

Towards a 3R-Oriented, Sustainable Society: Legislation and Trends 2007

**Towards a 3R-Oriented, Sustainable Society:
Legislation and Trends 2007**

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Ministry of Economy, Trade and Industry

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In the course of economic activities based on mass-production/consumption/disposal, Japan has been discharging an enormous amount of waste, and is currently facing various problems, such as a shortage of final disposal sites and the adverse environmental effects of inappropriate waste disposal. There is a concern over the depletion of resources and energy for the future due to the change of the global economic status resulting in a surge of resource price such as oil and iron.

In order to overcome the problem of environment as well as the resource problem, it is essential to establish a sustainable society by promoting, what is called, “3Rs”; reduction of waste generation, reuse of parts, and recycling of used products as raw materials.

Japanese government currently strives for making active efforts to confront environmental and resource constraints by establishing appropriate laws and guidelines. They include Containers and Packaging Recycling Law, Home Appliance Recycling Law, Construction Materials Recycling Law, Food Recycling Law, End-of-Life Vehicles Recycling Law, Green Purchasing Law, Promotion of Utilization of Recycled Resources and Waste Disposal Law. Most importantly, however, establishing a society, in which environmentally-concerned economic activities are highly appreciated through implementation of the 3Rs of each one of citizens by penetrating it into a range of economic activities and social engagement, should be sought for.

In accordance with the proposal presented in the report “Vision for a recycling economy” prepared at the Industrial Structure Council, the Ministry of Economy, Trade and Industry has been promoting the “3R” policy in order to shift the society of mass-production/consumption/disposal to a sustainable economic system. This handbook features the outline of legislation concerning the creation of a sustainable society and the trends of the 3Rs in individual fields. We hope that it will be helpful for those who engage in 3R-related activities.

I Creation of a 3R-Oriented, Sustainable Society

1 The Need for Creating a Sustainable Society

In the course of economic activities based on mass-production/consumption/disposal, Japan is facing various problems, such as a shortage of final disposal sites and the adverse environmental effects of hazardous substances, as well as concern over depletion of mineral resources in the future. These environmental and resource constraints are at the level in which a restriction of economic activities or reduction of the size of the economy would be caused.

(1) Environmental problems

In Japan, as much as 460 million tons of waste is generated every year, and the number of remaining sustainable years of final disposal sites is rapidly dwindling: 13.2 years for

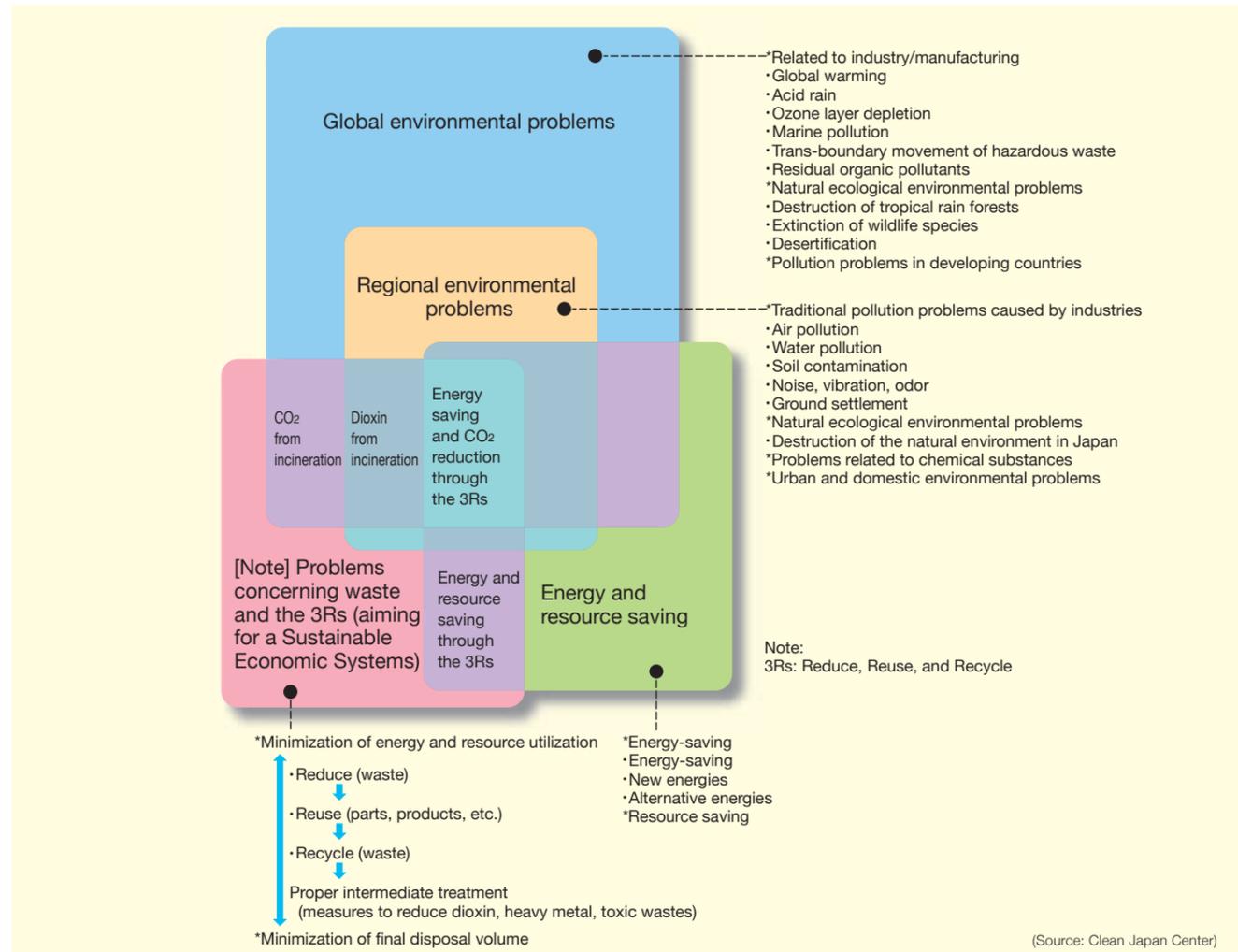
general waste and 6.5 years for industrial waste. Under these circumstances, it is necessary to promote measures concerning waste disposal and the 3Rs (reduce, reuse and recycling).

Furthermore, environmental problems have recently expanded, due to industrial pollution on a global level, including long-term environmental effects of hazardous substances such as dioxin, PCB, and endocrine-disrupting chemicals, as well as global warming.

(2) Resource constraints

In the 20th century, human beings mined and consumed limited mineral resources such as oil and metal at a rapid pace. As a result, the current number of sustainable years is about 40 years for oil and about 50 years for copper.

Fig. I-1 Environmental Problems



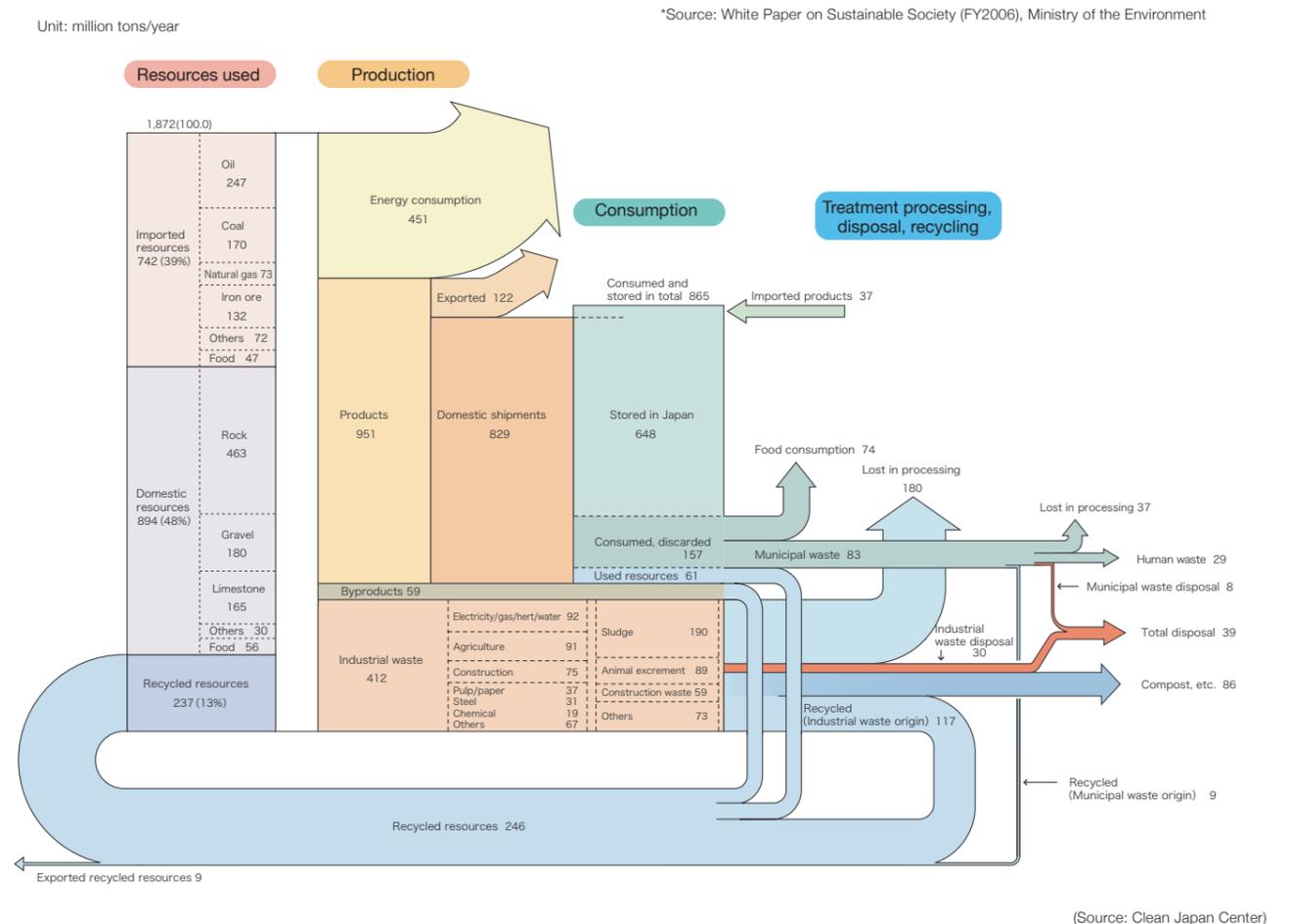
According to the overview of Japan's material balance, Japan utilized about 1.98 billion tons of resources in total, consuming 420 million tons of energy and discharging 580 million tons of waste in producing 1.07 billion tons of products. Most of the 0.93 billion tons of resources accumulated in Japan, which are utilized as roads, bridges, and buildings, will be industrial waste in about 10 years. Meanwhile, the amount of resources that were recycled and reused was about 220 million tons and subsequently remained at a low level, accounting for only slightly over 10% of the total amount of resources utilized. There is also a "hidden flow" of resources that are byproducts in the process of mining intended resources and discharged as wastes, such as the soil of mountains leveled for the purpose of mining aggregate used for civil engineering and

construction, and surface soil or rocks removed for the purpose of mining raw mineral ores.

As outlined above, in order to achieve sustainable development in the 21st century, Japan should take measures in relation to problems concerning waste and enforce the 3Rs as its top priority. It is an urgent task to establish a new economic system that is favorable for both the environment and the economy.

More specifically, for the sustainable development of Japan, it is essential to get out of the conventional economic system that is based on mass-production/consumption/disposal and create a Sustainable economic system and society, while promoting "environmentalization of industry" (incorporating measures for environmental and resource constraints into business activities) and "industrialization of the environment" (generating market value through measures for environmental and resource constraints) through effective use of the power of the private sector.

Fig. I-2 Japan's Material Balance (FY 2003)



2 Present Situation of Waste in Japan

(1) Municipal Solid Waste (MSW)

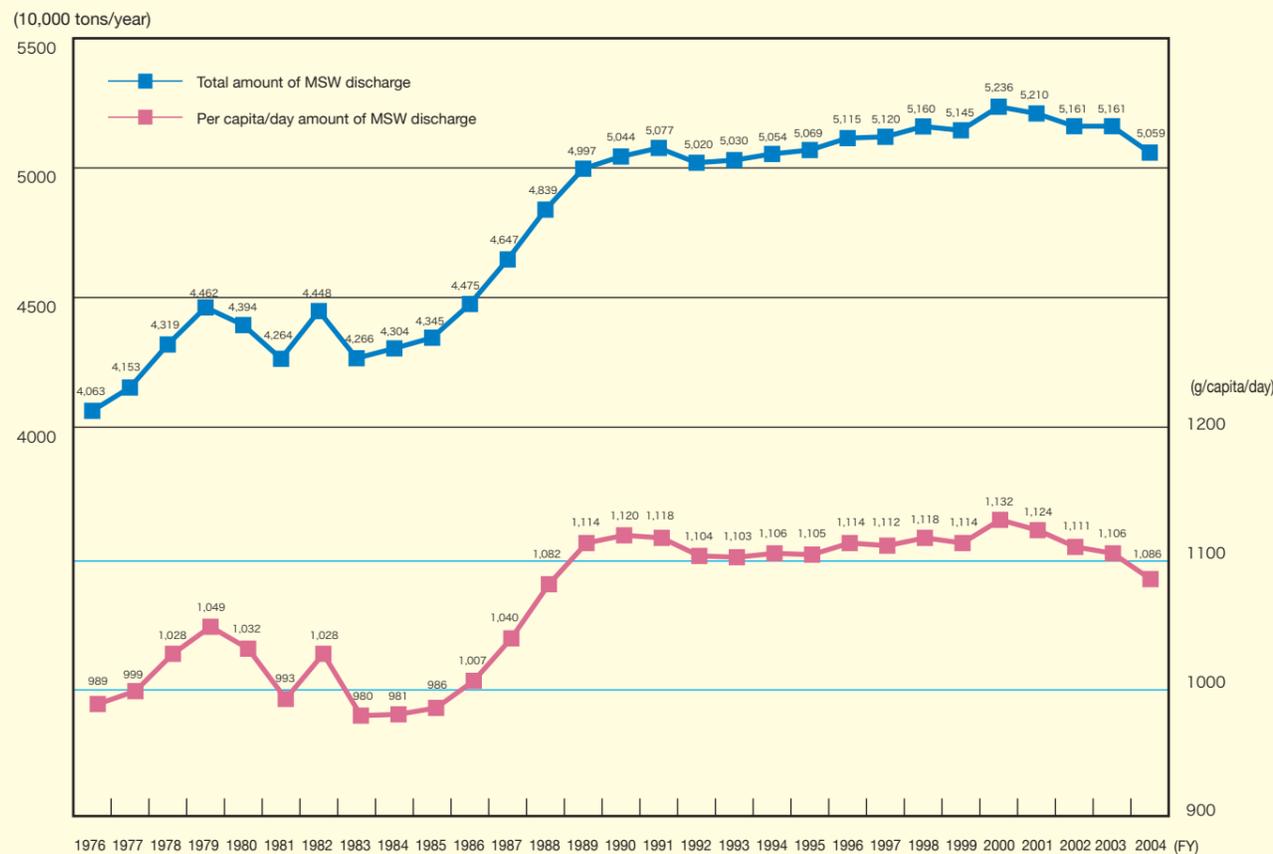
[1] Total amount of municipal solid waste discharged

The total amount of municipal solid waste discharged (MSW: wastes discharged from households) in FY 2004 was 50.59 million tons, accounting for 136 times as much as the volume of the Tokyo Dome Stadium (0.3 tons per m³), the per capita/day amount being 1,086g (see Fig. I-3).

The total amount of MSW discharged and the per

capita/day amount of discharge started to increase rapidly around FY1985, but remained almost flat during the period from FY1989 to FY2004. The downward trend seen after FY1979 was in line with the influence of the second oil shock. In the future, however, we should endeavor to reduce waste generation in an economic boom or bust.

Fig. I-3 MSW Discharge



Note : Total MSW discharge = MSW collected + MSW directly delivered + MSW treated in-house. According to the "Basic Policy for Comprehensive and Systematic Promotion of Measures for Reduction and Other Proper Treatment of Waste" under the Waste Management Law, the amount of MSW discharged is calculated by deducting the "amount of MSW treated in-house" from the "total amount of MSW discharged" and adding "the amount of recyclable resources collected by citizen groups." Therefore, the amount discharged for FY 2004 is 53.38 million tons.

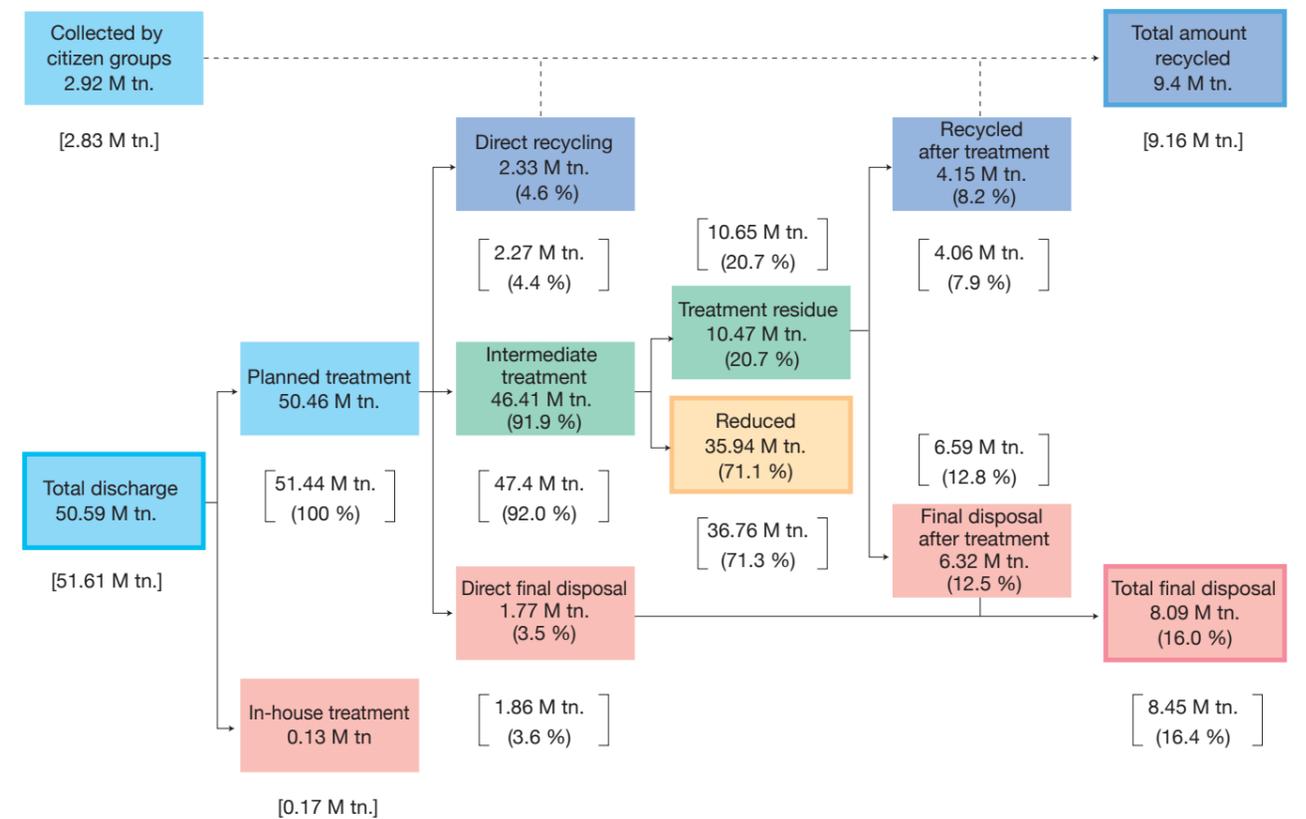
Source: Ministry of Environment, Discharge and Treatment of MSW (in FY 2004), June 29, 2006 (revised)

[2] Waste treatment

In the total amount of MSW treated in FY 2004, 46.41 million tons underwent intermediate treatment by municipalities such as incineration, comminution and selection, while 2.33 million tons were directly delivered to recycling industries, collectively accounting for 96.5% of the total amount of MSW treated. Out of 46.4 million tons of MSW delivered to intermediate treatment facilities, 4.15 million tons were reused after treatment. The total amount of

MSW recycled, the sum of the amount of MSW recycled through intermediate treatment, the amount of MSW directly recycled, and the amount of recyclable resources recovered by citizen groups, was 9.4 million tons. Some 1.77 million tons of MSW were delivered to direct final disposal without going through intermediate treatment (direct landfill) and 35.94 million tons were reduced through intermediate treatment (see Fig. I-4).

