1. Food waste and Food Waste Recycling Law
International Initiative for sustainable resource use
Sustainable Development Goals: SDGs September, 2015
Goal 12: Ensure sustainable consumption and production patterns
TMG 5-year strategy: Sustainable Design Tokyo 2016
for Sustainable Resources use and Waste Management optimization

【Concept】
- Transition to sustainable resources use
- Contribute for reduce global environmental load

【Measures and Policies】
- Resources Loss reduction
  Food loss, Disposable Lifestyle (Plastic bags reduction)
- Promote Resources Recycling
Food Loss and Food Waste

• Food Loss in SDGs

Food loss is defined as “the decrease in quantity or quality of food”. Food waste is part of food loss and refers to discarding or alternative (non-food) use of food that is safe and nutritious for human consumption along the entire food supply chain, from primary production to end household consumer level.

Food waste is recognized as a distinct part of food loss because the drivers that generate it and the solutions to it are different from those of food losses. (FAO, 2014)

• Food loss in Japan

We define “food waste” as food disposed of generally and “food loss” is part of food waste that is disposed of, even though it is edible.
**Food Waste Flow Outline (2013) Image**

- **Food 84 million tons**
  - 1. Food manufacturers and processors
  - 2. Food wholesalers and retailers:
  - 3. Restaurants: etc.

- **Food Waste and Valuables from Business (19 million tons)** including 3 million tons of food loss
  - Valuables 9 million tons
  - Waste from Businesses 8 million tons
  - Food Waste from Household 9 million tons including 3 million tons of food loss

- **Recycle 14 million tons**
  - Animal Feed: 10 million tons
  - Fertilizer: 3 million tons
  - Energy: 1 million tons

- **Thermal Recovery 0.5 million tons**

- **Incineration and landfill 3 million tons**

- **Total Food Waste 28 million tons**
  - Including Food loss 6 million tons

- **Recycle 0.5 million tons**

- **Incineration and landfill 8 million tons**

- **Dehydration 2 million tons**

Source: Ministry of Agriculture, Forestry and Fisheries
Definition of "Food Waste" in Food Recycling Law

Source: Food Industry Center
Food Recycling Law

◎ Establishment
May of 2001

◎ Purpose
To reduce the amount of food waste produced and promote recycling into feed and fertilizer
Outlines

(1) Basic Policy to promote recycling systematically

① Setting goals for each business
- Food manufacturers and processors
- Food wholesalers and retailers:
  Food wholesalers, supermarkets, convenience stores, etc.
- Restaurants: Cafeterias, restaurants, hotels, etc.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Food manufacturers</td>
<td>95%</td>
</tr>
<tr>
<td>Food wholesalers</td>
<td>75%</td>
</tr>
<tr>
<td>Food retailers</td>
<td>55%</td>
</tr>
<tr>
<td>Restaurants</td>
<td>50%</td>
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</table>
(2) Mandatory Reporting

Business in the food industry that produced at least 100 tons of food waste last fiscal year must report the amount of food waste being produced and the status of recycling activities every year.

*The determination of whether franchise chains are large producers is based on the total output of all stores in the chain.

(3) Legal Bindings

- Warnings
- Publicizing
- Legal orders
- Penalties
Outlines

(4) Promoting Recycling

① Establishment of system to register businesses that produce feed and fertilizer

<Benefits of registration>
- Increased feed and fertilizer contracts
- Reduction of administrative proceedings through provisions of laws and regulations

② Establishment of system to certify the "Food Recycling Cycle"
Food Recycling Circle

Coffee Bean cake Recycling
Current Trend

- Recycling Rate

<table>
<thead>
<tr>
<th>Year</th>
<th>Manufacturers</th>
<th>Food Industry</th>
<th>Food Wholesalers</th>
<th>Food Retailers</th>
<th>Restaurants</th>
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<tr>
<td>2000</td>
<td>8%</td>
<td>16%</td>
<td>32%</td>
<td>13%</td>
<td>8%</td>
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<tr>
<td>2007</td>
<td>22%</td>
<td>35%</td>
<td>54%</td>
<td>36%</td>
<td>16%</td>
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<tr>
<td>2008</td>
<td>52%</td>
<td>62%</td>
<td>59%</td>
<td>37%</td>
<td>37%</td>
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<td>2009</td>
<td>81%</td>
<td>82%</td>
<td>53%</td>
<td>37%</td>
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<td>2010</td>
<td>93%</td>
<td>94%</td>
<td>57%</td>
<td>41%</td>
<td>23%</td>
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<td>2011</td>
<td>95%</td>
<td>95%</td>
<td>58%</td>
<td>45%</td>
<td>24%</td>
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<td>2012</td>
<td>95%</td>
<td>95%</td>
<td>58%</td>
<td>45%</td>
<td>25%</td>
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<tr>
<td>2013</td>
<td>95%</td>
<td>95%</td>
<td>57%</td>
<td>46%</td>
<td>24%</td>
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<tr>
<td>2014</td>
<td>95%</td>
<td>95%</td>
<td>85%</td>
<td>57%</td>
<td>24%</td>
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Food waste recycling (Businesses)

- Food recycling is still challenging for downstream companies, such as Retailers and Restaurants.

