3Rs & Waste Management in Tokyo

Sustainable Materials Management Division
Bureau of Environment
Tokyo Metropolitan Government
TODAY’S TOPIC

1. INTRODUCTION
   1-1 WASTE/RECYCLING RELATED LAWS
   1-2 CITY PROFILE
   1-3 HISTORY OF WASTE IN TOKYO

2. 3RS AND WASTE MANAGEMENT IN TOKYO
   2-1 MSW
   2-2 INDUSTRIAL WASTE
   2-3 TMG’S 5-YEAR PLAN
   2-4 TOWARD 2020
      — NEW WASTE MANAGEMENT PLAN —

3. CONCLUSION
1. INTRODUCTION
1-1 WASTE/RECYCLING RELATED LAWS
National Legislation

Basic Act for the Sound Material-cycle Society

Waste Management Act

Effective Resource Utilization Act

Containers & Packaging Recycling Act
Home Appliance Recycling Act
Construction & Demolition Waste Recycling Act
Food Waste Recycling Act
End-of-Life Vehicle Recycling Act
Small WEEEs Recycling Act
The hierarchy ranks waste management options according to their environmental benefits. These options should be taken, in this order, whenever environmentally beneficial and economically viable.
Waste Management Act

Definition of waste
Solid or liquid materials, useless for the owner and valueless in the market (Supreme Court decision)

Classification of waste

- **Waste**
  - **Municipal Waste**
    - Waste other than industrial waste
  - **Industrial Waste**
    - 20 items including sludge, plastic waste, waste oil, C&D debris, etc.
  - **Household Waste**
  - **Commercial Waste**

Specially Controlled Municipal/Industrial Waste
Hazardous wastes, such as PCBs, asbestos, infectious waste, etc.
Waste Management Act

Roles of National and Local Governments

**National Government**
- Establish basic policies,
- Formulate waste disposal standards,
- Provide support to prefectures/municipalities, etc.

**Prefectures**
- Establish waste management plan,
- Provide control/guidance for appropriate disposal of industrial waste,
- License industrial waste disposal companies and approve construction of waste management facilities,
- Provide support to municipalities, etc.

**Municipalities**
- Establish municipal waste management plan,
- Treat municipal waste according to the plan,
- License general waste disposal companies, etc.
OBLIGATION OF MAKING A MSW DISPOSAL PLAN

In the Waste Disposal and Public Cleansing Law

Prefectural Plan

- Estimates amount of waste generation/treatment,
- Establishes basic policies related to reduction and treatment,
- Ensures proper management of general waste,
- Improves industrial waste management facilities, etc.

Municipal Plan

- Estimates amount of waste generation/treatment,
- Takes waste control measures,
- Classifies waste for sorting,
- Treats waste properly,
- Improves waste management facilities, etc.
LAW FOR
THE PROMOTION OF EFFECTIVE UTILIZATION OF RESOURCES

It states the standards of 3R efforts to be made by the producers

Regarding 69 products and 10 types of businesses.

The law covers approx. 50% of end-of-life products and waste in Japan.
CONTAINERS AND PACKAGING RECYCLING LAW

- **PET bottles**
- **Steel cans**
- **Aluminum cans**
- **Glass bottles**
- **Plastic containers and packaging, etc.**

**Source Separation**

**Consumer** (Domestic waste) → **Municipalities** → **Recycling facility**

Steel cans, etc. are sold

**Separate Collection**

Japan Containers and Packaging Recycling Association <Designated bodies>

**Recycling**

Businesses using containers and packaging user, containers and packaging producer, retailer/wholesaler, etc.

