

# Waste Management in Tokyo I

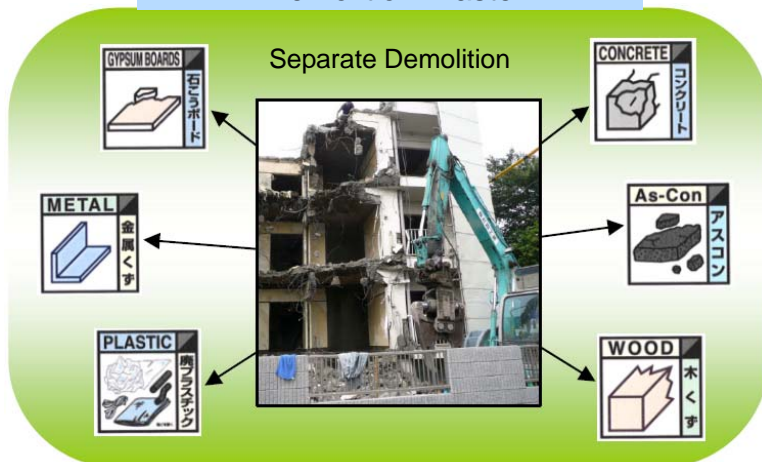
## Promotion of 3Rs

### Recycling-related legislation in Japan

#### Fundamental Law for Establishing a Sound Material-Cycle Society

- Law for the Promotion of Effective Utilization of Resources**
  - Provides the promotion by businesses of resource conservation and recycling
- Container and Packaging Recycling Law**
  - Calls for sorted collection by municipal governments and recycling by companies
- Home Appliance Recycling Law**
  - Provides collection by sales outlets and recycling by manufacturers
- Construction Waste Recycling Law**
  - Provides Separate Demolition, and recycling of construction waste by contractors
- Food Recycling Law**
  - Calls for recycling of food waste by food businesses
- ELV Recycling Law**
  - Recycling of shredder dust, etc. by manufacturers

### Recycling of Construction & Demolition Waste



#### Rate of recycling (Tokyo in 2005)

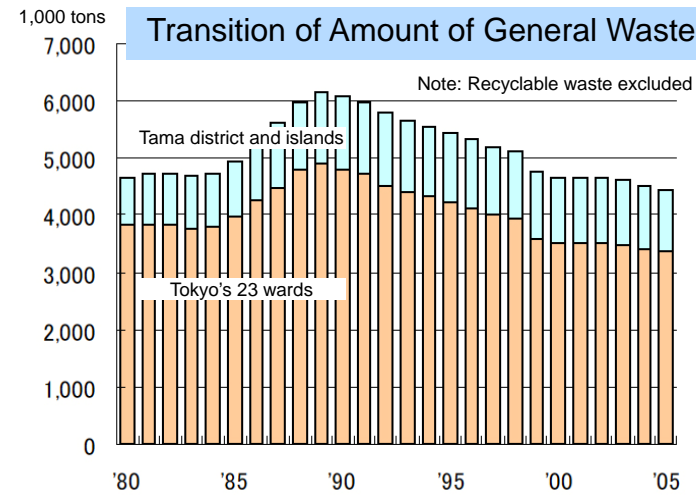
- Concrete: 99%
- Asphalt: 99%
- Wood: 80%

(Note)

The concept of general waste in Japan is similar to that of municipal solid waste in the U.K. However, general waste does not include used paper and scrap metal that is to be recycled for value. Municipal governments, including the governments of the 23 wards, are responsible for the disposal of general waste.

In Japan, construction and demolition waste is classified as industrial waste. Generators of industrial waste are responsible for the disposal of the waste.

- As a result of progress in the recycling of containers and packaging required by the law and recycling of used paper at offices, the amount of general waste was reduced from 6.13 million tons in 1989 at the highest to 4.45 million tons in 2005.
- Since the enforcement of the Construction Waste Recycling Law in 2002, recycling of construction & demolition waste has been promoted. The rate of recycling of waste concrete is more than 99%.



### Recycling of Used Paper at Offices



Municipal governments in Tokyo require large businesses submission of each recycling plan and require used paper recycling and minimization.