Fig. I-4 Flow of MSW Treatment in Japan (FY 2004)



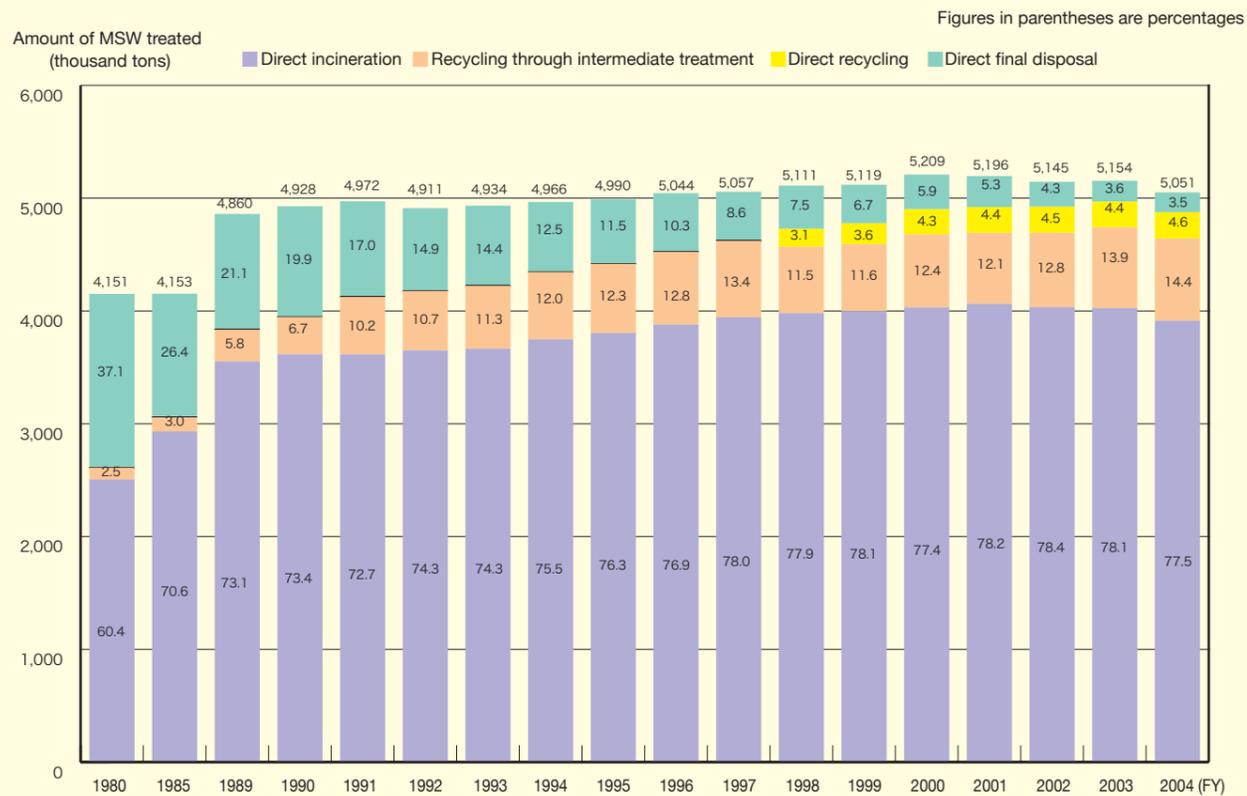
Notes: 1. The total amount of MSW treated does not correspond to the "amount of scheduled treatment" due to errors in measurement.

[] : the amount of FY2003

2. Rate of waste reduced in treatment (%) = [(intermediate treatment) + (directly recycling)] / (total MSW treated) x 100

Source: Ministry of Environment, Discharge and Treatment of MSW (in FY 2004), June 29, 2006 (revised)

Fig. I-5 Waste Treatment Methods



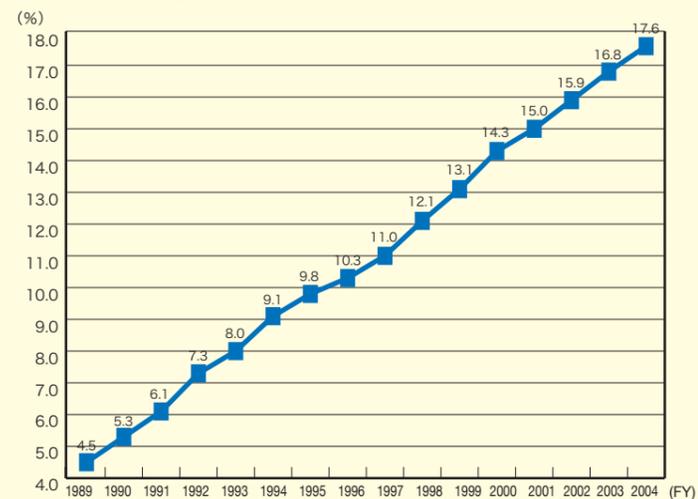
Notes: 1. Direct recycling is a category introduced in 1998, and refers to the amount of MSW that is directly delivered to recycling industries without going through recycling facilities.
2. Until FY1997, the amount of "direct recycling" was included in the amount of "recycling through intermediate treatment."

Source: Ministry of Environment, Discharge and Treatment of MSW (in FY 2004), June 29, 2006 (revised)

[3] Recycling

In FY 2004, 2.33 million tons of MSW were separately collected and directly recycled by municipalities, 4.15 million tons were recycled through intermediate treatment, and 2.92 million tons were collected by citizen groups for recycling. The total amount of MSW recycled, aggregating all of the above, was 9.4 million tons (see Fig. I-4). The recycling rate was 17.6%, about 4 times higher than FY1989. Fig. I-6 shows that the rise of the recycling rate was accelerated by the effect of the Containers and Packaging Recycling Law that partly came into force in 1997. However, recycling has yet to be promoted sufficiently for some kinds of MSW such as kitchen garbage.

Fig. I-6 Recycling Rate



Note:
Recycling rate = $\frac{(\text{MSW directly recycled} + \text{MSW recycled after intermediate treatment} + \text{MSW collected by citizen groups})}{\text{Total MSW treated and MSW collected by citizen groups}} \times 100$

The amount of "MSW recycled after intermediate treatment" is the amount of iron, aluminum, etc. recovered and recycled through treatment of recyclable waste and bulky waste.

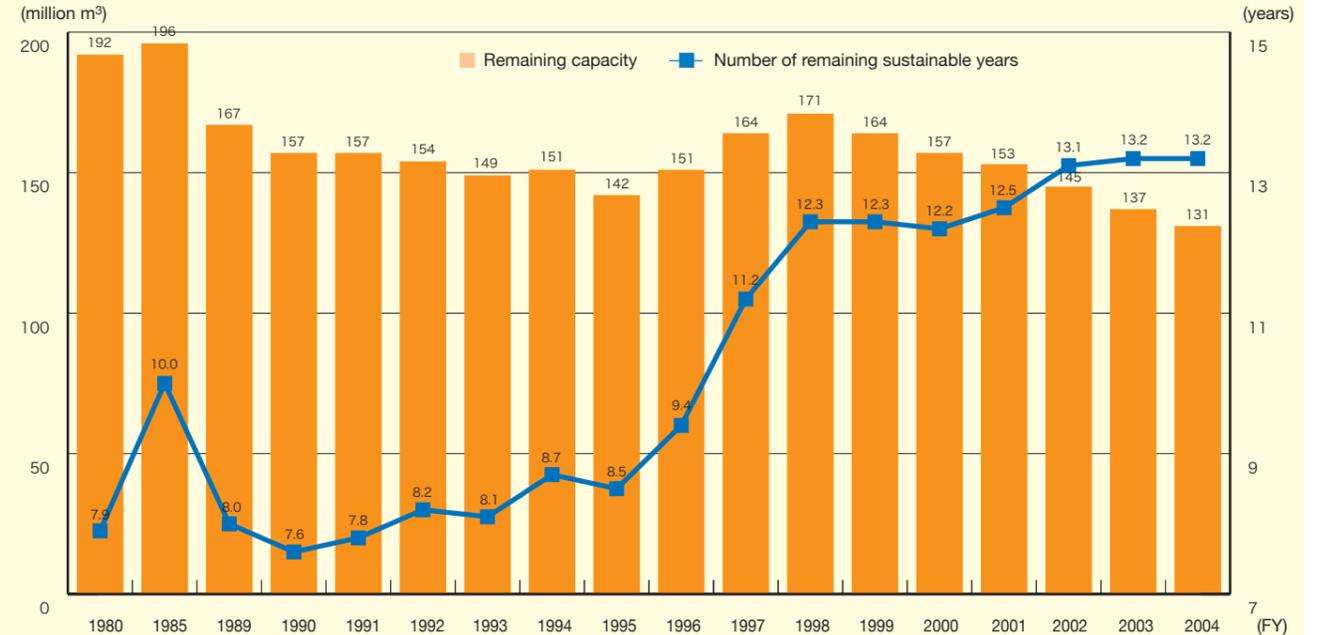
Source: Ministry of Environment, Discharge and Treatment of MSW (in FY 2004), June 29, 2006 (revised)

[4] Final disposal sites

As of FY 2004, there were 2,009 final disposal sites for MSW. The remaining capacity was 130.52 million m³ and the national estimated number of remaining sustainable years

was 13.2 years. As the distribution of final disposal sites is regionally uneven, the number of remaining sustainable years may differ among regions (see Fig. I-7).

Fig. I-7 Remaining Capacity and Number of Remaining Sustainable Years of Final Disposal Sites for MSW



Note:
Number of remaining sustainable years = $\frac{\text{Remaining capacity at the end of the fiscal year}}{(\text{Total final disposal in the fiscal year} / \text{Weight of landfill waste})}$

(Weight of landfill waste = 0.8163)

Source: Ministry of Environment, Discharge and Treatment of MSW (in FY 2004), June 29, 2006 (revised)

● Final landfill/Facility for exudative water treatment



(2) Industrial Waste

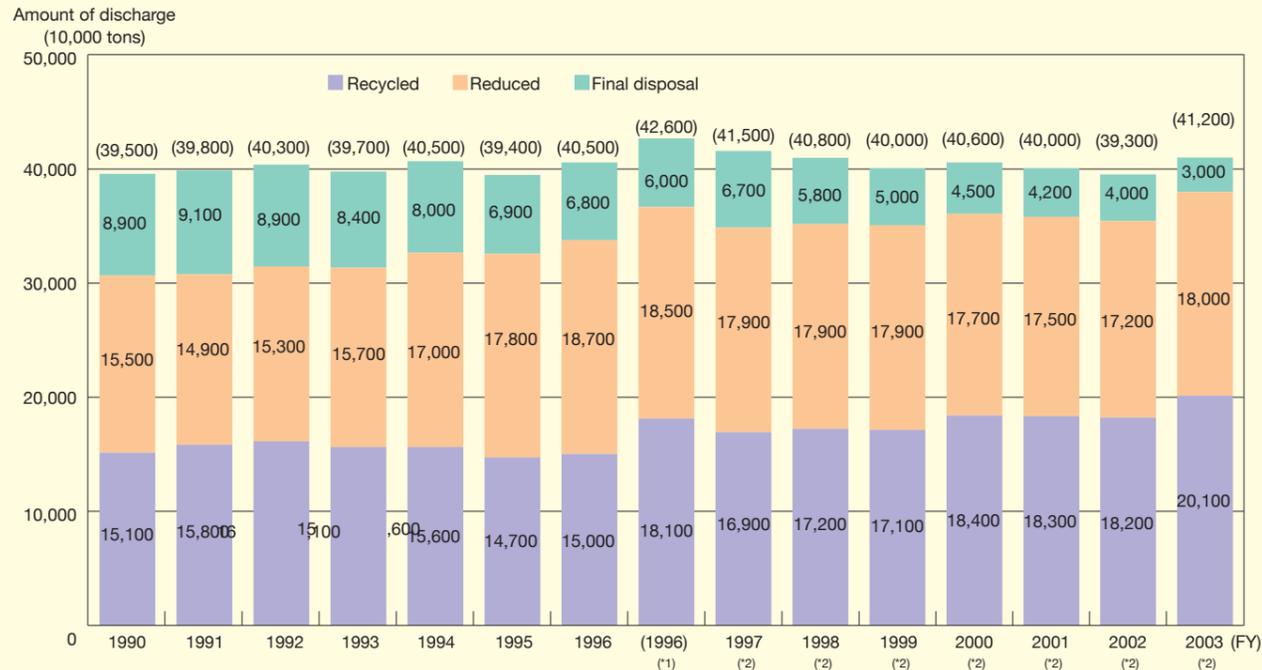
[1] Total amount of industrial waste discharged

The total amount of industrial waste discharged in Japan in FY 2003 was about 412 million tons, remaining almost flat since FY 1990. The amount of industrial waste recycled has not fluctuated significantly, while the amount of industrial waste reduced through intermediate treatment has been increasing gradually, and therefore the amount of final

disposal has been decreasing gradually (see Fig. I-8).

Based on the estimate by the Ministry of Environment as to the amount of final disposal in FY 2003 (30 million tons) and the remaining capacity of final disposal facilities as of April 2004, the national average number of remaining sustainable years of final disposal facilities is 6.1 years. Thus we are facing a severe situation.

Fig. I-8 Industrial Waste Discharge



Notes: 1. The amount of discharge(*1) shown above is the amount in FY 1996 according to the "target amount of waste reduction" set by the government to be achieved by FY 2010 (decided by the government on September 28, 1999) under the Basic Policy for Measures against Dioxin (decided by the Ministerial Meeting on Measures Against Dioxin).
2. The amount of discharge(*2) for FY 1997 and after is calculated under the same conditions as 1 above.
* The aggregate total may not correspond to the total amount because figures for individual amounts are rounded off.

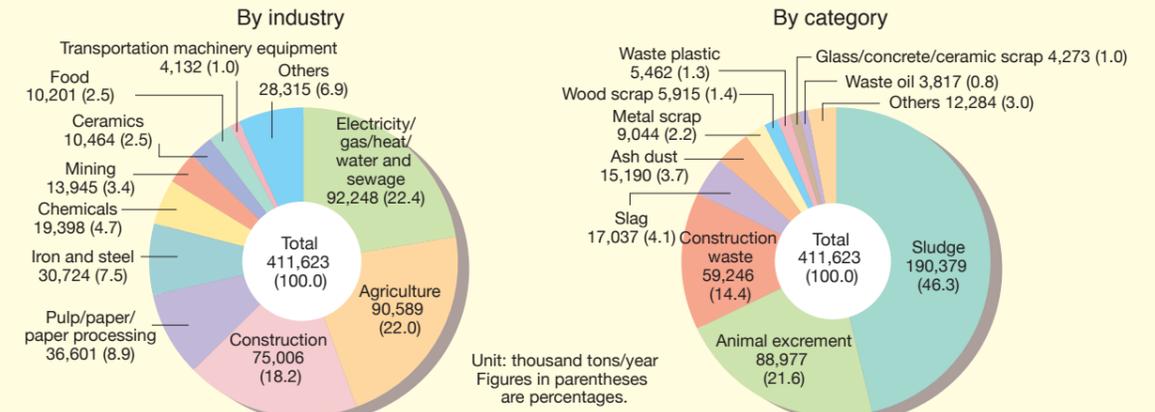
Source: Ministry of Environment, Discharge and Treatment of Industrial Waste (in FY 2003), November 8, 2005 (revised)

[2] Amount of discharge by industry and by category

The amount of discharge by six industries: electricity/gas/heat/water and sewage, agriculture, construction, pulp/paper/paper processing, iron and steel, and chemicals accounted for about 80% of the total amount of industrial waste discharged (see Fig. I-9).

In terms of category, sludge, animal excrement, and construction waste accounted for about 80% of the total amount of industrial waste discharged (see Fig. I-9).

Fig. I-9 Amount of Industrial Waste Discharged by Industry and Category (FY 2003)



Unit: thousand tons/year
Figures in parentheses are percentages.
Source: Ministry of Environment, Discharge and Treatment of Industrial Waste (in FY 2003), November 8, 2005 (revised)

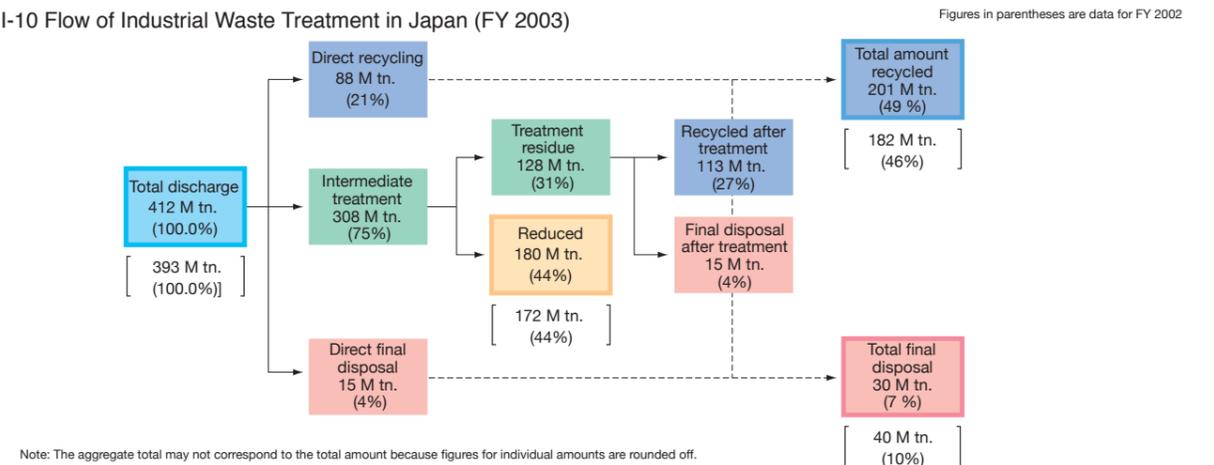
[3] Flow of industrial waste treatment

Of the total amount of industrial waste discharged (about 412 million tons), about 88 million tons were directly recycled (21% of the total), and about 308 million tons were delivered to

intermediate treatment, which were further reduced to about 128 million tons and then recycled or finally disposed (see Fig. I-10).

Finally, 49% of the total amount of industrial waste discharged was recycled and 7% was finally disposed (see Fig. I-10).

Fig. I-10 Flow of Industrial Waste Treatment in Japan (FY 2003)



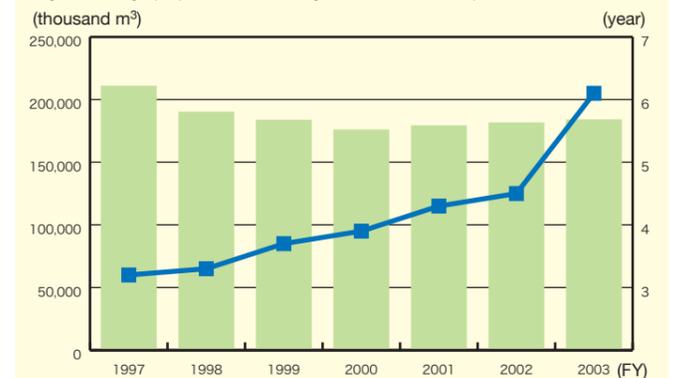
Note: The aggregate total may not correspond to the total amount because figures for individual amounts are rounded off.

Source: Ministry of environment, Discharge and Treatment of Industrial Waste (in FY 2003), November 8, 2005 (revised)

[4] Final disposal Sites

As of April 1, 2004, the remaining capacity of final disposal sites for industrial waste was about 184.18 million m³, an increase of about 2.4 million m³ (1%) over the previous year. The national average number of remaining sustainable years of final disposal sites was 6.1 years. (see Fig. I-11)

Fig. I-11 Remaining Capacity and Number of Remaining Sustainable Years of Final Disposal Sites for Industrial Waste



Notes: Number of remaining sustainable years= Remaining capacity (m³)/ amount of final disposal (tons) (conversion ratio between ton and m³=1)

Source: Ministry of environment, Discharge and Treatment of Industrial Waste (in FY 2003) (revised)

1 Legislative System

In the more than ten years since the "Law for Promotion of Utilization of Recycled Resources (amended to the Law for Promotion of Effective Utilization of Resources)" came into force in 1991, practices and policies concerning waste reduction and promotion of recycling have been generally reviewed, and a legislative system is currently being developed in this field. In June 2006, the "Containers and Packaging Recycling Law " amended (see Fig. II-1).

