

# Pilot Activity on Plastic Waste Management in Padang City, Indonesia

Building a Foundation for Collaborative work through **Digital Integration**

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# Plastic Waste Crisis in Indonesia

## Key Facts:

- **Second-largest contributor** to plastic waste globally
- **10 million tons of plastic** waste generated annually, with **3.2 million tons** ending up in the ocean.

## Challenges:

- Inadequate waste management infrastructure.
- Low recycling rates (<10%)
- Heavy reliance on single-use plastics.
- Etc.

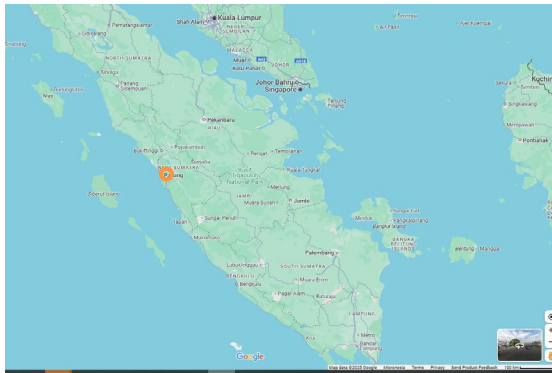
## Environmental Impacts:

- Marine life endangered by ingestion and entanglement.
- Microplastics infiltrating food chains and water supplies.
- Harmful economic effects on tourism and fisheries.



The Asean Post: Scavengers collect valuable waste at Sidoarjo garbage dump in East Java, on 5 June, 2018

# Waste Management in Padang



Population: 925K

Waste generation: 647 t/d

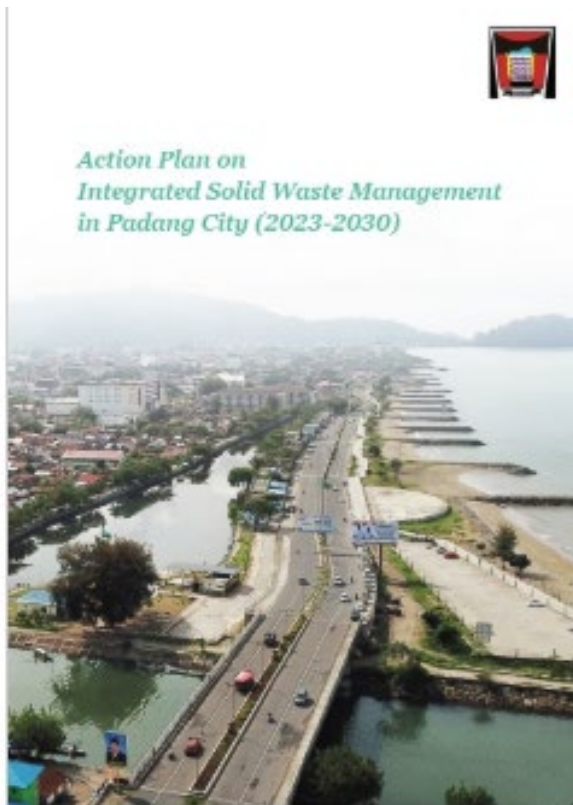
- Food waste: 63%
- Green waste: 6.6%
- Plastic: 12.4%
- Paper/cardboard: 6%

Waste dumped: 74% (478 t/d)

Recycling + Composting : 7% (49 t/d)

Burning: 12% (76 t/d)

- The disposal site is reaching its capacity + No alternative land is available
- Waterways such as river becomes littering points → clog of drainage, plastic pollution,
  - **reduce the amount of waste** that is transported to the final disposal site (TPA)
  - **Increase plastic waste collection** and **reduce plastic litters** through expansion of waste collection coverage



