



MAKING PENANG A LIVEABLE CITY - Good Integrated Solid Waste Management

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Zero Waste Malaysia
In collaboration with the Penang
State Government
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Penang State and City Overview

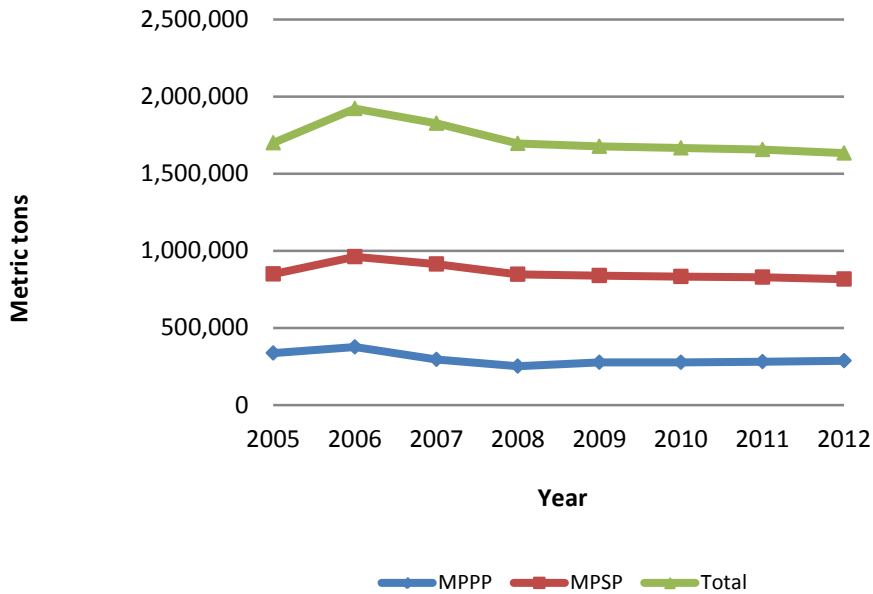
- Penang State = Penang Island Municipal Council (MPPP) and Seberang Perai Municipal Council (MPSP)
- Tropical climate with monsoons April – September
- Current population (2010 Census):
 - MPPP 741,300
 - MPSP 868,500



Solid Waste Sector Information

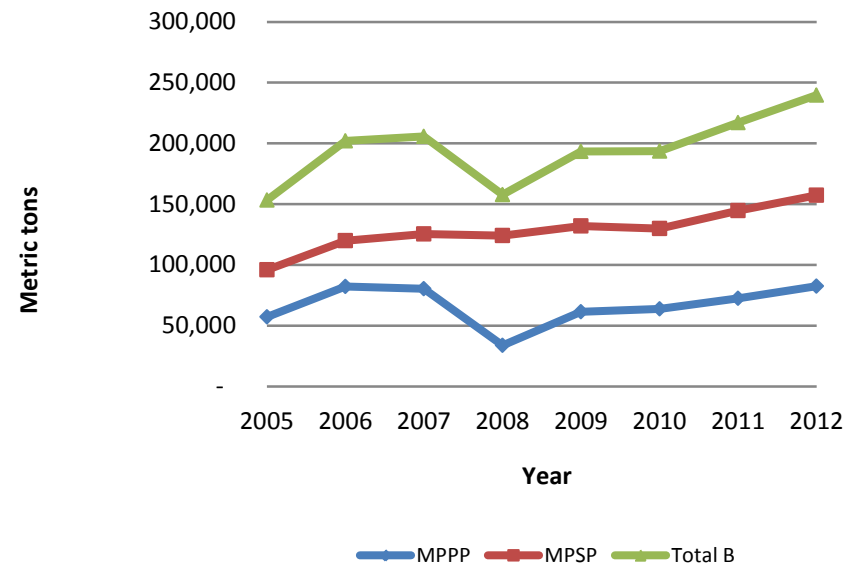
No.	Item	MPPP	MPSP	Unit
1	Quantity of waste generated annually	288,377	528,275	Tonnes/year (2012)
2	Quantity of waste generated daily	790	1447	Tonnes/day (2012)
3	Quantity of waste generated per capita	1.07	1.47	Kg/capita/day
4	Total number of households in the city	189,829	195,829	Households
5	Percentage of municipal budget used for solid waste sector	26	43	Percent
Waste Composition* (Source: Derived from Satang Report 2003)				
i	Organic	43	63	percent
ii	Paper	28	5	percent
iii	Plastic	15	17	percent
iv	Metal	5	4	percent
v	Glass	0	0	percent
vi	Other	6	11	percent

Chart 1: Total Waste Generation for Penang (2005-2012)



