Promotion of 3R s Activities in Tokyo

Waste Management Division
Bureau of Environment
Tokyo Metropolitan Government

Waste Management of Tokyo

- According to “Waste Management Program”, we are implementing specific activities in order to reach Sound Material Cycle Society.

Basic Concept of the Program

Transformation for Sound Material Cycle Society

【Our target : Sustainable Sound Material Cycle Society】

- Consumption of natural resources and waste generation are both reduced in line with promotion of waste reduction, reuse and recycling activities.
- We can enjoy safe and comfortable living environment by means of minimization of the risk for waste disposal.

Plan objectives

計画目標

i) Reducing final disposal of FY 2010 into 1.6 million tons

(35% reduction compared to FY 2004)

ii) Promoting recycling of waste plastics in order to reduce final disposal into zero

iii) Increasing recycling of construction sludge by 50%

Plan objectives

計画目標

iv) Establishing a management system of hazardous waste inside Tokyo Metropolis

v) Strengthening extensive liaison in Metropolitan sphere in order to reduce illegal disposal of industrial waste into zero

vi) Establishing a system in which good industrial waste management contractors can raise their market value

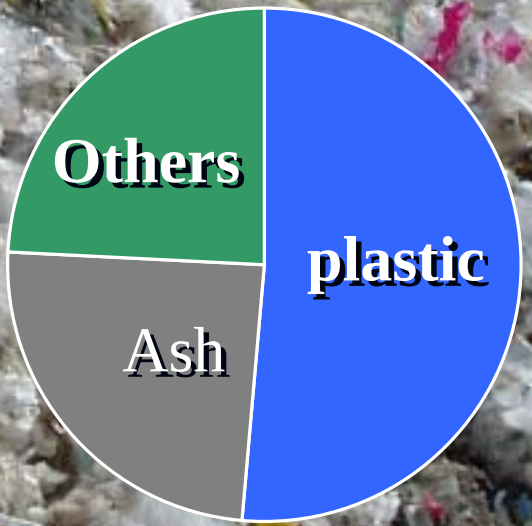
Some Activities for Waste Reduction and Promotion of Recycling