**Recycling （Left: Japan, right: Tokyo）**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Animal Feed</th>
<th>Fertilizer</th>
<th>Methane Fermentation</th>
<th>Other recycling</th>
<th>Thermal Recovery</th>
<th>Dehydration</th>
<th>Other</th>
<th>Disposal</th>
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<td>Manufacturers</td>
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<td>Wholesalers</td>
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<tr>
<td>Retailers</td>
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<td></td>
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<tr>
<td>Restaurants</td>
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</tbody>
</table>

TMG based on Maff and TMG research
TMG’s Initiative: Super Eco Town (SET)

- Food recycling facilities
  - Feed production, electricity
  - Generation from Bio-gass facilities
  - Another facility will be open by next summer

What’s super eco town?

TMG attracted recyclers with cutting edge technologies to TMG owned land. There are 10 facilities now.
Three Food recycling facilities located in SET

**Alfo (Feed production)**

**Bio-energy (Biogas electricity generation)**

Dried with cooking oil (Tempura-method)

Biogas produced through methane fermentation
2  Food loss reduction
(1) Current status
Food Loss in Japan

The amount of Japan’s Food Loss (6.3 million tons) is twice as much as Global Food Aid.

- **Japan’s Food Loss**: 6.3 million tons
- **Global Food Aid 2014**: 3.2 million tons
- **Food loss per person a day**: approx. 136g

Business Use:
The amount of food disposed of even though edible: 3.3 million tons

Household Use:
The amount of food disposed of even though edible: 3 million tons

資料：WFP, 総務省人口推計(25年度)

Ministry of Agriculture, Forestry and Fisheries
Amount of Food loss/waste in Japan

Amount of Food loss/Food waste in Japan (2012)

(10,000 tons)

<table>
<thead>
<tr>
<th>Category</th>
<th>Food waste</th>
<th>Food loss</th>
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<td>Manufacturers</td>
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<td>13</td>
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<tr>
<td>Wholesalers</td>
<td>22</td>
<td>58</td>
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<tr>
<td>Retailers</td>
<td>122</td>
<td>119</td>
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<tr>
<td>Restaurants</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>Household</td>
<td>312</td>
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<tr>
<td>Total</td>
<td>1,916</td>
<td>331</td>
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TMG based on the research by MAFF and MoE.
Amount of Food loss/waste in Tokyo

- Amount of Food loss/Food waste in Tokyo (2012)

Waste Generation (10,000t)

Business: Food Waste (980,000t) Food Waste (160,000t)

- Manufacturers: Food Waste 13, Food Loss 2
- Wholesalers: Food Waste 8, Food Loss 1
- Retailers: Food Waste 5, Food Loss 5
- Restaurants: Food Waste 61, Food Loss 8
- Household: Food Waste 99, Food Loss 11

TMG based on the research by municipalities
(2) Food Loss Factors

**Processing**
- Expiration date
- Introduction of new models
- Customers’ Preference for freshness
- Seasonal Items
- Mistakes in Printing packages

**Food manufacturers and processors**
- Customary Rule

**Logistics**
- Customers’ Preference for freshness
- Seasonal Items
- Mistakes in Printing packages

**Food wholesalers and retailers**
- Expiration date

**Consumption**
- Customers’ Preference for freshness
- Purchasing more than those consumed
- Misunderstanding of 'best before' date labels
- Leftovers

**Household, Restaurants, Hotels**
Retailers’ Customary Rule (1/3 Rule)

Processed date

Appointed Date of Delivery

2 months

Appointed Date of Sale

2 months

Best-by Date

Manufacturers ➔ Wholesalers ➔ Supermarkets ➔ Sold on Store shelves ➔ Withdrawn from store shelves (Some discounted)

Returned goods unsold 82 billion yen/year

Returned goods unsold 43 billion yen/year

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Household Waste components in incineration plants (23 wards)

- Food waste in combustible waste

![Pie chart showing waste components]

- **Combustible 1,708 thousand tons**
  - Food Waste: 21.06%
  - Paper: 44.21%
  - Plastics: 18.20%
  - Garden waste: 7.94%
  - Clothes: 6.02%
  - Others: 2.57%

- **Incombustible 58 thousand tons**

Clean Authority of TOKYO
Household Food Waste

- 1/4 of “Left uneaten” was before the expiration date

A research in Kyoto-city 2007

MAFF and Consumer Affairs Agency
Toward 2020 and more

➢ Food recycling promotion

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Thank you for your attention!