Waste Generation & Recycling in Penang, 2005-2012

Chart 2: Total Recyclables Collected for Penang (2005-2012)



Overview of MSWM system



- MSW from Penang Island
(Before the bridge construction)
Transported to Batu Maung TS → barged to Pulau Burong Landfill
(During the bridge construction)
Transported to Ampang Jajar TS via the First Penang Bridge → compacted → transported to Burong Landfill
- MSW from North/Central Seberang Perai
Transported to Ampang Jajar TS → compacted → transported to Pulau Burong Landfill
- MSW from South Seberang Perai
Directly transported to Pulau Burong Landfill

SOLID WASTE MANAGEMENT POLICY

Strategy
1:

Waste
Separation at
Source

Strategy
2:

Waste
Diversion
from the
landfill

Strategy
3:

Incentivising
the System

Strategy
4:

Capacity
Building &
Awareness
Programmes

Strategy
5:

Looking
Ahead

Samples of Implemented Projects & Activities

Waste Minimisation, Resource Recovery and Diversion from the landfill

- Promote **waste minimisation programmes** & **waste diversion** from the landfill
- Develop a better managed solid waste management system through the **upgrading the existing landfill** at Pulau Burong to a Level IV Sanitary Landfill with leachate treatment.
- Set up **buy-back centres, material recovery facilities** or **resource recovery centres** to divert waste away from the landfill.
- E-waste - Collect used **PCs & peripherals** under the Dell-Sunshine-Penang Island Municipal Council Programme, JICA **Household e-waste** collection programme
- Collect **used cooking oil** from eateries, restaurants, food complexes.
- Collect **food and organic waste** for composting and processing into **bio-liquid fertilizer**.
- Green waste static fermentation using the Groundswell process for **top soil production**
- Implemented the “100 steps to cleanliness” project using **3R illuminated bins** along major streets
- Established “**smoke-free**” zones for Penang.
- **Banned** the giving of free plastic shopping bags in Supermarkets / Hypermarkets to reduce the carbon footprint –**No Free Plastic Bag Regulation**.
- **Banned** the use of **Styrofoam food containers**.
- Enforced the **closed house system** for pig-farming activities.
- Collection of used **roadside banners** to be turned into shopping bags.
- **Green awards** for practioners – Greens School, Green Office, Green Citizen, Green industry etc.
- Promote more **Zero Waste** communities

RECYCLE BANK



 Collected



 Segregated

 Weighed

 Recorded in Bank Book

 Stored

 Sold to recycling agent



'CLEANER GREENER PENANG' COMMUNITY PROGRAMMES,





2010 - 44 Food complexes on the Island

2011 - Education Phase for all restaurants, shops, night markets licensed by MPPP & MPSP

1 Dec 2012 - Total Ban on Polystyrene Food Containers In Penang



Penang's Organic Waste Policy - Suggestions for Improvement

OBJECTIVES

1

- To divert the amount of organic waste (putrescibles) from the Pulau Burong Sanitary Landfill and moving towards a total ban in the long term.

2

- To reduce the costs of collection, transfer and treatment of organic waste for the local authorities by treating organic waste at source.

3

- To incentivise organic waste treatment by private and community efforts through costs savings by local authorities.

4

- To emulate nature and return all organic outputs to food production, parks and gardens and energy production thereby completing the nutrient cycle to ensure a sustainable food supply and security.

BAGAN AJAM WET MARKET WASTE COMPOSTING PLANT



**Heng Ee High School
Canteen waste
Collection (3,000
students)**

**Bayan Baru Hawker
Complex Food Waste
Collection**



Groundswell Static Fermentation Process

Waste to top soil



4-6 weeks

8-12 weeks

Stage
1

Picking
Incoming
Waste

Stage
2

Inoculating
With
Starter &
Seeder

Stage
3

Turning &
Respraying

Stage
4


Curing



Future Projects

Through Public-Private Smart Partnerships

1. Building more Zero Waste Communities
2. Food Waste, Bulk Waste & Green Waste Recovery using the Groundswell Process
3. Food to Food - Sustainable Organic Waste Management to Agriculture Training Centre, Seberang Perai using the Groundswell Process
4. Zero discharge system for pig farming area with conversion of pig waste into bio-gas, compost or algae cultivation.
5. Identifying more other activities and projects for strategies and approaches for the implementation of the Penang's Organic Waste Policy –such as waste separation at source

A close-up photograph of a person's hand gently holding a monarch butterfly on a tree branch. The butterfly has orange wings with black veins and white spots. The background is a soft-focus natural setting with green leaves and a light sky. The text 'TERIMA KASIH' is overlaid in large, bright green, bold letters with a black outline.

TERIMA KASIH