Toward 0 (Zero) Landfilling

Contents of Landfilling

2003FY

By Weight



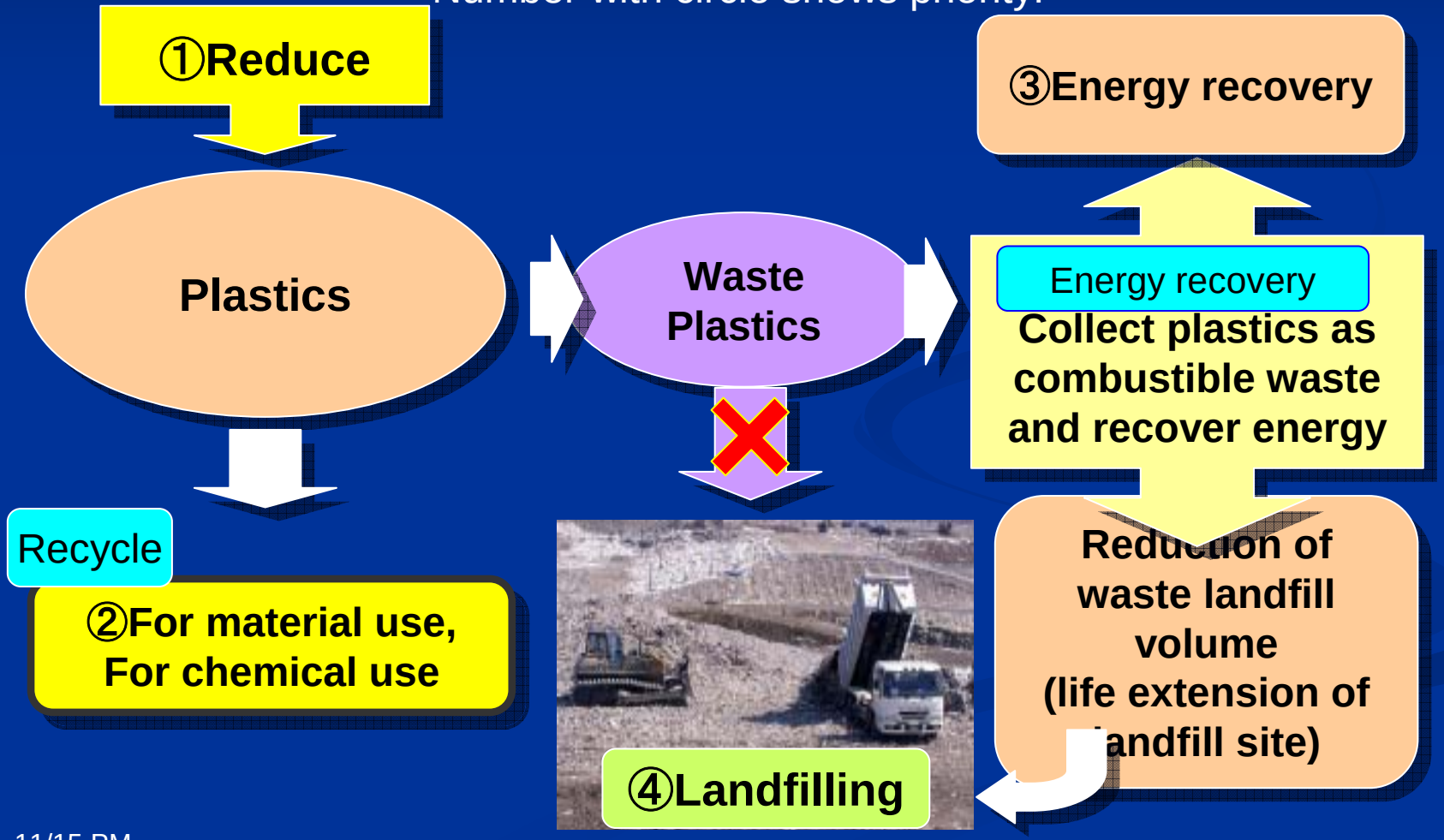
By Volume

TMG's landfill site

Recycling Waste Plastics ①

Image Figure

Number with circle shows priority.



Recycling Waste Plastics ②

- Waste plastics which are not dirty should be recycled for resources or fuels for industry.
- Other waste plastics should be lead to fuels for waste power generation.

プラスチックごみを3分別

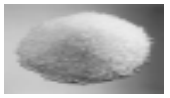
Ⅰ ペットボトル

飲料用ペットボトル

《プラスチック原材料》

繊維類、文具事務用品等


フレーク


ペレット

Ⅱ きれいなプラスチック

レジ袋、包装材、ヒモ類、クリアファイル、CDケース　等

- 食品等内容物が付着していないもの

《産業用の原燃料》

高炉原料、固形燃料、セメント製造用燃料等


固形燃料(RPF)


前処理プラ

Ⅲ その他のプラスチック

弁当容器、飲料カップ、ラップ類、ボールペン、のり容器　等

- 上記Ⅰ、Ⅱの再資源化に不適なもの
  （食品等が付着している
  金属部品が使用されている　等）

《廃棄物発電用の燃料》


廃棄物発電施設

Recycling Waste Plastics ③

Basic Policy Aiming for Zero Landfilling of Waste Plastics in TMG Landfill Site

1 Objective

Promotion of recycling waste plastics in order to achieve zero landfilling of industrial waste plastics by FY2011.

2 Disposal methods to replace landfill, and order of precedence

① Promotion of material recycling for single-material waste plastics.

② Promotion of recycling of waste plastics with low levels of dirt and foreign substance contamination as fuels and raw materials for industrial use.

③ Re-direction of other waste plastics to waste power generation plants, etc, for use as fuel for power generation.

