Cebu City is known as the second-largest center of business in the country. Among four premier cities in the country covered in a business risk assessment study (October 2011) by World Wide Fund for Nature Philippines (WWF), Cebu remains on top for Foreign Trade.

- From $396 Million in 1990, Cebu City’s foreign trade exports exceeded $1.527 Billion in 2008—3.85 times in 20 years.
- For imports, the city delivered growth from $214 Million in 1990 to $1.260 Billion in 2010—5.88 times in 20 years.

- Lowest population growth rate of the four cities in the WWF study, at 1.41% over the 20-year period.
- Cebu leads other cities in Tourism
  - Over five years, the city’s hotel room count has mushroomed from 2,864 rooms in 2005 to 4,126 rooms in 2010.
  - Tourism Arrivals, 60% of which are domestic, increased by 58% over five years, from 1.12 Million in 2005 to 1.76 Million in 2010.

- barely 15% of the city’s total land area sits on flat terrain
- Uplands are also highly vulnerable to landslides from rainfall
- Climate patterns indicate high inter-annual variability, with extreme weather events
- Cebu City will likely find itself caught in a “climate sandwich” as saltwater intrusion advances further, sea levels rise and more intense typhoons lash the coastline with storm surge.
The increasing urbanization of Cebu City coupled with the need to manage climate change impacts required a systematic and comprehensive ecological solid waste management system to ensure the protection of public health and environment.

Policy Framework

- Preservation & protection of the sources of life – the trees, soil and water – and to focus on sustainable development in the fulfillment of human needs while maintaining the quality of the natural environment for the current generation and for the generations yet to come. – City Ordinance No. 2243 or the Sustainable Development Ordinance of the City of Cebu
- Solid Waste Segregation at Source (City Ordinance No. 2031) that shall:
  a) Resource conservation & recovery through re-use, recycling and recovery of wastes;
  b) Solid waste volume reduction through source reduction and waste minimization measures such as composting, recycling, re-use and others;
  c) Proper segregation, collection, transport, storage, treatment and disposal of solid wastes;
  d) Effective enforcement by establishing a cooperation among non-govt. organizations, the private sector, the academe and other local government units.

Waste Composition by Sector (Source: CPDO, 2006)

<table>
<thead>
<tr>
<th>Waste Types</th>
<th>Commercial</th>
<th>Residential</th>
<th>Commercial/Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>15.71%</td>
<td>11.58%</td>
<td>15.14%</td>
</tr>
<tr>
<td>Glass</td>
<td>0.08%</td>
<td>1.69%</td>
<td>0.76%</td>
</tr>
<tr>
<td>Metal</td>
<td>3.09%</td>
<td>2.82%</td>
<td>4.84%</td>
</tr>
<tr>
<td>Electronics</td>
<td>8.67%</td>
<td>8.87%</td>
<td>9.01%</td>
</tr>
<tr>
<td>Plastics</td>
<td>16.96%</td>
<td>16.23%</td>
<td>16.48%</td>
</tr>
<tr>
<td>Organic</td>
<td>16.23%</td>
<td>54.68%</td>
<td>45.18%</td>
</tr>
<tr>
<td>Construction</td>
<td>0.06%</td>
<td>8.57%</td>
<td>1.40%</td>
</tr>
<tr>
<td>Hazardous</td>
<td>0.04%</td>
<td>8.26%</td>
<td>0.31%</td>
</tr>
<tr>
<td>Special</td>
<td>0.15%</td>
<td>3.99%</td>
<td>2.62%</td>
</tr>
<tr>
<td>Mixed residue</td>
<td>7.48%</td>
<td>6.28%</td>
<td>9.05%</td>
</tr>
</tbody>
</table>
ADMINISTRATION OF SOLID WASTE MANAGEMENT

The Department of Public Services particularly the Solid Waste Management Division is in-charge of the collection and disposal of Municipal Solid Waste to the designated waste facility. Around 90% of Cebu City and roughly 95% of its constituents is covered under the service by the aforementioned department with the assistance of Solid Waste Management Board for technical and policy recommendations. The scope of implementation is based on the city’s 5-year SWM Plan.

