role	Main Agency	Supporting Agency
Regulation and Standard	<ul style="list-style-type: none"> <li>DLH</li> <li>DPU</li> </ul>	<ul style="list-style-type: none"> <li>Bag. Hukum</li> <li>Bappeda Litbang</li> </ul>
Planning and Technical Program	<ul style="list-style-type: none"> <li>DLH</li> <li>DPU</li> <li>Bappeda Litbang</li> </ul>	<ul style="list-style-type: none"> <li>Dispermasdes</li> <li>Disperkim</li> <li>BPKAD</li> </ul>
Perencanaan dan Pemrograman Tata Kelola	<ul style="list-style-type: none"> <li>DLH</li> <li>Satpol PP</li> <li>Dispermasdes</li> <li>Dinkes</li> <li>Bappenas Litbang</li> </ul>	<ul style="list-style-type: none"> <li>Bag. Hukum</li> <li>BPKAD</li> <li>DPMPTSP</li> <li>Bag. Organisasi</li> <li>Kecamatan</li> </ul>
Build and Maintenance of Facility	<ul style="list-style-type: none"> <li>DLH</li> <li>DPU</li> <li>Disperkim</li> </ul>	<ul style="list-style-type: none"> <li>Dispermasdes</li> <li>Diskop UKMP</li> <li>Disporapar</li> </ul>
Operator	<ul style="list-style-type: none"> <li>DLH</li> <li>Diskop UKMP</li> <li>Disporapar</li> </ul>	<ul style="list-style-type: none"> <li>Dispermasdes</li> <li>Kecamatan</li> </ul>
Partner Engagement	<ul style="list-style-type: none"> <li>DLH</li> <li>Bappeda Litbang</li> <li>Dinsos</li> <li>Disperin</li> <li>DPU</li> <li>DPMPTSP</li> <li>Tim Kerjasama</li> </ul>	<ul style="list-style-type: none"> <li>Bag. Pemerintahan</li> </ul>
Waste Fee Collection	<ul style="list-style-type: none"> <li>DLH</li> </ul>	<ul style="list-style-type: none"> <li>Bappenda</li> </ul>

Waste Processed Utilization	<ul style="list-style-type: none"> <li>DLH</li> <li>DisKPTAN</li> <li>Disperin</li> <li>Dis. Perikanan</li> <li>DPU</li> <li>Disperkim</li> </ul>	<ul style="list-style-type: none"> <li>Diskop UKMP</li> <li>Disporapar</li> <li>Dispermasdes</li> </ul>
Socialization, Education, and Empowerment	<ul style="list-style-type: none"> <li>DLH</li> <li>Dinkes</li> <li>Diskominfo</li> <li>Dispermasdes</li> <li>Dinsos</li> <li>Kecamatan</li> <li>Diskop UKMP</li> <li>Disporapar</li> <li>Disdikbud</li> <li>Disperin</li> <li>DisKPTAN</li> <li>Satpol PP</li> <li>Bag. Kesra</li> <li>Kantor Kemenag Kab.</li> </ul>	
Monitoring and Legal Enforcement	<ul style="list-style-type: none"> <li>DLH</li> <li>Satpol PP</li> </ul>	<ul style="list-style-type: none"> <li>Kecamatan</li> </ul>
Monitoring and Evaluation	<ul style="list-style-type: none"> <li>DLH</li> <li>Kecamatan</li> <li>Dispermasdes</li> <li>Bappenas Litbang</li> <li>Inspektorat</li> </ul>	<ul style="list-style-type: none"> <li>Disporapar</li> <li>Diskop UKMP</li> <li>Dinkes</li> <li>Disdikbud</li> </ul>



Table 5. Level of waste management services and potential of operator institutions

Service Level	waste management activities					
	 Waste Reduction at Source	 Waste Sorting	 Waste Collection	 Treatment & Recycling	 Transporting	 Final Processing
Household	All waste sources		waste bank / waste charity / informal waste workers	Waste source	-	-
Non Household	-	Resident Manager**				-
Village/Urban Village	-	Village Government / KSM / Bumdes / DLH*				-
Subdistrict	-	-	-	KSM / Bumdes / Bumdesma / PASL *	-	-
Regency	-	-	DLH*	x	DLH*	UPTD PASL *

\*Able to collaborate with third party

\*\*Able to collaborate with third party/ village government and UPTD PSAL

At the regency level, institutional strengthening will be carried out by enhancing the capacity of the UPT PASL through upgrading its classification and implementing the BLUD system in Stage 1, to be further developed progressively over the subsequent four stages. At the sub-district level, in line with the revitalization and development of Area TPS3R facilities, the Regency Government will designate operators for the management of Area TPS3R and arrange cooperation with waste transport operators and offtakers to ensure operational sustainability.