Rate of used paper recycling: 72% (all Japan in 2006)

## Separate Collection

(Separation of Waste in Tokyo 23 Wards)

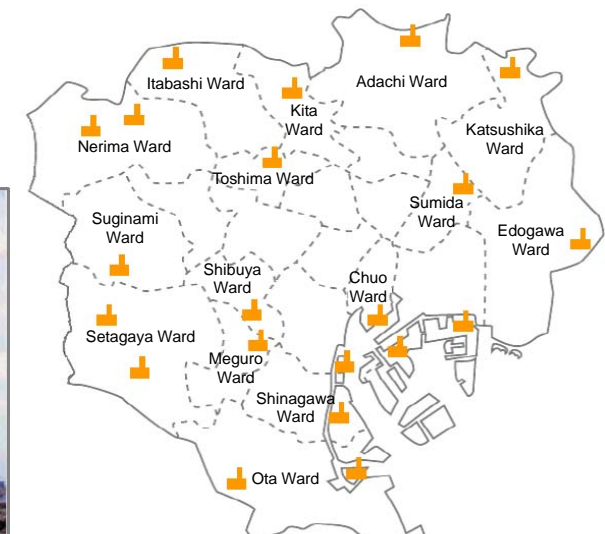
- Recyclable waste**: Used paper, glass bottles, cans, PET bottles, etc. (Collected once a week)
  - Combustible waste**: Kitchen refuse, wood and grass, waste paper, etc. (Twice a week)
  - Non-combustible waste**: Ceramics, plastics, etc. (Once a week)
  - Bulky waste**: Furniture, futons, electronic waste\* (Needs a reservation and there is a charge)
- \* Excluding the items specified in the Home Appliances Recycling Law

## Waste Incineration Facilities in Urban Areas

- In the 23-wards area, 21 waste incineration facilities are located in residential and waterfront areas.
- Waste incineration facilities are located even in the downtown areas at urban centers (Shibuya Plant near Shibuya Station and Toshima Plant near Ikebukuro Station)

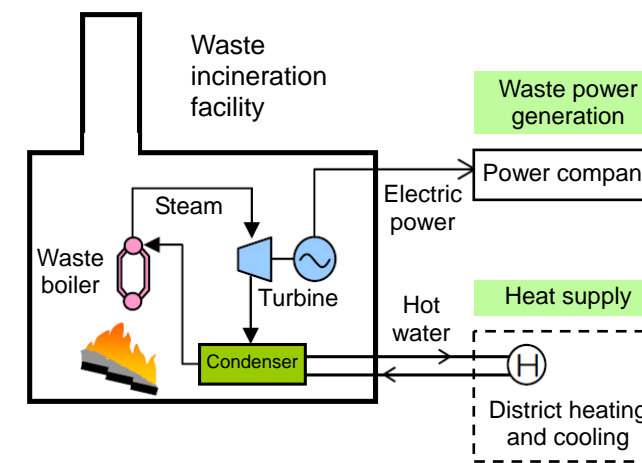


Toshima Incineration Plant



Location of Waste Incineration Facilities in Wards

## Highly Efficient Energy Recovery



Hikarigaoka incineration plant within the Hikarigaoka housing complex premises in Nerima Ward



Heat supplied to households in the complex

- All incineration plants in 23 wards generate power from waste and supply heat to nearby welfare facilities, etc.
- Latest facilities have achieved a power generation efficiency of more than 20%.
- There are three facilities that supply heat for district heating and cooling systems.

## Recycling of Incinerated Ash

- Incinerator ash generated at incineration plants in the 23 wards is converted into slag at ash melting facilities. The slag is used as a construction material that is a substitute of sand.
- In the Tama district, an eco-cement facility is in operation to produce cement from incinerator ash.



Ash melting facilities in the Central Breakwater Landfill Site (Waste Management Council of Tokyo's 23 Wards)



Eco-cement facility (Tokyo Tama Wide-Area Recycling Association)



Collection of recyclable waste



# Waste Management in Tokyo II

## Super Eco-Town Project

- The Tokyo Metropolitan Government (TMG) has been propelling the Super Eco-Town project to achieve more efficient disposal of industrial waste within Tokyo and encourage the development of environment-related industries.
- For this project, TMG invited private businesses to establish waste treatment and recycling facilities in the city's waterfront area.
- Thus far, eight waste treatment and recycling facilities have started their operation and another four facilities will be established.