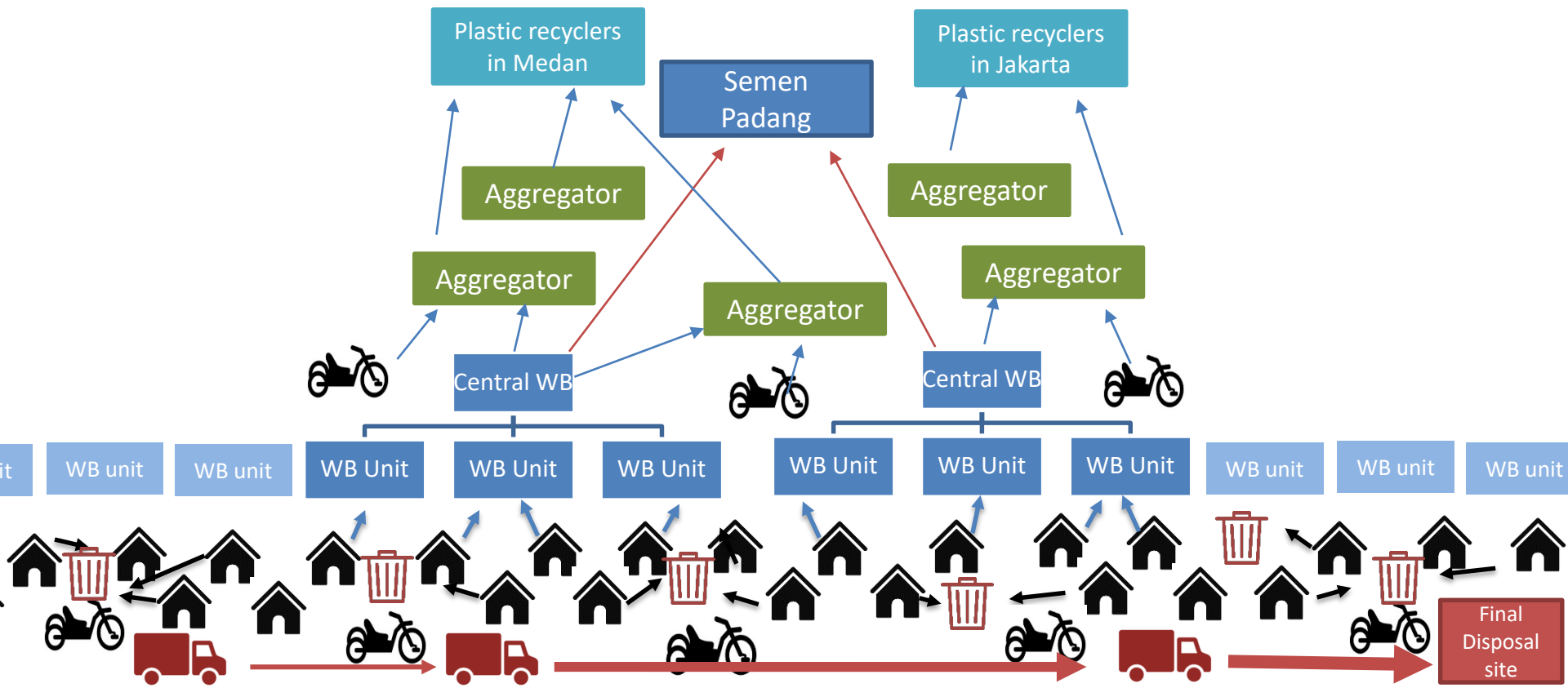
ISWM action plan (2023-2030) developed in 2022

## Objectives

1. Enhance waste separation to achieve a 30% waste reduction at the source
2. Increase organic waste reduction to 10% (Baseline in 2021: 0.4%)
3. Increase inorganic waste recycling and recovery to 20% (Baseline in 2021: 7.1%)
4. Reduce unmanaged waste that leaks to the environment to 10% (Baseline in 2021: 20.20%)
5. Enhance institutional capacity for better SWM with the focus on monitoring and evaluation (M&E) and collaboration with other partners

# Current Recycling Flow in Padang

→ Recyclable at **High** value  
→ Recyclable at **Low** value



# Key Actor: Waste Bank (WB)

**Waste Bank** is a facility where people can deposit sorted valuable waste in exchange for economic value with the 3R principle (Reduce, Reuse, and Recycle), as a means of education, change behavior, **circular economy**

## Purpose of Waste Bank

- Reducing Waste Generation
- Increasing Environmental Awareness
- Providing Economic Benefits for Community