Recycling costs
HOME APPLIANCES RECYCLING LAW

Discharger (Consumer) → Retailer → Designated collection site → Recycling facility

Home Appliances:
- Air conditioner
- TV (CRT type)
- Refrigerator, Freezer, Washing machine, Dryer,

Payment of costs

Take-back from consumer

Designation/placement

Producer/Importer

• Take-back from retailers
• Recycling, etc.
CONSTRUCTION MATERIALS RECYCLING LAW

Order/implementation flow of sorted demolition/recycling

- Ordering party (Formulation of sorted demolition plan)
- Prefecture governor
- Commission to municipality
- Advice/recommendation/order/report order/inspection
- Written report
- Prior notification

Main contractor (Confirmation of recycling completion and report to ordering party)

Contractor
- Implementation of sorted demolition and other recycling work
- Work management by engineering manager

Subcontractor
- Announcement
- Contract

Ordering party
- (Formation of sorted demolition plan)

Note: Penalty with fine is imposed on an ordering party who fails to comply with notification/change order.

National Total 77 million tons

Concrete lump 32.15 million tons (42%)

Asphalt/concrete lump 26.06 million tons (34%)

Mixed construction waste 2.93 million tons (4%)

Waste wood from construction and demolition sites 4.71 million tons (6%)

Construction sludge 7.52 million tons (10%)

Others (Scrap metal, waste plastic, waste paper) 3.63 million tons (5%)

Items to be recycled

3.63 million tons (5%) Others (Scrap metal, waste plastic, waste paper)

Concrete lump 32.15 million tons (42%)

Asphalt/concrete lump 26.06 million tons (34%)

Mixed construction waste 2.93 million tons (4%)

Waste wood from construction and demolition sites 4.71 million tons (6%)

Construction sludge 7.52 million tons (10%)
FOOD RECYCLING LAW (2001～)

**Manufacturing Phase (Food Manufacturers)**
- Processing Waste
- Unsold products and food waste
- Cooking scraps, uneaten food, and food waste

**Distribution Phase (Food wholesales/Food retailers)**

**Consumption Phase (Restaurants)**

Bodies that recycle their own food waste

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Food Manufacturers</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>Food Wholesalers</td>
<td>70%</td>
<td>58%</td>
</tr>
<tr>
<td>Food Retailers</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>Restaurants</td>
<td>50%</td>
<td>24%</td>
</tr>
</tbody>
</table>
END-OF-LIFE VEHICLE RECYCLING LAW

Vehicle owner (Final owner)
Pay recycling fee; Deliver an end-of-life vehicle to the receiver registered with the municipality

Receiver
Receives ELVs from the final owner, and delivers them to fluorocarbon recovery operators or dismantlers.

Fluorocarbon recovery operator
Recovers fluorocarbons and delivers it to automobile manufacturers or importers.

Dismantler
Dismantles ELVs, recovers airbags, and delivers them to automobile manufacturers or importers.
Recovers fluorocarbons and delivers them to automobile manufacturers or importers.

Shredder operator
Shreds dismantled ELVs, and delivers shredder dust to automobile manufacturers or importers.

Automobile manufacturer/importer
When vehicles they produced or imported are scrapped, they take over shredder dust, airbags, and fluorocarbons generated from the ELVs, and recycle them.
SMALL ELECTRONIC DEVICES RECYCLING PROMOTION LAW

From April 2013

**Background**

**Limitation of Natural Resources**
- Escalating price of resources

**Limitation of Environment**
- Lack of land for final landfill site
- Proper management of the environment

**Concept**

**Non mandatory scheme**
Provide guideline, set up necessary procedure for each sector
In order to promote recycling of precious metals used in small electronic devices

Manufacturer → Retailer

Consumers → Municipality → Depot → Recycling Facilities → Metal Refining → Cyclic Use

Municipality

Certified business operator
1. INTRODUCTION

1-2 CITY PROFILE
Japan
Area: 378 thousand km²
Population: 127 million
No. of Prefecture: 47
(as of January 1, 2015)

Tokyo
Area: 2,188 km²
Population: 13 million
No. of City: 62
(as of January 1, 2015)
**TOKYO**

**Suburban area**

“Tama area”
Area: 1160 km²
Population: 4,192,937
No. of municipalities: 30

**Central area**

“23-city area”
Area: 622 km²
Population: 9,002,488
No. of municipalities: 23

**Island area**

“Izu/Ogasawara islands”
Area: 406 km²
Population: 27,461
No. of municipalities: 9