Fig. II-1 Legislative System for Promoting the Creation of a 3R-Oriented Society

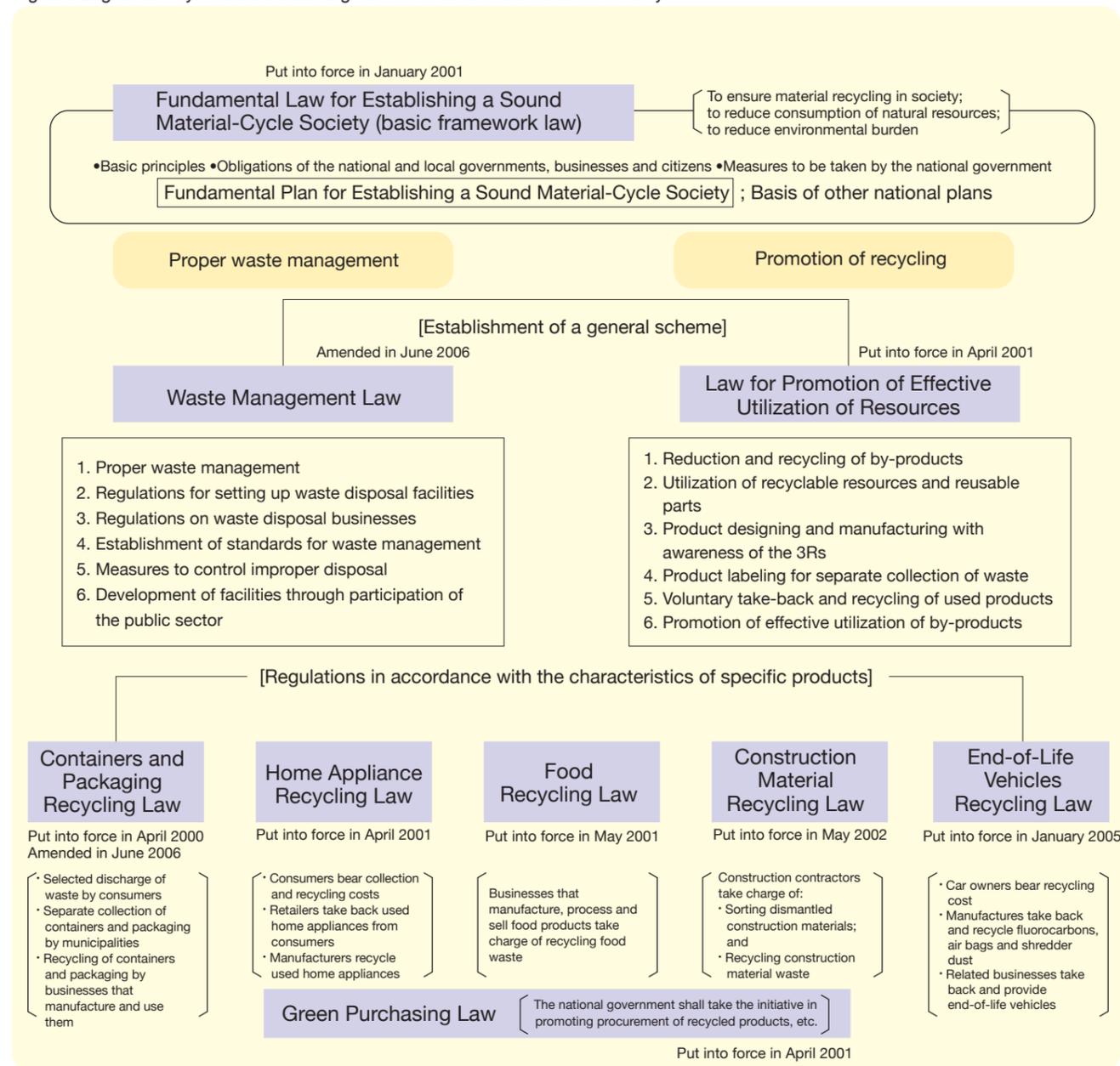
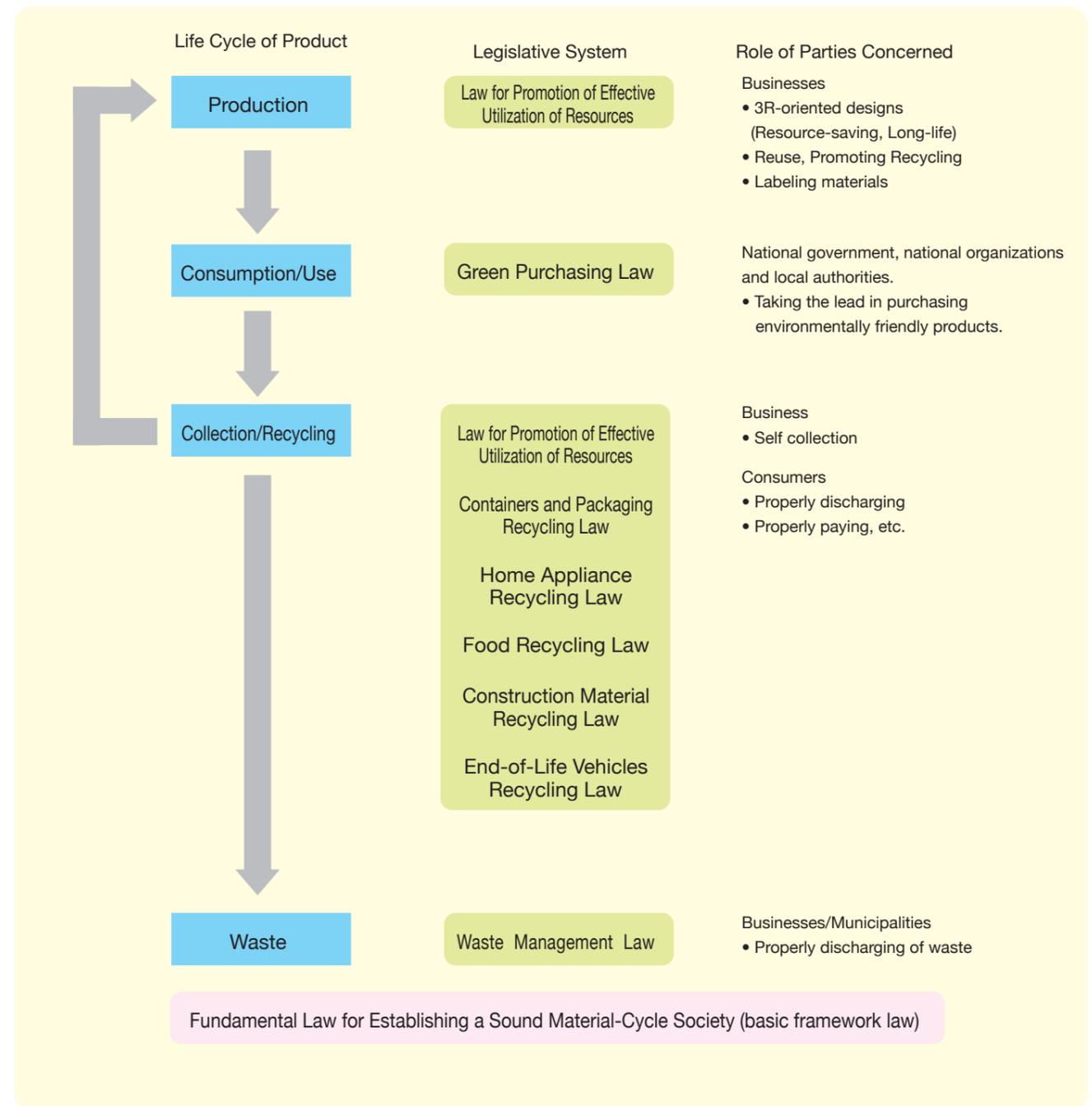


Fig. II-2 Legislative System in Line with the Life Cycle of Product

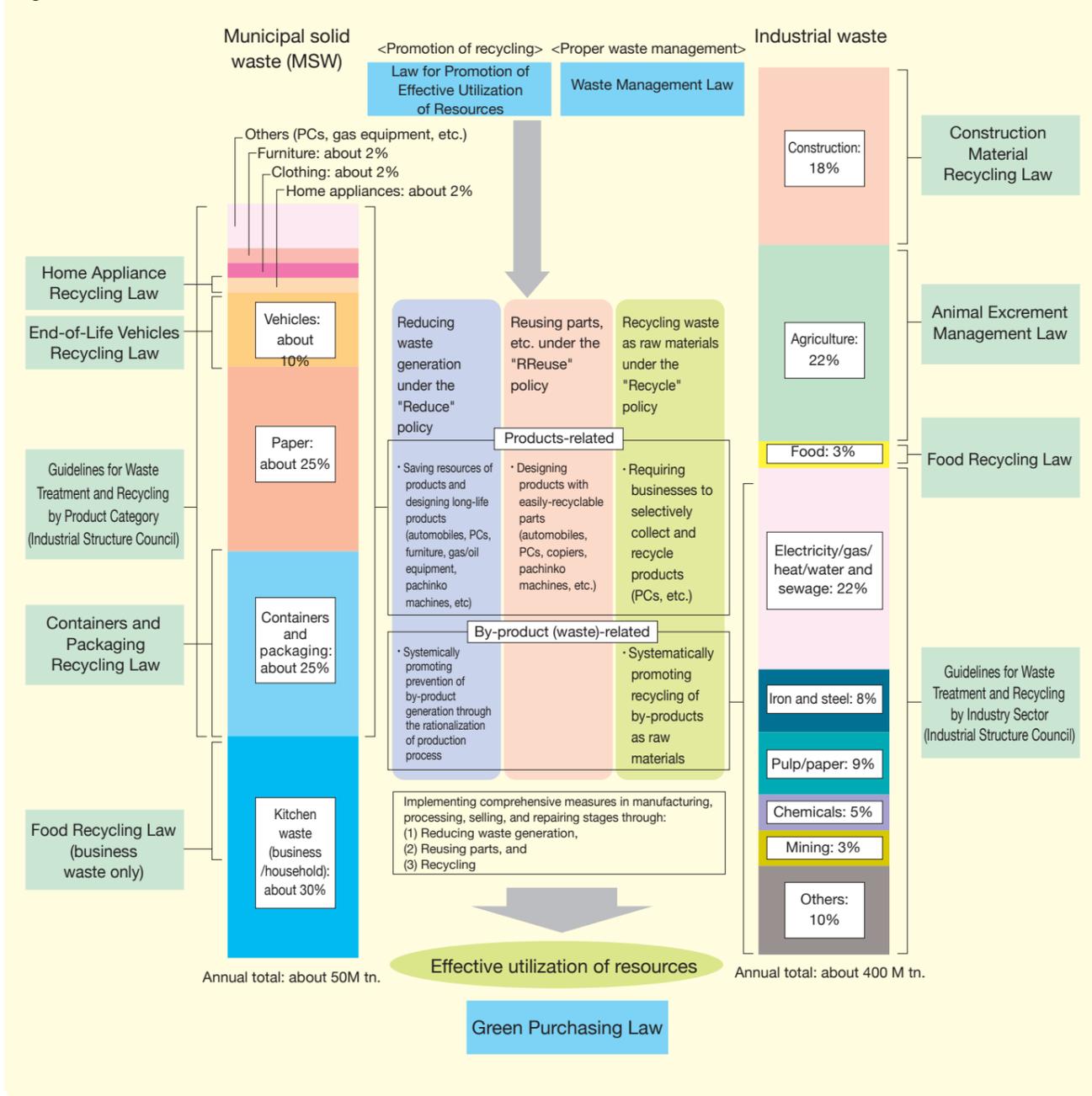


Under these laws, as well as the "Guidelines for Waste Treatment and Recycling (By Product Category and Industry Sector)" developed by the METI Industrial Structure Council (see page 38), measures are being taken to cover all types of waste (see Fig. II-3).

For the purpose of controlling environmental pollution caused by business and industrial activities, the Soil Contamination Countermeasures Law was promulgated in 2002 and put into force in January 2003. With respect to chemical substances, the "Law for Promoting Management of Release of Chemical Substances" was

promulgated in 1999, and the system for reporting release and transfer of chemical substances was introduced. Under this system, which corresponds to the Pollutant Release and Transfer Register (PRTR) System implemented by the OECD, businesses identify the amount of various kinds of toxic chemical substances released into the environment, as well as the amount of such substances contained in waste and transferred out of their property, and report these amounts to the national government, which gathers and publishes such data.

Fig. II-3 Laws and Guidelines to Control Waste



2 Fundamental Law for Establishing a Sound Material-Cycle Society

[1] Title of the law: Fundamental Law for Establishing a Sound Material-Cycle Society

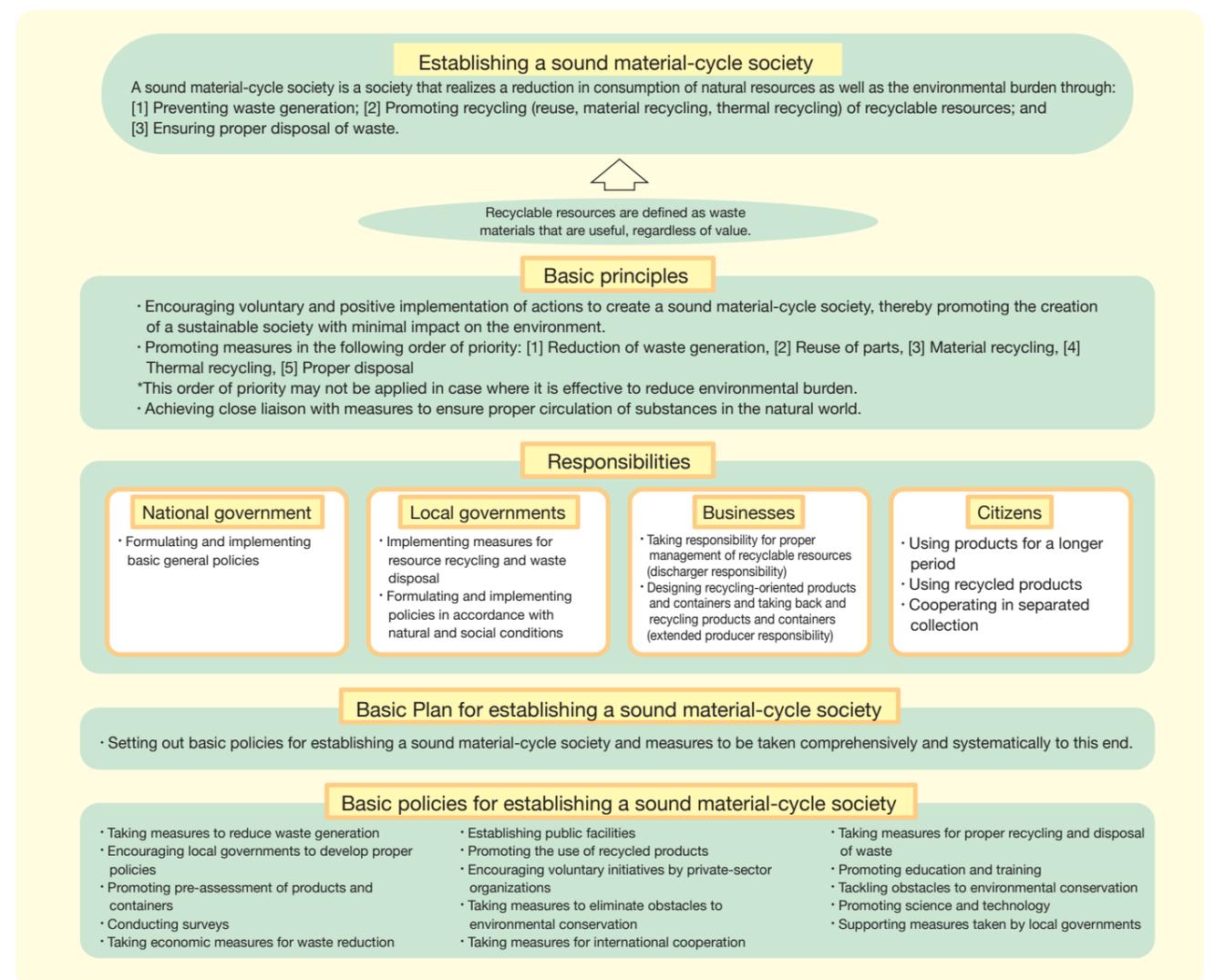
[2] Date put into force: January 2001 (promulgated in June 2000)

[3] Purpose: Providing a basic framework and clarifying the process for establishing a sound material-cycle society

Outline of the Law

The law provides for individual roles to be played by citizens, businesses, municipalities and the national government in establishing a sound material-cycle society (see Fig. II-4).

Fig. II-4 Framework of Fundamental Law for Establishing a Sound Material-Cycle Society



(1) Subjects to be regulated

The law states that it shall be applicable to "waste" in general, valuable or valueless, and that efforts should be made to prevent products from generating waste materials and to promote recycling of such waste materials generated by focusing on their utility as "recyclable resources."

(2) Parties to be regulated

The law attributes responsibility to the national and local governments, businesses and citizens. It clearly stipulates that businesses and citizens shall assume the discharger responsibility, while regarding the extended producer responsibility as a general principle.

(3) Basic Plan for Establishing a Sound Material-Cycle Society

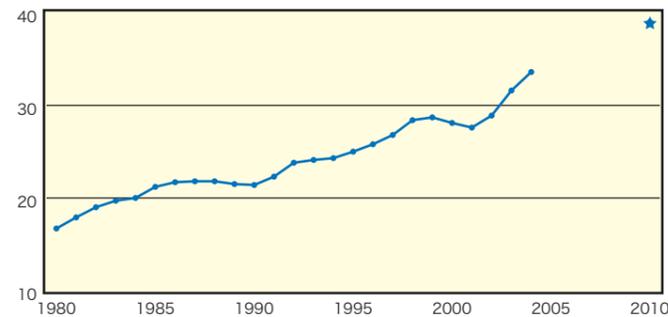
The Basic Plan for Establishing a Sound Material-Cycle Society was developed in March 2003 in comprehensively promoting the policies related to Establishing a Sound Material-Cycle Society as planned.

In this Basic Plan, three indices of different phases of the material flow are defined as “entry”, “recycled” and “exit” toward realization of a Sound Material-Cycle Society in which

measures for waste generation restraints, reuse, reuse after treatment, disposal and so forth are well balanced. Based on the past trend with regard to technology innovation and demand structure of goods and services, numerical targets are set as attainable levels when implementing measures with maximum effort based on the basic plan in terms of material cycling.

(1) Material productivity (=GDP/Amount of natural resources)

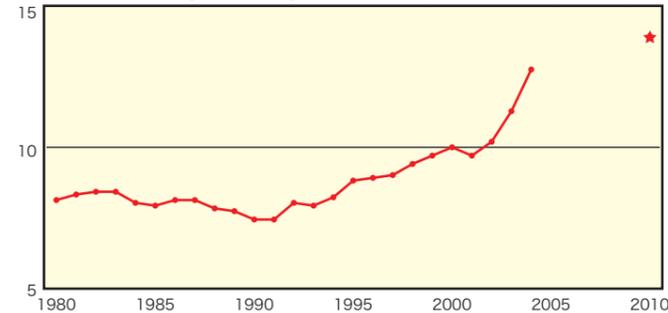
Fig. II-5 Material productivity (Unit: 10,000 yen/t)



With regard to “entry”, an index is defined as “material productivity” representing how effectively material is used (how much affluence is produced with less resource) by industries and people’s life. The numerical target was doubled from FY1990 [210,000 yen/t], and aimed at a 40% increase FY2000 [280,000 yen/t] in FY2010 [390,000 yen/t]. In FY2004, the material productivity was 336,000 yen/t.

(2) Usage rate of Recycled Goods (=Usage rate of recycled goods / (Usage rate of recycled goods + amount of natural resources used))

Fig. II-6 Usage rate of Recycled Goods (Unit: %)



With regard to “recycled”, an index is defined as “usage rate of recycled goods” representing how much resources input are cyclically used (reuse and reuse after treatment). The numerical targets are set as follows: a 80% increase from FY1990 [8%]; a 40% increase from FY2000 [10%]; and a 14% increase in FY2010 [14%]. It was 12.8% in FY2004 (preliminary report).

(3) Final disposal

Fig. II-7 Amount of final disposal (Unit: Million tn.)



With regard to “exit”, an index is defined as “amount of final disposal” (land-filled waste) representing an urgency in need of final disposal sites. The numerical targets are set as follows: a 75% decrease from FY1990 [110M tn.]; a 50% decrease from FY2000 [56M tn.]; and 28 million tons in FY2010. The amount of final disposal was 35 million tons in FY2004 (preliminary report).

