Seventh Regional 3R Forum in Asia and the Pacific
"*Advancing 3R and Resource Efficiency for the 2030 Agenda for Sustainable Development*"
Adelaide, SA, Australia, 2-4 November 2016

City Report

(Draft)

< Penang>

This city report was prepared by Penang as an input for the Seventh Regional 3R Forum in Asia and the Pacific. The views expressed herein do not necessarily reflect the views of the United Nations.

Guideline for City Reporting on Major Initiatives/Achievements in 3R areas

The main objective of the City Reporting is to share among international community the progress, achievements and best practices, including various challenges faced, in the areas of **3R (Reduce, Reuse, Recycle)** and sustainable waste management. This would help development agencies, donors, including development banks, in assessing the needs and challenges of cities to better devise their existing as well as future capacity building programmes and operations in the field of 3Rs and sustainable waste management.

It would be appreciated if a consolidated city report could kindly be prepared by answering the following questionnaire and submitted to the **Secretariat of the Regional 3R Forum in Asia and the Pacific** by email to 3R@uncrd.or.jp

Timeline for submission: **15 September 2016**
Secretariat of the Regional 3R Forum in Asia and the Pacific
United Nations Centre for Regional Development (UNCRD)

City Report: Penang (Penang Island City council & Seberang Perai Municipal Council)

Q 1 **What are the roles of local government stipulated in the 3R-related policies, acts, laws, or regulations?**

Vision:
To implement and administer solid waste planning and management in an integrated, holistic, cost effective and environmentally friendly manner.

Mission:
To implement and administer solid waste planning and management in an integrated, holistic, cost-effective and environmentally friendly manner through waste minimisation approaches moving towards the Zero Waste principle.

The following objectives have been formulated for the local government to achieve the above mission.

- To establish a comprehensive, integrated, cost-effective, sustainable and socially acceptable ISWM;
- To manage wastes through a more holistic and comprehensive approach than today's system, resulting in the conservation of natural resources and the creation of less waste and less pollution, and at the same time reducing the carbon footprint;
- To implement ISWM based on waste management hierarchy that shifts away from the "throwaway society," toward a system that promotes a reduction in the generation and toxicity of trash giving priority to waste reduction through effective waste minimisation strategies (3Rs) where wastes are treated as valuable raw materials and energy resources and waste diversion from the landfill via resource recovery and composting strategies, and efficient final disposal; and
- To adopt stable, long-term funding mechanisms that provide sufficient revenue for state and local programs while providing incentives for increased waste reduction and diversion.

<table>
<tr><td>Q 2</td><td colspan="2">Is 3R policy integrated in your city development strategy or master plan?
(Please attach photo(s) of your city's waste management if available.)</td></tr>
<tr><td></td><td colspan="2">x☐ Yes => Please share goals/visions/major achievements/important lessons learnt that could be replicated elsewhere.
☐ No => Please go to Q6 (please also answer Q4, 5, and 7)

Please refer attached Powerpoint Presentation.

Please attach photos with caption, if available:</td></tr>
<tr><td>Q 3</td><td colspan="2">What are the major challenges and constraints faced by your city in implementing 3R policies and programmes? (Please answer only if your <u>answer to Q2 is "Yes</u>")</td></tr>
<tr><td></td><td>Financial constrains:</td><td>Rising annual costs of waste management
Limited government funding for waste management activities.</td></tr>
<tr><td></td><td>Institutional/governance challenges:</td><td>• Implementation and enforcement of waste related regulations especially waste separation at source.
• Establishing further rapport with civil society groups, NGOs, private sector and other stakeholders.
• Establishing PPP projects with the private sector and CBOs
• Encouraging the private sector and multinationals to commit to Corporate Social Responsibility (CSR) principle</td></tr>
<tr><td></td><td>Policy gaps:</td><td>• Development of further policies for other types of difficult waste such as C&D, mercury related products, green waste, bulky waste and household hazardous waste.
• Developing and implementing a "Waste Generators Pay Principle" for the Industrial, commercial sectors.</td></tr>
<tr><td></td><td>Other challenges such as technical capacity, human resources etc.:</td><td>• Obtaining appropriate, affordable, available and accessible technologies for waste treatment
• Obtaining the right technical expertise.</td></tr>
<tr><td colspan="3">City Report City Name: Penang]</td></tr>
<tr><td>Q 4</td><td colspan="2">What programme is in place in your city to support NGOs activities towards promotion of 3Rs?</td></tr>
<tr><td></td><td colspan="2">• Establishing Zero Waste Communities
• Recycling incentives for NGOs and CBOs
• Green Schools with Recycling Banks and food waste processing machines.</td></tr>
</table>