Other Institutions Involved in SWM

<table>
<thead>
<tr>
<th>Office/Dept/Org.</th>
<th>Function/Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Environmental Sanitation Enforcement Team (CESET)</td>
<td>Enforcement of local laws/ordinances on solid waste management such as City Ordinances 1361 and 2031, barangay information &amp; education campaign (BEC) and advocacy, apprehends indiscriminate garbage throwers and SWM ordinance violators.</td>
</tr>
<tr>
<td>Barangays</td>
<td>Garbage collection, transportation and disposal at landfill, barangay BRC and advocacy, implementation of SWM programs at the barangay level, coordinating with the city regarding implementation of SWM programs.</td>
</tr>
<tr>
<td>NGOs/POs/Private sector</td>
<td>Provides trainings, IEC and advocacy on SWM, partnering with the city in the implementation of SWM programs, providing technical assistance to the city, community organizing, conducting regular cleanup activities</td>
</tr>
</tbody>
</table>

Flow Chart: Management of Waste

City Level

Sanitary Landfill

Household/Barangay/Village Level

Segregation of Wastes according to Classification

Biodegradable | Recyclables | Special Waste | Residual

MRF

Junkshop or Factory

Sweeping and Cleaning

Cebu City is practicing the segregation at source in compliance to City Ordinance 2031 and Republic Act 9003.

Waste Collection

As to the waste collection, the segregated waste from the households will be collected at the designated collection point in every barangay and then transported to the Transfer Station. After the final sorting and recovery of recyclables, the residual waste will then be transported to the designated and authorized waste disposal facility.

Schedule of Collection:

Biodegradable: Sunday, Monday, Wednesday & Friday
Non-Biodegradable: Tuesday, Thursday & Saturday
Residual: Everyday (on a separate container)

Collection and Transportation Equipment

There are 5 units of metal bins used at the transfer station for the hauling of wastes, 500 garbage plastic bins/receptacles and some TRISIKAD Distribution for Biodegradable Wastes Collection.

Sweeping and Cleaning

The Department of Public Services hired street cleaners and assigned them to the designated areas to aid in the Clean and Green program in the City. The street cleaners can collect up to 60 tons of street waste per day and will rise up to 110 tons during the Sinulog Festival.
**WASTE TRANSPORT**

The Department of Public Services is the office responsible for the transport of waste from the designated collection point to the Transfer Station. While some Barangays who do have a functional garbage truck are in-charge of transporting wastes who is not included in the DPS collection point.

**INTERMEDIATE TREATMENT**

30 Barangays from the North District and 20 Barangays from the South District have a material recovery facility. The Barangay composting program is achieved with the aid of Barangay Environment Officers and Bioman. Recently, the United Nations Environment Program and Development Academy of the Philippines pursued the Waste to Energy project through RDF Technology.

**RECYCLING**

Door-to-door collection of recyclables in partnership with the registered waste scrap buyers in every barangay. While some barangays utilized waste materials for livelihood programs and projects.

**FINAL DISPOSAL SITE**

After the cessation order from the Mayor of Cebu City, the existing Inawayan Sanitary Landfill serves as the Material Recovery Facility and Transfer Station. The final disposal site is a privately-owned landfill, Asian Energy Systems located at Polog, Municipality of Consolacion, Cebu.

**MEDICAL & HAZARDOUS WASTE**

The Philippines Abatement Systems Specialists, Inc. (PASSI) is the private company that manages the toxic, hazardous and pathological wastes in the City.

**INFORMAL SECTOR**

There are around 300 wastepickers in the Inawayan MRF who does the recovery of recyclables.

**CHALLENGES**

- Over-capacitated Landfill
- Equipment Availability
- SWM is not prioritized by some Barangays
- Limited community involvement

**SWM SOCIAL ORGANIZATIONS**

The Association of Barangay Councils (ABC), Public Markets, Cooperatives with Green initiatives, Cebu Chamber of Commerce and Industry and Business Sectors.

**TRAINING, EDUCATION, RESEARCH**

The City Academe Network that comprises all of the Universities, Colleges and Schools in Cebu City are in-charge of the Information Dissemination Campaign. Research works are done by partners Alternatives to Development (A2D) and Department of Science and Technology.