(4) Extended producer responsibility

In discussions on 3R-related policies and systems, “Extended Producer Responsibility (EPR)” is often used. Extended producer responsibility means that producers bear a certain degree of responsibility for proper recycling and management of the products that they produced even after the products are used and disposed of.

More specifically, in order to contribute to prevention of waste generation as well as recycling and proper disposal of recyclable resources, producers are required to [1] design recycling-oriented products, [2] indicate the materials or ingredients of products, and [3] take back and recycle

designated products after they are disposed of.

Having studied extended producer responsibility as an environmental policy approach since 1994, the OECD developed and published a guidance manual for OECD members in 2001.

Table II-1 Extended Producer Responsibility under the OECD "Extended Producer Responsibility: Guidance Manual for Governments"

[1] Definition	"An environmental policy approach in which a producer's responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product's life cycle". This approach has the following features: (a) The responsibility is transferred from local governments to the producer. (b) Producers consider the environmental impact when designing their products.
[2] Primary effect	Transfer the financial and/or physical responsibility of waste management from local governments and the general taxpayer to the producer, encourage positive changes in material selection and in the design aspects of a product. Appropriate signals can be sent to the producer to internalize a substantial portion of the external environmental cost of the product.
[3] Major Objective	(a) Source reduction (natural resource conservation/material conservation) (b) Waste prevention (c) Design of more environmentally compatible products (d) Closure of material-use loops to promote sustainable development
[4] Sharing responsibility	Sharing responsibility among parties concerned in the product chain from production to disposal is an inherent key of EPR.
[5] Specific policy instruments and measures	(a) Take-back and recycling of products (b) Deposit/refund scheme (c) Material taxes as earmarked taxes (d) Advance disposal fee (e) Criteria for users of recycled products (f) Leasing
[6] EPR and PPP	The Polluter Pays Principle (PPP) states that the polluter should bear the expenses of preventing and controlling pollution to ensure that the environment is in an acceptable state. In contrast, EPR seeks to solve problems by holding producers responsible for the entire life cycle of a product. Inconsistency between EPR and PPP can be completely prevented by clearly defining their roles.

Source: OECD, Extended Producer Responsibility: Guidance Manual for Governments (2001) (compiled by the Clean Japan Center)

3 Law for Promotion of Effective Utilization of Resources

[1] Title of the law: Law for Promotion of Effective Utilization of Resources

[2] Date put into force: April 2001 (promulgated in June 2000)

[3] Purpose: Comprehensively promoting reduction of waste, reuse of parts, and recycling of used products as raw materials

Outline of the Law

The law provides for measures to be taken by businesses, such as 3R-related measures in the production stage, 3R consideration in the product designing stage, labeling for separated collection, and development of a system for self-collection and recycling by manufacturers.

(1) Responsibilities of parties concerned

[1] Businesses

- Rationalize use of raw materials with the aim of reducing used products and by-products.
 - Using recyclable resources and reusable parts
 - Promoting the use of used products and by-products as recyclable resources and reusable parts
 - "Recyclable resources": Used products or by-products (waste) generated in plants that can be used as raw materials
 - "Reusable parts": Used goods that can be used as the parts or part of the products
- [2] Consumers
- Using products as long as possible
 - Using products containing recyclable resources
 - Cooperating for separated collection
 - Cooperating with measures taken by the national and local governments as well as by businesses

[3] National and local governments

- Taking financial measures
- Promoting the use of recyclable resources in procurement
- Promoting science and technology development
- Endeavoring to gain the understanding of the public

(2) Industries and products to be regulated

The law requires that businesses take measures to apply the 3Rs (reduction, reuse and recycling) under specific criteria (ministerial ordinances) with respect to 10 designated/specified industries and 69 product items (covering about 50% of municipal and industrial waste).

(3) Provision of product information

In order to integrate DfE into the economic system and benefit the entire company, clear standardization in labeling and assessment indices for DfE facilitating each entity involved in the product life cycle is vital.

Law for Promotion of Effective Utilization of Resources therefore designates product items in which the 3Rs are considered. Items include; automobiles, home electric appliances (television sets, refrigerators, washing machines, microwave ovens, clothes driers), PCs, copiers, metal furniture, gas/oil equipment, bathroom units, pachinko machines. Items required labeling for separate collection include; PET bottles, steel cans, aluminum cans, plastic tray packaging, paper container packaging and compact secondary batteries. Moreover, a new information disclosure system with information of materials contained in the product (home electric appliances and PCs) was planned to be introduced in July 2006.

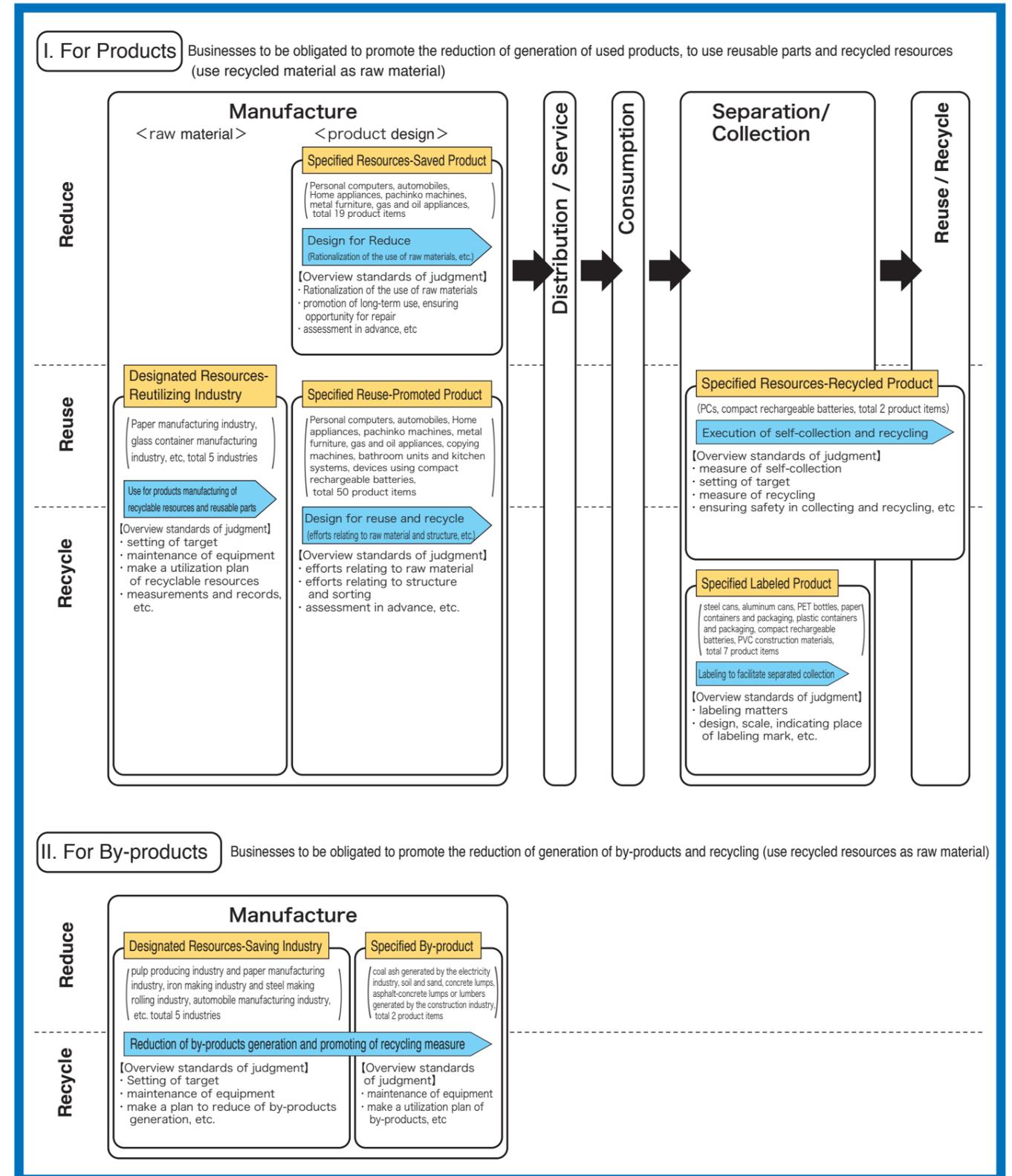
Fig. II-8 Identification of materials contained



Subject materials contained (labeling is obligatory)

*Notes: The symbol presented in left side shall be attached to the body and packaging of the subject product items (PCs, air conditioners, television sets, refrigerators, washing machines, microwave ovens, clothes driers) containing subject materials (lead and lead compounds, mercury and mercury compounds, hexavalent chromium compounds, cadmium and cadmium compounds, polybromo-biphenyls, polybromo-diphenyl ether).

Scheme of the Law



1 Designated resources-saving industry Required to reduce generation of by-products (by ensuring rational use of raw materials and promoting use of by-products as recyclable resources)

- Pulp and paper
- Inorganic chemical manufacturing (excluding salt manufacturing) and organic chemical manufacturing
- Iron-making and steel-making/rolling
- Primary copper smelting and refining
- Automobile manufacturing (including motorized bicycle manufacturing)



2 Designated resources-reutilizing industry Required to use recyclable resources and reusable parts

- Paper manufacturing
- Glass container manufacturing
- Construction
- Rigid PVC pipes and pipe fitting manufacturing
- Copier manufacturing



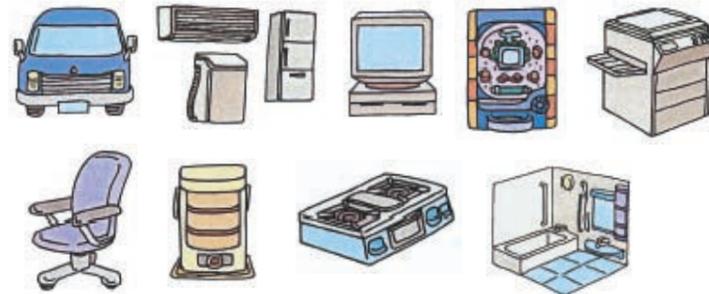
3 Specified resources-saved product Required to ensure rational use of raw materials, prolong product life and reduce generation of used products

- Automobiles
- Home appliances (television sets, air conditioners, refrigerators, washing machines, microwave ovens, clothes dryers)
- Personal computers (including CRTs and liquid crystal displays)
- Pachinko machines (Including rotary types)
- Metal furniture (metal storage furniture, shelves, office desks and swivel chairs)
- Gas and oil appliances (oil heaters, gas cookers with grills, switch-on gas water heaters, bath heaters with gas burners, oil-fired water heaters)



4 Specified reuse-promoted product Required to promote the use of recyclable resources or reusable parts (designing and manufacturing products that can be easily reused or recycled)

- Automobiles
- Home appliances (television sets, air conditioners, refrigerators, washing machines, microwave ovens, clothes dryers)
- Personal computers (including CRTs and liquid crystal displays)
- Copying machines
- Metal furniture (metal storage furniture, shelves, office desks and swivel chairs)
- Gas and oil appliances (oil heaters, gas cookers with grills, switch-on gas water heaters, bath heaters with gas burners, oil-fired water heaters)
- Bathroom units and kitchen systems



- Devices using compact rechargeable batteries (electric power supply devices, power tools, guide lights, fire alarm systems, security alarm devices, electric assisted bicycles, electric powered wheelchairs, printers, portable data collecting devices, cordless phones, facsimile devices, telephone switchboards, communication devices for mobile phones, communication devices for MCA systems, communication devices for simplicity radio transmission, radio sets for amateurs, video cameras, headphone stereos, electric vacuum cleaners, electric shavers, electric therapeutic apparatuses, electric bubble generators, electric toys)

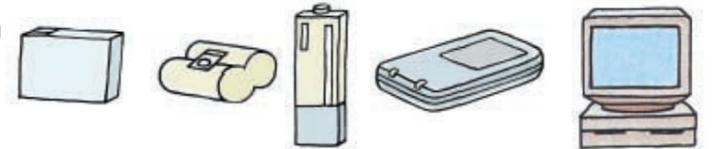
5 Specified labeled product Required to be labeled to facilitate separated collection

- Steel cans, aluminum cans (beverages and liquors)
- PET bottles (beverages, liquors, soy sauce)
- Paper containers and packaging (excluding paper-packs for beverages, which do not use aluminum and containers and packaging made of corrugated cardboard)
- Plastic containers and packaging (excluding PET bottles for beverages liquors, soy sauce)
- PVC construction materials (rigid PVC pipes, spouting and window frames, PVC flooring and wallpaper)
- Compact rechargeable batteries (compact sealed lead batteries, sealed nickel-cadmium batteries, sealed nickel-metal-hydride batteries, lithium batteries)



6 Specified resource-recycled products Required to promote self-collection and recycling

- Compact rechargeable batteries (compact sealed lead batteries, sealed nickel-cadmium batteries, sealed nickel-metal-hydride batteries, lithium batteries)
- Personal computers (including CRTs and liquid crystal displays)



Devices in which compact rechargeable batteries (specified resources-recycled products) are used as parts

Required to promote self-collection and recycling of compact rechargeable batteries

- 29 items including electric power supply devices and power tools (The same as those in which compact rechargeable batteries are used in the category of specified resources-reutilized products)



7 Specified by-product Required to promote the use of by-products as recyclable resources

- Coal ash generated by the electricity industry
- Soil and sand, concrete lumps, asphalt-concrete lumps or lumbers generated by the construction industry



4 Waste Management Law

[1] Title of the law: Waste Management and Public Cleaning Law (Waste Management Law)

[2] Date put into force: October 2006 (promulgated in February 2006)

[3] Purpose: To preserve the living environment and improve public health by preventing waste generation, promoting proper waste management (transportation, disposal, recycling, etc.) and maintaining a clean living environment.

Outline of the Law

The law provides for the definition of waste, permission for engaging in the waste disposal business, permission for establishing waste disposal facilities, and setting of the waste disposal criteria (see Fig. II-9).

(1) Definition of waste

The law defines "waste" as "refuse, bulky refuse, ashes, sludge, excreta, waste oil, waste acid, waste alkali, carcasses and other filthy and unnecessary matter, which are in solid or liquid state." In other words, "waste" means things that become useless because they can no longer be used by their owners or sold to others for value.

Whether a thing falls under the definition of waste is comprehensively judged in light of its nature, the condition of its discharge, the ordinary way of handling it, whether it has any commercial value, and its owner's intention. For example, if used tires are piled up in an open field and left untouched for as long as about 180 days, they are regarded as waste.

Among waste materials discharged in business activities, 20 kinds of waste materials, such as ashes, sludge, animal excrement discharged in the livestock industry, waste oil, waste acid, waste alkali, and animal bodies discharged in the livestock industry, are defined as industrial waste, and other kinds of waste materials are defined as municipal solid waste.

(2) Responsibilities of businesses

[1] Businesses shall bear the responsibility of properly managing waste materials generated in their activities or entrust such management in writing to licensed waste disposal businesses.

[2] Businesses are also required to follow the flow of waste materials that they discharge until their final disposal in accordance with the "Manifest" (waste management sheet).

[3] Businesses discharging a vast quantity of waste (businesses that discharged 1,000 tons or more of industrial waste or 50 tons or more of specially controlled industrial waste in the previous year) need to develop a waste disposal plan.

[4] Except for incineration under the waste disposal standards, (incineration under) other laws or ordinances, or incineration inevitable for public interests or social custom, businesses shall be prohibited from incinerating waste and shall be punished for violating this prohibition.

(3) Permission of disposal facilities

Businesses shall obtain permission for establishing a waste disposal facility under this law even in the case of engaging in recycling provided under the Home Appliance Recycling Law or the Containers and Packaging Recycling Law.

(4) Special schemes

Licenses for engaging in a waste disposal business or establishing waste disposal facilities shall not be required under two special schemes, National Permit System and the Disposal and Recycling Approval Scheme (see Table II-2).

The National Permit System was created as an enhanced version of the original Wide-Area Disposal and Recycling Designation Scheme, with the aim of promoting better waste management (based on the amended law, which entered into effect on 1 December, 2003).

Fig. II-9 Flow under the Waste Management Law

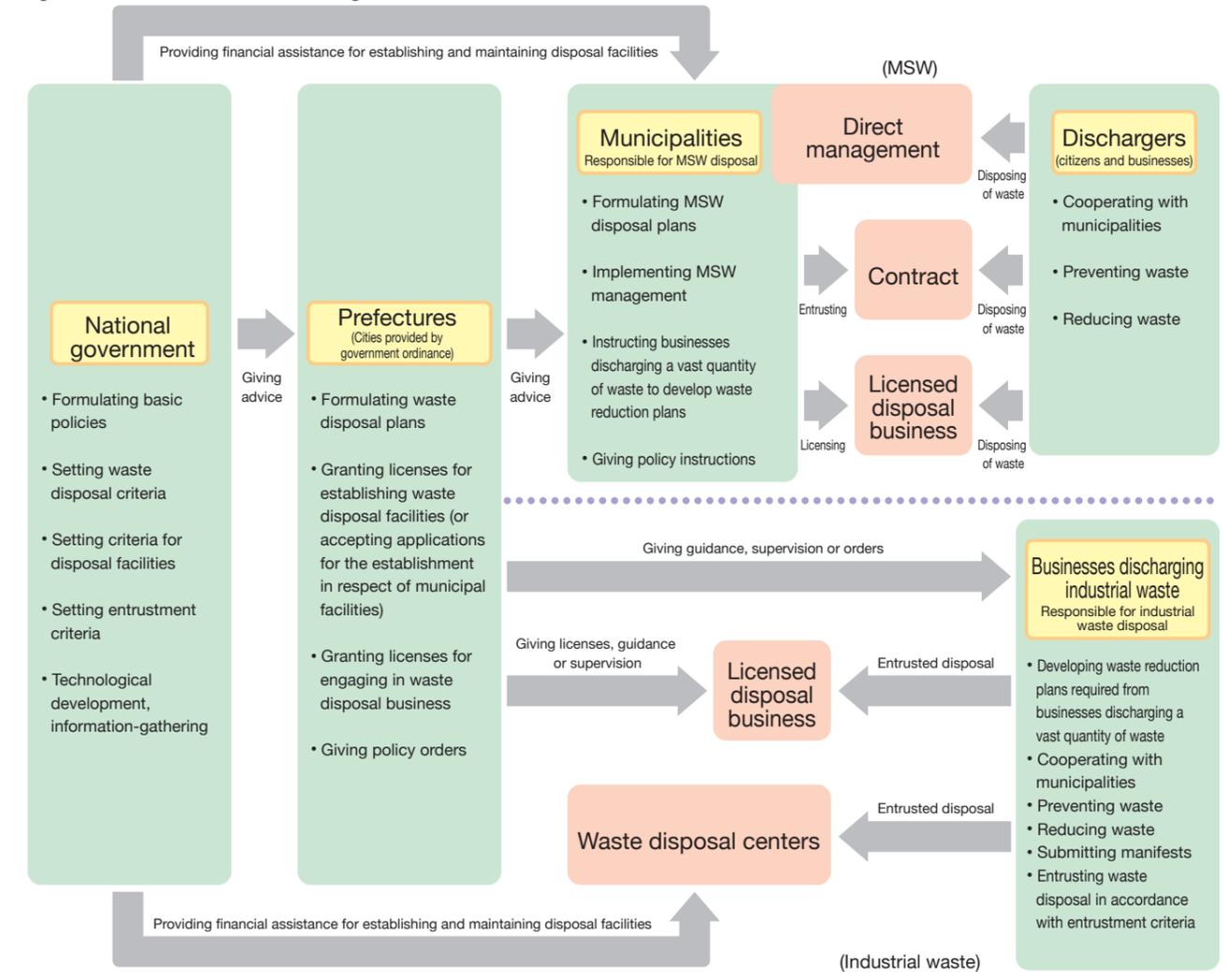


Table II-2 Outline of the Special Schemes for Waste Disposal Businesses and Facilities

	National Permit System	Disposal and Recycling Approval Scheme
Details of the scheme	Under this system, local waste management permits are not necessary for entities that have received authorization from the Minister of the Environment as businesses that conduct waste management over a wide area.	Businesses approved by the Minister of Environment as carrying out disposal and recycling of designated waste materials in accordance with the criteria shall not be required to obtain a license for engaging in a waste disposal business or for establishing waste disposal facilities.
Waste materials subject to the scheme	<p>Waste that falls under either of the following categories:</p> <ol style="list-style-type: none"> Items those are not likely to have a harmful impact on the human living environment as a result of their decomposing easily under normal transport conditions, evaporating, or otherwise undergoing changes in their physical properties. For products that have become waste, if entities that conduct manufacturing, processing or sales operations of the said products also conduct treatment of said waste items, a reduction in the volume of said waste, and other proper management can be ensured. <p>MSW</p> <ul style="list-style-type: none"> Waste spring mattresses Waste personal computers Waste rechargeable batteries Waste motorcycles Waste open-type batteries Waste FRP ships Waste digestive organs 	<p>MSW</p> <ul style="list-style-type: none"> Used rubber tires (recycled as raw materials for cement) Plastic waste (recycled as iron-making reducer) Meat and bone waste (recycled as raw materials for cement) <p>Industrial waste</p> <ul style="list-style-type: none"> Used rubber tires (recycled as raw materials for cement) Plastic waste (recycled as iron-making reducer) Construction inorganic sludge (recycled as materials for building super (high-standard) levees) Sludge containing silicon (recycled deoxidizer for fused steel) Waste meat and bone meal (recycled as raw materials for cement)

5 Containers and Packaging Recycling Law

(1) Overview

[1] Title of the law: Law for Promotion of Sorted Collection and Recycling of Containers and Packaging (Containers and Packaging Recycling Law)

[2] Date put into force: December 1995 (promulgated in June 1995)
December 2006(amended in June 2006)

Reduction of Discharge etc. are enforced in April 2007

Payment of Money to the Municipal Government is enforced in April 2008

[3] Purpose: Reducing containers and packaging that discharged as MSW from households, Clarifying the role-sharing in managing these waste i.e., consumers sorting waste materials when discarding them, municipalities carrying out sorted collection, and businesses recycling collected waste, with the aim of ensuring proper management of waste and effective use of resources through reduction of MSW and adequate use of recyclable resources.