\* For details of this project, refer to the TMG's website in English.  
<http://www2.kankyo.metro.tokyo.jp/recycle/superecotown/outline.pdf>

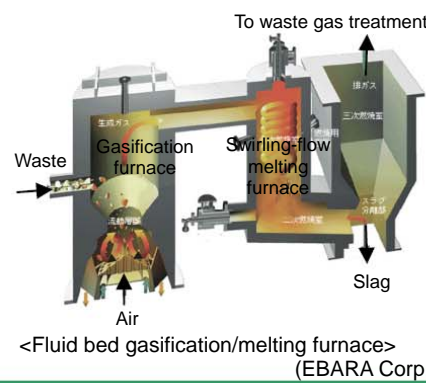
### Pyrolysis and Gasification Waste-to-Energy Plant



Industrial waste (plastic waste) is received for gasification and melting. Infectious medical waste is incinerated in exclusive furnaces. Waste heat generated from these processes is recovered and used for highly efficient waste power generation.

(Tokyo Waterfront Recycle Power Co., Ltd.)

- Treatment capacity
- Pyrolysis and Gasification of plastic waste: 550 t/day
  - Incineration of infectious medical waste: 100 t/day
- Power generation capacity 23,000 kW



### PCB waste treatment



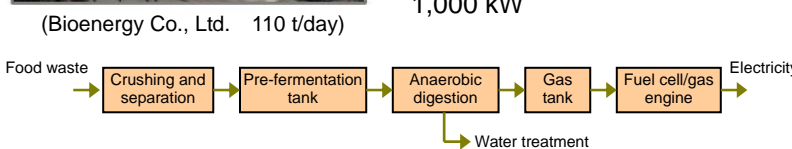
(Japan Environmental Safety Corporation)  
 \* The facility treats waste containing PCBs from Tokyo and the neighboring three prefectures.

### Biogas power generation from food waste



This facility accepts food waste for anaerobic digestion. Methane gas generated is used as fuel for power generation by fuel cells and gas engines.

Power generation capacity 1,000 kW



(Bioenergy Co., Ltd. 110 t/day)

### Animal feed from food waste



(Alfo Co., Ltd. 140 t/day)

### Construction and demolition waste recycling



(Takatoshi Corporation 928 t/day)



(Recycle Peer Co., Ltd. 961 t/day)

### E-waste recycling



(Re-Tem Corporation 300 t/day)



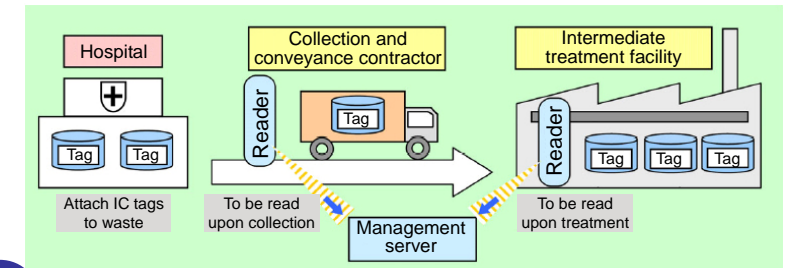
(Future Ecology Inc. 36 t/day)



Landfill site

## Tracing of infectious waste using IC tags

- TMG promotes wider use of an IC tag-based tracing system to prevent illegal dumping of infectious waste.



## Final Disposal

- General waste generated in Tokyo undergoes intermediate treatment such as incineration, and then 100% of the incinerator ash is disposed of in landfill sites within Tokyo. General waste generated in the 23-wards area is disposed of at the landfill site in Tokyo Bay managed by TMG. This landfill site also accepts industrial waste generated by small- and medium-sized companies in Tokyo.
- Industrial waste is treated by industrial waste disposal contractors in the private sector at sites located in other prefectures. 61% of the final disposal amount of industrial waste generated in Tokyo is disposed of outside Tokyo.

### Waterfront Landfill Site along Tokyo Bay



Outer Central Breakwater Landfill Site: 199 ha

Block B of the New Sea Surface Disposal Site: 72 ha

Land disposal site in the Tama district (Futatsu-zuka disposal site)



### Reduction of Final Disposal Amount

- The Tokyo Metropolitan Waste Management Program formulated in 2006 aims to reduce the final disposal amount of general and industrial waste to 1.6 million tons by fiscal 2010 (a 35% reduction from fiscal 2004).