3 Yearly plans for approved volumes of waste plastic delivery

FY	FY2007	FY2008	FY2009	FY2010	FY2011
Approved delivery volume (10 thou tons)	17	15	11	6	0
% reduction from FY2007	−	△12%	△36%	△65%	△100%

4 Waste plastic delivery approval for each business

In accordance with the above approved volumes for waste plastic delivery for each year, each business will be subject to delivery approval.

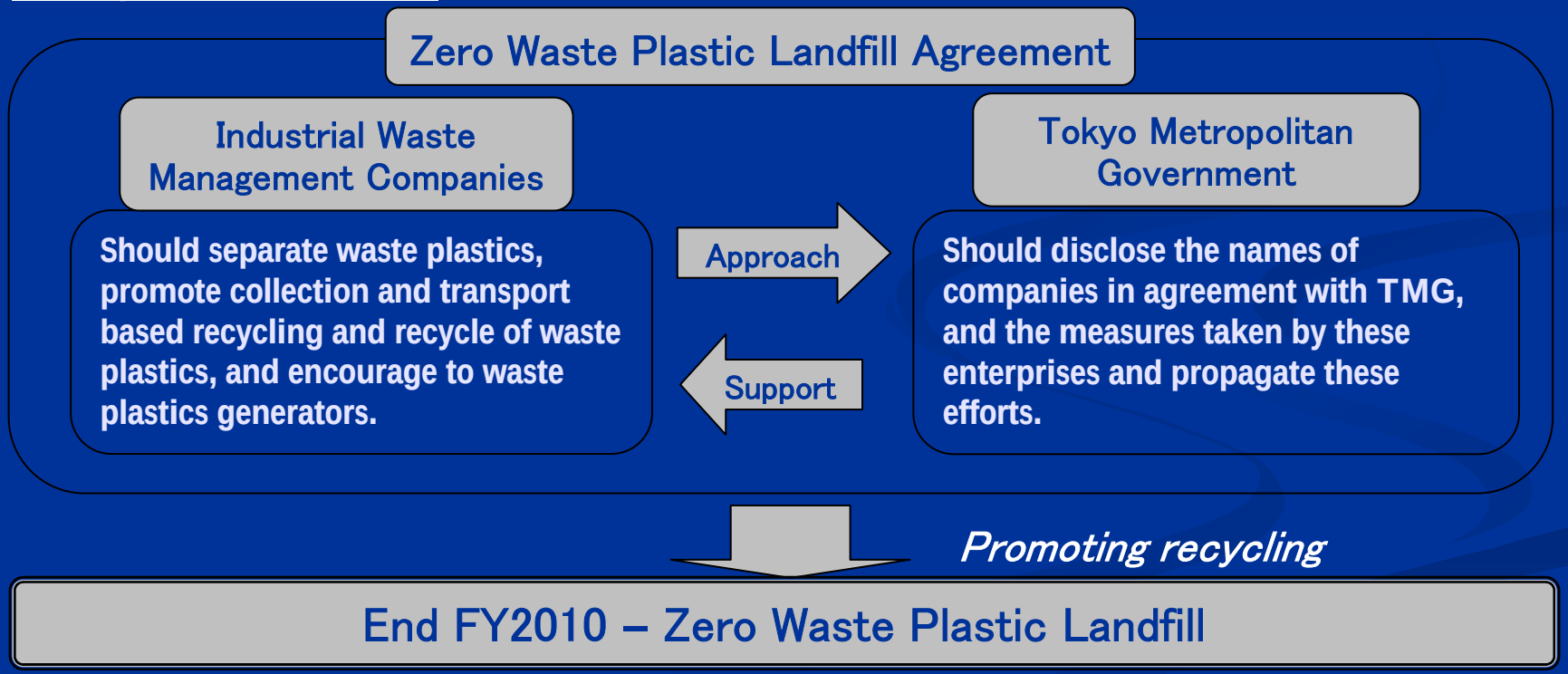
Recycling Waste Plastics ④

■ Agreement on Zero Landfilling of Waste Plastics – 174 companies (as of August 2010)