Outline of the Law

The law provides for a collection and recycling system in which municipalities take charge of carrying out sorted collection of containers and packaging (sorted and discarded by consumers) and businesses take charge of recycling such collected containers and packaging (see Figs. II-11 and II-12).

(1) Containers and packaging

"Containers" means things in which products are contained (including bags), and "packaging" means things used to wrap products.

The term "containers and packaging" as used in this Law shall mean containers and packaging of goods (including the cases where containers and packaging of goods are paid for) which become unnecessary when the said goods have been consumed or when the said containers and packaging have been removed from the goods.

(2) Containers and packaging subject to Recycling

"Containers" subject to the law include glass containers, PET bottles, paper containers, plastic containers (including styrene foam trays and plastic bags), and "packaging" subject to the law includes packaging and wrapping materials, all of which are discharged from households, under the following conditions.

[1] Are they containers/packaging?

Examples: Caps of PET bottles, covers of pudding cups and plastic films etc. of the transparency used for the box lunch sold in convenience stores etc. are containers/packaging.

[2] Are they containers/packaging of goods?

Examples: Containers or packaging where premium or prize is put, bag of cleaning and containers or packaging of courier service are not.

[3] Are they containers/packaging which become unnecessary if the goods was consumed or containers/packaging detached from the goods?

Examples: Ditty bags where desiccant was put directly, CD cases and camera cases are not.

(3) Businesses to be obligated to recycle

The law specifies that businesses (manufacturers/users) that are to be regulated are obliged to recycle containers and packaging.

(4) Businesses shall endeavor to reduce

"Specified container users" who manages following retail trade shall endeavor to reduce waste containers and packaging discharged through reducing the excess use of containers and packaging.

- Retail Trade, General merchandise
- Retail Trade (Dry goods, Apparel and Apparel accessories)
- Retail Trade (Food and Beverage)
- Motor vehicle parts and Accessories stores

- Retail Trade (Furniture, Household utensil and Household appliance)
- Drug and Toiletry store
- Book and Stationery stores
- Sporting goods, Toy, Amusement goods and Musical instrument stores
- Tobacco and Smoking article specialty stores

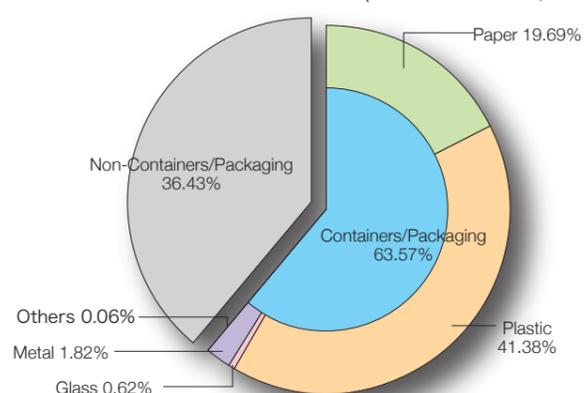


Entrustment to the designated body
The Japan Containers and Packaging Recycling Association is a body designated under the Containers and Packaging Recycling Law as engaging in recycling containers and packaging collected separately by municipalities, by entrustment of designated manufacturers/users. Designated manufacturers/users shall be regarded as recycling containers and packaging when they conclude a recycling contract with the designated body to perform their obligation under the contract. The designated body shall also be entrusted by municipalities to recycle containers and packaging on behalf of the municipalities (recycling these to be recycled by businesses that are excluded from the application of the law).

• 60% of domestic waste is from containers and packaging

In Japan, the amount of waste per annum is 50.59 million tons (in FY2004), of which waste discharged from households is 34.05 million tons, accounting for 67.3%. Containers and packaging discharged from households account for about 60% of domestic waste in terms of volume.

Fig. II-10 Share of Waste from Containers and Packaging in the Total Amount of Household Waste (in terms of volume,



Source: Ministry of Environment, Actual condition survey of utilizing waste from containers and packaging and its disposal and business report about effect verification

Fig. II-11 Three Recycling Routes

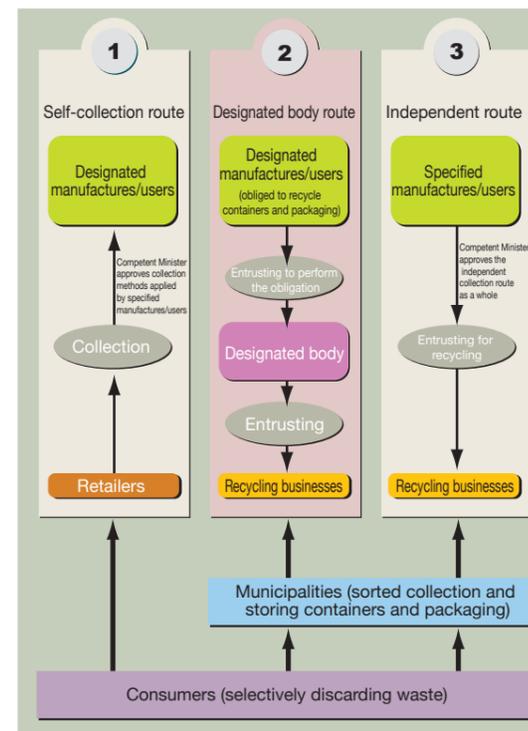


Fig. II-12 Scheme under the Containers and Packaging Recycling Law (Designated body route; PET bottles)

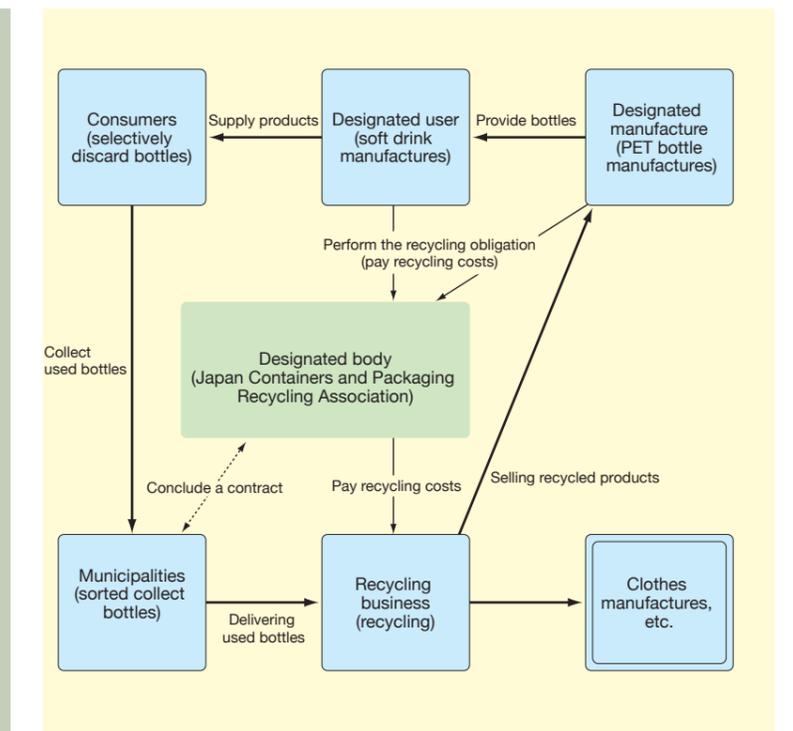


Fig. II-13 Methods for Recycling Waste from Containers and Packaging under the Recycling Obligation

Category	Recycling method	Examples of Recycled products
Glass bottles	Crushed into cullets	• Glass containers • Construction and civil engineering materials
PET bottles	Palletized, etc. Polyester raw materials	• Fibers • Plastic sheets • PET bottles
Paper containers and packaging	Sorted by paper-making material + RDF Used for manufacturing construction boards of material woven from crushed recycled paper + RDF	• Paperboards • Construction materials • Refuse-derived fuel
Plastic containers and packaging	Raw materials for plastic products Liquefaction Blast furnace reducing agent Gasification Coal materials substitute for the coke oven	• Plastic products including imitation wood and palletes • Industrial raw materials

* Steel cans, aluminum cans, paper cartons, and corrugated cardboard are subject to the Containers and Packaging Recycling Law, but they have yet to be subject to the recycling obligation.

(2) Present Situation of Recycling

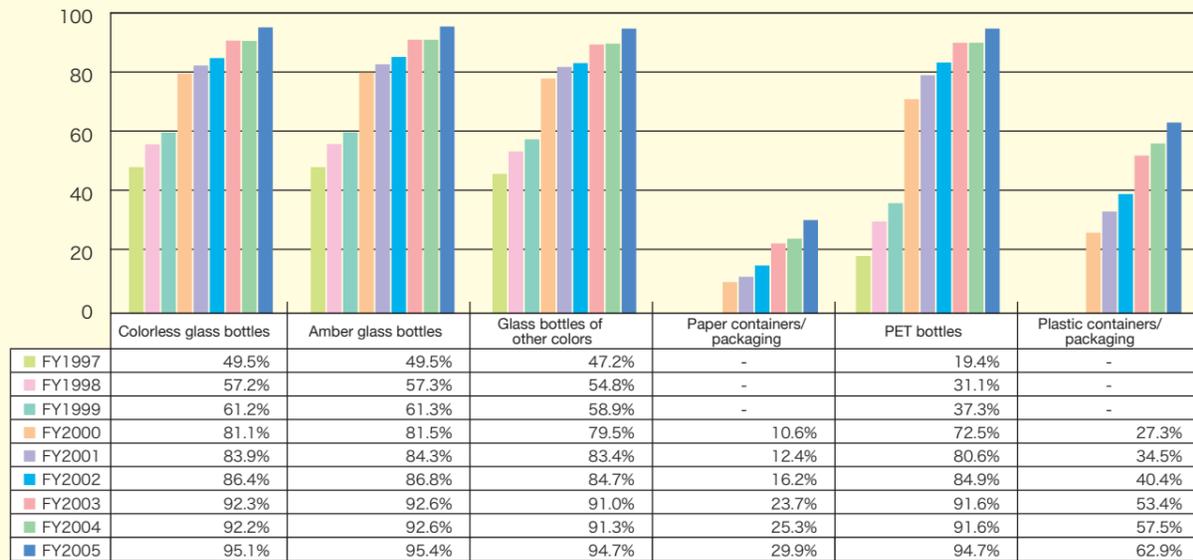
The number of those carrying out sorted collection and recycling under the Containers and Packaging Recycling Law has been increasing steadily (see Fig. II-14).

The volume of PET bottles collected separately in FY2005 was 252,000 tons (see Fig. II-15), of which the collection rate exceeded 47.3 % (see Fig. III-8). PET bottles are voluntarily collected by manufactures and the collection rate exceeds 65.6% by adding 97,000 tons (data provided by a manufactures' association) collected in FY2005. The volume of PET bottles collected and then recycled in

was 244,000 tons (see Fig. II-16), of which 143,000 tons (see Fig. II-17(d)) were recycled and sold via the designated body.

With respect to paper containers/packaging and plastic containers/packaging, which were included in the scope of regulation in 2000, the volume of those separately collected in FY2005 was 71,000 tons and 538,000 tons (see Fig. II-16), of which 26,000 tons and 366,000 tons (see Fig. II-17 (e)(f)) were recycled and sold via the designated body, respectively.

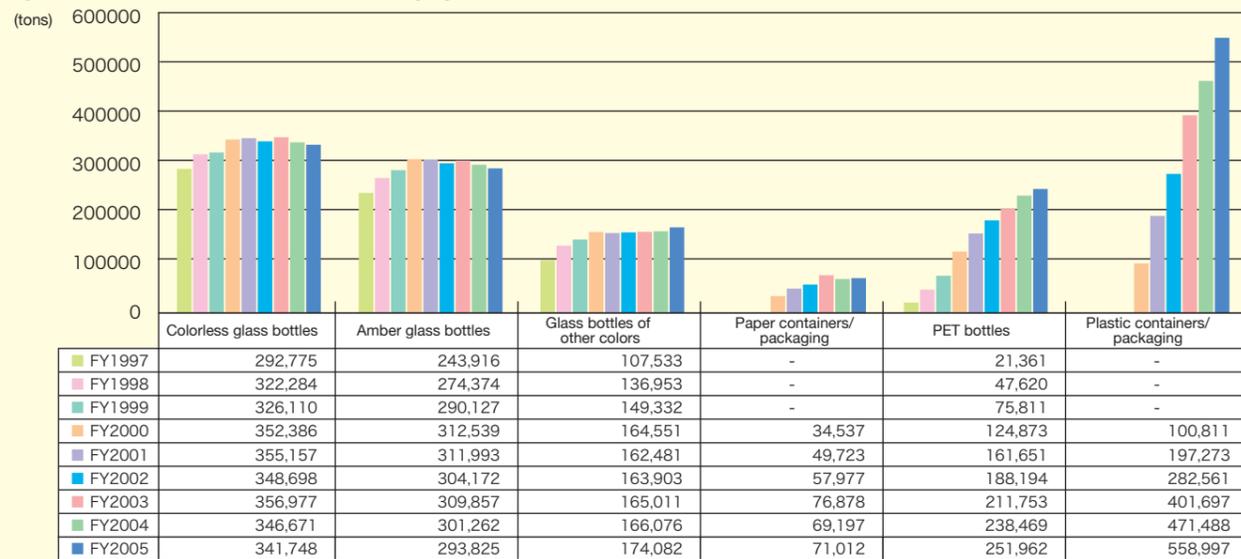
Fig. II-14 Number of Municipalities Carrying Out Sorted Collection



Note: "Plastic containers / packaging" means all kinds of plastic containers and packaging, including white (styrofoam) trays.

Source: Ministry of Environment

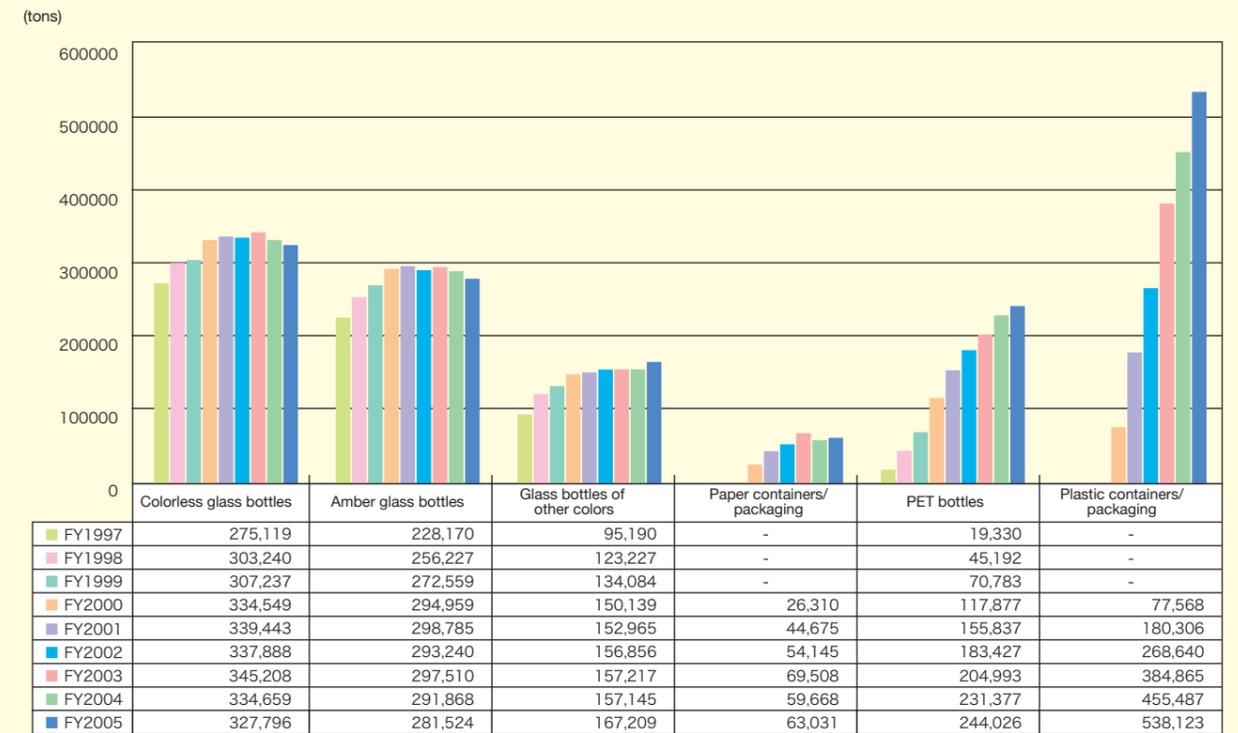
Fig. II-15 Volume of Containers and Packaging Collected



Note: "Plastic containers / packaging" means all kinds of plastic containers and packaging, including white (styrofoam) trays.

Source: Ministry of Environment

Fig. II-16 Volume of Containers and Packaging Recycled (Volume of Those Delivered to Recycling Businesses)

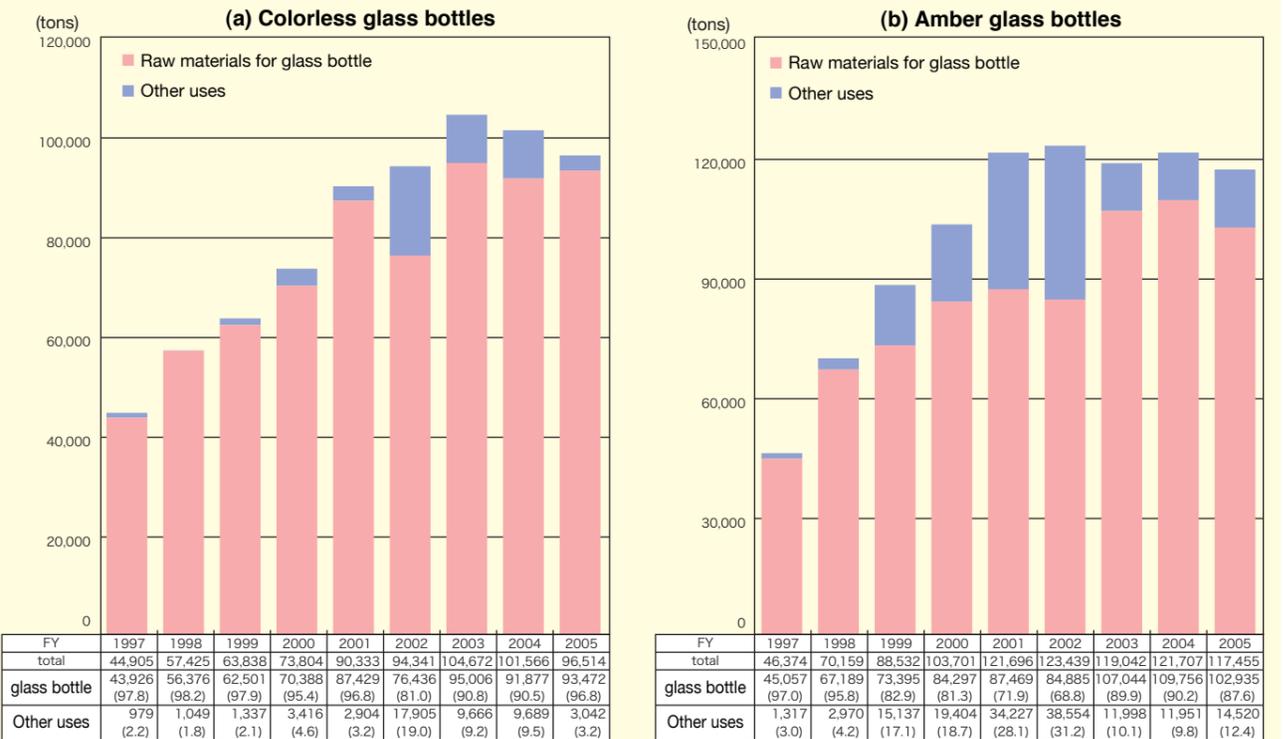


Note: "Plastic containers / packaging" means all kinds of plastic containers and packaging, including white (styrofoam) trays.