As of 1st Jan 2013
RAPID INCREASE OF POPULATION AND MSW

- MSW
- Population

End of WWII

(population)

(ton)
Biggest Challenge: Lack of land for FDS
FDS IN TOKYO BAY

① 1927-1962
② 1957-1966
③ 1965-1974
④ 1973-1986
⑤ 1977-
⑥ 1984-1991
⑦ 1998-
1. INTRODUCTION

1-3 HISTORY OF WASTE IN TOKYO
OPPOSITION AGAINST INCINERATOR 1950’s
OUTBREAK OF FLIES (1965)

Burning down flies on FDS in cooperation with fire department and polices.
Garbage War 1970’s

Don’t bring garbage into my city
Peak of Waste Generation (1989)
ILLEGAL DUMPING (C&D WASTE)
REDUCTION OF WASTE GENERATION AND FINAL DISPOSAL AMOUNT

Population: 11.8 million

Cooperation with Citizens

Total Incineration of combustible waste

Bubble Boom

MSW

Landfilling

Ash Recycling

Plastic Recycling

(Reduction of waste generation and final disposal amount)
REDUCTION OF FINAL DISPOSAL AMOUNT

Tama Area
1,160km²
4 million people

Central Area
622km²
9 million people
2. 3Rs and Waste Management in Tokyo

2-1 MSW

2-2 Industrial Waste

2-3 TMG’s 5-Year Plan
2. **3Rs & Waste Management** in Tokyo

2-1 MSW
WASTE GENERATION IN TOKYO

- Municipal Solid Waste: 11,700 t/d
- Industrial Waste: 67,400 t/d

In 2013

- Municipal Solid Waste: 15%
- Industrial Waste: 85%
MSW in Tokyo

Waste generation in Tokyo

- Municipal Solid Waste 15%
- Industrial Waste 85%

Waste generated by

- Households
- Small businesses

Managed and disposed by

Municipal Government

11,700 T/D
MSW MANAGEMENT

• Each municipal government has responsibility for MSW management
• Providing careful services to residents
The MSW Flow in Central Tokyo

- **Residents**
  - Source Separation & 3Rs

- **Each city**
  - Collection & Transport

- **Clean Authority of Tokyo 23 cities**
  - Incineration & Shredding

- **Tokyo Metropolitan Government**
  - Final Disposal

Residents separate waste and transport it to each city. Each city collects and transports the waste to the clean authority of Tokyo 23 cities. The clean authority handles incineration and shredding. Finally, waste is disposed of by the Tokyo Metropolitan Government.
RATIO OF MSW

- Combustibles: 85%
- Recyclables: 11%
- Bulky: 2%
- Incombustibles: 2%

Source: Bureau of Environment, Tokyo Metropolitan Government

23-ward area (2013)
COMPOSITION OF COMBUSTIBLE WASTE

- Papers 44%
- Kitchen Waste 20%
- Plastics 18%
- Woods & Grasses 9%
- Clothes 6%
- Others 2%

23-ward area (2013)
Data: Clean Association Tokyo23
CURRENT MSW FLOW

- Combustibles
- Incombustibles
- Bulky Wastes
- Recyclables
- Hazardous Waste

MSW

Energy Recovery

Combustible Residues

Incinerators

Ash Recycling

Slag

Eco-cement

Pulverization Facilities

Ash

Landfill Site

Residues

Metals

Recycling

Processing properly
SOURCE SEPARATION BY RESIDENTS

Recyclables and garbage collection point in the community
VOlUNtaRy RECyCling aCTiviTies

Sign: Collection point for recyclables
CONTINUOUS COMMUNICATION
ENVIRONMENTAL EDUCATION
21 Incineration Plants in 23-Ward