At the village and urban village levels, institutional and human resource capacity will be strengthened through the enhancement of the Desa Merdeka Sampah (Waste-Free Village) program, accompanied by capacity building for Village Governments, urban village Administrations, and village-level service operators. Meanwhile, at the level of independent zones that have dedicated management bodies, the Regency Government will undertake organizational structuring by designating independent zones, enhancing the capacity of zone managers, and integrating the services of these independent zones with the Area TPS3R facilities.

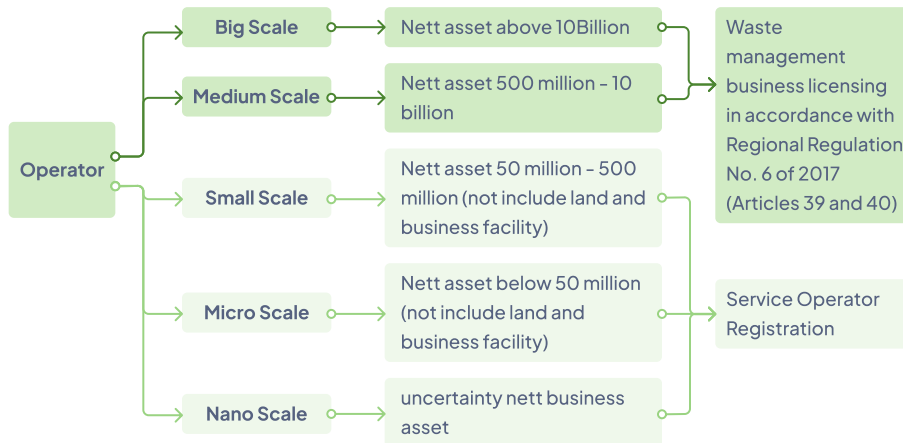
3. Structuring of Waste Management Operators The Regency Government will directly regulate operators currently operating or intending to operate in Tegal Regency through an operator registration and licensing system. This registration and licensing system serves as a mechanism for recording and verifying operators to ensure that each operator meets the technical standards set by the Regency Government. Based on the legal provisions stipulated in Article 8, Article 39, and Article 40 of Regional Regulation Number 6 of 2017, this registration and licensing system provides benefits to the Regency Government, the operators, and the service users as follows.

Tabel 6. Manfaat sistem registrasi dan perizinan

Benefit for Regency Government	Benefit for Operator	Benefit of Users
<ol style="list-style-type: none"> <li>1. Service control</li> <li>2. Ease of monitoring</li> <li>3. Ease of planning</li> <li>4. Add resource from non government</li> </ol>	<ol style="list-style-type: none"> <li>1. Business certainty</li> <li>2. Access to capital and capacity building</li> <li>3. Service expansion</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensuring service quality</li> <li>2. Ease of monitoring</li> </ol>

To ensure inclusivity in the operator registration and licensing system, its application will be based on the scale of operations and assets owned by each operator. Operators with a nano to small scale of operations and assets will be subject to the registration system, while operators with a medium to large scale of operations and assets will be subject to the licensing system. A more detailed explanation of this can be found in the diagram below.

Figure 6. Design of operator scale in registration and licensing system



The preparation of the registration and licensing system will commence in Stage 1, followed by dissemination and pilot testing. The implementation of this system will then be carried out in phases during the subsequent stages, in accordance with the mandate of Articles 39 and 40 of Regional Regulation Number 6 of 2017.