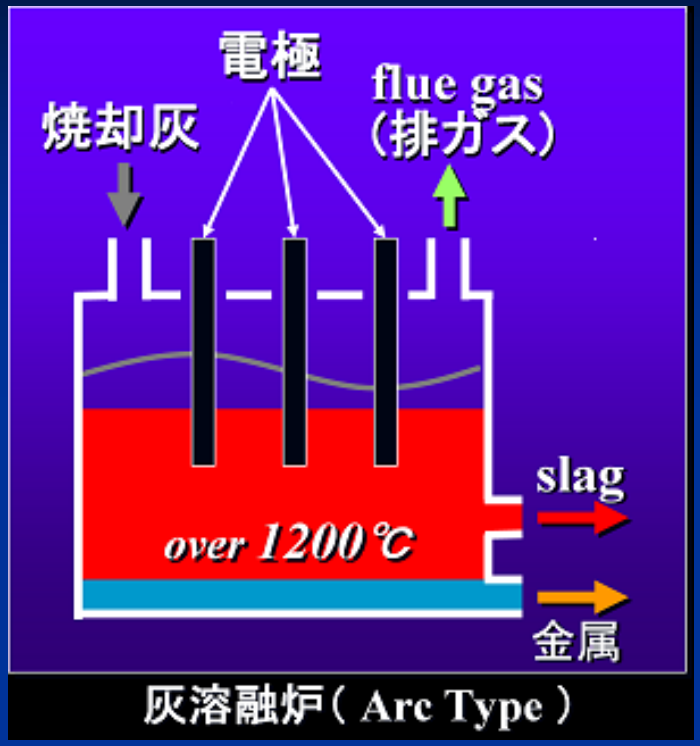
■ Objective

Promotion of waste plastic recycling through the conclusion of an agreement with industrial waste management companies who have adopted a proactive approach towards recycling to achieve "Zero Waste Plastic Landfill".

■ Agreement content



Recycling Incineration Ash ①



灰溶融炉（Arc Type）

slag

Secondary products of concrete

FY2007
About 70,000t

Clean Association of TOKYO23

Asphalt pave aggregate, road material

Recycling Incineration Ash ②

Combustible Waste

Incineration Plant

Residue

Fly Ash

Limestone etc.

Eco-cement Facility

Eco-cement

FY2007

Combustible Waste
600,000ton
↓
Incineration Ash
80,000ton
↓
Eco-cement 120,000ton

Secondary products of concrete

Toward establishing a system in which good industrial waste management contractors can raise their market value

Tokyo Super Eco-Town Project Outline

Objectives

- Improving the waste processing rate within the Tokyo metropolitan area
- Increased recycling rate aiming toward zero landfill disposal
- Development of advanced and highly reliable waste treatment/recycling businesses

Positioning

- 2001 – Established as the national urban renaissance project
- 2003 – Eco Town project approved (METI, MOE)

Project implementation method

The role of TMG

- **Provision of TMG owned land**
- **Acceptance of applications from project implementing businesses (2002, 2006)**
- **Technical advice regarding environmental measures**
- **Hosting of inspection tours, PR enlightenment**

The role of private businesses

- **Purchase of TMG owned land**
- **Construction/operation of facilities**
- **Public opening of facilities and dissemination of technologies**