Population: 9 million
Area: 622 km²

Source: Clean Association of TOKYO23
FEATURE OF INCINERATION PLANT IN 23 WARD

Toshima incineration plant
- next to Ikebukuro Station
  (2.7 million passengers/day)

All incineration plants in 23-ward (2013)
- equipped with power generator

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Total Generated Power</td>
<td>1,130 million kWh</td>
</tr>
<tr>
<td>Electricity sold</td>
<td>572 million kWh</td>
</tr>
<tr>
<td>Income from electricity sold</td>
<td>9.8 billion yen</td>
</tr>
<tr>
<td>Supplied heat(Charged)</td>
<td>547,000 GJ</td>
</tr>
<tr>
<td>Income from heat sold</td>
<td>183 million yen</td>
</tr>
</tbody>
</table>

- have certificate of ISO14001

Source: Clean Association of TOKYO23
POLLUTION CONTROL OF SYNGAS

A: Soot and dust control
B: Dioxin control
C: Mercury control
D: Hydrogen chloride and SOx control
E: NOx control

Source: Clean Association of TOKYO23
ASH RECYCLING - ASH MELTING

(23 wards Area)

Ash Melting Furnace (Arc type)

Electrode
Incineration Ash
Flue gas (Exhaust gas)
over 1200 ℃

Slag
Used for construction material

Source: Clean Association of TOKYO23
ASH RECYCLING - ECO CEMENT

(Tama Area)

Used for construction material

Eco-cement

Source: Tokyo Tama Regional Association for Waste Management and Resource Recycling
FINAL DISPOSAL SITE (FDS) IN TOKYO BAY

Photo: Bureau of Environment, TMG
CENTRAL BREAKWATER OUTER LANDFILL SITE / NEW SEA SURFACE DISPOSAL SITE

- Landfill inside central breakwater
- Landfill disposal site outside central breakwater (No. 1)
- Landfill disposal site outside central breakwater (No. 2)
- New landfill disposal site on seawater surface

A Block to G Block

- A Block: 20 ha
- B Block: 72 ha
- C Block: 69 ha
- D Block: 67 ha
- E Block: 91 ha
- F Block: 88 ha
- G Block: 73 ha

Current landfill disposal site
Past landfill disposal site

Tokyo Port Seaside Road
**Structure of FDS**

- **Sandwich construction technique**
  - Waste
  - Soil
  - Approx. 3 m
  - Approx. 50 cm

- **Rain**
- **Landfill gas**
- **Power generator**

- **Tokyo Bay**

- **Waste**

- **Landfill**

- **Clay layer**

- **Leachate collection**

- **Waste water treatment facility**

- **Sewage treatment plants**
ENVIRONMENTAL EDUCATION AT FDS

45,000 visitors /year
(40,000 Elementary/Junior High School students included)
(as of 2014)
2. 3Rs & Waste Management in Tokyo

2-2 Industrial Waste
WASTE GENERATION IN TOKYO

- Municipal Solid Waste: 15%
- Industrial Waste: 85%

In 2013

79,100 t/day
M S W : 11,700t/d
Industrial : 67,400t/d
**Industrial Waste in Tokyo**

67,400 T/D

**Waste Generation in Tokyo**

- **Industrial Waste**: 85%
- **Municipal Solid Waste**: 15%

**Generator has responsibility for proper disposal**

**Disposed by private sector licensed by Prefectural Government**
COMPOSITION OF INDUSTRIAL WASTE

Water and Sewage Sludge

Construction and Demolition

Others
**DISPOSAL FLOW OF INDUSTRIAL WASTE**

- **Waste Generation**: 25 million tons / year
  - Construction businesses,
  - Manufacturing businesses,
  - Hospitals, etc.

- **Intermediate Treatment**: 25 million t/y (99.7%)
  - Dehydration,
  - Shredding,
  - Incineration, etc.