# Key Actor: Waste Aggregator (1)



**Eco Tuah Sakato (Ecoahto)**

## Key Actor: Waste Aggregator (2)



**NO RECYCLING FACILITY in**  
Pandang



Transport to Recyclers in  
Medan (770km, 17h30m ) or  
Jakarta (1,300km, 27h)

**We want more plastic waste!**





# Key Actor: RDF Off-taker

Machine Translated by Google

## Construction of RDF Facilities

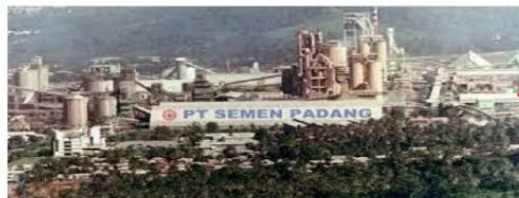
Coal Requirement : 4,500 Tons/Day

Co-Firing Demands: 5%  
(225-250 Tons/Day)

Already Obtain 60 Tons

There are still opportunities for RDF  
Products ( $\pm 165$  Tons/Day)  
Caloric Requirements : 3000

$\pm 15$  KM



SEMEN PADANG FACTORY

**Off Taker  
RDF**

**We want more plastic waste!**

**We want more biomass  
waste!**

ELECTRICAL COMPANY

Coal Requirement: 3,000 – 3,600 Tons/Day

Co-Firing Demands : 30%  
(900-960 Tons/Day)

Already Obtain 30 Tons

There are still opportunities for RDF  
Products ( $\pm 930$  Tons/Day)  
Caloric requirements : 4000

Final disposal site

$\pm 48.6$  KM



PLTU TELUK SIRIH  
sumatera barat

Eco Tuah Sakato  
(Ecoahto)

PT Semen  
Padang

Sakina &  
Panchadaya  
(Central WB)

Aggregator  
want more  
plastic waste

Off-taker of  
RDF wants  
more plastic  
waste

Waste banks  
want more  
plastic waste

City wants to reduce  
plastic waste from  
waterways and  
disposal sites

Padang city

SUPPLY

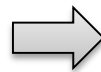
DEMAND



# Match making!

# Enhancement of Institutional Capacity of WB

Garbage becomes a problem



Waste becomes **BUSINESS OPPORTUNITIES!**

**182 waste banks registered, BUT only 82 are active**

## Challenges

- slow manual recording
- risk of data loss
- a lack of transparency that reduces public trust
- Absence of collection vehicles
- Lack of business mind
- Lack of awareness about source separation

**1. Digital Tool by  
Griya Luhu Gianyar  
Bali**

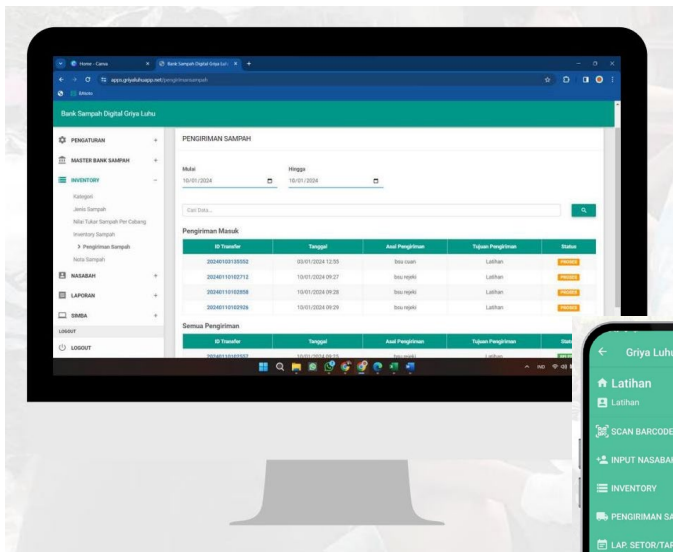
**2. Coordination by Andalas University**

**3. Education through Waste Banks**

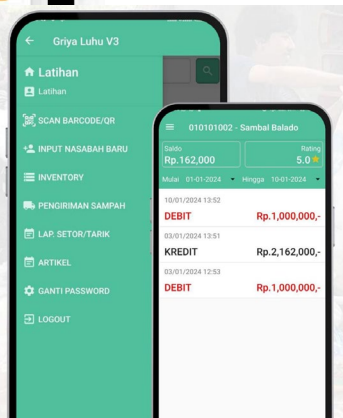
Time efficiency ↑  
Data transparency ↑  
Data security ↑  
Motivation ↑  
Monitoring ↑

# Feature of Digital Apps

For admin (central waste bank)



For waste bank unit



## MASTER BANK SAMPAH

Feature to set up, edit and delete unit waste bank accounts.