4. Strengthening coordination among all waste management stakeholders. The Regency Government has designed a comprehensive strategy for advocacy and coordination among all waste management stakeholders in Tegal Regency, as follows:

**a. Internal Coordination of Waste Management** – This will be facilitated through the establishment of a Working Group (POKJA) comprising all relevant Regional government (OPDs) to improve the performance of waste management.

**b. Coordination of All Stakeholders** – The Regency Government will carry out coordination among all waste management stakeholders through the establishment of a Waste Management Forum/Council, which will include :

- Representatives of the Regency Government (including sub-districts, urban villages, and villages);
- Representatives from the Legislative (DPRD); Representatives of the community, estate managers, and producers (waste-generating sources in Tegal);
- Representatives of the community and business sector engaged in waste management services, both formal and informal;
- Representatives from the education sector, academics, and experts;
- Media representatives; and
- Representatives from environmental activists, waste management advocates, and other community-based organizations.

**c. Coordination between the Regency Government and the Provincial and National Governments** – This is carried out to strengthen policies and budget allocations for waste management:



# 04.

## Regulation



In order to make waste management a social practice developed by all stakeholders, the regency government considers it important to strengthen regulatory aspects as a legitimate instrument with legal force to harmonize orderly waste management. In addition, the regulation also provides legal certainty for stakeholders to be able to participate in the appropriate role. The regency government has developed a strategic direction for strengthening waste management regulations in Tegal Regency, which will be implemented systematically as follows.

1. Ensuring the clarity and completeness of waste management regulations. Starting in phase I, the regency government ensures that all regulatory instruments, especially those related to technical matters, are available from the village to the district level. Technical regulations will be drafted to provide guidelines for waste management implementation, including:
  - a. Drafting of a Regent Regulation on the Master Plan for Waste Management in Tegal Regency.
  - b. Formulation of Regent Regulations on Guidelines for Waste Management in Villages and Subdistricts.
  - c. Formulation of Regent Regulations on Waste Management Cooperation
  - d. Formulation of Regent Regulations on the Registration and Licensing System for Operators.
  - e. Changes to waste management fees, aimed at encouraging the implementation of different fees for sorted and unsorted waste collection.
2. Ensuring that all stakeholders understand and are encouraged to follow the social order required by waste management regulations. This will be done by the regency government through various creative efforts such as forums, activities, social media/ conventional media, curriculum development, waste management innovation festivals, clean village competitions, as well as the provision of separate containers. The regency government will also facilitate capacity building for change agents from religious leaders, community leaders, religious and cultural institutions, and other social institutions to help disseminate waste management norms. In addition, the regency government provides incentive and disincentive packages to facilitate stakeholders understanding and acceptance of policies, willingness to engage and respond, and compliance with policy provisions *berserikman pamangku*

3. Strengthening the monitoring system by involving all stakeholders. The regency government will strengthen law enforcement by focusing on strengthening the monitoring system through strengthening the community reporting and complaint system as a form of community monitoring and providing monitoring technology devices prepared as a means of preventing waste management violations. In phase 1, CCTV devices will be installed in illegal waste disposal areas (hotspots) in priority areas and then expanded to other hotspots in the next phase.
4. Strengthen law enforcement with a system of social, administrative, and criminal legal measures in waste management. The regency government will strive to strengthen public order through social law enforcement, followed by administrative law enforcement. In phase I, social law enforcement regulated through village regulations will be encouraged from the outset as part of soft enforcement to provide space for social education and the organic growth of responsibility in the community. The regency government will begin implementing administrative or criminal sanctions, considering that the process of socialization, internalization, and social enforcement has made the community understand, accept, and implement good waste management practices. To enforce these laws, the district government will intensively carry out judicial operations and impose sanctions for any violations of waste management regulations.



# 05.

## Funding and Financing



### Economic Profile of Tegal Regency

The economic growth of Tegal Regency can be seen based on the shift in Gross Regional Domestic Product (GRDP). Basically, Gross Regional Domestic Product (GRDP) is the accumulation or total added value of goods and services produced by various production units in a region within a certain period, so that Gross Regional Domestic Product (GRDP) can show the economic capacity of a region within a certain period. A rapid increase in Gross Regional Domestic Product (GRDP) will contribute to or improve development capabilities, and conversely, a decline in Gross Regional Domestic Product (GRDP) will reduce the development capabilities of a region. Therefore, we need to look at a comparison of economic growth rate data at the national, provincial, and regional levels, as shown in the table below.