- **Recycling**: 8,694 t/y (35%)

- **Final Disposal**: 747 t/y (3%)

- **Licensed Private Company**
  (Issued by Prefectural Government)

(in 2013)
REDUCTION OF FINAL DISPOSAL OF INDUSTRIAL WASTE

Started recycling of construction/demolition waste by law

(Unit: 1,000 tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>'99</td>
<td>2,907</td>
</tr>
<tr>
<td>'00</td>
<td>2,317</td>
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<tr>
<td>'01</td>
<td>2,222</td>
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<tr>
<td>'02</td>
<td>2,470</td>
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<tr>
<td>'03</td>
<td>1,493</td>
</tr>
<tr>
<td>'04</td>
<td>1,576</td>
</tr>
<tr>
<td>'05</td>
<td>1,181</td>
</tr>
<tr>
<td>'06</td>
<td>1,405</td>
</tr>
<tr>
<td>'07</td>
<td>1,164</td>
</tr>
<tr>
<td>'08</td>
<td>1,030</td>
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<tr>
<td>'09</td>
<td>839</td>
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</table>
### Challenge 1: Lack of Disposal Facilities in Tokyo

<table>
<thead>
<tr>
<th>Prefecture</th>
<th>Disposal (Thousand tons)</th>
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<tbody>
<tr>
<td>Tochigi</td>
<td>117</td>
</tr>
<tr>
<td>Ibaraki</td>
<td>1</td>
</tr>
<tr>
<td>Chiba</td>
<td>40</td>
</tr>
<tr>
<td>Saitama</td>
<td>239</td>
</tr>
<tr>
<td>Gunma</td>
<td>6</td>
</tr>
<tr>
<td>Kanagawa</td>
<td>111</td>
</tr>
<tr>
<td>Tokyo</td>
<td>204</td>
</tr>
<tr>
<td>Others</td>
<td>29</td>
</tr>
</tbody>
</table>

In 2013

How wide the Industrial Waste produced in Tokyo is disposed.
<CHALLENGE 2>

ILLEGAL DUMPING IS STILL REMAINED

<table>
<thead>
<tr>
<th>No. of Dumping Cases</th>
<th>Dumped amount (1,000 tons)</th>
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</thead>
<tbody>
<tr>
<td>230</td>
<td>298</td>
</tr>
<tr>
<td>210</td>
<td>217</td>
</tr>
<tr>
<td>190</td>
<td>242</td>
</tr>
<tr>
<td>90</td>
<td>110</td>
</tr>
<tr>
<td>70</td>
<td>282</td>
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<td>40</td>
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<td>87</td>
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<td>80</td>
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<td>25</td>
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<tr>
<td>16</td>
<td>84</td>
</tr>
<tr>
<td>8</td>
<td>80</td>
</tr>
</tbody>
</table>

(2003)
<CHALLENGE 2>

ILLEGAL DUMPING/DEPOSITION/EXPORTING

Aerial photo of illegal dumping site in Aomori/Iwate border

Illegal deposition of dismantled waste in Chiba

Huge illegal dumping on prefectural border of Aomori and Iwate (820 thousand m$^3$)

Treatment residue of end-of-life electronic appliances imported from developed countries (Guangdong, China)
<SOLUTION 2> INSPECTION AT TOLLGATE

29 Local Government work together for eliminating illegal dumping.
Outline
Third party organization designated by TMG certify “Expert” and “Professional” companies which conduct proper disposal, recycling and reduction of environmental impact from their activities.

Purpose
1. Disseminate information about reliable disposal company to waste generator
2. Cultivate good company, promote proper disposal
3. Develop waste disposal & recycling industry

Evaluation item
1. Compliance
2. Stability
3. Advanced activities

The certificate and a special sticker are given to certified companies.
2. 3Rs & Waste Management in Tokyo

2-3 TMG’s 5-Year Plan
# Composition of Current Plan

<table>
<thead>
<tr>
<th>Planning Period</th>
<th>Structure</th>
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<tbody>
<tr>
<td>FY 2011 to 2015</td>
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</tbody>
</table>