Source: Ministry of Environment

Fig. II-17 Trends in the Volume of Containers and Packaging Recycled via the Designated Body and the Use of Recycled Products

Figures in square parentheses: volume sales of recycled products
Figure in round parentheses: percentage of the total volume of sales of recycled products



6 Home Appliance Recycling Law

(1) Overview

- [1] Title of the law: Law for Recycling of Specified Kinds of Home Appliances (Home Appliance Recycling Law)
- [2] Date put into force: April 2001 (promulgated in June 1998)
- [3] Purpose: Clarifying the role-sharing between consumers, retailers and home appliance manufacturers in managing used home appliances disposed of by households, with the aim of promoting waste reduction and recycling.

Outline of the law

The law provides for a collection and recycling system in which home appliance retailers take charge of collecting used home appliances and home appliance manufacturers take charge of recycling collected appliances (see Fig. II-18).

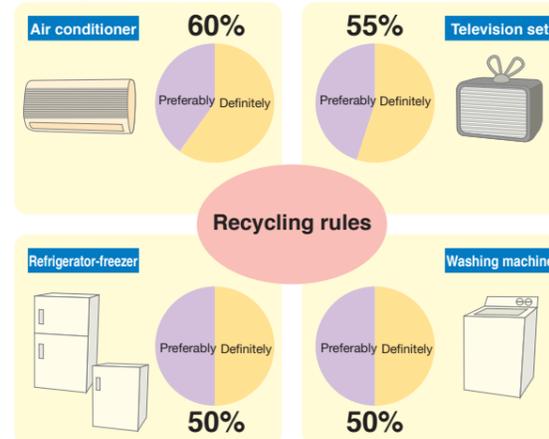
(1) Home appliances to be regulated

- [1] Air conditioners
- [2] Television sets (limited to CRT-types)
- [3] Refrigerators, freezers^{*1}
- [4] Washing machines

(2) Recycling

"Recycling" means removing parts and materials from used home appliances and reusing them as parts or raw materials for new products or assigning them, with or without charge, to those who will reuse them. "Recycling" includes thermal recycling or using waste as fuel. However, it is currently required to satisfy a certain recycling level^{*2} only in terms of recycling of waste as parts or raw materials of new products.

Recycling level required under the law



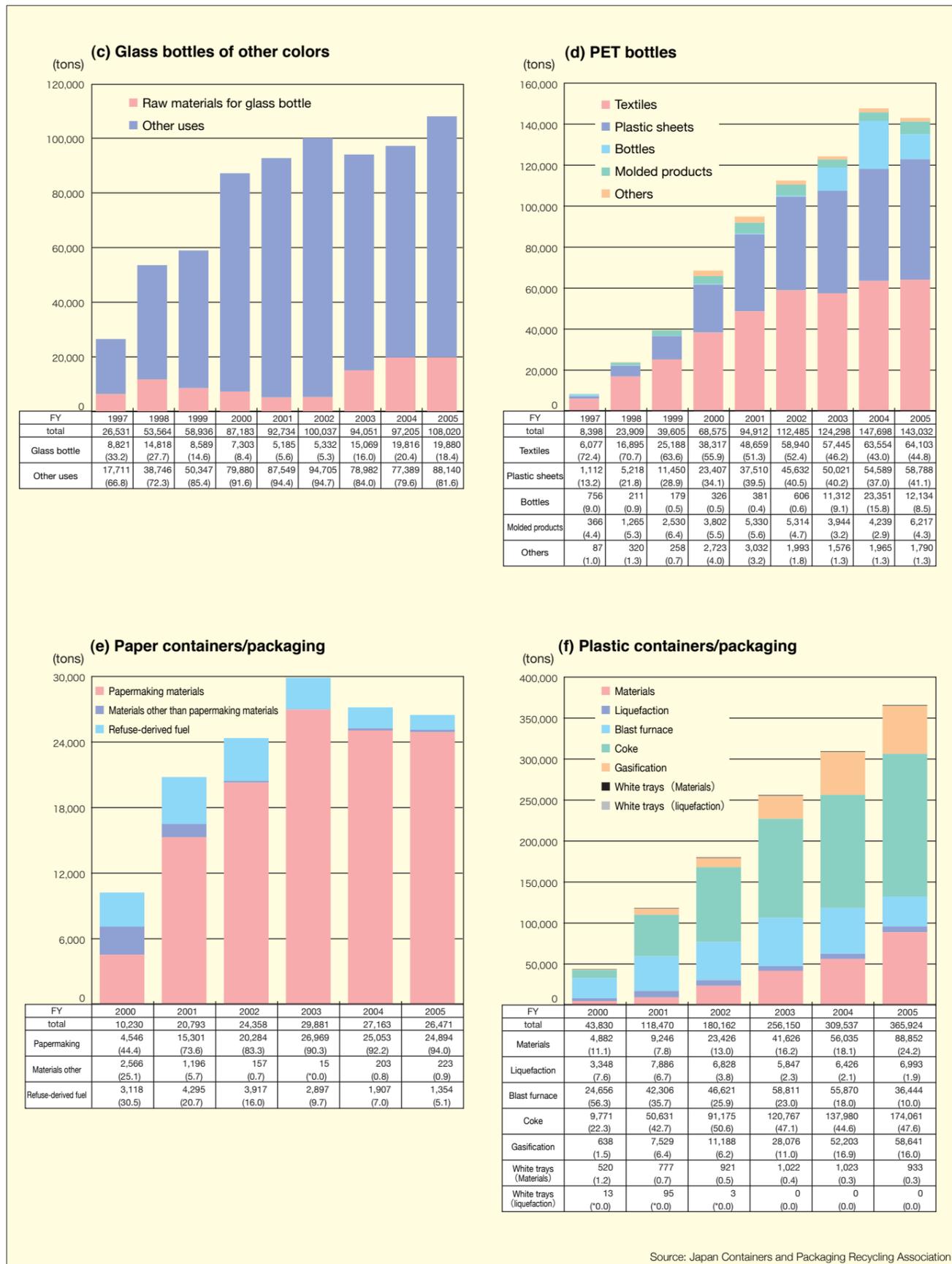
(3) Responsibilities of parties concerned

- [1] Consumers (Those who use home appliances shall pay for recycling costs.)
 - Appropriate disposal
 - Payment of costs for collection and recycling
- [2] Home appliance retailers (Those who sell home appliances shall collect and transport them.)
 - Taking back home appliances, which they have sold, from businesses that dispose of them
 - Taking back home appliances at the request of consumers who buy new ones to replace old ones and proper delivering of collected home appliances to the manufacturers, etc.
 - Issuing home appliance recycling coupons^{*3} to manufacturers and the designated body and sending copies to dischargers
 - Displaying the costs of collecting and transporting in shop windows
- [3] Home appliance manufacturers and importers (Those who manufacture home appliances shall recycle them.)
 - Taking back home appliances, which they have manufactured or imported, from retailers
 - Recycling these home appliances
 - Publishing the costs for recycling these home appliances (recycling fees)
- [4] Designated body (Association for Electric Home Appliances)
 - Recycling home appliances whose manufacturers are unknown or those entrusted by specific manufacturers (manufacturers whose production volume is less than 900,000 units for air conditioners, 900,000 units for television sets, 450,000 units for refrigerators, and 450,000 units for washing machines)
- [5] Municipalities
 - Measures to promote collecting, transporting and recycling

^{*1} Refrigerators became subject to the regulation as of April 2004.

^{*2} Recycling rate = $\frac{\text{Weight of materials recycled}}{\text{Weight of units treated for recycling}}$

^{*3} Association for Electric Home Appliances operates the home appliance recycling coupon system, which is convenient for paying and collecting recycling fees. Recycling fees may be paid and collected via retailers or by postal transfer.



(2) Present Situation of Recycling

The four items have been taken back by retailers or municipalities, and then recycled by manufacturers/importers or the designated body (Association for Electric Home Appliances) at 47 recycling plants for home appliances. (as of December 2006)

In FY 2005, manufacturers/importers or the designated body took back a total of about 11.62 million units (3.6% increase compared to the previous year) of the four items at take-back sites, and the recycling rates for the four items were 66% to 84% (see Fig. II-19). All these recycling rates exceeded the target levels under the Home Appliance Recycling Law (see page 27).

With regard to the composition of the weight of materials recycled, iron, copper, aluminum and glass account for the majority of the total although depending on products (see Fig. II-20 and II-21).

CFCs used as refrigerants for air conditioners, and refrigerators/freezers and CFCs in the heat insulator of refrigerators/freezers are also collected and decomposed.

The ratio of home appliances illegally discarded to the number of units taken back has varied between 1% and 2% during the last few years (see Fig. II-22). The total number of the four items illegally discarded in FY 2005 was 155,379 (1,816 municipalities, 127.77 million people: 99.7% of total population). This was a decrease of 16,825 units (10%) compared to the same term of the previous year. Continued investigation of the actual situation is needed.

Fig. II-18 Flow of Recycling of Used Home Appliances

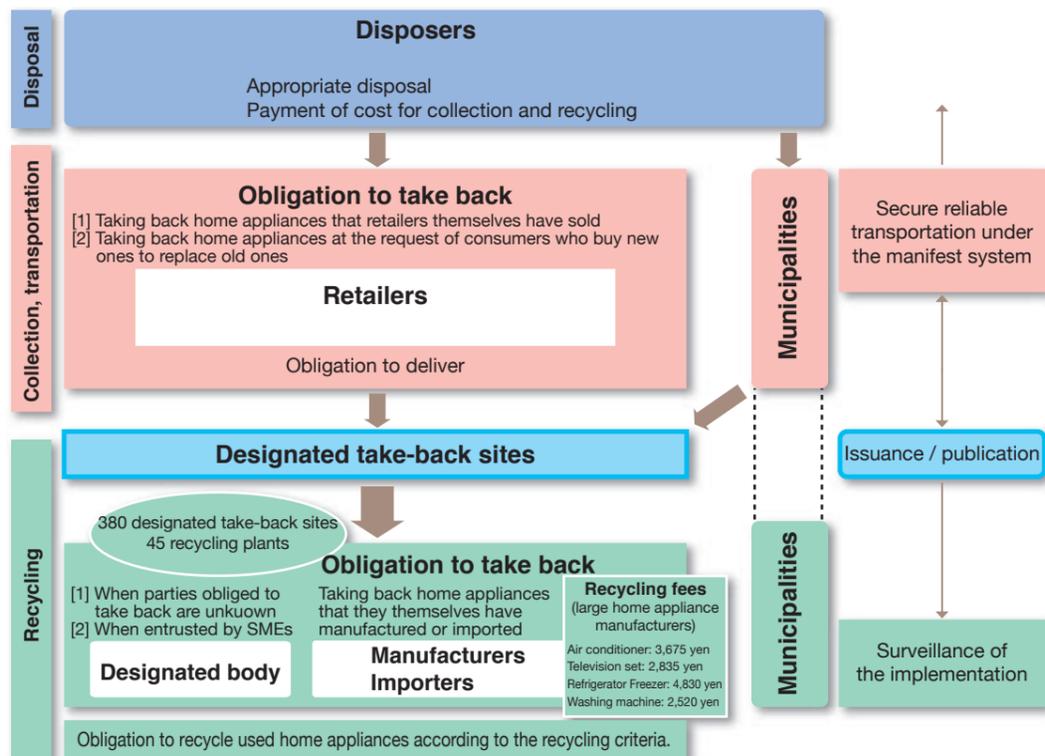


Fig. II-19 Recycling by Manufacturers/Importers and the Designated Body (FY2005)

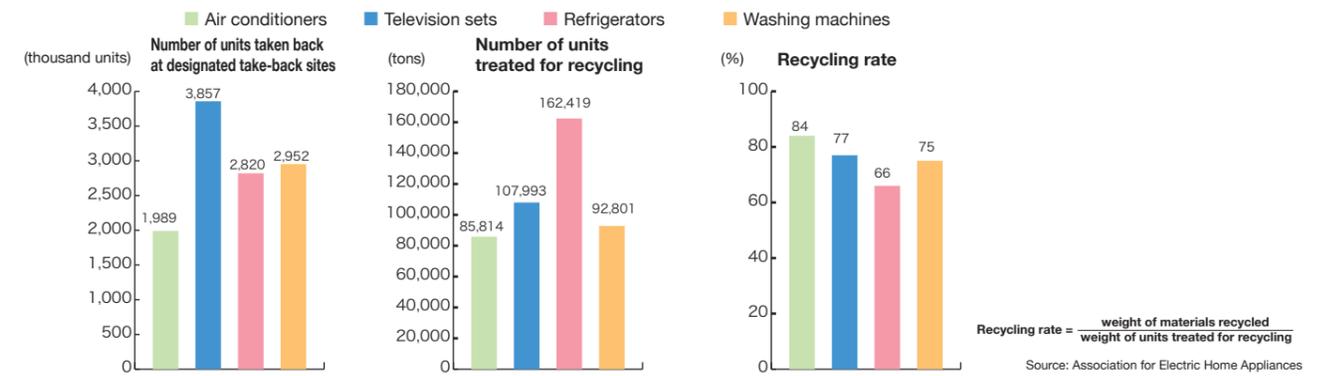


Fig. II-19 Weight of Materials Recycled by Manufacturers/Importers and the Designated Body (FY2005)

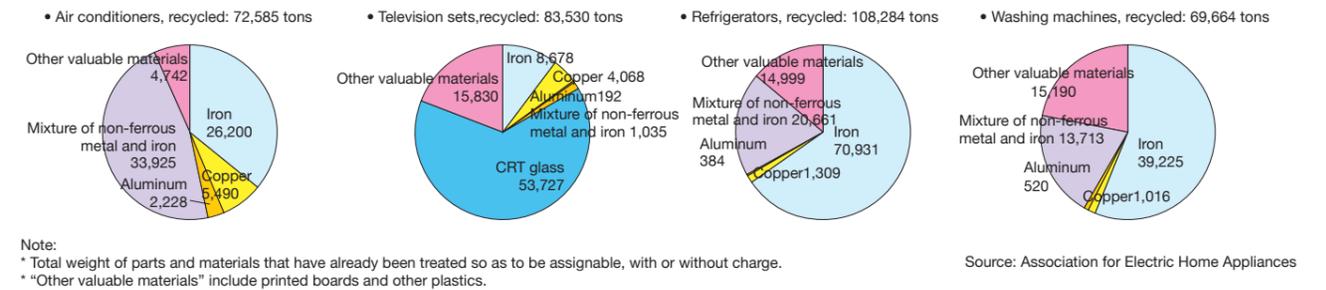


Fig. II-21 Composition of Home Appliances

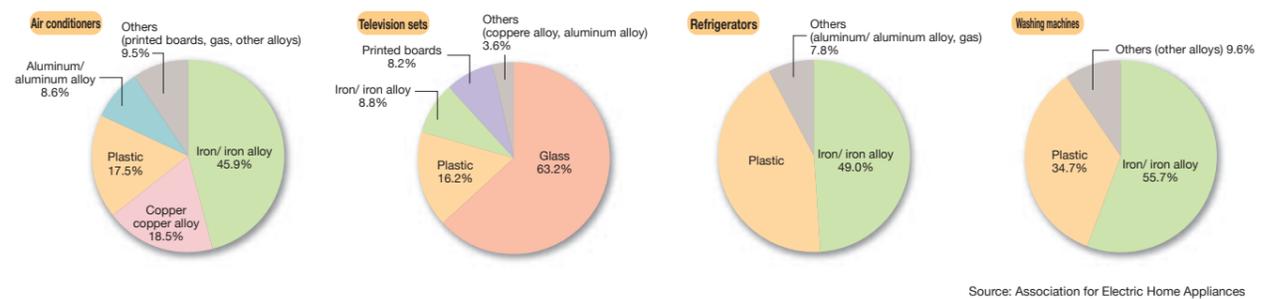


Fig. II-22 Trends in the Number of Units Illegally Discarded (total of four items)



7 End-of-Life Vehicle Recycling Law

[1] Title of the law: Law on Recycling of End-of-Life Vehicles (ELV Recycling Law)

[2] Date put into force: January 1, 2005 (promulgated in July 2002)

[3] Purpose: construct a recycling system to ensure recycling and proper disposal of ELVs by role-sharing of businesses beginning with car manufacturers.

Outline of the law

The law provides role-sharing between car owners, ELV-collecting businesses, car manufacturers, and car importers to build a recycling-oriented society in which waste is reduced and resources are used with care.

(1) Vehicles to be regulated

About the all types of four-wheel vehicles (including large vehicles and commercial vehicles, such as trucks and buses)

(2) Responsibilities of the parties concerned

[1] Car owners (end users)

Payment of recycling fee, delivering end-of-life vehicles to ELV-collecting businesses that are registered with local authorities

[2] ELV - collecting businesses

Taking back ELVs from end users and then delivering them to CFC-collecting businesses and auto - dismantling businesses.

[3] CFC - collecting businesses

Collecting fluorocarbons properly from ELVs in accordance with the recycling standards, and handing over ELVs to car manufacturers/importers

[4] Auto dismantling businesses

Dismantling ELVs properly in accordance with the recycling standards, collecting airbags and handing over ELVs to car manufacturers/importers

[5] Shredding businesses

Shredding dismantled ELVs (press, cutting and shredding) in accordance with the recycling standards, handing over shredder dust (waste remaining after shredding dismantled ELVs) to car manufacturers/importers

[6] Car manufacturers/importers

Collecting and recycling CFCs, airbags and shredder dust from ELVs that are manufactured and imported by themselves.

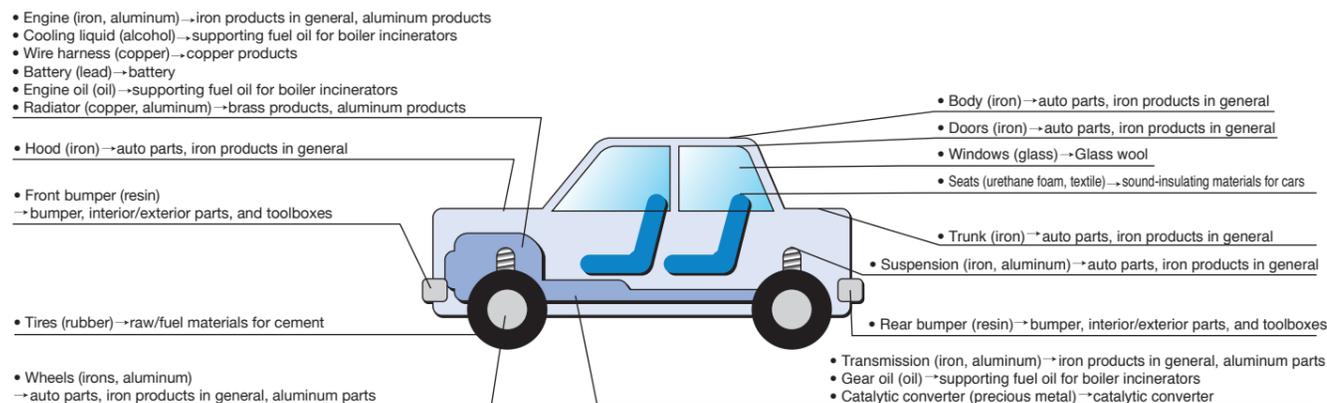
(3) Payment of recycling fee

[1] Fees shall be paid upon purchasing new cars for those who purchase new cars from January 2005, and paid at the first periodic inspection of every in-use vehicle from January 2005 for those who already purchased cars by the end of 2004. In the case of disposing of cars without undergoing a periodic inspection, fees shall be paid to ELV - collecting businesses when ELVs are handed over to them.

