



# Challenges in Developing Mitigation Options: Case of Bogor City

**Kiki Kartikasari, Syahrina D. Anggraini, Ari Suharto**

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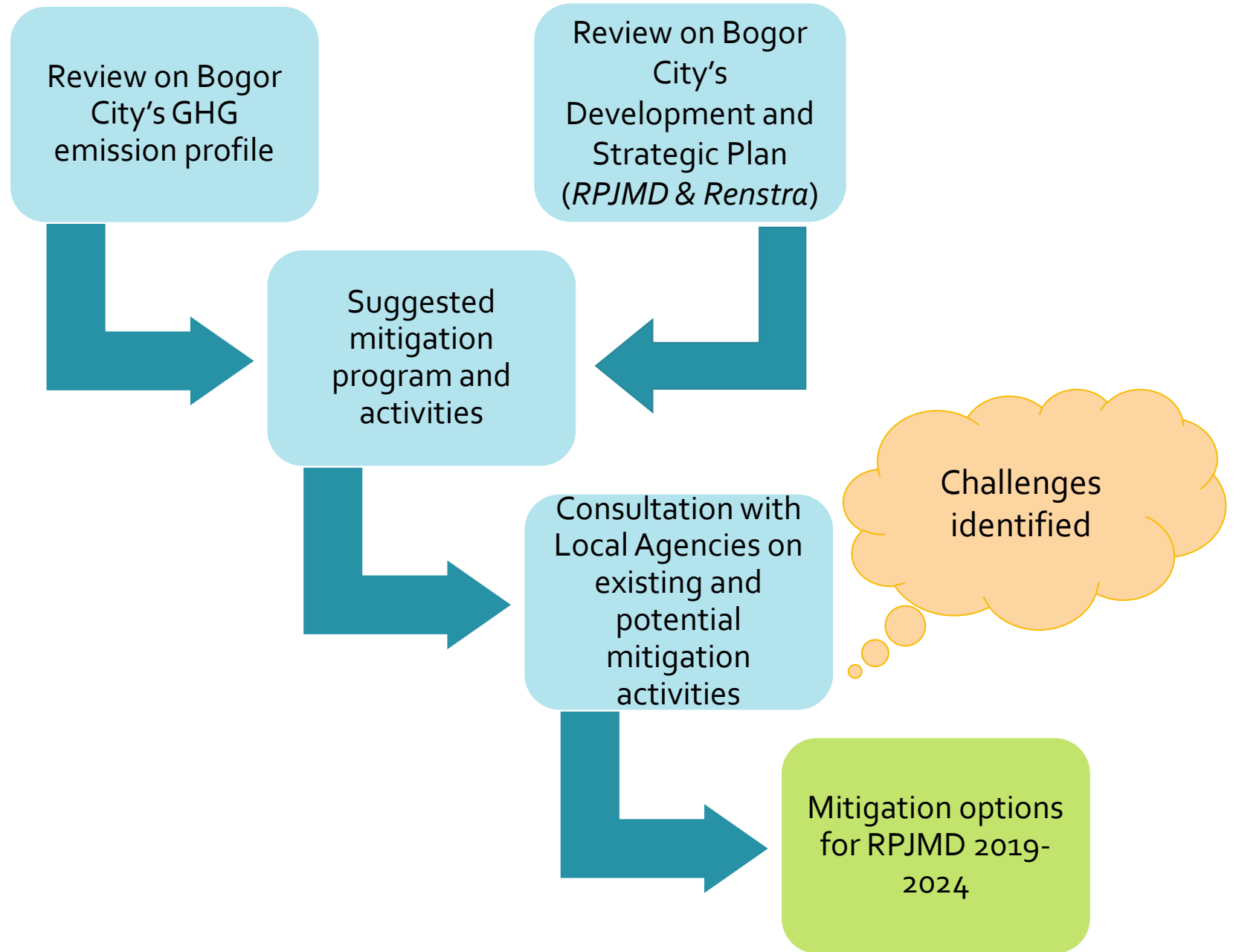
# Background & Objectives

- Bogor's Green City vision
- Development of mitigation options for Medium-term Development Plan (RPJMD) 2019-2024; supported by Bogor City's BAPPEDA
- Challenges faced by existing mitigation activities in Bogor City