Super Eco-Town in Tokyo's Waterfront Area

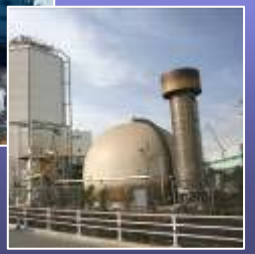
C&D Waste Recycling Plants

PCB Waste Disposal Plant

Gasification & Melting Power Plant

E-Waste Recycling Plants

Food Waste Recycling Plants



Outline of Super Eco-Town Facilities

As of July 2010

Site	Facility type/Operator	Treated waste, etc.
Inner Central Breakwater Landfill Site	**PCB Waste Disposal Plant** Japan Environmental Safety Corporation	**PCB waste from transformers, capacitors and ballasts from Tokyo and three neighboring prefectures** This facility undertakes PCB waste disassembly, washing and detoxification through chemical treatment
	Gasification & Melting Power Plant Tokyo Waterfront Recycle Power Co., Ltd.	**Waste plastic, waste wood, waste paper and infectious medical waste** This facility undertakes highly efficient power generation by utilizing waste plastics, etc. that are not suitable for material recycling as fuel for power generation, and also implements appropriate treatment of infectious medical waste.
Ota-ku, Jonanjima	**Construction & Demolition Recycling Plant** ① Takatoshi Corporation Ltd. ② Recycle Peer Co., Ltd.	**Rubble, waste plastic, waste glass, waste pottery, waste wood, etc.** ①② These facilities undertake material recycling through mechanical separation of mixed construction waste
	Rubble/Sludge Recycling Plant Seiyu Kogyo	**Rubble, glass/concrete/pottery waste, construction sludge** This facility produces recycled aggregate for concrete using the heating and rubbing method to treat rubble generated from construction sites
	Food waste Recycling Plants ① Bioenergy Co., Ltd. ② Alfo Co., Ltd.	**Food scraps (kitchen scraps and leftovers), food product manufacturing scraps, etc.** ① This facility utilizes biogas generated from the methane fermentation of food waste for power generation through fuel cells, etc. ② This facility uses oil as the heating medium for the drying treatment of food waste to produce formula feed for poultry and pig farming
	E-Waste Recycling Plants ① Future Ecology Inc. ② Re-Tem Corporation	**Metal waste, plastic waste, glass, etc. (Electric/electronic equipment such as waste PCs, etc.)** ① This facility undertakes the re-use and material recycling of waste electronic equipment, etc. ② This facility undertakes material recycling of waste electronic equipment and metallic products, etc.

What's NEW!

Recycling of Rare Matal

- Electric products and rechargeable batteries contain noble metal and rare metal
  - Noble Metal and Rare metal: gold, silver, cobalt, palladium, indium
- As Japan is an import-oriented country, it would be for us important to recycle those items.

	gold	silver	cupper	palladium
Per mobile phone	**0.028 g**	**0.189 g**	**13.71 g**	**0.014 g**
Per one ton of mobile phone	**280 g**	**2 kg**	**140 kg**	**140 g**
Cf. Per one ton of natural ore	**0.92 g**	**93 g**	**12 kg**	**1.81 g**

平成20年11月　総務省会議資料（循環型社会白書（平成13年度）より作成）から引用

Current Situation of E-Waste Recycling

- Home Appliance (TV set, Air conditioner, Refrigerator, Washing machine)
  - ➔Included Home Appliance Recycling Act
- PC
  - ➔Designated as products which must be taken back after use by manufacturer
- Rechargeable Battery
  - ➔ Designated as products which must be taken back after use by manufacturer
- Mobile phone, PHS, Rechargeable battery, Charger
  - ➔**Manufacturers are spontaneously take back and recycle them.**

Recycling activities for mobile phone

Mobile Recycle Network

- Collect all kind of waste equipments (mobile phone, rechargeable battery and charger) freely of all makers and telecommunications carrier
- Collect at about 10,400 mobile phone shop in Japan
- Hand out those equipments to recycler

Promotion of collecting mobile phone by the cooperation between TMG and Businesses

Council for promotion of products which include rare metal

- Study about cooperation between the Civil Service and Businesses for promoting rare metal collection included in mobile phone.
- Conduct test collection of mobile phone at university, subway station, etc. in order to inform the recycle system to the people and increase the number of collection for two month (Oct 2008~Dec 2008).

Setting up collection box in Tokyo

【Collection item】 Mobile phone, PHS, Rechargeable battery, Charger

Result (Collection amount)

- Mobile phone and PHS 1,522
- Charger 527
- Rechargeable battery 1,371

Attitude survey

① Many people did not know the collection system, but think that they want to do recycling activity.

②Most strong reason to motivate people to participate recycling activity is security for keeping personal information safely.