## INVENTORY

Features to manage categories and types of waste, incoming goods inventory, and sales notes.



## CUSTOMERS

A feature that shows all customers registered at all unit waste banks.



## REPORTS A

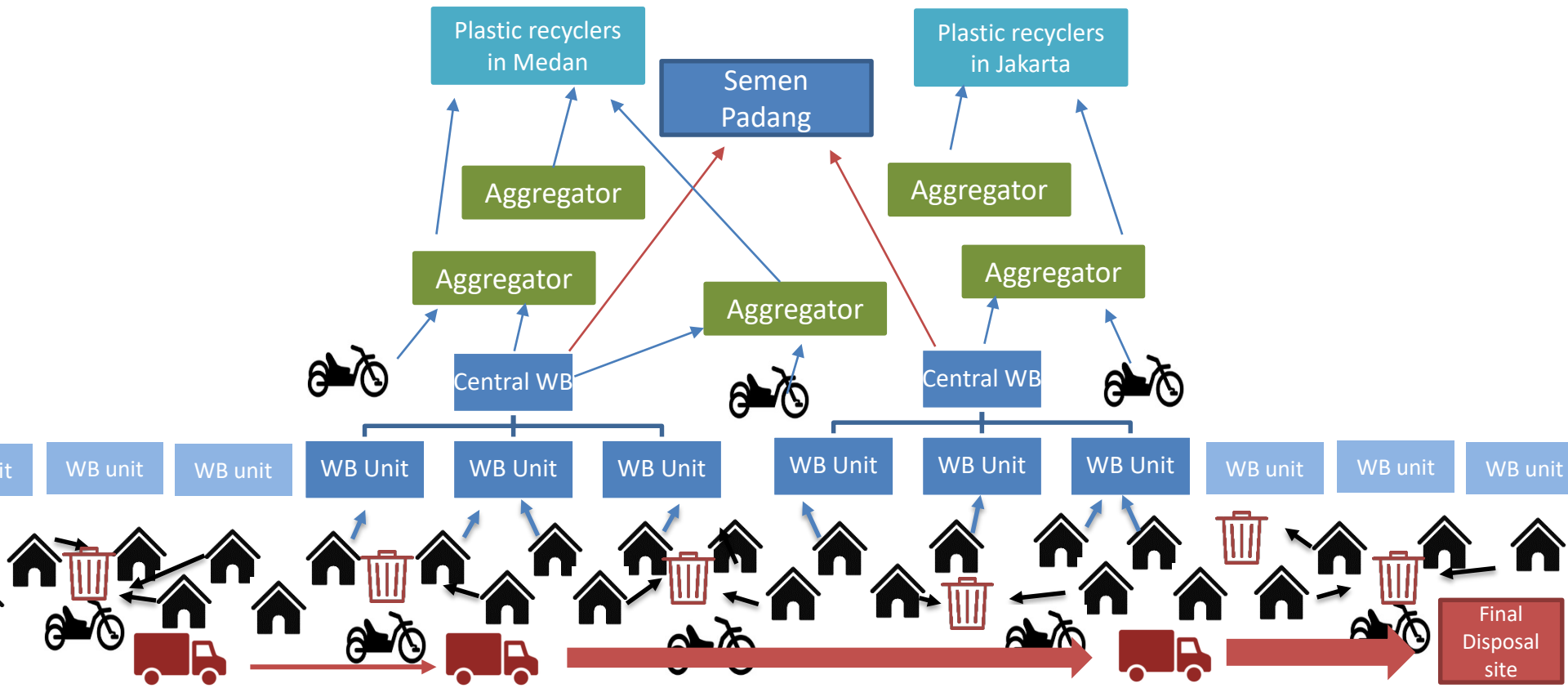
feature that provides all reports needed by a waste bank.



