MAXIMIZING RESOURCE RECOVERY

By Phee Boon Poh
5th High Level Seminar
Thematic Session 1A: Waste Management
Surabaya, Indonesia
28 February 2014
1. Changing the rules
   • Source Separation Law
   • Waste Generator Pays Principle

2. Success Stories
   • Highrise communities
     Zero Waste Communities and activities

3. Success Stories
   • Establishing Zero Waste Communities

4. Conclusion
   • Success factors
CHALLENGES

- Waste Separation at source not yet implemented
- Mixed waste hinders efficient resource recovery
- Creating more diversion points for recyclables and organic waste
- Changing people’s mindset and practices
CHANGING THE RULES
By-Laws & Regulations

1. Source Separation By-laws
2. Waste Generator Pays Principle
(a) to encourage and facilitate the maximum recycling practicable on the part of each and every household, business, apartment complex, industry, and institution within State of Penang;

(b) to establish, implement, and enforce minimum recycling-related practices and procedures to be applicable to all Waste Generators, Waste Haulers/Recyclable Collectors, and Materials Recovery Facilities/Recycling Facilities located within municipality; and

(c) to require onsite Source Separation by each and every Waste Generator within Penang Island Municipal Council and the Seberang Perai Municipal Council and to ensure that those Recyclable Materials that are Source Separated are recycled properly and kept separate from Solid Waste.
WASTE STREAMS COVERED

- MSW
  + Paper / paper products
  + Plastics
  + Metals
  + Class
  + Organic Waste

- Organic Waste
  + Green Waste
  + Food waste
  + Animal Waste
    - Carcass
    - Dung
  + Bulky Waste

- E-waste

- C&D
  + Excavation waste / marine clay
  + Broken Glass
  + Wood
  + Concrete
  + Metal
  + Other Organic waste
  + Other Mixed Waste
<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Subcategories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domestic</strong></td>
<td>Highrise</td>
</tr>
<tr>
<td></td>
<td>Kampung</td>
</tr>
<tr>
<td></td>
<td>Landed</td>
</tr>
<tr>
<td><strong>Institutional</strong></td>
<td>Schools</td>
</tr>
<tr>
<td></td>
<td>Universities / Colleges</td>
</tr>
<tr>
<td></td>
<td>Hospitals</td>
</tr>
<tr>
<td></td>
<td>Government</td>
</tr>
<tr>
<td><strong>Industrial</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Commercial</strong></td>
<td>Shoplots</td>
</tr>
<tr>
<td></td>
<td>Hotels / Inns / Guest Houses etc</td>
</tr>
<tr>
<td></td>
<td>Restaurants</td>
</tr>
<tr>
<td></td>
<td>Food Courts / Hawkers Centres</td>
</tr>
<tr>
<td></td>
<td>Markets</td>
</tr>
<tr>
<td></td>
<td>Farms</td>
</tr>
<tr>
<td></td>
<td>Turf Club</td>
</tr>
<tr>
<td></td>
<td>Others</td>
</tr>
<tr>
<td><strong>Recycling Business</strong></td>
<td>Collectors</td>
</tr>
<tr>
<td></td>
<td>NGOs</td>
</tr>
<tr>
<td></td>
<td>CBOs</td>
</tr>
<tr>
<td></td>
<td>Schools</td>
</tr>
<tr>
<td></td>
<td>Other collectors</td>
</tr>
<tr>
<td></td>
<td>Traders</td>
</tr>
<tr>
<td></td>
<td>Processors</td>
</tr>
<tr>
<td></td>
<td>Convertors</td>
</tr>
</tbody>
</table>
Proposed Mechanism for
Final Disposal of Commercial & Industrial Waste
BENEFITS TO LOCAL AUTHORITIES

1. Save SWM final disposal costs
2. Income from issuance of permits
3. Additional income from tipping fees
4. Leverage on private sector to collect data for Commercial & Industrial database
5. Cost of GPS monitoring and tracking system borne and operated by private sector
6. Private sector to monitor illegal dumping of Commercial & Industrial waste.
FUNCTIONAL RELATIONSHIPS BETWEEN STAKEHOLDERS

**Penang Green Council (PGC)**
- Issues Business License
- Shares waste generator data
- Submits online application with waste generation data

**Local Authorities (MPPP/MPSP)**
- Applies for permits
- Issues permits
- Shares waste generator data

**Service Provider (Hauler)**
- Applies for permits
- Purchase debit card
- Installs GPS system
- Returns copy of waste ticket to WG for verification
- Sells Debit Card

**Waste Generator**
- Collate data for their “Zero Waste Network”
- Match make between generator & recycler
- Submits completed application online via Council’s website
- Annual data update on business license renewal

**State SWM Control Centre / Landfill Operator**
- Issuance of ID card
- Sales of Debit card (Touch n Go system)
- Install GPS tracking device for haulers
- Issue waste tickets

**Key Activities**
- Approves & Issues permits to hauler on per track basis (Min: 1 mth; Max: 1 yr)
- 4 plys - Hauler/Council/WG/LFO
- Verify and countercheck yearly amount and type of Commercial & Industrial waste disposed at the landfill.
- Renew WG yearly business license
- Issues Business License
- Shares waste generator data
- Submits online application with waste generation data
- Purchases Debit Card
- Installs GPS System
- Sells Debit Card
1. Processing the food / kitchen waste on site with a food waste processing machine,
2. Diverting food / kitchen waste for community composting,
3. Diverting food / kitchen waste to an existing organic waste treatment facility and
4. A combination of methodologies (2) and (3).
Taman Pelangi Medium Cost Apartments
Separation of Organic waste via food processing machine
SEBERANG PERAI – HIGHRISE PILOT PROJECTS

Park View Condo, Harbour Place, Butterworth

Taman Pandan, Butterworth

Separation of Recyclables & Food Waste
ORGANIC WASTE DIVERSION CENTRES

Bagan Ajam Wet Market Food Waste Processing Plant

Taman Pelangi On-site Food Waste Processing Plant
Premise on Penang Island

Landed Properties :  818
High Rise          :  1,213
Shop lot           :  48

Estimated Generation of Waste:

2,031  x 5 x 1.1 kg = 11.17 ton per day

Estimated Generation of Organic Waste: 33% x 11.17 ton = 3.68 ton per day
ZERO WASTE PROGRAMME (VILLAGE COMMUNITY)
ZERO WASTE PROGRAMME (VILLAGE COMMUNITY)
Green Schools Award

2012- 53 schools
2013- 84 schools
Giving Talks on Composting At School
BRIEFING ON SOAP PRODUCTION USING USED COOKING OIL
Education & Awareness
SUCCESS FACTORS

- Strong political will
- Public education & awareness campaigns for behavioural change
- Strong ground champions and supportive NGOs
- Strong Community support and participation
- Incentives & Penalties
CONCLUSION

- Your Environment, Your Ownership
- Focus on the waste generator and not on the waste generated!
- Waste generators must pay!
TERIMA KASIH