<table>
<tr><td>Q 5</td><td colspan="3">Is there any collaborative 3R related activity/project/partnerships with cities and organizations at international level?</td></tr>
<tr><td></td><td colspan="3">x☐ Yes => Please brief the project(s) including objectives, project partners, target, period, budget etc.
☐ No
Climate & Clean Air Coalition (CCAC) MSW Initiative - Organic Waste Diversion & Short-Lived Climate Pollutants (SLCP) Avoidance
Status: Recently launched

• Activity 1: Waste Diversion at Landfill site:
FEASIBILITY STUDY FOR MATERIAL RECOVERY FACILITY (MRF) & BIO-DIGESTER AT PHASE 3, PULAU BURONG SANITARY LANDFILL, PENANG, MALAYSIA
Objective: To divert organic waste from the landfill cells through efficient resource recovery of both recyclables and organic material as a useable product through the implementation of environmentally sustainable technologies.

• Activity 2: Waste Diversion at Point of Generation:
PILOT PROJECT: UPSCALING OF FOOD WASTE DIVERSION FROM THE LANDFILL IN GEORGE TOWN, PENANG, MALAYSIA
Objective: Upscaling of organic waste diversion upstream targeting food waste separation from roadside hawker stalls, restaurants, hotels in the UNESCO World Heritage George Town inner city on selected main streets (especially those which have night hawking) for a pilot project.

Please attach photos with caption, if available:</td></tr>
<tr><td>Q 6</td><td colspan="3">Even if your city doesn’t have any dedicated 3R policies/programmes/activities, what future prospects or opportunities does your city have in 3R areas?</td></tr>
<tr><td></td><td colspan="3"></td></tr>
<tr><td>Q 7</td><td colspan="3">What type of 3R infrastructure and facilities your city is equipped with? Please tick the appropriate.</td></tr>
<tr><td></td><td>Type of 3R infrastructure and facilities</td><td>Adequate/Significant</td><td>Not-Adequate/ Non-significant</td></tr>
</table>

	☐ waste collection facility	☐x	☐
	☐ waste segregation facility	☐	☐x
	☐ waste storage facility	☐x	☐
	☐ waste processing & treatment facility	☐x	☐
	☐ resource recovery facility	☐x	☐
	☐ waste recycling facility	☐x	☐
	☐ waste to energy facility	☐	☐x
	☐ eco-industrial zones	☐x	☐
	☐ science parks/theme parks relevant to 3R	☐	☐x
	☐ others (please specify:)	☐	☐
Q 8	**Kindly provide the important 3R policies/programmes/projects/master plans that your City Government plants to undertake within next five years (2016-2021)**		
	1. Waste Separation at Source 2. Waste Diversion from the landfill 3. Incentivising the System 4. Capacity Building & Awareness Programmes **Please refer Appendix 1 for Framework**		
Q 9	**In response to the 2030 Agenda for Sustainable Development, in particular SDG 11 (*Make cities and human settlements inclusive, safe, resilient and sustainable*) and SDG 12 (*Ensure sustainable consumption and production patterns*), how is your City planning to advance 3R and resource efficiency related measures?**		
	• Implement waste separation at source regulation by mid -2017 • Enhance the collection of organic waste and treatment at source into liquid soil enhancers and compost. • Implement further resource recovery at the sanitary landfill with the establishment of an Eco-park • Conversion of organic waste into energy and other useful products. • Recycling and reuse of C&D waste and bulky waste. • Collection and treatment of mercury related waste such as used fluorescent lamps following the Minimata Convention.		

Thank you for your kind cooperation.

Appendix 1

PENANG'S SOLID WASTE MANAGEMENT FRAMEWORK

POLICY: To implement and administer solid waste planning and management in an integrated, holistic, cost- effective and environmentally friendly manner through waste minimisation approaches moving towards the Zero Waste principle.

VISION
To implement and administer solid waste planning and management in an integrated, holistic, cost effective and environmentally friendly manner.