[2] Recycling fees are determined on every car by individual car manufacturers/importers, depending on the possible quantity of shredder dust and CFCs, number of airbags and simplicity of taking off airbags.

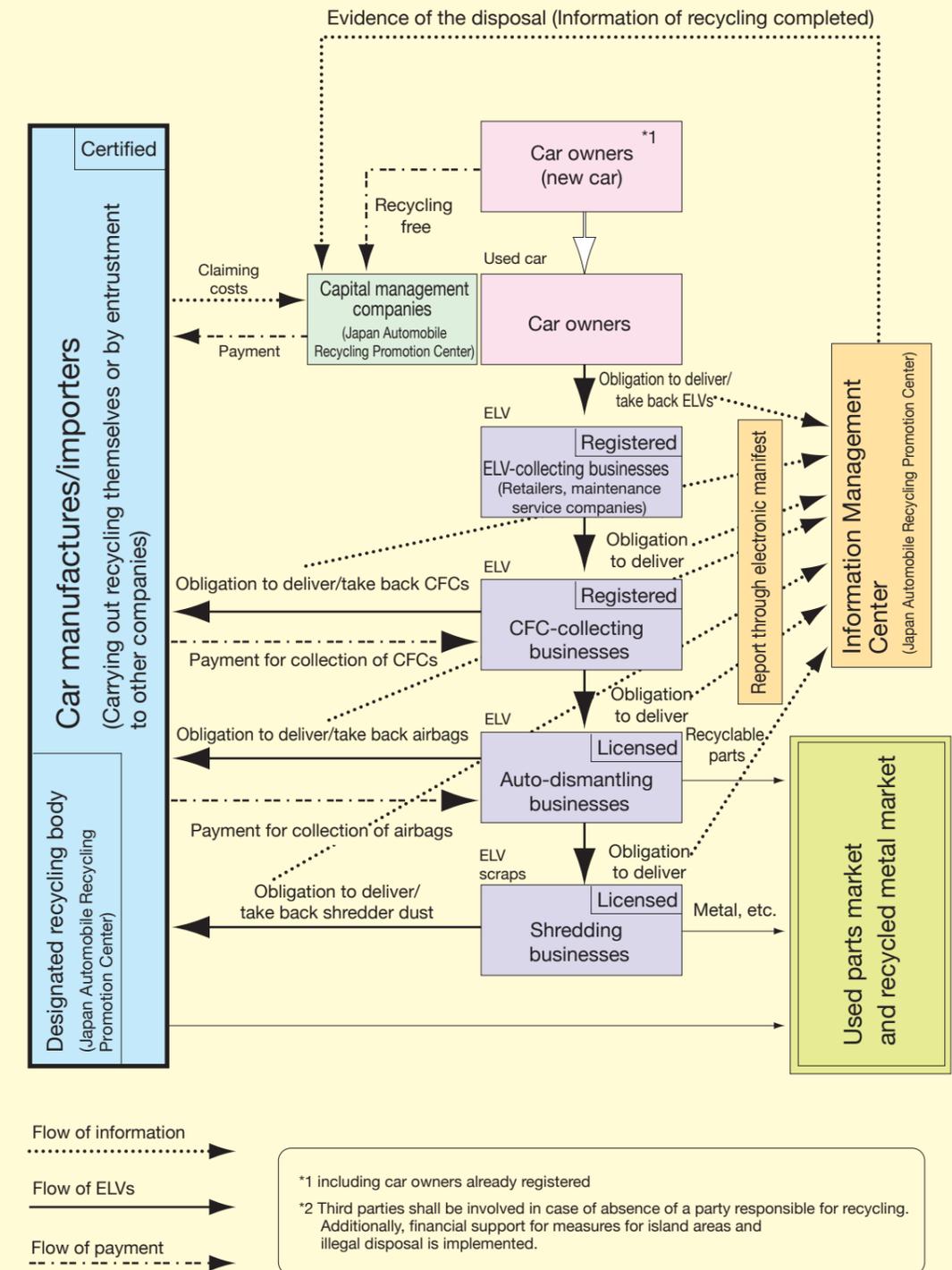
[3] The average fee for recycling shall be disclosed by car manufacturers/importers. Visit the websites provided by car manufacturers/importers, or <http://www.jars.gr.jp> for automobile recycling system.

Fig. II-23 Recycling Uses of ELVs



Source: Japan Automobile Manufacturers Association

Fig. II-24 Concept of the ELV Recycling Law



Source: Ministry of Economy, Trade and Industry

8 Construction Material Recycling Law

- [1] Title of the law: Law on Recycling Construction-Related Materials (Construction Material Recycling Law)
 [2] Date put into force: May 2002 (promulgated in May 2000)
 [3] Purpose: To promote sorting and recycling of designated construction materials which are discharged in the process of demolishing buildings

Outline of the law

The law provides for the process of sorted demolition and recycling carried out by contractors and the contractual procedures to be followed by the client and the prime contractor for construction works (see Fig. II-28)

(1) Construction works to be regulated

Type of construction	Standard size
Demolition of a building	80m ² or more (total floor space)
Construction of a new building or extension	500m ² or more (total floor space)
Repairing or remodeling (renovating) of a building	100 million yen or more (contracting fee)
Other construction work (civil engineering work)	5 million yen or more (contracting fee)

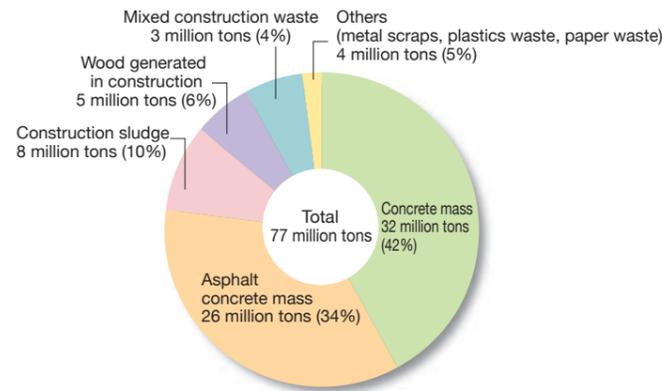
Notes:

- Demolition work means demolishing parts of a building, such as the foundation, foundation piles, walls, posts, roof trusses, bases, diagonal framing, floor covers, roof plates or horizontal framing, which support the weight of the building or its live load, snow, wind pressure, earth pressure or hydraulic pressure, or earthquake or other vibration or impact.
- Work for demolishing part of a building or constructing part of a new building or extension shall be subject to the regulation if the total floor area of the part concerned falls under the standard size. Reconstruction work shall be regarded as a combination of demolition and construction of a new building (or extension).

(2) Construction materials to be regulated

- Concrete
 - Construction materials consisting of concrete and iron
 - Wood*
 - Asphalt concrete
- * It is allowable to reduce (incinerate) wood if the construction site is more than 50 km away from the nearest recycling facility.
- These materials account for about 80% of the total amount of construction waste (see Fig. II-25).

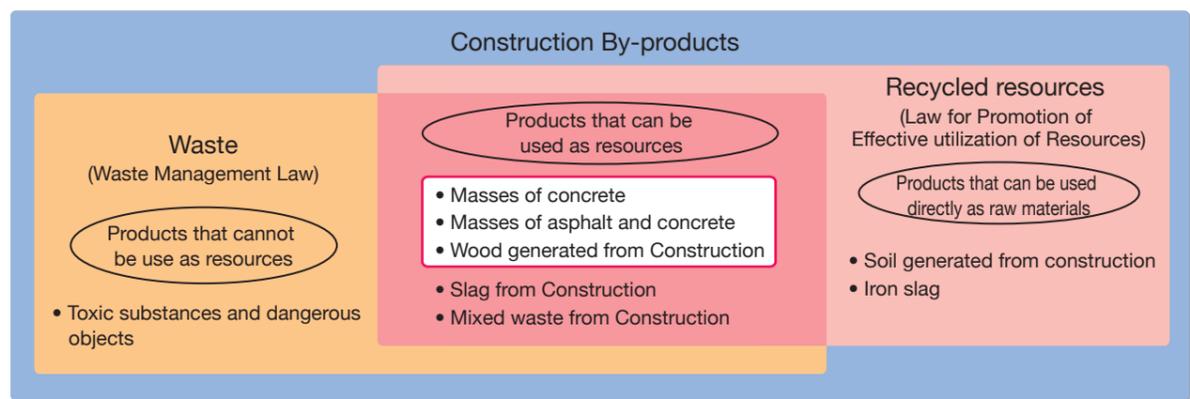
Fig. II-25 Amount of Construction Waste Discharged, by Product Category (FY2005)



Note: The aggregate total may not correspond to the total amount because figures for individual amounts are rounded off.

Source: Ministry of land, Infrastructure and Transport

Fig. II-26 Relationship Between Construction By-products, Recycled Resources and Waste

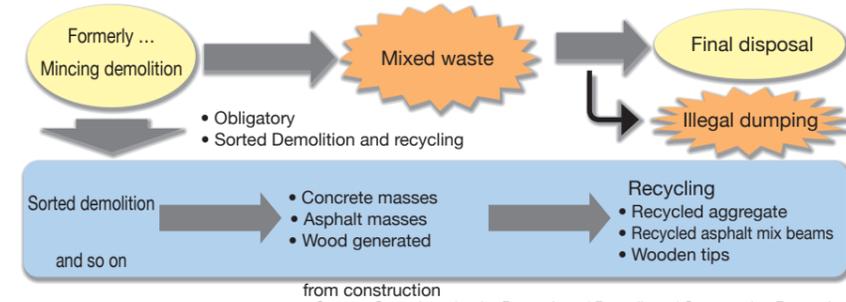


□ = Recycling of these items is mandatory under the Construction Material Recycling Law

Construction by-products are products generated as byproducts from construction; they include recycled resources and waste.

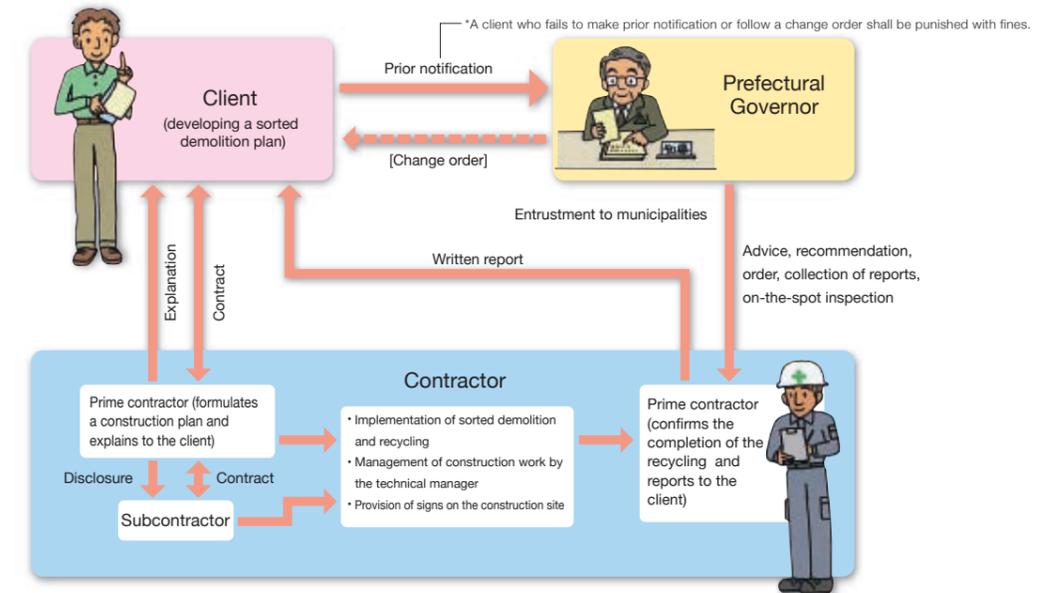
Source: Committee for the Promotion of Recycling of Construction By-products, (2004)

Fig. II-27 Flow of Sorted Demolition and Recycling



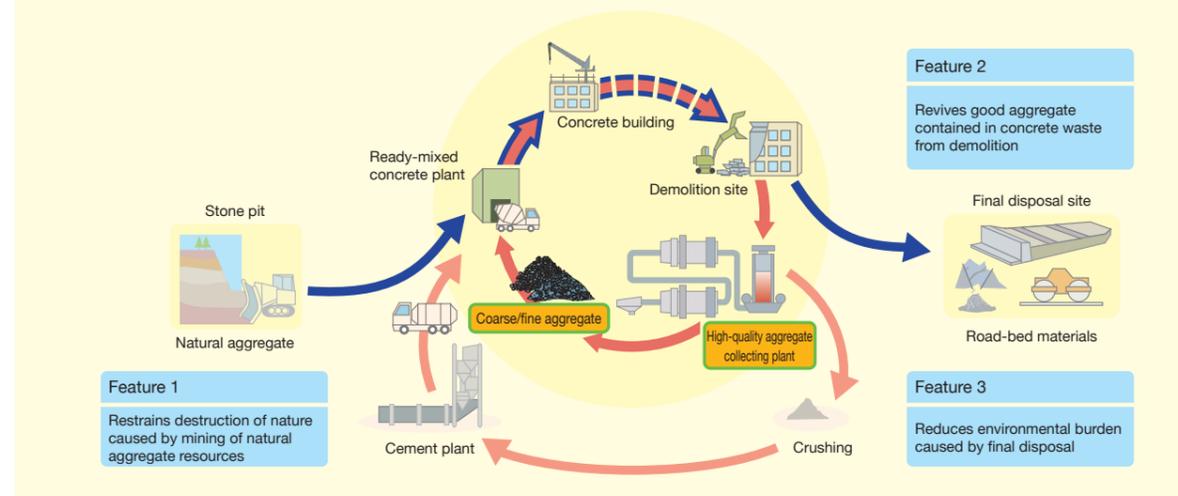
Source: Committee for the Promotion of Recycling of Construction By-products, (2004)

Fig. II-28 Flow of Sorted Demolition and Recycling: from placement of order to implementation



Source: Committee for the Promotion of Recycling of Construction By-products

Fig. II-29 Example of Recycling of Concrete Aggregate



9 Food Recycling Law

[1] Title of the law: Law Concerning Promotion to Recover and Utilize Recyclable Food Resources (Food Recycling Law)
 [2] Date put into force: May 2001 (promulgated in June 2000)
 [3] Purpose: To prevent and reduce food waste discharged from food-related businesses, thereby decreasing the amount for final disposal, as well as to promote recycling of such waste as fertilizers and animal feeds.

Outline of the law

The law provides for measures to be taken by food-related businesses.

(1) Food waste to be regulated

[1] Unsold or uneaten food waste generated in the process of distribution and consumption
 [2] Leftover plant and animal food generated in the process of manufacturing, processing and cooking food products (excluding kitchen waste discharged from households)

(2) Food-related businesses to be regulated

[1] Businesses engaged in manufacturing/processing food products for wholesale or retail sales

* e. g. Food manufacturers, greengrocerers, department stores, supermarkets

[2] Restaurants and other food-service businesses

* e. g. Cafeterias, restaurants, hotels, Japanese-style hotels, wedding centers, floating restaurants

(3) Role of parties concerned

[1] Food-related businesses

All Food-related businesses engaged in manufacturing and distributing food products or providing restaurant services

shall carry out recycling of food waste (through prevention of waste generation, and reduction of final disposal), and raise the recycling rate to 20 % higher.

[2] Consumers

Consumers shall prevent generation of food waste by improving their methods of buying and cooking food and by using recycled products.

[3] The national and local governments

The national and local governments shall implement measures to promote recycling of recyclable food resources.

(4) Target of recycling and priority of measures

[Aims to increase the recycling rate to 20% by FY2006]

[1] Prevention: preventing generation of food waste

[2] Recycling: using food waste as raw materials of fertilizer, animal feeds, oil and fat products or methane.

- Fertilizers: compost made by aerobic fermentation, organic fertilizer made by drying

- Animal feeds: feed for livestock or aquarium fish made by pressure steaming, aerobic fermentation or dehydration through frying

- Oil and fat products: cooking oil, soap

- Methane: biogas made by anaerobic fermentation of kitchen waste (composed of methane gas (about 60%) and carbon dioxide gas (about 40%)), used as fuel

[3] Reduction: reducing the amount of food waste by dehydration, drying, fermentation or carbonization (roasting)

Measure of food recycling promotion

It is necessary to execute large area recycling to execute the recycling smoothly.

Therefore it is an exception in Waste Management Law as for permission of collecting and transportation businesses of municipal solid waste (MSW) in The Food Recycling Law. (if food waste is applicable to waste of Waste Management Law, it is necessary to follow procedures concerned with permission of waste disposal businesses and permission for establishment of waste disposal facility.)

From the viewpoint that attempts the simplification of procedures, the notification of manufacturing and sales is assumed to be unnecessary for registration recycling businesses, in also Law Concerning Safety Assurance and Quality Improvement of Feeds, and Manure Managing Law.

Fig. II-30 Special schemes to Collecting and transportation businesses of MSW

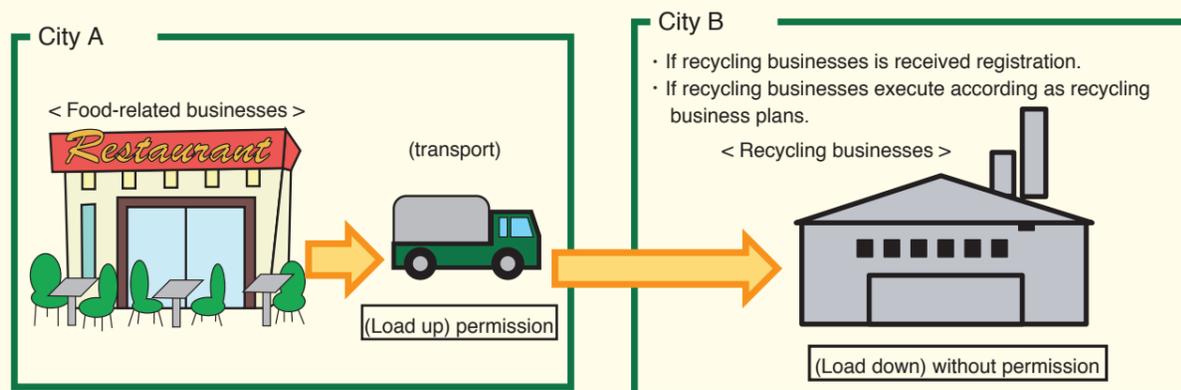


Fig. II-31 Food Waste and Recyclable Food Resources

Food waste includes leftover plant and animal food generated in the process of manufacturing and cooking food products and unsold or uneaten food waste generated in the process of distribution and consumption.

