



1 - 4 / 11/ 2016

Members of Advisory Committee on Recycling Fund visited Seoul, South Korea on 1 – 4th Nov, 2016 in order to understand and make reference to the recycling industries in other jurisdictions. South Korea has been successful in achieving waste reduction and it shares many similarities with Hong Kong. The group has visited to the recycling chain in South Korea from **collection, treatment and incineration**.



Background

Purpose

-  In order to understand and make reference to the recycling industries in other jurisdictions, a study mission to Seoul, South Korea on 1-4 November 2016 is organized.
-  South Korea has been successful in achieving waste reduction and it shares many similarities with Hong Kong.
-  Visit to recycling chain from **collection, treatment and incineration.**

Participants

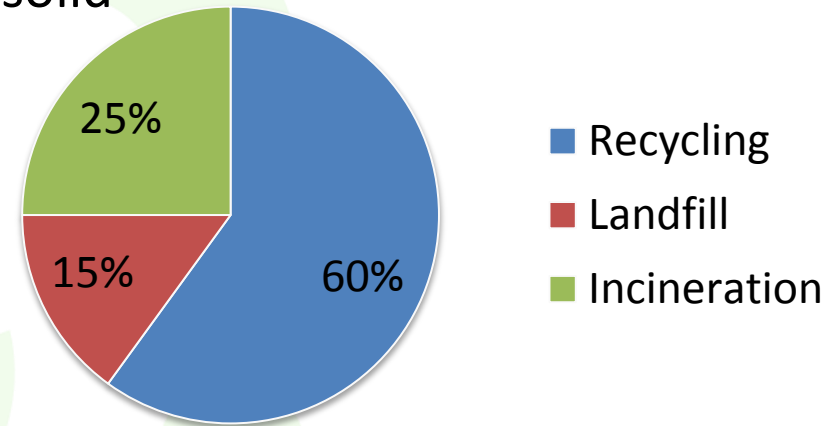
-  Recycling Fund Advisory Committee Members (RFAC)
-  Recycling trade
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** This technical visit are at participants' (include RFAC, Recycling Trade) own cost and no government funding is provided to the participants, including air ticket and accommodation.*

Overview of South Korea

- Population: 51.7 million
- In 2014, about **50,000 ton/ day** municipal solid waste generated
- 60% Recycling Rate**
- Major waste management policies:
 - Volume-based Waste Fee System**
applicable to households and small commercial sector (since 1995)
 - Restrictions on the use of disposable products** by businesses
 - Extended Producer Responsibility System**
(includes glass bottles, metal cans, plastics packaging, tires, batteries, electronics)

MSW Generation



Waste collection – street corner collector

Private sector waste collection

- Major types of recyclables: metal, paper, plastics



- A Recycling shop which collect different types of recyclables e.g. Metals, plastics, paper, etc.



- Two workers carried a trolley of carton paper to this shop.



- Different types recyclables (papers, metals, etc.) was separated and stored at the corner of the shop.



- The truck could get into the site and unload recyclables directly.

Waste collection – food waste collection

Waste collection point at residential area using RFID system

- ♻️ Food waste recycling rate over **94%** in Korea
- ♻️ **Landfill bans** for food waste since 2005
- ♻️ RFID system trial scheme since 2010, mainly located at large scale residential area
- ♻️ Each household have a food waste discharge management card and monthly bill will be sent to them for the disposal fee



- Food waste bins open after recognition of food waste discharge management card.

- Card reader is placed on the food waste bins.

Waste Treatment Facilities – eWaste

Metropolitan Electronics Recycling Center (MERC)

- ♻️ This government operated e-waste treatment center, established 2003. There are total **9 E-waste treatment centers in Korea**, 2 of them operated by the Government.
- ♻️ Due to an established Producer Responsibility Scheme, the center collect e-waste for free through a Happy Call system, which facilitate end users to call and pick up services **for free**.