## Body

1. Planning Targets
2. Primary Measures
   1. Promotion of 3R's
   2. Promotion of proper treatment
   3. Promotion of developing reverse logistics businesses
Planning Targets

1.25 million tons for amount of final disposal in FY 2015
(30% reduction comparing FY 2007)

Breakdown: Municipal solid waste 250K tons (down 60%)
           Industrial waste 1 million tons (down 14%)
Planning Targets

Final Disposal in Tokyo

Previous waste processing plan period
FY (2006 to 2010)

This waste processing plan period
FY (2011 to 2015)

<table>
<thead>
<tr>
<th>Year</th>
<th>Municipal solid wastes</th>
<th>Industrial wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>158</td>
<td>90</td>
</tr>
<tr>
<td>2005</td>
<td>118</td>
<td>87</td>
</tr>
<tr>
<td>2006</td>
<td>141</td>
<td>73</td>
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<tr>
<td>2007</td>
<td>116</td>
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<td>2008</td>
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<td></td>
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<tr>
<td>2014</td>
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<tr>
<td>2015</td>
<td>125</td>
<td>25</td>
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</tbody>
</table>

Planning Targets (10,000 tons)

Promotion of developing reverse logistics businesses

- a) Promotion of 3R's
- b) Promotion of proper treatment
- c) Promotion of developing reverse logistics businesses
Primary Measurement (1)
Promotion of 3R Measures

• **Promotion of reuse to suppress generation**
  Change to paying for household garbage and entrench being a society that doesn't generate waste

• **Promote recycling**
  Develop urban mining, make reverse logistics and heat recovery more efficient, and utilize methane gas from landfill sites

• **Visualization of 3R effects**
  Visualization of amount of resources invested and the effect of reducing greenhouse gases from cyclical use of resources, and make the costs involved in recycling transparent

• **Create a system that supports 3R**
  Promote public awareness of green purchasing and promote environmental education and public awareness
Development of Urban Mining (Recycling, such as small appliances)

EXAMPLE OF MEASURES

Collection box
Pick-up-type collection, etc.
Primary Measurement (2)  Promotion of Proper Treatment

- **Toxic waste**
  Develop system for properly treating waste with minute amounts of PCBs, continue accepting friable asbestos, reduce and properly treat amount of mercury used

- **Industrial waste**
  Thoroughly separate and properly dispose of non-friable asbestos and waste gypsum board, strengthen leadership in order to eliminate illegal dumping, such as by using industrial waste G-men

- **Municipal solid waste**
  Promote proper disposal of hazardous materials, such as aerosol cans, lighters, etc., and home medical care waste

- **Waste treatment facilities**
  Reduce the environmental load and maintenance costs of landfill sites and give guidance and advice to local government recycling facilities
Strengthening Guidance for Eliminating Illegal Dumping

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases of Dumping</th>
<th>Amount Dumped (10,000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>19</td>
<td>242</td>
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<tr>
<td>2001</td>
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</tr>
<tr>
<td>2012</td>
<td>59</td>
<td>1</td>
</tr>
</tbody>
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Survey of industrial waste trucks in cooperation with other prefectures.
Primary Measurement (3) Promoting Development of Reverse Logistics Businesses

- **Create an environment where good waste processors dominate**
  Work to understand the burden of costs of proper disposal on producers of waste, and the structure and actual situation of the industry; develop specialist processors and recyclers

- **Super Eco-Town businesses**
  Actively disseminate information at home and abroad on the successes of Super Eco-Town businesses as examples of progressive initiatives

- **Joint technical research**
  Conduct joint technical research and surveys via industry/academic cooperation with the aim of higher levels of waste treatment and recycling technologies
SUPER ECO-TOWN BUSINESSES

