

# FIELD VISIT REPORT:

# SUSTAINABLE WASTE MANAGEMENT SITE VISITS TO BANTARGEBAK AND ROROTAN

6 November 2025

Supported by:



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**ORGANIZED BY:**

Ministry of National Development Planning (BAPPENAS) in collaboration with UNDP Indonesia through the Sustainable Infrastructure Programme in Asia (SIPA)

**LOCATIONS:**

RDF Plant Bantargebang and RDF Rorotan, DKI Jakarta



## I. Background and Context

Indonesia is entering a pivotal phase in transforming its waste management system from traditional collection–disposal approaches toward integrated and circular models. The National Long-Term Development Plan (RPJPN) 2025–2045 and the Medium-Term Development Plan (RPJMN) 2025–2029 emphasize the reform of waste management from upstream to downstream as a strategic national priority.

In alignment with these national priorities, the Ministry of National Development Planning (Bappenas), in collaboration with the United Nations Development Programme (UNDP) under the Sustainable Infrastructure Programme in Asia (SIPA), is undertaking a comparative study on sustainable waste treatment technologies, particularly focusing on the performance and scalability of Refuse-Derived Fuel (RDF) and Waste-to-Energy (WtE) facilities.

The Province of DKI Jakarta serves as an important case study due to its advanced and diverse implementation of waste management technologies, including the operation of RDF facilities, WtE pilot plants, and ongoing landfill mining initiatives. Specifically for RDF technology, DKI Jakarta also has relatively more advanced technology compared to other regions, as it operates two RDF plants—Bantargebang and Rorotan—with design processing capacities of 2,000 tpd and 2,500 tpd. To gain a comprehensive understanding of Jakarta’s technological and institutional experiences, Bappenas and SIPA Indonesia conducted a technical site visit to these two key facilities.



## II. Objectives of the Site Visit

**OBSERVE  
FIRSTHAND THE  
IMPLEMENTATION  
OF RDF  
AND WTE  
TECHNOLOGIES IN  
DKI JAKARTA.**

**GATHER QUANTITATIVE  
AND QUALITATIVE DATA  
TO SUPPORT  
SIPA'S COMPARATIVE  
STUDY ON WTE AND  
NON-WTE SYSTEMS.**

**IDENTIFY OPERATIONAL  
CHALLENGES, BEST  
PRACTICES, AND  
LESSONS LEARNED FROM  
BOTH ESTABLISHED AND  
DEVELOPING RDF  
PROJECTS.**

**STRENGTHEN INSTITUTIONAL  
COLLABORATION AMONG  
BAPPENAS, ENVIRONMENTAL  
AGENCY (DINAS LINGKUNGAN  
HIDUP-DLH) DKI JAKARTA,  
AND UNDP-SIPA FOR POLICY  
DEVELOPMENT AND CAPACITY  
BUILDING IN THE WASTE  
MANAGEMENT SECTOR.**

### III. Participants

The visit involved representatives from Bappenas, UNDP-SIPA, and the Sustainable Waste Indonesia (SWI) study team. Key participants included:

- Nur Aisyah Nasution – Coordinator for Water Supply and Sanitation, Directorate of Housing and Settlement Infrastructure, Bappenas
- Fawwaz Akbar – Development Planner, Bappenas
- D. F. Haekal – Development Planner, Bappenas
- Zia Husnia S. – Policy Analyst, Bappenas
- Dimas Andhika – UNV-SIPA Programme, UNDP Indonesia
- Dini Trisyanti – Coordinator, SWI Team, Expert Team
- Djoko Heru Martono, Arief Eko Hadiputra, Gadaphi Maran, and Amy Angelia – SWI Team Members





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## IV. Agenda and Itinerary

The one-day technical field visit was conducted on 6 November 2025, facilitated by the DKI Jakarta Environmental Agency (DLH).



## V. Overview of the Bantargebang Integrated Waste Management Site

### 5.1 Facility Description

The Bantargebang Integrated Waste Management Site serves as the largest waste handling facility in Indonesia, receiving approximately 1.000 tons of MSW out of Jakarta's daily 7.500 tons, as well as an additional 1.000 tons of landfill waste. Within the complex, the RDF Plant Bantargebang converts residual waste into Refuse-Derived Fuel (RDF), which can be co-processed as a substitute for fossil fuels in industrial furnaces.

Bantargebang TPST was constructed from February 2022 to May 2023 by the Adhi Karya–Jaya Konstruksi Consortium and began operations in June 2023 under the management of the BLUD (BLUD UPST DKI). Meanwhile, the technology provider for the plant is Daehan E&C Co Ltd.

### 5.2 Technology and Operations

The RDF Plant operates through sorting, screening, shredding, and drying. The plant processes around 2.000 tons of waste per day. In 2025, RDF product with a calorific value around 3.000 kCal/kg, moisture content 29,07% (MSW) and 28,68% (LFW), proportion of product size <50 mm around 44,13% (MSW) and 54,36% (LFW). The RDF production capacity at the RDF Plant shows strong performance in its third year of operation, with MSW-based RDF reaching 306.42 tpd out of a design capacity of 350 tpd (88%), and LFW-based RDF reaching 225.21 tpd out of 350 tpd (64%).