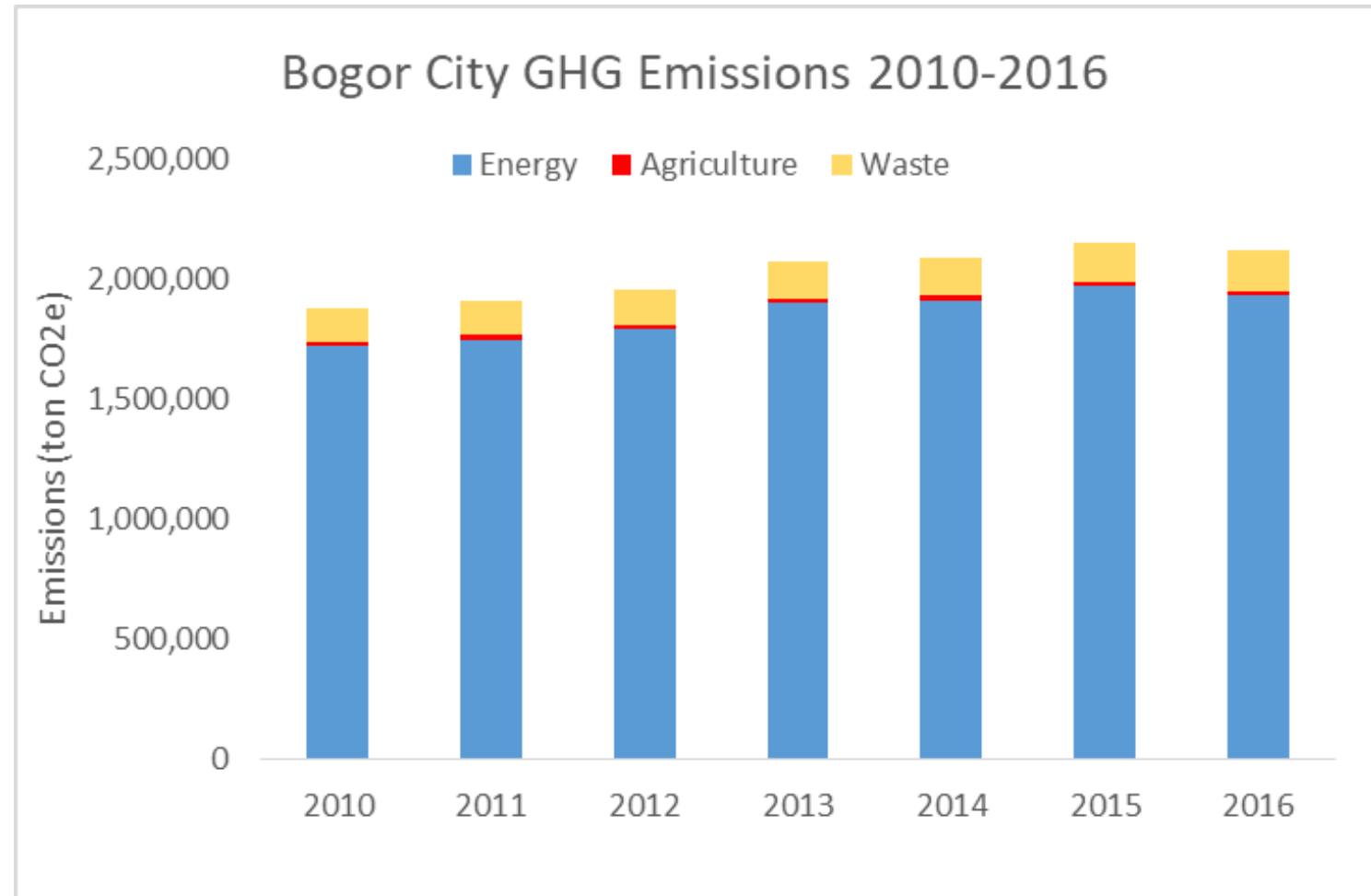
→ To provide insight into operational constraints in some mitigation activities in Bogor City