Construction and Demolition Waste Recycling Plant

Central Breakwater Inner Landfill Site

Jonanjima, Ota ward

E-Waste Recycling Plant

Food Waste

Animal Feed from Food Waste

Biogas Power Generation from Food Waste

PCB Waste Treatment

Waste Fuel Electric Power Generation Plant

Waste to Energy
# The role of TMG and private company

<table>
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<th><strong>Tokyo Metropolitan Government</strong></th>
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<td>Sell the TMG-owned land to the private company</td>
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<td>Public offering of waste management company</td>
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<td>Technical advice related to the environmental measures</td>
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<td>Enlightenment including observation tour of facilities</td>
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<th><strong>Private company</strong></th>
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<td>Purchase of the TMG-owned land</td>
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<td>Disclosure of facility and diffusion of technology</td>
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<td>Management of the Tokyo Super Eco Town council</td>
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CONSTRUCTION AND DEMOLITION WASTE RECYCLING
Takatoshi Corporation Ltd.

Industrial wastes (construction and demolition waste / business-related industrial waste)

General wastes (plastic waste / scrap wood)

Recycled sand
Approx. 80t/day

Other items
Approx. 783t/day

928t/day

Recycling rate of over 90%
2. 3Rs & Waste Management in Tokyo

2-4 Toward 2020

— New Waste Management Plan —
POLICIES AIMED AT SUSTAINABLE USE OF RESOURCES

TOWARD FORMULATING A NEW PLAN

• Policies Aimed at "Sustainable Use of Resources" (March 2015)

To develop a New Waste Management Plan (Period: FY 2016-2020), establish policies that indicate the direction of new measures, based on today's global situations.
POLICIES AIMED AT SUSTAINABLE USE OF RESOURCES

INCREASED CONSUMPTION OF RESOURCES AND THEIR ENVIRONMENTAL IMPACT

Increased Consumption of Resources Globally

Consumption of Resources Globally Doubled in 30 Years

- Consumption of Resources
- Billion Tons
- 1980 to 2010
- Data: materialflows.net

Climate Change

Area of sea ice in Arctic is 1/2 of previously (summer)

- 1979 to 2000
- Data: NASA
- Sept. 2012

Loss of forested area globally is 5.2 million ha/year

- Deforestation
- Area Forested in S/E Asia
- 1990, 2000, 2010
- Data: FAO
- Photo: Tropical Forest Action Network, Data: FAO
JAPAN’S MATERIAL FLOW AND UPSTREAM AND DOWNSTREAM IMPACTS

- Deforestation
- Illegal logging
- Excessive water consumption
- Water pollution
- Illegal dumping
- Illegal export
- Deforestation
- Illegal logging
- Excessive water consumption
- Water pollution
- Illegal dumping
- Illegal export

Source: MOEJ
From Waste Management to ‘Sustainable Materials Management’
Take the entire supply chain into considerations, including the stage of resource extraction to.

3 Pillars

- Reduce loss of resources
- Promote sustainable procurement
- Further promote recycling of waste
1st Pillar  Reduce loss of resources
- Review waste in resource consumption and improve resource productivity-

Reduce food losses

- 5 to 8 million tons of edible food is wasted every year in Japan.

Food Put out as Combustible Waste
2nd Pillar Promote Sustainable Procurement

--Use low-carbon, symbiotic and readily recycled materials/products-

Use Sustainable Lumber

- Much plywood forms is made of tropical woods imported from places like Malaysia & Indonesia.

Concrete Forms using Domestic Lumber
3rd Pillar: Further Promote Recycling of Waste

--Greater levels of recycling and prevent improper disposal--

Create Rules for Recycling Commercial Waste

Not enough commercial waste, such as plastics, generated in places like office buildings is recycled.

Waste Plastic from Office Building.
ACTIVITIES FOR THE FUTURE

● From FY 2015, start **projects for sustainable resource use** collaborating with businesses and NGOs

● Work with local governments and waste management companies → Initiatives like creating rules for recycling commercial waste

Creating the legacy of Tokyo 2020 Olympics & Paralympics
**Sustainable Consumption and Production** (Goal 12 of SDGs)
3. CONCLUSION
3. **Conclusion**

- It took a long period
- Both “soft” and “hard” are essential
- Hoping to share experiences
Thank you for your attention!