Collection pilot project for used small household appliances

Collection items Small household appliances smaller than 15cm x 25cm
(E.g.) Mobile phones, digital cameras, portable music players, handheld gaming devices, video cameras, calculators, electronic dictionaries, portable DVD players, car navigation devices, portable TVs, portable radios, and accessory items for these devices

【Koto-ku】

Recycling in a "City where diverse lifestyles co-exist"

Collection using Boxes (70 in 67 locations)
- Ward associated facilities (41 locations)
  Government bldg, branch offices (9), bicycle parking lots (10), libraries (6), culture centers (9), sports centers, etc. (6)
- Main rail stations within the ward (13 locations)
  Metropolitan subway (7 stations), Yurikamome line (3 stations), Rinkai line (3 stations)
- Retail outlets (13 locations)
  Shopping malls, high volume household appliance retailers, etc.

Collection at events
- Koto Kumin Festival, Chuo Festival

【Hachioji-shi】

Recycling in a "University town"

Collection using Boxes (52 in 51 locations)
- Rail station (1 monorail station)
- Roadside station - Takiyama
- Universities (18)
- Super ALPS (2 stores)
- City associated facilities (29 locations)
  City hall, Attaka Hall, Citizens' Dept. on-site offices, citizens' centers, libraries, welfare centers, incineration plants, treatment centers for non-combustible materials

Mass collection 31 implementing organizations

Collection at events
- All university festivals
- Gingko Festival etc.

Collection pilot project for used small household appliances

- **No. of collected items**

FY2009 (over 4 months) Approx 13,000 items

FY2010 (over 5 months) Approx 11,000 items

Development of an Integrated Strategy for the Sustainable Use of Resources

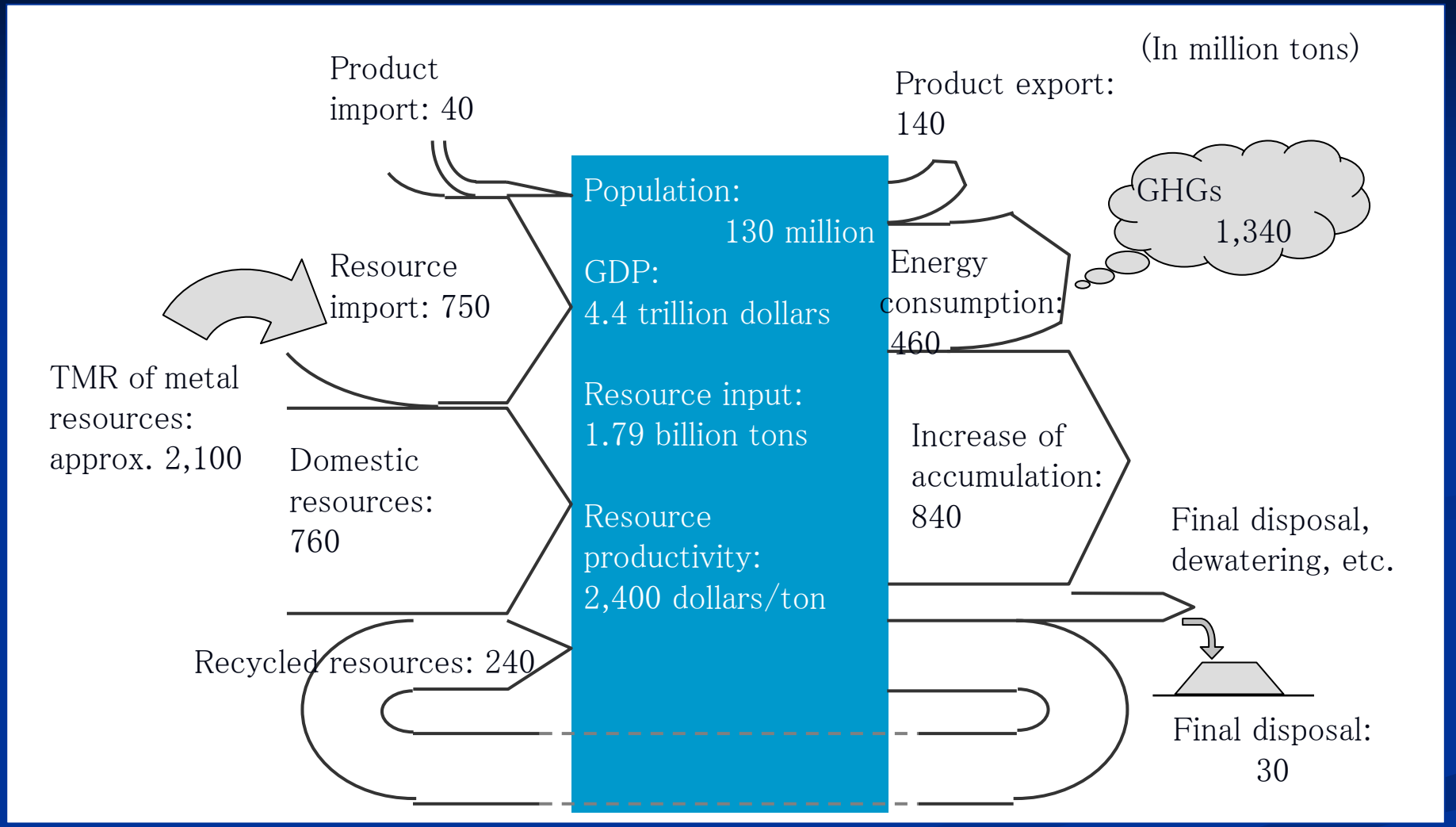
-Reducing the extraction of natural resources, greenhouse gas emissions, and final waste disposal