Tabel 7. Economic growth rate 2015 – 2024

Economic Growth Rate	Year									
	2015	2016	2017	2018	2019	2020	2021	2022	2023*	2024**
Indonesia (National))	5,72	5,34	5,23	5,66	4,68	-1,24	4,22	5,76	5,27	5,45
Central Java (Province)	5,47	5,25	5,26	5,3	5,36	-2,65	3,33	5,31	4,97	4,95
Tegal Regency (Regional)	5,49	5,92	5,38	5,51	5,56	-1,48	3,71	5,13	4,93	5,07

\* Provisional figures

\*\* Very provisional figures

To assess the economic condition of Tegal Regency, it is also important to examine the budget, specifically the Regional Budget (APBD).

Tabel 8. Regional budget (APBD) and Regional budget (APBD) growth 2015–2024

Year	Regional budget (APBD)	(APBD) Growth
2021	Rp 2.750.790.210.000	-4,32%
2022	Rp 2.869.008.063.000	4,30%
2023	Rp 2.989.929.834.000	4,21%
2024	Rp 3.137.915.965.300	4,95%
2025	Rp 3.093.800.038.200	-1,41%

The table above shows that the Tegal Regency Regional Budget (APBD) for 2021–2025 has a fairly volatile value, ranging from 2 trillion to 3 trillion rupiah, with an average growth rate of 4%, except for the 2021 fiscal year, when the Tegal Regency Regional Budget (APBD) growth rate reached -4.32%, which was still a transitional period from the COVID-19 pandemic.

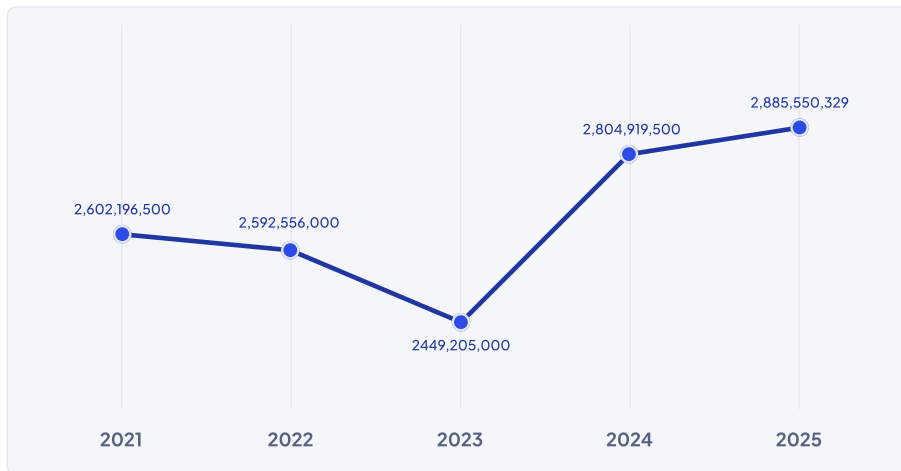


Figure 7. Graph of waste collection fees in Tegal Regency for 2021–2025

Based on the figure above, the results of waste collection fees in Tegal Regency for 2021–2025 are considered suboptimal due to a downward trend in 2021–2023, although the amount of fees increased in 2024. Meanwhile, in 2025, it is projected to increase by 2.87% from the previous year. The Tegal Regency Government will encourage the potential for waste fees because population growth and settlement development indicate a high potential for mandatory fees. The proceeds from these fees are not yet sufficient to cover the costs of waste management in Tegal Regency. Waste collection services for shops and wholesalers, hotels, and public health facilities such as hospitals served by the private sector are already being provided at a higher cost than waste fees by environment agency.