# Current Plastic Recycling in Padang

→ Recyclable at **High** value

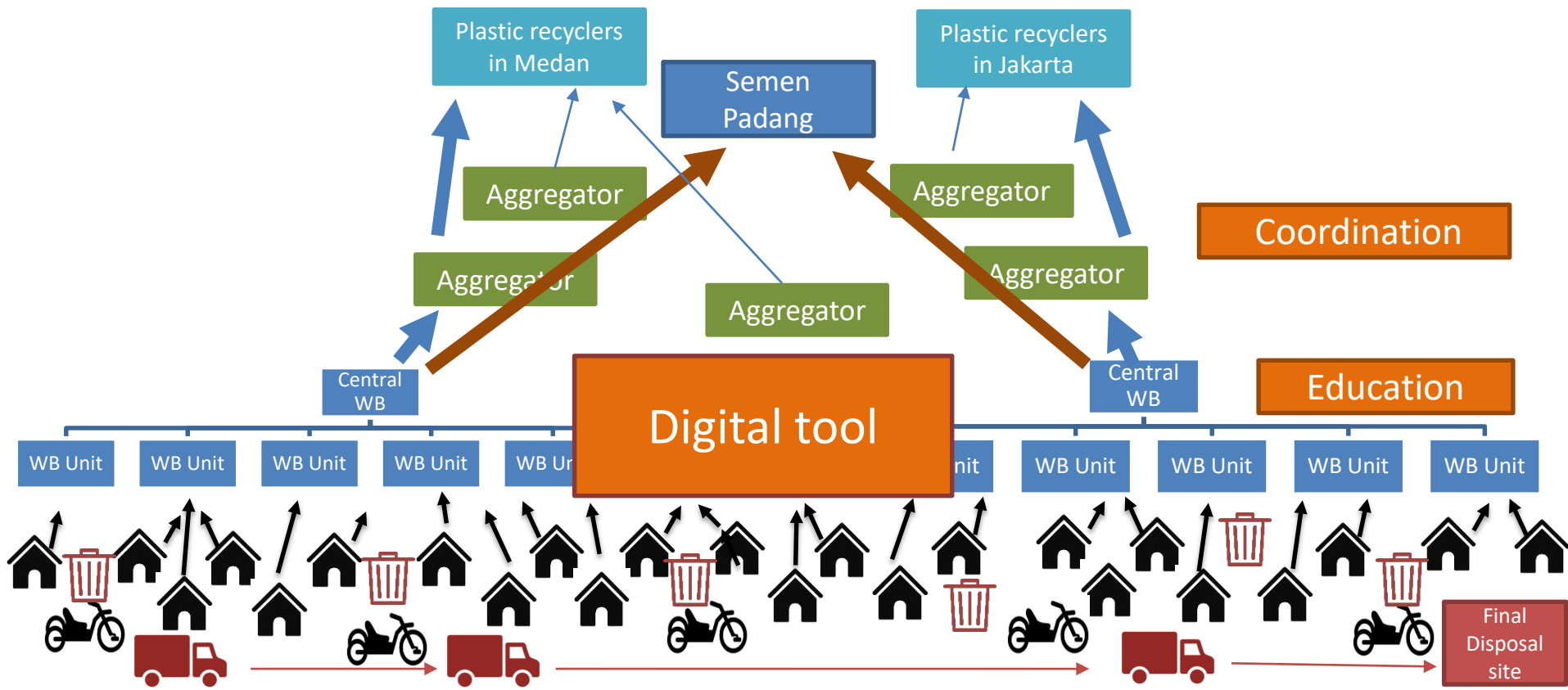
→ Recyclable at **Low** value



# Concept of Pilot Activity

→ Recyclable at **High** value

→ Recyclable at **Low** value



# **Stay Tuned!**

## **We will report the result of pilot activity around the end of the year 2025**

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Any other questions, please contact [miho.hayashi@iges.or.jp](mailto:miho.hayashi@iges.or.jp)