～Panel for New 3Rs Strategy～

Panel for New 3Rs Strategy

- The Tokyo Metropolitan Environmental Master Plan declare “creating a new urban model to fight the climate change crisis and resources depletion”.
- We need to put into action integrated efforts to create a low-carbon society and a society with a sound material cycle.
- TMG has launched a Panel for New 3Rs Strategy.
- TMG published “Development of an Integrated Strategy for the Sustainable Use of Resources” in Oct. 2009.

Current Status and Challenges in the Use of Resources



Material flows in Japan (in 2006)

Sources:

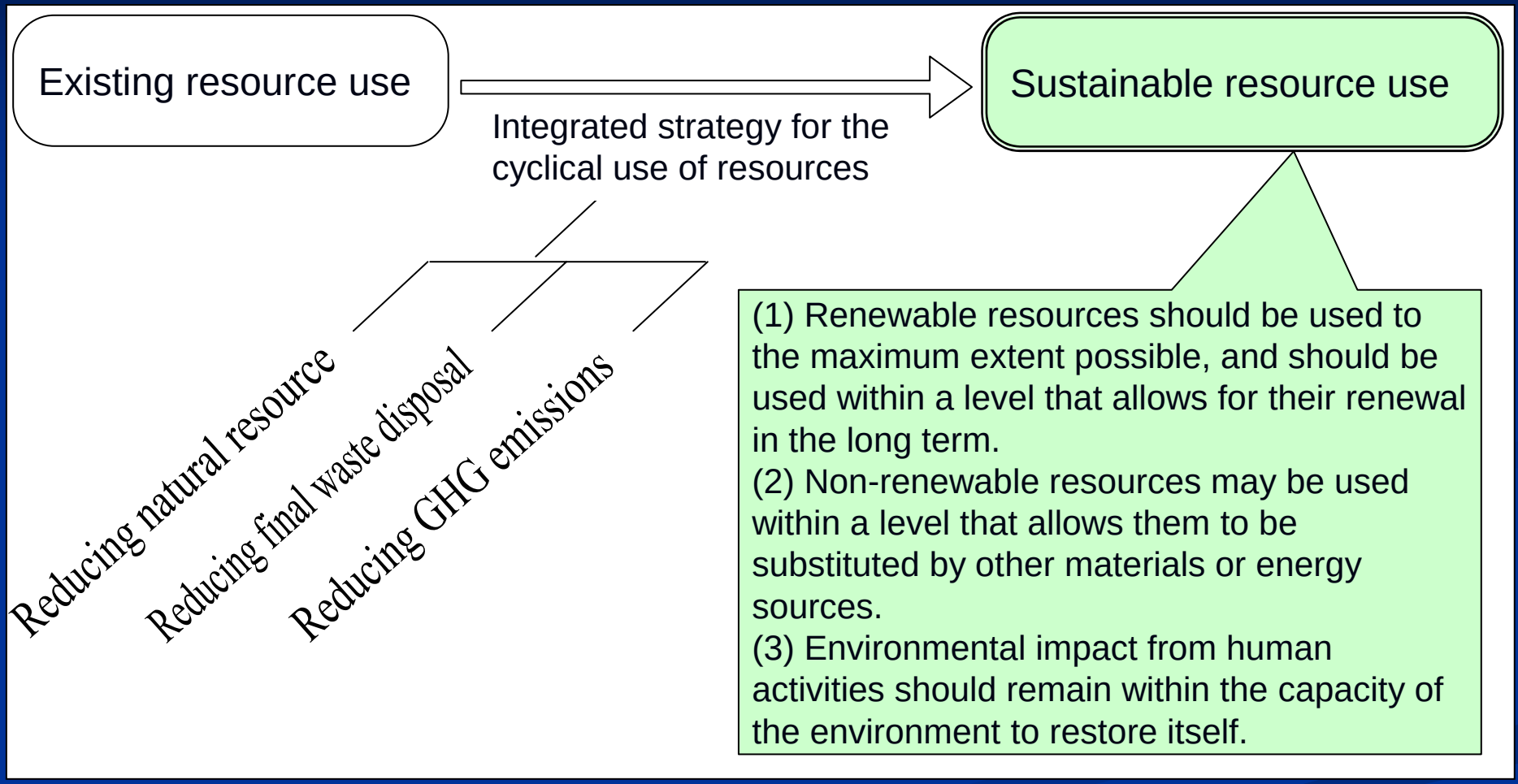
- TMR of metal resources: Fundamental Plan for Establishing a Sound Material-Cycle Society
- GHG emissions: National Institute of Environmental Studies website
- Remaining data: *Japan's Material Balance 2006,* Clean Japan Center

Resource use and environmental impact

- **Current resource usage is not sustainable.**

Biomass resources (Renewable resources)	Usage within the renewal rate must be kept in mind. (An area of forest three times greater than domestic artificial forest area is needed to support wood and paper consumption in Japan.)
Fossil-derived resources	Increased consumption of fossil fuels equates to increased CO_2 emissions.
Metal resources	Vast amounts of earth and rock are discharged during resource extraction. A TMR perspective is necessary.
Ceramic/rock and soil resources	Huge amounts of resources are extracted in Japan. There are concerns over future increases in final disposal volumes.

Integrated strategy for the sustainable use of resources



- We need to develop a new strategy for the cyclical use of resources that aims to reduce the extraction of natural resources, GHG emissions, and final waste disposal in an integrated approarch.

Strategic direction

- Approaches to both artery and vein processes
  - ・Minimization and optimization of actual resource usage volume (Reduce)
  - ・Cyclical use of resources
  - ・Changing raw materials (Raw materials that use renewable resources and elements with few resource constraints)
- Promotion of cyclical use for metals and other natural resources
  - ・Metal resources ⇒ TMR perspective (Total Material Requirement)
  - ・Promoting the development of collection mechanisms for small electronic devices
  - ・Biomass resources ⇒ Ecological footprint perspective
- Visualization of GHG reduction effect due to cyclical use of resources
- Response to decreased demand for recycled resources as urban maturation progresses
  - ・There is a high possibility that volumes of waste concrete, etc, will exceed recycle demand in the future
  - ・Promotion of long life-cycles for buildings, etc, and expansion of “Building to building” recycling