Objectives

- **To establish a comprehensive, integrated, cost-effective, sustainable and socially acceptable ISWM;**
- **To manage wastes through a more holistic and comprehensive approach than today's system, resulting in the conservation of natural resources and the creation of less waste and less pollution, and at the same time reducing the carbon footprint;**
- **To implement ISWM based on waste management hierarchy that shifts away from the "throwaway society," toward a system that promotes a reduction in the generation and toxicity of trash giving priority to waste reduction through effective waste minimisation strategies (3Rs) where wastes are treated as valuable raw materials and energy resources and waste diversion from the landfill via resource recovery and composting strategies, and efficient final disposal; and**
- **To adopt stable, long-term funding mechanisms that provide sufficient revenue for state and local programs while providing incentives for increased waste reduction and diversion.**

NO	STRATEGIES	OBJECTIVES	ACTION PLAN	ACTIVITIES
1	**Waste Separation at Source**	1. To ensure that waste is separated at the source of generation for easier resource recovery. 2. To ensure that municipal solid waste is free from contamination from	i. Implement mandatory waste separation at source for major recyclable items (e.g. paper, cardboard, plastics, metal, glass, e-waste and putrescibles).	a. Formulate regulations together with local authorities for announcement and implementation. b. Start awareness campaigns and pilot projects before statewide implementation.

NO	STRATEGIES	OBJECTIVES	ACTION PLAN	ACTIVITIES
		scheduled and hazardous waste		
			ii. Implement changes for waste separation starting with easy adopters - targets that are easily achievable e.g. wet markets, hotels, hospitals and schools; food courts under municipal control.	c. Encourage waste minimization and separation of waste at source for the residential, industrial, commercial and institutional sectors.
			iii. Change contractual agreements of waste collectors appointed by the municipality to cater for collection of separated waste.	d. Make changes to collection operations to provide a more holistic coverage of service areas.
			iv. Collect household hazardous waste (HHW) separately for safe disposal.	e. Establish collection centres f. Ensure local authorities have budget for safe disposal of HHW.
			v. Ensure that all infrastructures are ready to cater for the separated waste e.g. 2-stream system, buy-back centres, MRFs at transfer stations and landfills.	g. Facilitate and encourage the setting up of businesses for buy-back centres and programmes . h. Establish crucial capture points at transfer stations and landfill sites to prolong lifespan of landfills. E.g. MRFs, Waste to energy plants
2	**Waste Diversion from the**	1. To divert waste away from the landfill thus saving	i. Encourage the practice of 3Rs and changing peoples'	a. Establish Zero Waste Communities.

NO	STRATEGIES	OBJECTIVES	ACTION PLAN	ACTIVITIES
	landfill	municipal costs for Solid Waste Management (SWM) and prolonging the lifespan of the landfill.	attitudes and present practices. ii. Minimize waste at the front end so that waste is reduced in the first place rather than treating it later.	b. Establish efficient recycling network.
			iii. Divert the amount of organic waste (putrescibles) from the Landfill moving towards a total ban in the long term.	c. Encourage the commercial, industrial and institutional sectors to segregate food and kitchen waste. d. Encourage processing of food waste at source into bio-fertilisers
			iv. Encourage the processing of C&D at source.	e. Discourage the sending of C&D to the landfill. f. Encourage the recycling of C&D waste. g. Encourage the use of C&D waste for land reclamation or construction.
			v. Encourage the collection of green & bulk waste for processing into products.	h. Encourage the processing of green waste into production of "top Soil/bio-soil' or RDF.
			vi. License recycling businesses under a special "recycling" category with mandatory data collection and submission to the local authorities.	i. Register and license all recycling businesses. j. Develop a comprehensive databank for recycling data.

NO	STRATEGIES	OBJECTIVES	ACTION PLAN	ACTIVITIES
			vii. Issue permits for collection of recyclables for CBOs, NGOs, institutions and charitable organisations.	k. Register and issue permits to all collectors of recyclable items.
3	**Incentivising the System**	1. To determine the cost of Solid Waste Management (SWM) & Public Cleansing (PC) 2. To determine the amount of savings from waste minimization and diversion activities.	i. Finalise Payment Level and the Mode of Payment.	a. Survey of waste generation activities for commercial, industry and institutional sectors
		3. To develop incentive schemes to encourage waste minimization and diversion.	ii. Develop incentive schemes to encourage waste minimization and diversion of different types of waste such as paper, plastics, ferrous and non-ferrous metals, glass, e-waste & C&D.	b. Devise incentive systems to reward recycling and waste diversion practitioners. E.g. green school awards, green citizen, green industry etc. c. Devise a voluntary carbon credit scheme for diversion of organic waste. d. Establish an independent body to audit carbon credit schemes.
4	**Capacity Building & Awareness Programmes**	**1.** To build capacity for local government staff as well as continue and expand public awareness programmes	i. Build Capacity for Local Governments and to meet KPIs.	a. Send officers involved in SWM & Public Cleansing for capacity building programmes.
			ii. Continue and expand the public education and awareness programme in the	b. Establish more Environment Resource Centres to conduct community awareness and