# Workflow for development of Bogor City's Mitigation Options



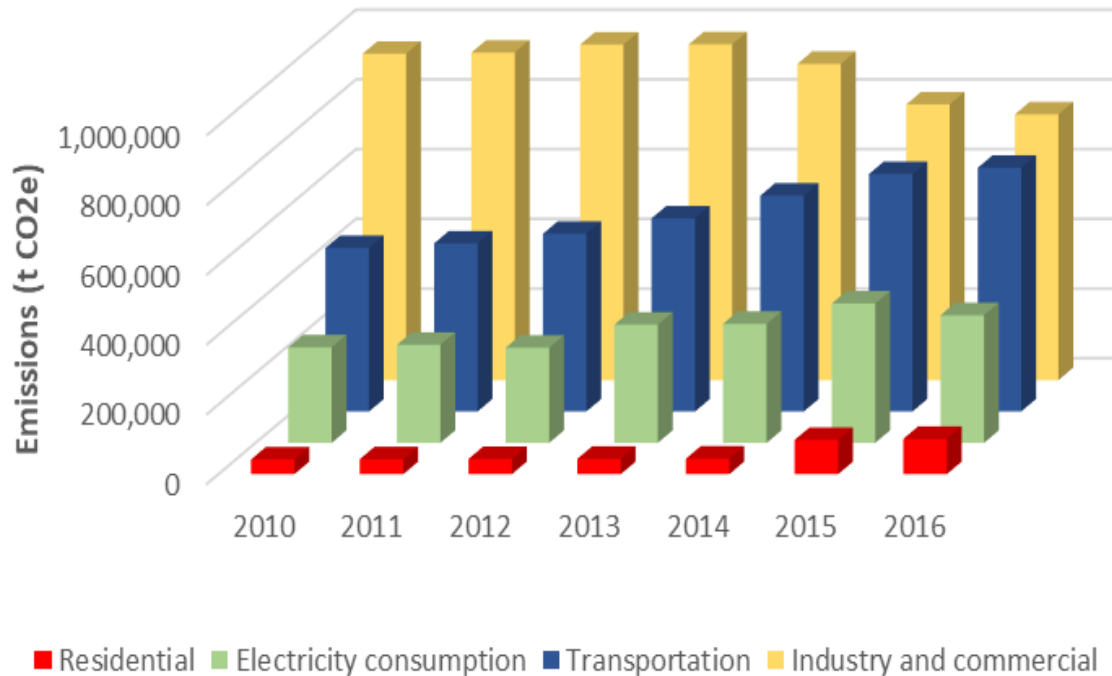
# Bogor City's GHG Emissions Profile



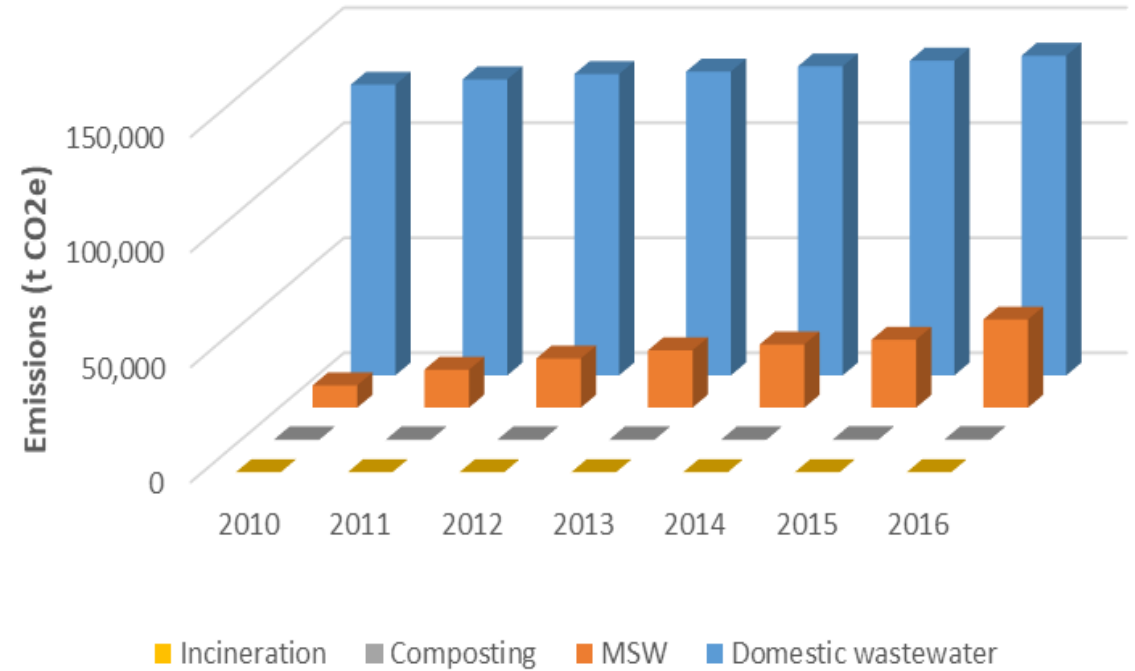
More than 95% of GHG emissions in Bogor city come from energy sector