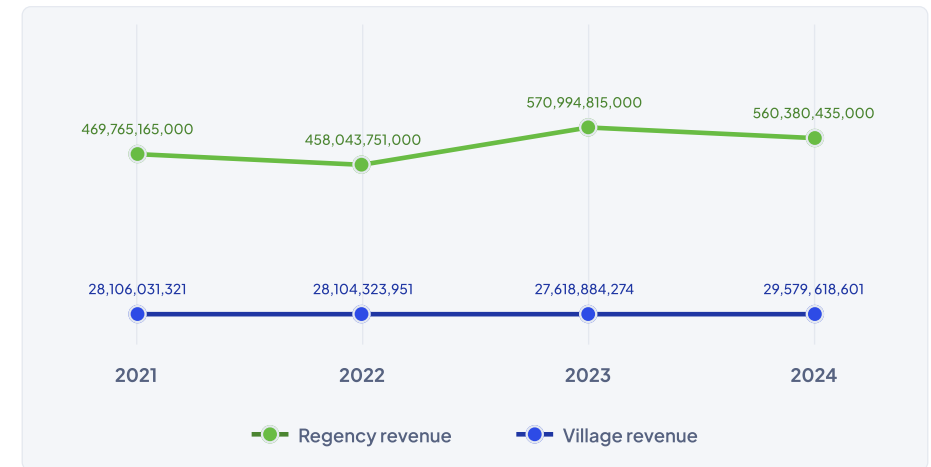


Figure 8. Graph of Local Own – Source Revenue (PAD) of Tegal Regency and Village Revenue for 2021–2025

The Local Revenue (PAD) of Regency and the Local Revenue (PAD) of Village can reflect the specific strength of the local area in terms of local tax collection, local levies, local revenue sharing, and legitimate income at both the regency and village levels. Based on the above data, the Local Revenue (PAD) of Regency has increased more steadily than the Local Revenue (PAD) of Village. This can be estimated based on the size of the regency, which covers a wider area, and the greater diversity of local revenue sources compared to those in villages. Therefore, Local Revenue (PAD) from regency has the potential to be spent on supporting part of the costs of waste management.

## Funding and Financing Requirements for the Tegal Regency Waste Management System 2025–2045

The development of a long-term waste management system over a period of 20 years, in line with the objectives of the Waste Management Master Plan, as well as the construction of waste management infrastructure as outlined in the technical chapter (with details in Figure 2), is estimated to require total funding of 1.79 trillion rupiah. This amount consists of 423 billion Rupiah for investment and 1.37 trillion Rupiah for operational costs, as detailed in the table below.

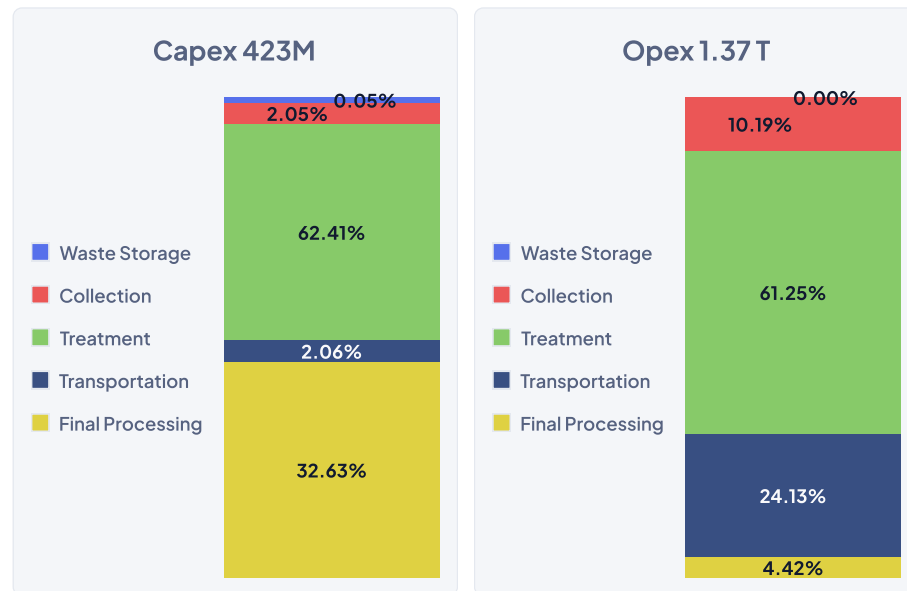


Figure 9. Total physical waste management costs for Tegal Regency 2025–2045

Tabel 9. Details of Budget Requirements for Waste Management per Subsystem in Tegal Regency for 2025–2045