Types of recyclables

Products

E-waste (Refrigerator, washer, air conditioner)

Iron, Copper, Plastics, Aluminum



- Different types of resources (e.g. Iron, Copper, Plastics, Aluminum) could be sorted and separated from the collected E-waste through semi-automation system.

Waste Treatment Facilities – eWaste

Seoul Resources Center

 This is a social enterprise established 2009 who employ vulnerable group in Korea.

Major types of recyclables

E-waste (Major & small appliances, computers)

Mobile Phone

Products

Products: Iron, Copper, Plastics, Aluminum



- The collected E-waste is treated by manual sorting process by workers.
- Iron, Copper , Aluminum could be sorted

Waste Treatment Facilities – food waste

Environmental Corporation of Incheon

🌱 A food waste treatment facilities and incineration, leisure center

Treatment Capacity	Process and recycled products
Food waste	- Animal feeds - Others to incineration to produce energy



- Real time monitoring of incinerator operation i.e. temperature, emission, incinerators
- Truck unload food waste directly to the treatment facility

Waste Treatment Facilities

Songpa Recycling Complex

-  A privately-run plant with 300 staffs
-  Food waste collected through RFID system at designated residential every day.

Treatment Capacity	Process
Food waste facilities	Recycled to animal feed, bones, biodiesel and metal items
MSW	PET, PP, HDPE, LDPE, etc



- Waste collection truck unload at the site directly.



- Automatic food waste treatment line and recycled product e.g. animal feeds



Waste Treatment Facilities – Incineration

Hanam Union Park and Tower

- There are 4 incineration facilities in Korea
- A natural space where waste treatment infrastructure and residential facilities co-exists.

On the Ground **Swimming Pool, Tennis, Basketball Court, Gym Center
Outdoor Park**

Underground **Recycled waste sorting facility, Food waste treatment facility
Incineration Facility**



- Outdoor parks, physical training facilities, observatory tower and waste treatment infrastructure co-exists for residential use.

Waste Treatment Facilities – Incineration

Hanam Union Park and Tower

🌱 Waste treatment facilities

Treatment Capacity

Food waste facility

Recycled waste sorting facility

Incineration facility



- Automatic recycled materials sorting and selection facilities

Research and development center

Korea Environment Corporation (KECO) & National Institute of Environmental Research (NIER)

- Established 2010 / **2,800 experts** (PhD, Engineer for research)
- Established **by the Korea Government** to contribute to eco-friendly national development through improvement to the environment and promotion of resource recycling.



❁ Policies for **promoting reduction**:

- ❁ E.g No free provision of disposables in Hotels, Restaurants, Shopping stores e.g. disposable cup, platter, toothbrush, shampoo, etc.
- ❁ E.g. RFID food waste collection system

❁ Policies for **promoting reuse**:

- ❁ E.g. Support remanufacturing of printer cartridges
- ❁ E.g. Develop trade platform for reuse of materials (auto parts)

❁ Policies for **promoting recycle**:

- ❁ E.g. Management and development of an Integrated waste management system for Recyclers.

❁ Policies for **promotion Recovery**:

- ❁ E.g. Landfill gas utilization facilities



Lesson Learnt

- ♻️ The successful waste management strategies implemented by the South Korean Government in reducing waste, maximizing recycling is the key take away from this trip. The major regulatory policy , such as volume base waste charging scheme, landfill bans of food waste and the law that prohibits the use of disposable products that support development of recycling industry, thus achieve waste reducing goal.
- ♻️ During the visit of the food waste collection at the residential area, citizen has demonstrated good practices which showed that public education and awareness is important to support to the Government policy.
- ♻️ The briefings by and exchange views with the representatives of the facilities have provided detailed information about how South Korean Government achieve the waste reducing strategies.

Reference

Hanam Union Park and Tower

- <http://union.hanam.go.kr>

Korea Environment Corporation (KECO)

- <https://www.keco.or.kr>

National Institute of Environmental Research (NIER)

- <http://www.nier.go.kr>



Acknowledgment

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