# Bogor City's Emissions in Energy and Waste Sector

## GHG Emissions in Energy Sector 2010-2016



## GHG Emissions in Waste Sector 2010-2016



Increasing trend is prominent in transportation and MSW sub-category

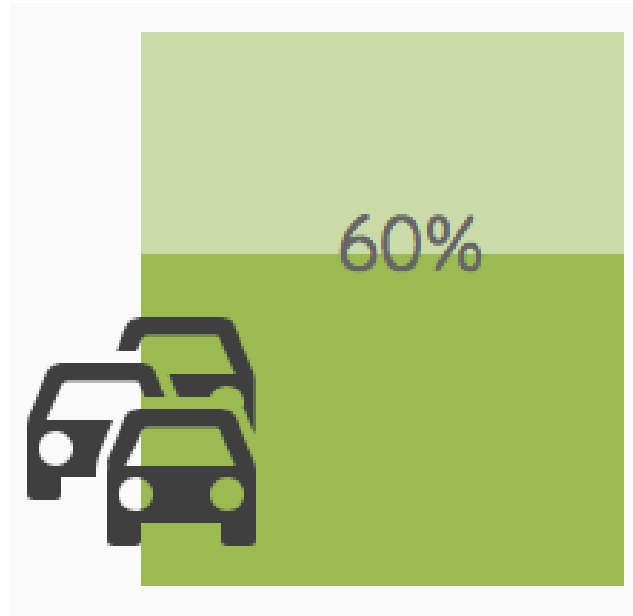
# Mitigation Activities in Bogor City's Development Plan 2014-2019

Document	Number of Program/ activity	Priority (%)		
		High	Medium	Low
RPJMD - City	315	10.8	6.8	79.6
Renstra Bappeda (development & planning)	55	1.8	12.7	85.5
Renstra Dinas Perhubungan (transportation)	89	13.5	22.5	64
Renstra Dinas Lingkungan Hidup (environmental)	48	28.6	36.7	32.7
Renstra Dinas Perumkim (housing and settlement)	45	15.6	31.1	53.3

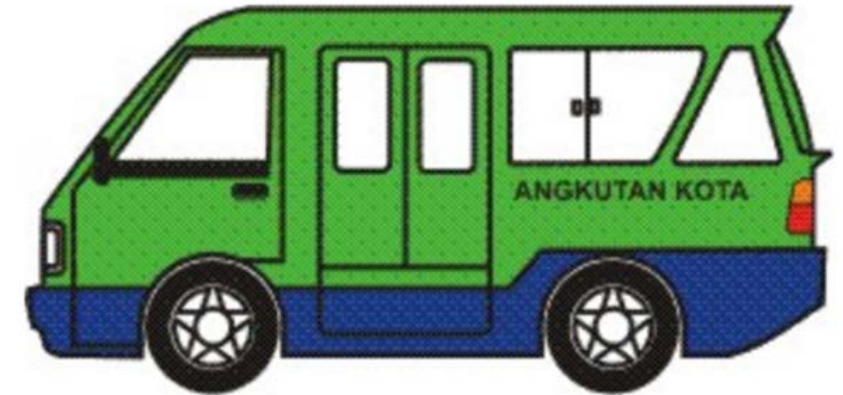
# Mitigation Activities in Bogor City's Development Plan 2014-2019

No	Program	Activities	Responsible agency
1	Policy umbrella for climate change related programs	Implementation of mitigation and adaptation actions	Development Planning Agency
		Monitoring and evaluation of mitigation and adaptation actions	
		Environmental pollution and damage control	Environmental Agency
		Vulnerability analysis to support identification of relevant adaptation options	BPBD
		Establishment of climate change working group to support implementation of mitigation and adaptation actions	Development Planning Agency
2	Energy efficiency	at household level	Settlement Agency
		at commercial facilities	Public Works and Housing Agency
		at government facilities	
3	Transportation	Conversion to BRT	Transportation Agency
		Conversion to cleaner fuel	
		Parking policies e.g high parking tariff and no street parking policy to encourage people using public instead of private transportation	
		Improvement and development of pedestrian and bike lane to encourage shifting from using motorized transportation for short trips	Public Works and Housing Agency
4	Low emission agriculture	Climate smart agriculture	Agricultural Agency
		Low emission animal husbandry	
5	Improvement of green spaces	Quantity (development of new green spaces)	Gardening Agency
		Quality (replanting and rehabilitation of existing green spaces with hardwood trees)	
6	Waste management	3R	Environmental Agency
		Waste Bank	
		Composter	
		Development of new IPAL facilities to cover more areas without onsite waste-water management facilities	

