Measures Taken in Construction and Demolition Waste (CDW) Recycling in Japan

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History of dealing with waste in Japan
(Excretion treatment → Waste treatment → Sound Material-Cycle Society)

Sanitary issues
Garbage and excretion were disposed of by ocean disposal and land disposal.
Mosquitoes and fly arise from waste disposal sites.
→ Sanitary control required (since the 1945's)

Public Cleansing Act (1954)

Pollution issues
Increase in waste volume due to rapid economic growth.
→ Waste treatment by not only municipalities but also businesses is required.
Construction of incineration plants and landfill sites (since the 1955's)
Waste Disposal and Public Cleansing Act (1971)

Environmental and resource issues
Proper treatment and utilization of waste,
More momentum on environmental issues
→ Proper circulative resource such as recycling is necessary (since the 1989's)
What is a Sound Material-Cycle Society?

A "Sound Material-Cycle Society" means a society in which the consumption of natural resources will be conserved and the environmental load will be reduced to the greatest extent possible, by preventing or reducing the generation of wastes (Basic Act on Establishing a Sound Material-Cycle Society, promulgated in 2000, enforced in 2001, Article 2).

Generation and disposal of CDW

CDW accounts for approximately 20% of all industrial waste, and 25% of final disposed amount.

Total 392.84 million tons

Generated amount
(result in fiscal year 2014; Ministry of Environment)

Final disposed amount
(approximately 25%)

CDW 2.9 million tons

Other industrial waste 7.5 million tons

Electricity, gas, heat supply, and water service 101.03 million tons 25.7%

Agriculture, Forestry 81.9 million tons 20.8%

Other 55.15 million tons 14.0%

Construction 81.61 million tons 20.8%

Iron and Steel 28.63 million tons 7.3%

Pulp, Paper, Paper Products 32.61 million tons 8.3%

Chemical 11.9 million tons 3.0%

(approximately 20%)

Total 10.4 million tons

2.6%
システムを構成する基整法、重要法及び関連法

- **基本環境計画法**
  - 環境問題の基本枠組み
- **産業廃棄物及び公共クリーニング法**
  - 廃棄物及び公共クリーニング
- **資源有効利用促進法**
  - 資源有効利用
- **環境基本法**
  - 環境基本法
- **産業廃棄物及び公共クリーニング法**
  - 廃棄物及び公共クリーニング
- **資源有効利用促進法**
  - 資源有効利用
- **再生可能エネルギー法**
  - 再生可能エネルギー

**システムの構成を示す図**

- **再生可能エネルギー法**
  - 廃棄物及び公共クリーニング
- **資源有効利用促進法**
  - 資源有効利用
- **環境基本法**
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- **資源有効利用促進法**
  - 資源有効利用

**詳細内容**

- **建設廃棄物リサイクル法**
  - 建設廃棄物リサイクル法
- **住宅用家電リサイクル法**
  - 住宅用家電リサイクル法
- **食品リサイクル法**
  - 食品リサイクル法
- **廃車リサイクル法**
  - 廃車リサイクル法
- **小家電リサイクル法**
  - 小家電リサイクル法

**建設廃棄物リサイクル法**

- **適用対象工事**
  - 90㎡以上の建物の解体や増改築工事
  - 500㎡以上の建物の建設や増改築工事
  - 500万円以上の公共工事
  - 1億円以上の修理やリノベーション工事

- **特定建設材料**
  - 混凝土、鋼鉄、木材、アスファルト、コンクリート

- **施主の執行義務**
  - 施主が特定のCDWを分類し、リサイクルする義務

- **CDWの分類とリサイクル**
  - 施工業者が建設工事地で特定のCDWを分類してリサイクルする

**再生可能エネルギー法**

- **再生可能エネルギーの導入**
  - 再生可能エネルギーの導入

**環境基本法**

- **環境基本計画法**
  - 環境基本計画

**資源有効利用促進法**

- **資源の有効利用**
  - 資源の有効利用
Recycling and reduction Rate of CDW

The recycling and reduction rate of CDW steadily rise.