Sub System	Investment (Capex)	Operation (Opex)	Total
Waste storage	3.617.352.581	-	3.617.352.581
Collection	8.694.000.000	140.320.351.800	149.014.451.800
Processing	264.158.784.692	843.120.068.655	1.107.278.853.347
Transportation	8.774.971.705	332.324.275.381	341.099.247.086
Final Processing	138.085.249.950	60.892.685.376	198.977.935.325
<b>Total</b>	<b>423.330.358.928</b>	<b>1.376.657.381.216</b>	<b>1.799.987.740.144</b>

Based on the figure above, it shows that the physical cost requirements for waste management in Tegal Regency over a period of 20 years will require funds amounting to Rp 1,799,987,740,144, with a total capex of 423 billion rupiah and a total Opex of 1.37 trillion rupiah. The largest portion of the waste management infrastructure costs for Tegal Regency in the 2025–2045 period is for operational and maintenance costs (OPEX), which account for 76.5% of the total infrastructure cost requirements. The largest portion of OPEX in Tegal Regency is for waste processing at 61.25% and transportation at 24.13%. The remaining 23.5% of the total infrastructure cost requirement is allocated for CAPEX. The largest portion of CAPEX is used for waste treatment (62.41%) and final processing (32.62%). The composition of costs as described above shows that over the next 20 years, the Tegal Regency Government needs to concentrate its costs on treatment, transportation, and final processing. These three things are the main activities to ensure Tegal Regency is free of waste and the community enjoys sustainable services.

The construction of new infrastructure and revitalization planned over a 20-year period cannot be separated from the budgetary requirements for non-infrastructure projects. To achieve the 20-year target, it is projected that funding for non-infrastructure projects will range from 23% to 25% of the infrastructure investment requirements at each phase. In aggregate, the total budget for this period (2025 to 2045) amounts to Rp.89.4 billion. The budget of Rp 89.4 billion is the minimum additional regional budget (supplementing the budget plan in the strategic plan for each phase of the 2025–2045 period)

The budget for non-infrastructure functions is highly strategic and has been prepared to support the implementation of more integrated and sustainable waste management. Some of the activities covered here include budgeting for community development, budgeting for institutional capacity building, strengthening regulatory capacity, and implementing program socialization and other related matters. The non-infrastructure budget requirements here are assumed to be additions/accelerations to the budget already listed in the existing Regional Apparatus Organization (OPD) strategic plan. In other words, the budget already prepared by the Regional Government Agency (OPD) remains in effect and can be modified with previously established plans. As a result, the total budget required to implement a sustainable waste management system over the next 20 years, including both infrastructure and noninfrastructure waste-related expenses, amounts to 1.889.3 trillion rupiah.

## Funding and Financing Strategy for Waste Management in Tegal Regency 2025 – 2045

To create an effective waste management system, as well as to realize a clean environment and improve public health, it is necessary to update the governance of funding and financing in line with the context of Tegal Regency. The funding and financing strategy for waste management in Tegal Regency for 2025–2045 is as follows:

- Optimization of government funding sources by utilizing potential budgets outside of local government, funding can come from provincial government, central government, and non-government sources such as ZISWAF funds, CSR, microcredit, sponsors, and in-kind and cash donations from other communities.
- Expanding the funding and financing ecosystem that involves synergies between various actors, including funders, beneficiaries, and providers of goods/services in a productive manner, as well as bringing benefits effectively and efficiently.
- Improving waste recovery costs by supporting cooperation between the government and business entities (KPDBU)

Based on a review of the economic and financial strength of Tegal Regency and the applicable funding and financing regulations, the Tegal Regency Government has filled the funding gap with a mix of funding and financing sources, as shown in the table below.