**STRATEGIES IN SUPPORTING BARANGAY MRFs & COMPOSTING**


   **Schedule of Collection:**
   - Biodegradable: Sunday, Monday, Wednesday & Friday
   - Non-Biodegradable: Tuesday, Thursday & Saturday
   - Residual: Everyday (on a separate container)

**FORM**

CITATION TICKET No. 123456

- To: __________________________
- Date: __________________________
- Address: _________________________________________
- Time: __________________________
Strategies in Supporting Barangay MRFs & Composting

(2) Creation of Barangay Environmental Officers (BEOs): to enforce environmental laws at the barangay level, monitor proper garbage collection, assist in the establishment of materials recovery facility in the barangay and supervise modes of composting.

Five BEOs per barangay with the specific functions:
1. Environment Coordinator: Coordinate and orchestrate activities
2. Responsible for the segregation of recyclable materials.
3. Responsible for the accumulation of biodegradable materials for composting (BIOMAN).

Barangay Environmental Officers apprehending violators

(3) Training for BEOs, Capacity Building for Barangay Officials and Staff to Strengthen Barangay SWM Committees

(4) Extensive Information and Education Campaign (IEC) for awareness on SWM laws & penalties for violations thereof

(5) Financial Assistance to barangays for MRF establishment

SWM Orientation for Barangay Officials and MOA Signing for Financial Assistance

KALUNASAN Composting Facility
Strategies in Supporting Barangay MRFs & Composting

(7) Award System for Best Barangay
- Undertaken at the city level, with an annual award (monetary & certificates) bestowed upon barangays with best environmental practices.
- Several barangays also starting to replicate award at the “sito” level.
- The business sector, through the Cebu Chamber of Commerce and Industry, Inc. (CCCI), emulated practice by holding environmental awards among subdivisions.

(8) Public-Private Partnerships
- Partnership with Cebu Chamber of Commerce and Industry, Shangri-La Mactan Resort, SM City Cebu and Ayala Center Cebu (malls), Local Markets (EchoStore in Serendra) and Non-Government Organizations (NGOs).
- International Markets through Sister Cities for marketing of products from waste. JICA involvement in the establishment of the Sanitary Landfill.

(9) International Partnership
- Partnership with International Markets through Sister Cities for marketing of products from waste. Kitakyushu City, UNEP and JICA involvement in the establishment of the Sanitary Landfill.

Examples of International Partnership

WASTE-TO-ENERGY PILOT PROJECT (to address big volume of waste plastic generated, refer to “waste composition” slide)
- Waste plastic to fuel technology

BIODEGRADATION & COMPOSTING
Examples of International Partnership

WASTE-TO-ENERGY PILOT PROJECT (to address big volume of waste plastics generated, refer to “waste composition” slide)

B. pelletizer

Shredded Coconut Husks
Shredded Mango Peel & Seeds
Shredded Plastic

RDF

TAKAKURA COMPOST PAY FORWARD SCHEME

KitaQ System of Composting

List of Barangays with MRF/Composting Facilities

<table>
<thead>
<tr>
<th>North</th>
<th>Vemi</th>
<th>KitaQ-Facility</th>
<th>KitaQ-Basket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adlaon</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agsungot</td>
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<tr>
<td>Apas</td>
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<td>Bacayan</td>
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<td>Banilad</td>
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<td>Binaliw</td>
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<tr>
<td>Budlaan</td>
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<tr>
<td>Busay</td>
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<tr>
<td>Cambinocot</td>
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<tr>
<td>Capitol Site</td>
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<tr>
<td>Ermita</td>
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<td></td>
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<tr>
<td>Guba</td>
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</tr>
</tbody>
</table>
### List of Barangays with MRF/Composting Facilities

#### North Vermi KItaQ-Facility KItaQ-Basket

<table>
<thead>
<tr>
<th>Barangay</th>
<th>Vermi</th>
<th>KItaQ-Facility</th>
<th>KItaQ-Basket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hipodromo</td>
<td>*</td>
<td></td>
<td></td>
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<tr>
<td>Kamagayan</td>
<td>*</td>
<td></td>
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<tr>
<td>Kamputhaw</td>
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<tr>
<td>Lahug</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Lorega</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Luz</td>
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<tr>
<td>Mabini</td>
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<td>Mabolo</td>
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<td></td>
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<tr>
<td>Malubog</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pahina Central</td>
<td>*</td>
<td></td>
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</tr>
<tr>
<td>Parian</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### South Vermi KItaQ-Facility KItaQ-Basket