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Asphalt waste</td>
<td>40%</td>
<td>41%</td>
<td>36.0%</td>
<td>39.3%</td>
<td>68.6%</td>
<td>58.2%</td>
</tr>
<tr>
<td>Concrete waste</td>
<td>14%</td>
<td>11%</td>
<td>9%</td>
<td>11%</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Wood waste (reduction included)</td>
<td>81%</td>
<td>83%</td>
<td>83.0%</td>
<td>80.1%</td>
<td>74.5%</td>
<td>78.6%</td>
</tr>
<tr>
<td>Construction sludge (reduction included)</td>
<td>65%</td>
<td>61%</td>
<td>65%</td>
<td>61%</td>
<td>65%</td>
<td>61%</td>
</tr>
<tr>
<td>Mixed waste (reduction included)</td>
<td>65%</td>
<td>61%</td>
<td>65%</td>
<td>61%</td>
<td>65%</td>
<td>61%</td>
</tr>
<tr>
<td>Soil used construction work</td>
<td>81%</td>
<td>83%</td>
<td>83.0%</td>
<td>80.1%</td>
<td>74.5%</td>
<td>78.6%</td>
</tr>
</tbody>
</table>

Fiscal 2018 target

Outline of “Construction Recycling Promotion Plan 2014”

7 main themes

(1) Set up ways to monitor CDW.
(2) Resolve regional problems.
(3) Work in coordination with other environmental policies.
(4) Be sure to make reducing plans at the design stage.
(5) Be sure to sort waste at construction sites and to carry waste to proper plants.
(6) Make use of CDM.
(7) Make a proper system for recycling construction soil (excavated soil).

10 sub themes

(1) Information management and logistics management,
(2) Strengthen cooperation among related parties,
(3) Promotion of understanding and participation,
(4) Fostering CDW recycling market,
(5) Promotion of technology development etc.,
(6) Prevention,
(7) On-site sorting,
(8) Recycling and reduction,
(9) Appropriate disposal,
(10) Reuse/Use of recycled materials.
New themes for the next generation of Construction Recycling Plan

1. Supply system innovation and Work-style reform
   - AI ⇒ Recycling facilities etc.
   - BIG DATA ⇒ “COBRIS (Construction Byproducts Resource Information Interchange System)” “e-Manifests”
   - DRONE ⇒ Demolition site patrols in order to ensure the enforcement of Construction Materials Recycling Act etc.

2. Maintenance and renovation era
   - How will it change from now?
   - What kind, quantity and quality of CDW generated in large quantities?

3. “The Basic Rule on CDW ”
   - By the rule, can’t carry excavated soil over 50 km from an original site to another.

4. Promoting use of recycled materials
   - Recycling rate of concrete waste is already up to 99%.
     ⇒ Another index for recycled concrete waste.

“The Basic Rule on CDW ”
Regardless of any economic reason, you must keep this Basic rule of CDW recycle in Public Works.

<table>
<thead>
<tr>
<th>Construction site</th>
<th>Obligation to carry</th>
<th>Recycling facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete waste</td>
<td>Use on site within 40km</td>
<td>Recyling facilities</td>
</tr>
<tr>
<td>Recycled crusher-run</td>
<td>Use on site within 40km</td>
<td>Recyling facilities</td>
</tr>
<tr>
<td>asphalt waste</td>
<td>Use on site within 40km And 1.5 hour</td>
<td>Recyling facilities</td>
</tr>
<tr>
<td>Recycled bituminous mixture</td>
<td>Use on site within 40km</td>
<td>Recyling facilities</td>
</tr>
<tr>
<td>wood waste</td>
<td>Obligation to carry if it is impossible, incinarate</td>
<td>Recyling facilities</td>
</tr>
<tr>
<td>Excavated soil</td>
<td>Obligation to carry within 50km</td>
<td>Another construction site (include private works)</td>
</tr>
<tr>
<td>Soil/sand</td>
<td>Use on site within 50km</td>
<td>Recyling facilities</td>
</tr>
</tbody>
</table>

※Use it on condition that the required quality is satisfied