Food Waste Management
SEOUL

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General Information on Seoul

1. Map of KOREA
2. Area & Population
3. 25 District Offices
1. Map of KOREA
2. Area & Population

- **Area**: 605 km²
- **Population**: 10.44 million persons
3. 25 District Offices
Ⅱ Overview of Waste Management

1. Composition of Waste
2. Waste Management History
1. Composition of Waste

42,000 tons per day

- Domestic Waste: 22%
- Construction Waste: 72%
- Discharge Facility Waste: 5%
- Hazardous Waste: 1%
- Other Waste: 7%
- Food Waste: 8%
- Recyclable: 7%

< Domestic Waste >
2. Waste Management History

- **1978 ~ 1993** Nanjido Landfill Sites
- **1993 ~ Present** Sudogwon Landfill Sites
- **1995** Pay-as-you-throw Scheme
- **2005** Ban on food waste landfill
- **2013** Ban on FWL discharge to the sea
Food Waste Policies

1. Food Waste Generation
2. Food Waste Collection
3. Food Waste Disposal
1. Food Waste Generation

<table>
<thead>
<tr>
<th>Year</th>
<th>Tons/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>3,447</td>
</tr>
<tr>
<td>2010</td>
<td>3,382</td>
</tr>
<tr>
<td>2011</td>
<td>3,347</td>
</tr>
<tr>
<td>2012</td>
<td>3,311</td>
</tr>
<tr>
<td>2013</td>
<td>3,070</td>
</tr>
<tr>
<td>2014</td>
<td>3,181</td>
</tr>
<tr>
<td>2015</td>
<td>3,166</td>
</tr>
<tr>
<td>2016</td>
<td>3,075</td>
</tr>
<tr>
<td>2017.11</td>
<td>2,852</td>
</tr>
</tbody>
</table>
2. Food Waste Collection

- Single Housing
  Number: 2.6 million
  900 tons/day

- Multi-family Housing
  Number: 1.6 million
  840 tons/day

- Small Restaurants
  Number: 100,000
  640 tons/day

Commercial Sites with Large Amounts of Waste
Number: 10,000

- Pre-paid Bags
- Bins
- RFID

- Bins
3. Food Waste Disposal

1) Food Waste

2) Food Waste Leachate (Public treatment plants)
1) Food Waste

- Five public food waste treatment plants in Seoul are responsible for 38% of the total food waste disposal.

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
<th>Dongdaemun</th>
<th>Songpa</th>
<th>Gangdong</th>
<th>Dobong</th>
<th>Seodaemun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity (tons/day)</td>
<td>1,160</td>
<td>110</td>
<td>280</td>
<td>360</td>
<td>110</td>
<td>300</td>
</tr>
<tr>
<td>Solids</td>
<td></td>
<td>Biogas</td>
<td></td>
<td>Animal Feed</td>
<td></td>
<td>Compost</td>
</tr>
<tr>
<td>FWL</td>
<td></td>
<td>Biogas</td>
<td>Biogas</td>
<td>Biogas (Sewage Treatment Plants)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

※ gas : to remove odor, dry solids and heat digesters

- 35 private plants located outside Seoul are responsible for 62% of the total food waste disposal. (Compost and animal feed)
## 2) Food Waste Leachate (Public treatment plants)

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
<th>Inside Seoul</th>
<th>Outside Seoul</th>
<th>Sewage Treatment Plants</th>
<th>Songpa</th>
<th>Sudogwon Landfill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Jungnang</td>
<td>Nanji</td>
<td>Seonam</td>
<td></td>
<td>Leachate</td>
</tr>
<tr>
<td>Capacity (tons/day)</td>
<td>1,450</td>
<td>270</td>
<td>230</td>
<td>170</td>
<td>240</td>
<td>340</td>
</tr>
<tr>
<td>FWL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
</tr>
</tbody>
</table>

※ gas: to generate power, remove odor and heat digesters

※ Seonam: 300 tons/day (2016 ~ 2022)
  Gangdong: 270 tons/day (2013 ~ 2022)
IV

Other Food Waste Disposal

1. Disposer (Shredder installed under a kitchen sink)
2. Stand-alone Disposer
3. Large-scale Food Waste Reducer
4. Raw Food Waste Composting
5. Ptecticus tenebrifers
6. Earthworms
1. Disposer (Shredder installed under a kitchen sink)

1) Discharge into sewer

2) Solid Waste Collection / FWL discharge into sewer

3) Microorganism Fermentation to discharge into sewer
   ◆ Discharge into septic tank (Pilot scheme)
   ◆ Multi-family Solid Collection / FWL discharge into sewer (Pilot scheme)
1) Discharge into sewer

1. Disposer (Shredder installed under a kitchen sink)
2) Solid Waste Collection / FWL discharge into sewer
3) Microorganism Fermentation to discharge into sewer
◆ Discharge into septic tank (Pilot scheme)
◆ Multi-family Solid Collection / FWL discharge into sewer (Pilot scheme)

- Cutter/transpoter
- Solid-liquid separator
- Resource recovery machine
2. Stand-alone Disposer

1) Dryer
2) Shredder & Dryer
3) Microorganism Fermentor
1) Dryer
2) Shredder & Dryer
3) Microorganism Fermentor
3. Large-scale Food Waste Reducer

1) Shredder & Dehydrator
2) Dryer
3) Dryer (lifter)
4) Microorganism Fermentation & Dissipation
1) Shredder & Dehydrator
2) Dryer
3) Dryer (lifter)
4) Microorganism Fermentation & Dissipation
4. Raw Food Waste Composting

1) Compost Bins
2) Compost at Weekend Farms
3) Compost Equipment
1) Compost Bins
2) Compost at Weekend Farms

- Discharge (household)
- Collection by vehicles
- Compost
- Crop cultivation
3) Compost Equipment
※ Compost Equipment Process

Put Sawdust → Add Microorganism → Put Raw Food Waste → Stir
5. *Ptecticus tenebrifer*

- **Egg**: 3 days
- **Larva**: 15 days
- **Pupa**: 13 days
- **Imago**: 7 days

**Lifecycle (38 days)**
IV. Other Food Waste Disposal

6. Earthworms
Thank you for Your attention

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