# Overview on Issues in Transportation in Bogor



Private vehicles (e.g car, motorcycle) dominate roads in Bogor. Mitigation options in transportation is focused on reducing use of private vehicles



In 2017, there are more than 3,400 units of Angkot (minibus type of public transportation) serving 30 routes



## Main Program in Transportation sub-sector



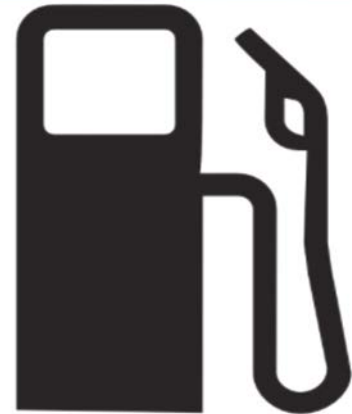
### **BRT**

Conversion of 796  
small city  
transport into 252  
minibuses



### **PARKING**

On and off street  
parking management,  
high tariff for private  
cars/motorcycles



### **FUEL**

Conversion into  
biofuel for public  
transportation



### **PEDESTRIAN**

Expansion of  
pedestrian area from  
0.5 km to 24.8 km

# Challenges in Transportation sub-sector



The rise of online transportation service



Undisciplined vehicle parking habit



Walking is not a preferable means of transportation for lots of Bogor citizens



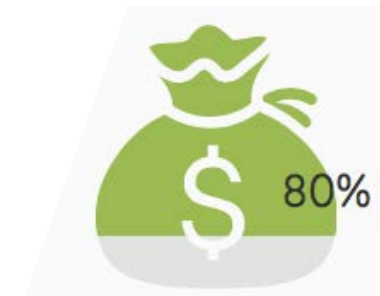
In the development of Natural gas-based Fuel Station, equipment were stolen and some of the equipment (e.g. fuel nozzles) do not fit some vehicle types

# Bogor City's Municipal Solid Waste Management

Treatment (per 2015)	Percentage of Waste
To Galuga SWDS (unmanaged shallow), until 2020	70%
Open burning	8.68%
3 R	1%
Others (unidentified)	20.32%

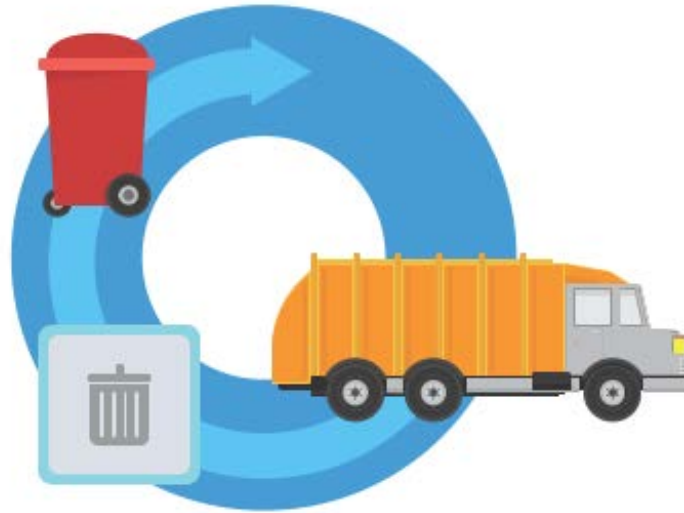


Dominated by  
organic waste:  
66% are food waste  
6.5% paper



As of now most budget  
in waste management  
are allocated for  
transportation fuel and  
labor

# Mitigation Program in Solid Waste Management



New regional landfill in Nambo, operation starts in 2020. Quota for Bogor City is 500 ton/day



26 Recycling Stations



233 Community-based Waste Banks; 1 Waste Bank operated by government officers



# Challenges in Municipal Solid Waste Management



- Only around 4% of MSW being segregated, despite existing solid market to absorb paper and other materials being segregated
- Lack of capacity for segregation in households
- No dedicated station to collect used electronic devices



High cost for transportation to Nambo landfill



Rise of small scale food industry with non-biodegradable packaging

In terms of composting, lack of segregation caused metal to contaminate compost, thus not suitable for crops. Composts are only being used for decorative plants



## Key Messages

- More research concerning supporting and hindering habit/lifestyle for green development → mitigation activities designed and implemented taking into account these information to increase acceptance and adoption.

Example: development of MRT that accommodate shorter stops, utilization of biodegradable food packaging

- Early education on green lifestyle