NO	STRATEGIES	OBJECTIVES	ACTION PLAN	ACTIVITIES
			communities and institutions such as primary and secondary schools and colleges.	education community programmes c. Establish model communities that practices zero waste

Developing Penang's SWM Plan

National Waste Management Strategy Development Workshop
Hanoi, Vietnam
August 11, 2016
By Khor Hung Teik

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PENANG, MALAYSIA

- Penang Island was established in 1786 by Capt. Francis Light of the British East India Company
- Mainland Penang (Province Wellesley) was occupied in 1790, and placed together under the administration of Straits Settlement.
- Independence since 31 Aug 1957
- George Town, a port town, was developed as hub for trading, commerce and culture.
- .Country : Malaysia
- Coordinates: 5°24'N 100° 14'E
- Area: 1,048 km²
- Population: 1.6 million (as of 2010)
- GDP : RM 49.5 billion (as of 2010)
- Human Development Index : 0.773
- Urbanization: 80%

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Penang in the news:
An industrial base state, heritage city and campus for technology

- **Top 10 dynamic industrial cluster** locations in the world to have demonstrated a successful manufacturing experience among developing economies (UNIDO Industrial Development Report 2009)
- **Top 31 Business Process Outsourcing (BPO)** - locations of the future (KPMG's "Exploring Global Frontiers" Report 2009)
- Georgetown – **UNESCO World Heritage Site in 2008**
- The **8th most livable cities in Asia** (ECA Intl. 2012)
- Top in **Green initiatives** in Malaysia
- **C.A.T. Governance** praised for anti-corruption efforts (Transparency International, AG Report 2010)
- **Top 10 best city to visit** in the world (The Guardian 2014)
- **Top culinary spot** (Lonely Planet 2014)
- **Top 8 islands** in the world 'You must see before you die' (Yahoo! Travel, Feb 2011)
- **Top 15 best street art** in the world (The Guardian 2013)

Analysing the situation

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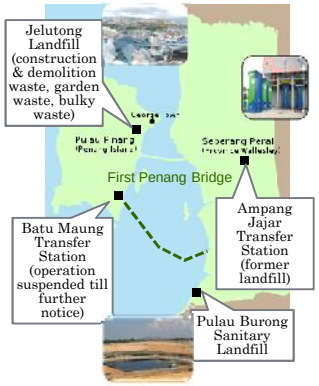
Overview of MSWM system



- 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

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Solid Waste Sector Information

No.	Item	Penang Island Municipal Council (MPPPI)	Seberang Perai Municipal Council (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

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Penang waste generation , 2005-2013

Year	Waste Disposed at Landfill Per Year (metric tons)			Recycling Per Year (metric tons)			Total Waste Generation Per Year (metric Tons)	Recycling Rate (%)
	MBPP	MPSP	Total A	MBPP	MPSP	Total B	C=(A+B)	B/C
2005	280,489	416,254	696,743	57,178	96,032	153,210	849,953	18.03%
2006	295,498	463,750	759,248	82,210	119,964	202,174	961,422	21.03%
2007	216,490	490,729	707,219	80,351	125,504	205,855	913,074	22.55%
2008	218,440	472,005	690,445	33,775	124,121	157,896	848,341	18.61%
2009	216,456	428,563	645,019	61,307	132,039	193,346	838,365	23.06%
2010	213,591	426,152	639,743	63,756	129,804	193,560	833,304	23.23%
2011	209,701	401,663	611,364	72,341	144,682	217,023	828,387	26.20%
2012	205,972	370,989	576,961	82,405	157,286	239,691	816,652	29.35%
2013	207,968	427,706	635,674	80,050	207,849	287,899	923,573	31.17%
2014	214,609	434,175	648,784	80,233	233,791	314,024	962,808	32.62%

Source:

Penang Island City Council (MPPP), 2015

Seberang Perai Municipal Council (MPSP), 2015

Waste Composition of Seberang Perai Municipal Council (MPSP) & Penang Island Municipal Council (MPPP), 2003

Item	MPSP		MPPP	
	Tonnes (per day)	%	Tonnes (per day)	%
Food	605.84	50%	206.23	33%
Yard & Garden	148.99	12%	59.86	10%
Paper	54.12	5%	176.15	28%
Plastics	208.10	17%	89.89	15%
Textile/Rubber	38.48	3%	19.02	3%
Metal	43.36	4%	29.09	5%
Hazardous	2.69	0%	1.92	0%
Others	98.42	8%	37.74	6%
Total	**1,200.00**		**619.90**	

Setting targets

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Targets for Waste Reduction & Recycling 2011-2020

Indicator	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Waste Generation kg/capita/day	1.5	1.35	1.21	1.09	0.98	0.88	0.78	0.72	0.64	0.58
Recycling Rates (%)	25	27	30	33	37	40	44	49	53	59

Source: PEMANDU SWM Lab, 2011

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Strategies to increase recycling rate by 2020

	2012	2013	2014	2015	2016	2017	2018	2019	2020	Responsible agency
Licensing of recyclers										Licensing JPP
Registration of recyclers										JPP
Database of recyclers										JPP Komputer
Mandatory waste separation										JPP Enforcement
Enabling infrastructure (landfill, transfer station, recovery facilities, buy-back)										Local government Private Investors
Public awareness										JPP/NGOs/Media
Government support Tax holiday Grants Soft loans Start up capital "Waste to wealth"										Local government Federal government

Next step: Drill down to specific initiatives

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Formulating policies

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SWM Policy

- **To implement and administer solid waste planning and management in an integrated, holistic, cost- effective and environmentally friendly manner through waste minimisation approaches eventually moving towards Zero Waste.**

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Global Environmental Commitments

- We are committed as:
- Member of the Commonwealth Parliamentary Association of the Climate Change Networking Committee in Tanzania (Sept/Oct 2009);
- June 2010, Penang State -commitment to the Principles of the Kyoto Protocol in Seoul, Korea
- December 2010 Cancun Mexico, at the 2010 United Nations Climate Change Conference which is officially referred to as the 16th session of the Conference of the Parties (COP 16) to the United Nations Framework Convention on Climate Change (UNFCCC).
- 2011, Korea, signatory to fully subscribed to the International Solid Waste Association (ISWA), International Partnership for Local Authorities (IPLA) agenda and principles

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Local Action

- Economy
- Environment
- Stakeholders
- Institution

Balanced Sustainable Development for a Green State

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Planning strategies

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- 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

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Strategy1: Waste Separation At Source

- Objectives:
- To determine the cost of SWM & Public Cleansing
- To determine the amount of savings from waste minimization and diversion activities.
- To develop incentive schemes to encourage waste minimization and diversion.

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STRATEGY 1 : ACTIVITIES

Formulate regulations together with Local Authorities

Start awareness campaigns & pilot projects to inform public of regulations

Encourage waste minimization and separation of waste at source for the residential, industrial, commercial and institutional sectors.

Establish collection & buyback centres

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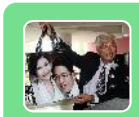
STRATEGY 1 ACTIVITIES

Banned the use of Styrofoam food containers.

Promoting the use of tiffin carriers



Collection of used roadside banners to be turned into shopping bags.

An Awareness Programme

Implemented the "100 steps to cleanliness" project with 3R recycling boxes as Street Furniture and advertising media

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NO FREE PLASTIC BAG CAMPAIGN:

- No Free Plastic Bag Campaign-
  - Penang - 1 Jul 2009 (Mon, Tues, Wed)
    - 1 Jan 2011 (Everyday)
  - Selangor - 1 Jan 2010 (Every Saturday)
  - Federal - 1 Jan 2011 (Every Saturday)
    - Retailers, Supermarkets, Hypermarkets, Departmental Stores
    - 2008 - 25.2 mil / yr 2.5 mil bags/month, now less than half
    - 20 cents per plastic Bag following the polluter pays policy

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Office & Household e-Waste Management started in 2004 in collaboration with the Penang Island Municipal Council (MPPP) – Dell, Sunshine Supermarket
Total Collection todate: 133,211.50 kgs

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Mitigating the Effects

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Strategy 2: Waste Diversion from the Landfill