### 5.3 Observations and Findings

The RDF Plant has achieved stable operations with growing industrial demand. It reduces landfill volume significantly. However, challenges remain, including waste composition variability, dependence on imported machinery, and seasonal moisture fluctuations.

In its third year of operation, the operator also faced challenges related to machinery maintenance and spare parts, which affected plant operations. The plant experienced a decline in production capacity due to high downtime caused by shredder overload. As a solution, the operator modified the cutter by adding liners. In addition, the provincial government is planning to install additional shredders (a pre-shredder and a fine shredder) as well as a trommel screen for LFW to reduce the humus content in the input material.

### 5.4 Integration with PLTSa Merah Putih and Landfill Mining

The site also hosts PLTSa Merah Putih, which focuses on waste-to-energy electricity generation, and ongoing landfill mining activities aimed at recovering recyclable materials and rehabilitating landfill areas. Together, these components demonstrate an integrated circular waste management model.

## VI. Overview of RDF Rorotan Project

### 6.1 Development Status

The RDF Rorotan Facility, located in North Jakarta, is currently in the pre-operational planning stage, with a designed capacity of 2.500 tons of waste per day and yielding RDF 875 tons per day with a calorific value  $\geq 3.400$  kCal/kg, moisture content  $<20\%$  and size  $<50$  mm. It aims to transform residual waste into high-calorific RDF.

### 6.2 Planned Technology Design

Rorotan's RDF system will utilize integrated pre-treatment technologies, including drying, dewatering, automated sorting, and emission control. The facility will complement Bantargebang by handling waste streams from central, northern and eastern Jakarta.

### 6.3 Key Discussion Points

- Background and chronology of the planning and preparation for the development of the RDF Plant.
- Challenges in land acquisition and local community acceptance of the planned RDF Plant development.
- Implementation of Trial Phases 1 and 2, and the Joint Strategies of Local Governments and Contractors to Foster Community Support, particularly, particularly regarding environmental pollution control management, including odor and emission control.
- Design of waste processing into RDF, including process flow, types of machinery, and equipment manufacturers.
- Energy demand and integration with industrial off-takers.

## VII. Key Takeaways and Lessons Learned

### TPST Bantargebang

- The local government has shown strong commitment to large-scale waste management, planning improvements at Bantar Gebang to address Jakarta's growing daily waste generation, which previously relied only on small-scale TPS3R/TPST facilities.
- DKI Jakarta has established a solid monitoring and evaluation system, supported by detailed technical data, enabling data-driven operational decisions.
- The operator has undertaken several measures to maintain production efficiency, including machinery modifications (blade adjustments and cutter liners), engaging local vendors to replicate imported parts to reduce downtime, and expanding the shredding process to four stages.

### RDF Rorotan

- Private sector involvement in plant planning, including technology selection, offers an effective alternative due to stronger resource availability. The DKI Jakarta Government conducted an open bidding process that allowed all technology options, enabling service providers to propose diverse solutions. For the Jakarta RDF Plant, the winning consortium—WIKA and Jaya Konstruksi—partnered with PT Asiana Teknologi Lestari and UNTHA as the technology suppliers.
- A clear and standardized cooperation contract is essential. Challenges related to community resistance during Trial Phase 1 and Trial Phase 2 were fully managed by the service provider, ensuring that the local government did not need to allocate additional funds.
- Performance evaluation of existing facilities is critical for planning. The Provincial Government used key findings from the Bantar Gebang TPST evaluation—limited truck parking, absence of offtaker parking, open hangar design, lack of staff locker rooms, and no deodorizer—as inputs for the Jakarta RDF Plant design.
- The government has demonstrated commitment in responding to community concerns regarding odor. Improvement measures include installing three new deodorizers and a wet ESP system, leachate removal and truck cleaning, road sweeping, odor neutralizing agents, and expanding ambient air monitoring points from three to ten locations.

- The facility uses reliable technology and machinery to enhance operational efficiency, with upfront investment seen as necessary for long-term sustainability.
- Open communication was also prioritized, including facilitating a community visit on 3 October (beginning of Trial Phase 2) to observe odor mitigation efforts at Rorotan.
- Integrated upstream–downstream reforms remain essential. Despite various odor control efforts, challenges persist due to low source segregation, aging trucks with leachate leakage, and non-fresh waste deliveries.



## VIII. Conclusion and Next Steps

The field visit to Bantargebang and Rorotan provided valuable insights into Jakarta's leadership in circular waste management. The integration of RDF, WtE, and landfill rehabilitation illustrates how waste can be repositioned as a resource for energy and material recovery.

Findings from this visit will support SIPA's Comparative Study on Sustainable Waste Technologies, guiding policy recommendations and investments that accelerate Indonesia's transition to a low-carbon, circular economy. Bappenas and UNDP-SIPA will continue to work with DLH DKI Jakarta and local governments to replicate and scale innovative waste treatment solutions across Indonesia.



# PARTICIPANTS & COLLABORATORS



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Directorate of Housing and  
Settlement Infrastructure Areas



UNDP Indonesia  
SIPA Project Team



The Environmental Agency  
of DKI Jakarta Provincial Government

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