<table>
<thead>
<tr>
<th>Barangay</th>
<th>Vermi</th>
<th>KItaQ-Facility</th>
<th>KItaQ-Basket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babag</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basak Pardo</td>
<td>*</td>
<td></td>
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<tr>
<td>Bonbon</td>
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<td></td>
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<tr>
<td>Buhisan</td>
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<td></td>
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<tr>
<td>Bulacao</td>
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<td></td>
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</tr>
<tr>
<td>Buot Taup</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cogon Pardo</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guadalupe</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Inayawan</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Kalunasan</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Labangon</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mambaling</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

### Summary

- **# of barangays with MRFs:** 58 Barangays (35 North, 23 South) 72.5%
- **Vermi:** 54 barangays
- **KItaQ-Facility:** 7 barangays
- **KItaQ-Baskets:** 13 barangays

### Waste Reduction due to City efforts

- **Reduction by 30% of total waste since assumption of office in year 2010:**
- Equivalent to 141,000 kilograms of waste reduction (or 141 tons) from a total of 470,000 kilograms (or 470 tons) of wastes generated daily in Cebu City.
Other Economic and Social Benefits

- Awareness - people have become aware of the issues affecting environment and waste management as well as the benefits to their own families, community and their social relationships. Almost all segregate at source. Many are involved in recycling and composting, and savings through waste at different levels and groups. With the barangay clean, the people feel and act with dignity.

- More women are doing Livelihood using waste.
  - More people are involved in composting using individual composting bin and condo type of composting.

Kwarta Sa Basura Program

- Income generations and savings mobilization through weekly waste buying through the establishment of 16 Bayanihan Centers and linking with the Barangay Luz Multipurpose cooperative for the savings (cash or waste), junk shops and tapping local and foreign contacts for recycled products.

Mechanisms and Structure Set-up for Collection and Transport of Waste

- Regularizing garbage collections and Strict Law Enforcement
  - Garbage Collections
    - Timed collections of Garbage
    - Schedules for the collection of Biodegradable waste: Monday, Wednesday, Friday and Sunday
    - Schedules for the collection of Non-Biodegradable Waste: Tuesday, Thursday and Saturday
  - Strict enforcement of City Ordinance 1361 & 2031 and the Implementation of R.A. 9003:
    - Violations led to the following:
      - Fine from P500.00 to P1,000.00
      - Render Community Service from 1 day to 1 week
      - No Segregation No Collection

Product from wastes

- Business establishment like Ayala Center Cebu provided Market for Brgy. Luz recyclable products
  - Tugkaran - the fruit of Brgy. Luz and Ayala Center-Cebu Strong Partnership.

Linking and Setting up of Social Infrastructure for collaboration with and among Stakeholders for Marketing and Sale

- Business establishment like Ayala Center Cebu
- Local and International networks were tapped to market recycled products.

- NGO conducted livelihood training for the constituents.

Improvements of Products from waste CIT-IE Department

Incentives to stakeholders such as:
- Annual search for the cleanest sitio.
- Recognition of individuals and Bayanihan centers who has the highest no. of kilo’s of waste recycled per year and
- Annual search for marketable products from waste.

* Clean & Green Contest for the Cleanest Sitio.
* Products from Waste Contest.
* Contest for the Highest Number of Kilos Segregated per Cluster.
* Contest for Sustainable & Manageable Composting Centers.

WASTE CONVERSION
- 10 PTS – 1 NOODLE
- 15 PTS – 1 NOODLES and 1 SARDINE
- 20 PTS – 2 NOODLES and 1 SARDINE
- 25 PTS – 1 kilo of RICE

Note: 1 KILO of waste equivalent to 1 point.

CHRISTMAS DECOR CONTEST
The activity is participated by all Bayanihan members. The contest promotes the use of recyclable materials in making Christmas Decor.

The Barangay Luz ECO-Waste Center

The Main Entrance

The Herbal Plants

Butterfly Sanctuary
People did not weave the web of life, they are merely strands in it. Whatever they do to the web, they do to themselves......

Daghang salamat!