- Objectives:
- To divert waste away from the landfill saving SWM municipal costs for SWM & prolonging life of landfill

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STRATEGY 2 ACTIVITIES

Establish Zero waste communities & good recycling networks

Separate food/ kitchen waste, collect food and green waste for composting and processing into liquid fertilizer as part of the methane avoidance programmes

Encourage processing of C&D

Collect & process green waste into top compost using the methane avoidance static pile fermentation technologies such as Groundswell Process

License all recycling businesses & issue permits to collectors

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

Bayan Baru Hawker Complex Food Waste Collection

Insentivising the System

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Strategy 3: Incentivising the System

- Objectives:
- To determine the cost of SWM & PC
- To determine the amount of savings from waste minimization and diversion activities.
- To develop incentive schemes to encourage waste minimization and diversion.

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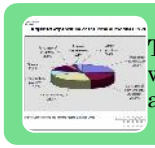
STRATEGY 3 ACTIVITIES

To determine the cost of SWM & Public Cleansing



To determine the amount of savings from waste minimization and diversion activities.

To develop incentive schemes to encourage waste minimization and diversion-

- Wasted diversion incentive
- Voluntary Carbon Credit

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STRATEGY 3 ACTIVITIES

Provide incentives for green activities :

- Implemented the Green School Award
- Promoted the Green Citizen membership to encourage citizens to be green
- Developed the "Aqua Save" Programme to conserve and use water efficiently
- Penang Environmental Award
- Green Journalist Award to promote environmental activism

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Capacity Building and Awareness Programmes

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Strategy 4: **Capacity Building & Awareness Programmes**

- Objectives:
  - To build capacity for local government staff as well as continue and expand public awareness programmes

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STRATEGY 4 ACTIVITIES

Build Capacity for Local Governments and to meet KPIs.

Set up Environmental Resource Centres in each district. (7 units set up on the mainland and 1 on the Island)

Zero Waste community Bagan Lalang Residential area – all recyclables & food waste separated & collected

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STRATEGY 4 ACTIVITIES

Every Sunday Car Free Day in George Town, UNESCO World Heritage Site
- Reduce carbon foot print and exhaust gases

"Senamrobiks" Mass aerobics every Sunday in 5 districts to promote healthy living and lifestyle.

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Strategy 5: **Looking Ahead**

- Objectives:
  - To continually search for new technologies which are affordable, efficient and sustainable.

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STRATEGY 5 ACTIVITIES

Establish a State SWM Council to formulate policies, search for new technologies, programmes & regulate all SWM & Public cleansing activities

Establish a Special Purpose Vehicle (SPV) to manage public cleansing, solid waste collection, transfer and disposal

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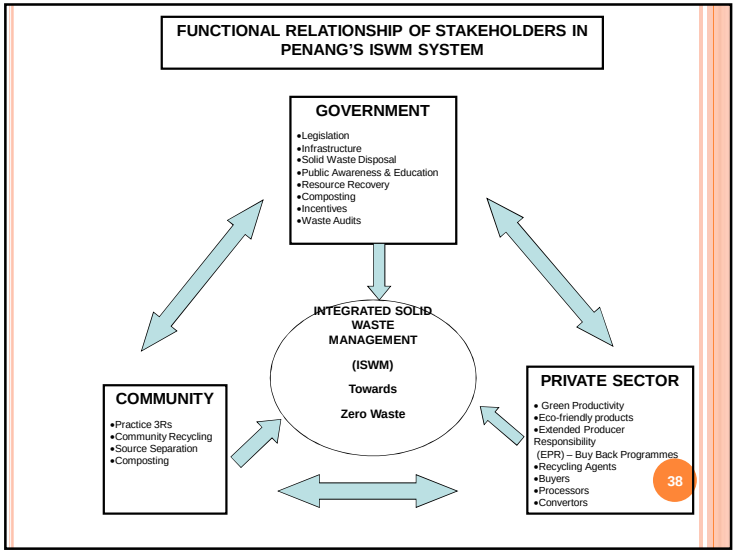

CONCLUSION

- Way Forward: 5 Principles of **Awareness, Education, Attitude Change, Warning & Enforcement**
- Changes towards realising environmental importance and sustainability in growing Green Economy supported by strong political will leadership.
- Reflected in policy changes and programmes, especially from the State Government towards ecological sustainability & food security
- Receptive stakeholders (NGOs, CBOs, Private Institutions) with community commitment

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