Tabel 10. Funding gap fulfillment scenario

	Funding Source	Funding Requirements
<b>A</b>	<b>Estimated Requirements:</b>	<b>1.889,3 Triliun</b>
<b>B</b>	<b>Availability Forecast:</b>	<b>1.889,3 Triliun</b>
<b>B.1</b>	National Budget (APBN)	33,5 Miliar
<b>B.2</b>	Regional Budget (APBD)*	1.106,6 Triliun
<b>B.3</b>	TPS3R Waste Fees**	73,5 Miliar
<b>B.4</b>	Private Investment and CSR ***	88,88 Miliar
<b>B.5</b>	Village Funds****	340,35 Miliar
<b>B.6</b>	Environment Agency (DLH) Waste Fee	56,96 Miliar
<b>B.7</b>	KPDBU, Grants, ZISWAF, and Others	189,6 Miliar
<b>Selisih (A–B)</b>		<b>0,0</b>

\* Assumption of 0.66% of the regional government budget for waste management

\*\*\* Private investment = 15% of CSR figures

\*\*\*\* Waste budget = 2% of total Village funds

The funding sources included in the above scenario include funds from the National budget (APBN), regional budget (APBD), TPS 3R waste fee contributions, private investment and CSR, village funds, Environment Agency waste fee, KPDBU/grants/Ziswaf, and others. In the scenario of filling the funding gap in Tegal Regency, funding from the province is not included because Tegal Regency is not included in the strategic areas of Central Java and the provincial growth center. To achieve the above funding scenario, the Tegal Regency Government will implement several strategies, namely closing the funding and financing gap, expanding the funding and financing ecosystem, and increasing waste recovery costs.

# 06.

## Action Plan



Efforts to achieve the vision and mission of waste management in Tegal Regency for 2025–2045 will be carried out systematically through the implementation of program plans and activities with the following phases.



### Phase 1 Foundation Building (2025–2029)

This phase is set for the first five years after the Waste Management Masterplan (RIPS) is formulated, namely 2025–2029. During this stage, the regency government will focus on establishing a foundation and incubating waste management in collaboration with all stakeholders. In Phase I, the district government will prioritize measures in four main priority programs, that :

1. **Village Assistant program for developing waste management in 7 pilot villages, Revitalization of 28 TPS3R Facilities in Villages, and Construction of 5 Additional TPS3R Facilities in Villages**, with the primary objective of establishing a waste management system model at the source and improving the service level of each village/subdistrict.
2. **TPS3R Activation Program Regional Scale Based on Cooperation**, with the main objective of producing an RDF management model and a model for cooperation between the district government and the private sector and other parties.
3. **Penujah Final Processing Site (TPA) Management Improvement Program by initiating management with a controlled landfill system**.
4. **Waste Operator Management Program with a Registration and Licensing System**, with the main objective of increasing waste recycling and reducing waste leakage into the environment.

These four priority programs will also be accompanied by the implementation of eight supporting programs. The estimated funding required for Phase 1 is 112 billion rupiah in costs, 248.5 billion rupiah in operational costs, and 21.9 billion rupiah in non-infrastructure costs.

In Phase 1, the regency government focused its improvement efforts on the following 33 priority villages/subdistricts:

- |                     |                   |                 |
|---------------------|-------------------|-----------------|
| 1. Ujungrusi        | 12. Bogares Kidul | 23. Penarukan   |
| 2. Balapulung Wetan | 13. Blubuk        | 24. Sidamulya   |
| 3. Pedeslohor       | 14. Kertayasa     | 25. Kalisapu    |
| 4. Batumirah        | 15. Rembul        | 26. Dermasuci   |
| 5. Kertasari        | 16. Banjaragung   | 27. Maribaya    |
| 6. Mejasem Barat    | 17. Lebak Gowah   | 28. Pesarean    |
| 7. Dukuh Bangsa     | 18. Sidokaton     | 29. Pekiringan  |
| 8. Pener            | 19. Rancawiru     | 30. Karangmangu |
| 9. Penusupan        | 20. Kalisoka      | 31. Dampyak     |
| 10. Lebaksiu Kidul  | 21. Dermasandi    | 32. Pakembaran  |
| 11. Pagerwangi      | 22. Kalibakung    | 33. Kaliwungu.  |

## Phase 2 Modeling Expansion (2030–2034)

The expansion phase of the model is set for the second five years, from 2029 to 2034. In this phase, the regency government will focus on **optimizing waste management in the area according to standards, by registered and/or licensed operators**. During Phase II, the regency government prioritized efforts on 3 main priority programs, that are:

1. Addition of 7 TPS3R villages and 2 TPS3R subdistricts/Integrated Waste Management Sites (TPST), with the main objective of increasing waste management models through the construction of decentralized facilities in villages/sub-districts and sub-districts.
2. Initiate cooperation with inter-regional schemes for the development of Integrated Waste Management Facilities (TPST) in the Pantura region.
3. Strengthening incentives and disincentives for waste management for operators and villages/subdistricts, with the main objective of optimizing service performance by operators in line with the increase in the volume of waste to be processed

The above priority programs will also be accompanied by supporting programs aimed at fulfilling the mandate of Regional Regulation No. 6/2017 and the expansion of the model prepared along with the preparation of its law enforcement system. The funding requirements for Phase 2 amount to 131.6 billion rupiah in investment costs, 325 billion rupiah in operational costs, and 25.2 billion rupiah in non-infrastructure costs.

In Phase 2, the improvement plan will focus on the following priority villages/subdistricts:

- |                    |               |               |
|--------------------|---------------|---------------|
| 1. Bersole         | 4. Margamulya | 7. Wangandawa |
| 2. Harjosari Kidul | 5. Bongkok    | 8. Cibunar    |
| 3. Gumayun         | 6. Kemuning   | 9. Wanasari   |

## Phase 3 Stabilization (2034–2039)

The Stabilization Phase is set for 5 (five) years, 2035–2039. The focus of the Regency Government at this stage is to improve the quality of separate waste collection and intermediate waste processing, so that the landfill can function as a residue processing site. During Phase III, the Regency Government will prioritize efforts on 4 Main Priority Programs, namely:

1. Addition of 6 TPS 3R villages and 2 TPS3R subdistricts/integrated waste management sites, with the main objective of increasing waste management models through the construction of decentralized facilities in villages/ and sub-districts.
2. Strengthening law enforcement on waste management for waste management service operators, both at the source and at processing facilities.
3. Expansion of triggering and empowerment in source-separated waste management to encourage demand for separated waste management services.
4. Optimization of waste reduction to encourage the development of the recycling and reuse sector, with the main objective of reducing the waste burden managed by the district government before the waste is generated.

Funding requirements for Phase III amount to IDR 125.8 billion in investment costs, IDR 382.5 billion in operational costs, and IDR 24.8 billion in non-infrastructure costs.

In Phase 3, the improvement plan will focus on the following 8 priority villages/subdistricts:

- |               |               |              |
|---------------|---------------|--------------|
| 1. Gunungjati | 4. Sokasari   | 7. Pangkah   |
| 2. Guci       | 5. Lebakwangi | 8. Cangkring |
| 3. Sigedong   | 6. Tamansari  |              |

## Phase 4 Circular (2039–2045)

The Circular Phase is set for 15 years after the Waste Management. The regency government focus is to achieve sustainability in all aspects of the waste management system, from upstream to downstream. In Phase IV, the district government prioritized efforts in four main priority programs, that are:

1. Addition of 5 TPS3R villages and 1 TPS3R subdistrict/ Integrated Waste Management (TPST), with the main objective of increasing waste management models through the construction of decentralized facilities in villages and sub-districts.
2. Full implementation of waste management standards through expanded law enforcement covering all waste sources, area management, producers, and service operators.
3. Improving the professionalism of operators with the main objective of ensuring capacity building and business scale development for waste management service operators. For example: nano-scale businesses can move to micro-scale, and so on.
4. Developing innovative financing to encourage the development of recycling and reuse businesses.

The estimated funding required for Phase 4 is IDR 53.9 billion in investment costs, IDR 420.5 billion in operational costs, and IDR 17.5 billion in non-infrastructure costs.

In Phase 4, the improvement plan will focus on the following six priority villages/subdistricts:

- |                  |                |             |
|------------------|----------------|-------------|
| 1. Kedungbanteng | 3. Jatimulya   | 5. Sukareja |
| 2. Semedo        | 4. Demangharjo | 6. Kreman   |





This program is implemented through collaboration between:



Supported By:



Sirk Norge