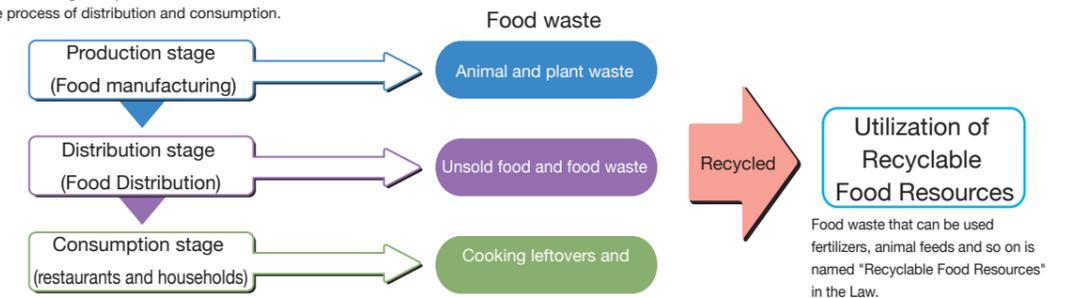


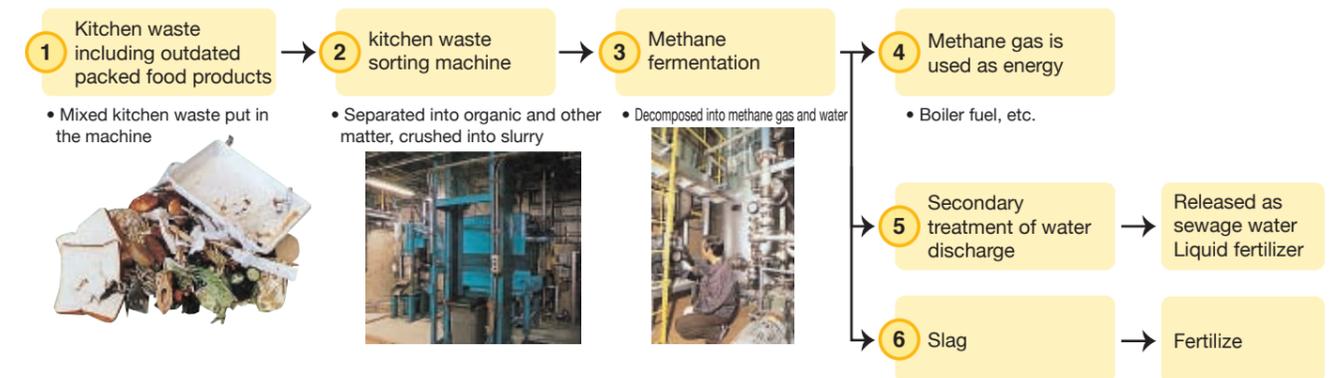
Table II-32 Amount of Food Waste Generated and Recycled (FY2005)

	Waste generated a year (10,000 tons)	Reduction of generation (1)	Reduction in quantities (2)	Recycled (3)	Recycled (3)				Recycling rate (1)+(2)+(3)
					Fertilizer	Animal feeds	Methane	Oil and fat products	
Food manufactures	495	5%	3%	73% (100)	(48)	(48)	(1)	(3)	81%
Food wholesalers	74	4%	1%	56% (100)	(44)	(47)	(1)	(8)	61%
Food retailers	263	4%	2%	25% (100)	(51)	(35)	(2)	(12)	31%
Food-service businesses	304	4%	4%	13% (100)	(53)	(25)	(2)	(20)	21%
Total	1,136	4%	3%	45% (100)	(49)	(44)	(1)	(6)	52%

Note: The aggregate total may not correspond to the total amount because figures for individual amounts are rounded off.

Source: Department of Statistics, Ministry of Agriculture, forestry and Fisheries, "Actual condition survey on utilization of recyclable food resources", (2006)

Fig. II-33 Waste disposal system by methane fermentation



10 Green Purchasing Law

[1] Title of the law: Law Concerning the Promotion of Eco-friendly Goods and Services by the State and Other Entities Authorities (Green Purchasing Law)

[2] Date put into force: April 2001 (promulgated in May 2000)

[3] Purpose: To create and develop markets for recycled products and other products with a reduced environmental impact.

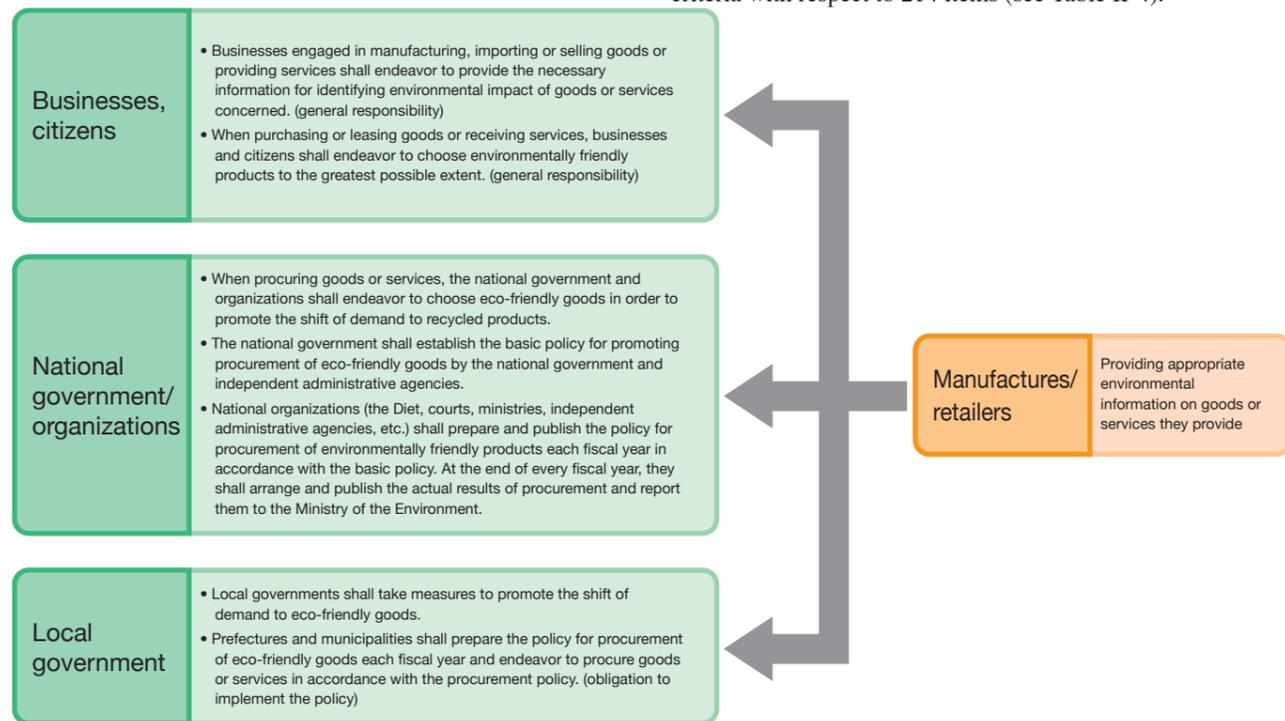
Outline of the law

The law provides that the national government, national organizations and local authorities shall take the lead in purchasing eco-friendly goods, while businesses shall choose eco-friendly goods when purchasing goods, to the greatest possible extent (see Fig. II-33).

Designated procurement items

The law designates the types of eco-friendly goods on which priority should be placed in procurement and judgment criteria with respect to 214 items (see Table II-4).

Fig. II-32 Green Purchasing Law



Green procurement

Green procurement generally means that, when purchasing raw materials, manufacturers preferentially choose eco-friendly goods or procure products from manufacturers that implement environmental considerations. In other words, it means procuring materials and parts from manufacturers that have established systems for environmental management and prohibited substance management.

Large manufacturers have developed their own "green procurement criteria" and started taking measures accordingly. For example, 18 large information/communication device manufacturers unified their green procurement criteria in 2002 and included

heavy metals and halogen compounds such as cadmium (Cd), lead (Pb), mercury (Hg) and hexavalent chromium (Cr6+), which are contained in materials and parts, as common items to be disclosed.

In July 2006, information disclosure system with information of materials (Pb, Hg, Cd, and Cr6+ as well as two kinds of Br (bromine)-based flame retardants) contained in the product (home electric appliances and PCs) introduced. Furthermore, the EU enforced the RoHS Directive to prohibit home electric appliances and communication devices from containing the above 6 materials. Manufacturers have already started to take these measures.

Table II-4 Designated Procurement Items and Criteria (214 in total)

Category	Designated procurement item (Cabinet Decision on February 28, 2006)	Criteria
Paper	8 items including information paper (copy paper, diazo-type paper), printing paper, hygienic paper (toilet paper, facial tissue)	Composition of recycled pulp Degree of whiteness, etc.
Stationery	79 items including mechanical pencil, ball point pens, scissors, dust blowers, glue, files, binders, desk mats, windowed envelopes, blackboard dusters, can/bottle crushing machines	Use of recycled plastic, thinned wood, plant-origin plastic, global warming potential
Office Furniture	10 items including chairs, desks, shelves, coat hooks, umbrella stands, blackboards	
OA Machines	13 items including copiers, printers, facsimile machines, display devices, digital printers	Energy efficiency
Home appliances	Refrigerators, freezers, refrigerators with freezer, electrically heated toilet seat	
Air conditioners	Air conditioners, gas-heat pump systems, heaters	
Water heaters	Electric hot water heaters, gas-water heaters, oil-fired water heaters, gas cookers	
Lighting	Fluorescent lighting apparatuses, fluorescent lamps, electric-lamp bulbs	Gas emissions, fuel consumption
Vehicles	Automobiles, ETC devices, Satellite navigation systems, official automobile tires, two-stroke engine oil	
Fire extinguisher	Fire extinguishers	Use of recycled extinguishing agent
Uniforms and Work clothes	Uniform, work clothes	Use of resin recycled from PET bottles
Interior fixtures and bedding	Carpets, curtains, blankets, futons, bed frames, mattresses, etc.	
Work gloves	Work gloves	
Other fiver goods	Tents, tarpaulins, protective netting	Use of solar energy, Reduction of kitchen waste
Facilities	Photovoltaic generation systems, fuel batteries, solar thermal systems, kitchen waste disposers	
Public works projects	Public works [1] Recycled materials (47 items including particle boards, ceramic-quality tiles, blast furnace cement, permeable concrete, heat-insulating window sashes/doors, automatic water taps, light control systems, and sewage sludge fertilizer) [2] Construction machinery (low-emission type, low-noise type) [3] Method of construction (6 items including recycling of concrete masses and road surface layer) [4] Special-purpose items (drainage paving, transparent paving and tree planting on the roof)	Usage degree of recycled materials, emitted gas and noise
Services	Energy-saving diagnoses, cafeterias, printing, tire retread, car repair, government office building management, cleaning	Contents of technical qualifications and diagnoses, kitchen waste disposal, composition of recycled paper, tire retread, use of recycled car parts

Note: For green purchasing, environmental labels such as Eco-Mark (certified by the Japan Environment Association) and Eco-Leaf (used by the Japan Environmental Management Association for Industry) are important information sources to distinguish Eco-friendly goods.

11 METI Industrial Structure Council: Guidelines for Waste Treatment and Recycling

In the Guidelines for Waste Treatment and Recycling (by Product Category/Sector), the Industrial Structure Council indicates measures to be taken by businesses for waste treatment and recycling, with the aim of promoting voluntary actions.

The Guidelines were first developed in 1990 with respect to 14 product categories and 10 sectors. After repeated revisions for improvement and enhancement of the contents, they were revised in October 2005 for the seventh time to regulate 35 product categories and 18 sectors in total and

reviewed in October 2006..

The Guidelines play two roles: [1] a collection of voluntary measures to be undertaken with respect to product categories and sectors that are not regulated under recycling-related laws, and [2] implementation guidelines with respect to product categories and sectors that are regulated under recycling-related laws. Industries aim at achieving the numerical targets for recycling set in the guidelines as quickly as possible.

(1) Guidelines by product category (35 commodities)

Paper	Glass bottles	Steel cans	Aluminum cans
Plastics	Automobiles	Motorbikes	Tires
Bicycles	Home electrical appliances	Spring mattresses	Office furniture
Carpets	Futons	Dry cell batteries, button batteries	Small secondary batteries, etc.
Lead batteries for automobiles and two-wheel vehicles	Cassette gas cylinders	Aerosol cans	Small gas cylinders
Fire extinguishers	Pachinko game machines, etc.	Personal computers and peripheral devices	Copying machines
Gas and kerosene equipment	Textile products	Lubrication oil	Electric wires
Construction materials	Bath tubs and bathroom units	Kitchen components	Cellular phones and PHS
Fluorescent tubes	Vending machines	Single-use cameras	

(2) Guidelines by sector (18 businesses)

Iron and steel	Paper/pulp manufacturing	Chemicals	Glass sheet manufacturing
Textiles	Nonferrous metal manufacturing	Electricity	Automobile manufacturing
Car part manufacturing	Electronic/ electric device manufacturing	Oil refineries	Distribution
Leasing	Cement manufacturing	Rubber product manufacturing	Coal mining
Gas	Factory-produced housing manufacturing		

(For more details, see "Guidelines for Waste Treatment and Recycling (By Industry Sector)", METI)

Example of a guideline for waste treatment and recycling (Reviewed in October 2006)

<By product>

Pachinko machines, etc.

• Overview of the guideline

- Considerations to be taken into designing and manufacturing toward 3R
 - [1] Implementation of the product assessment
 - [2] Disclosure of the conditions and effects due to the measures carried out
 - [3] Commonization and standardization to prolong the life of products eligible for repairing
 - [4] Reduce varieties of materials and amount of lead
 - [5] Standardized labeling of materials
- Goals of material recycling
FY2001: 35%, FY2005: 55%, FY2007: 75%
- Measures for distribution and disposals
Adopt a nationwide system of collection and recycling and, maintain and expand collection sites
- Promotion of R&D
R&D for parts reuse based on the concept of easy disposal, reduction of shredder dust and the law to prevent irregularity
- PR activity
Instruct and enlighten the appropriate disposal and publicize recycling status implemented by the businesses

New collection system

• Progress of measures implemented (overview)

- Considerations to be taken into designing and manufacturing toward 3R
 - Reduction in usage of ABS resin and plywood and the number of parts for frames
 - Implementation of research on types of resin and amount of environmental burden (e.g. lead) used
 - Material labeling for resin parts which weigh 100g and more. For the parts less than 100g is labeled to a maximum extent.
- Material recycling

	Pachinko machines	Slot machines
FY2001 (actual):	41.4%	-
FY2002 (actual):	51.9%	62.8%
FY2003 (actual):	63.6%	64.7%
FY2004 (actual):	74.4%	69.1%
FY2005 (actual):	82.3%	87.3%
- Measures for distribution and disposals
In Tokyo Metropolis, a new collection system in which the machines are delivered to manufacturers at collection sites by area blocks was launched in October 2003 and its area expanded to be nationwide.
- Promotion of R&D
The system for facilitating reusable parts is strengthened.
- PR activity
Publicizing measures taken for recycling through industry newsletters and exhibitions

• Measures to take after this (overview)

- start collection of new type slot machines used of pachinko ball
- measure to collect from solitary islands
- maintain and expand of collection sites
- promotion of R&D for parts reuse based on the concept of easy disposal, reduction of shredder dust

<By industry>

Iron ore industry

• Overview of the guideline

- Goal to reduce final disposal
Meet a goal of a 50% decrease in final disposal in FY2010 in comparison with FY1998
- Recycling of iron and steel slag
 - [1] Promotion of research/study to further increase utilization of iron steel slag
 - [2] PR activities to encourage utilization
- Acceptance of materials from other industries
With regard to waste plastic (including waste plastic, waste tires, ASR, etc.), an acceptance system is developed aiming at accepting one million tons in 2010 given that conditions including a system of goods collection are met.

Final disposal (goal and actual amount)

Note: Final disposal is a sum total of slag, dust and sludge.

• Progress of measures implemented (Overview)

(Development of recycling iron and steel slag)
Amount of iron and steel slag generated: 37.48 million tons in FY2005 (36.74 million tons in FY2004)
Final disposal of iron and steel slag: 320,000 tons in FY2005 (390,000 tons in FY2004)
Effective use of iron and steel slag: 99.2% in FY2005 (98.9% in FY2004)

- Started preliminary working for revision of "JIS A 5015(iron and steel slag for road construction)"
- made CD of "simple question of iron and steel slag" for HP contents, published slag news, made a pamphlet on target products of Green purchasing law and informed for government and municipal offices.(Progress of waste plastic acceptance)FY 2005 490 thousand ton (FY2004 410 thousand ton)

• Measures to take after this (overview)

(Measures to further increase utilization)

- Promotion of R&D to apply iron and steel slag to harbor and ocean fields
- Revision of JIS for iron and steel slag aggregate for concrete (Enlightenment)
- support to acquire JIS (Electric arc furnace oxidizing slag aggregate for concrete) acknowledgment factory
- promotion of enlightenment for various slag products

12 Governance of Waste and Recycling

“Guideline for governance of waste and recycling for dischargers” is developed by Industrial Structure Council Environment Meeting and Subcommittee for recycling in September 2004 in order to properly instruct dischargers to promote appropriate disposal and recycling of the waste.

1. Background of development of Guideline for governance of waste and recycling

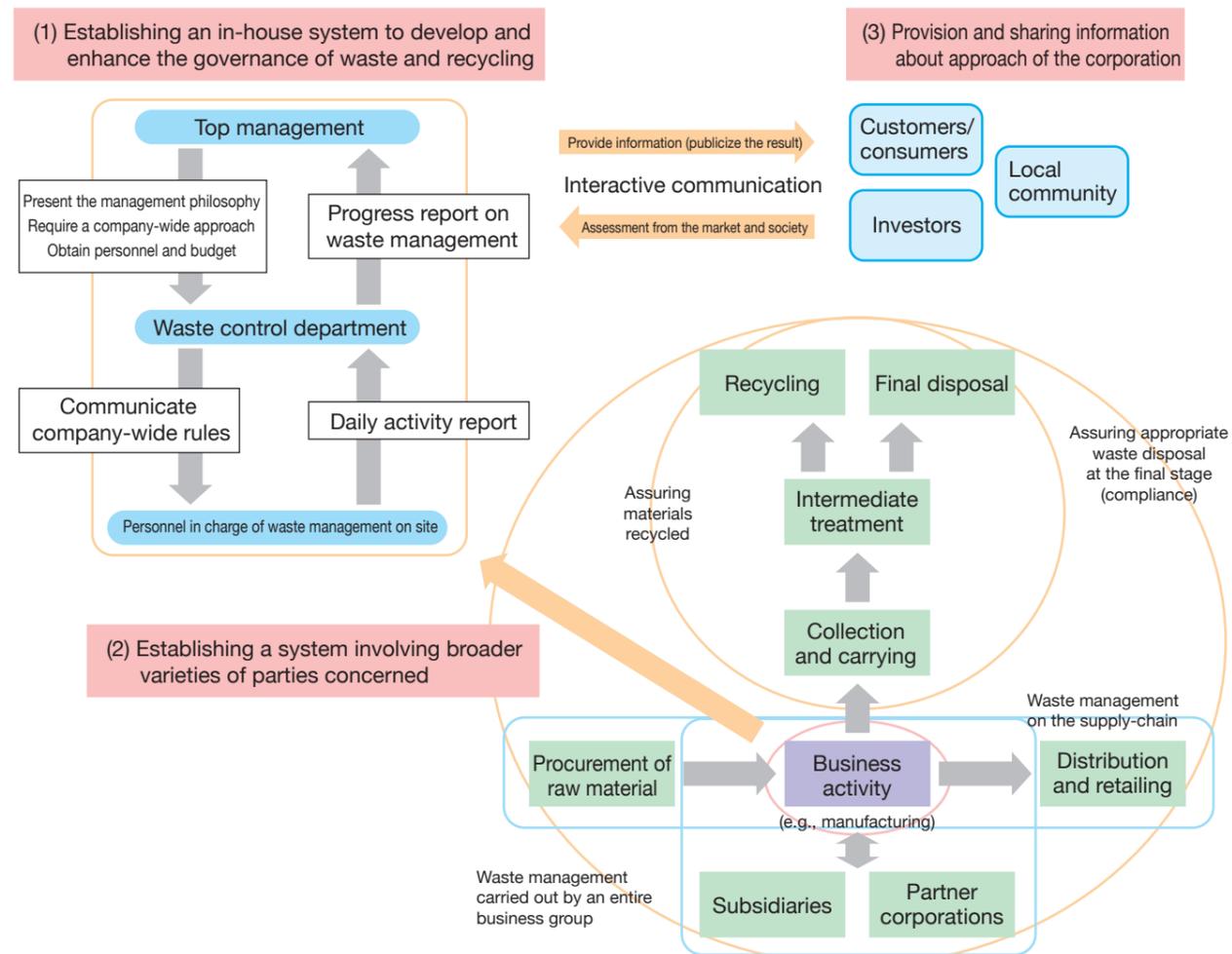
In recent years, some major cases of illegal dumping including Teshima, Kagawa Pref. (1990), the prefectural boundary between Aomori and Iwate (2002), Yokkaichi city, Mie Pref. (2005) have been revealed and caused serious social problems.

Subsequently, Waste Disposal Law is revised thereby

asking dischargers for weightier responsibilities. In the case of the prefectural boundary between Aomori and Iwate, both prefectural governments took the following steps: reported and levied fees on dischargers; disclosed the name of the company which is confirmed to have perpetrated illegal disposal; and ordered the said company to remove the waste from the site. Violation of law such as illegal dumping may cause a company to risk management of the company due to its degraded image of the corporate brand.

Upon these facts “Guideline for governance of waste and recycling” is assembled with the concepts including importance of compliance, views of social responsibility of a corporation and necessity to address the issue with a standpoint of corporate management.

Fig. II-34 Outline of governance of waste and recycling



2. Points to be considered in governance of waste and recycling

Governance of waste and recycling is a concept of an ideal approach for a corporation (discharger) to increase the corporate value through improvement of corporate brand image and reduced management risk by preventing an inappropriate discharge of waste by the corporation. The guideline has three specific points to consider.

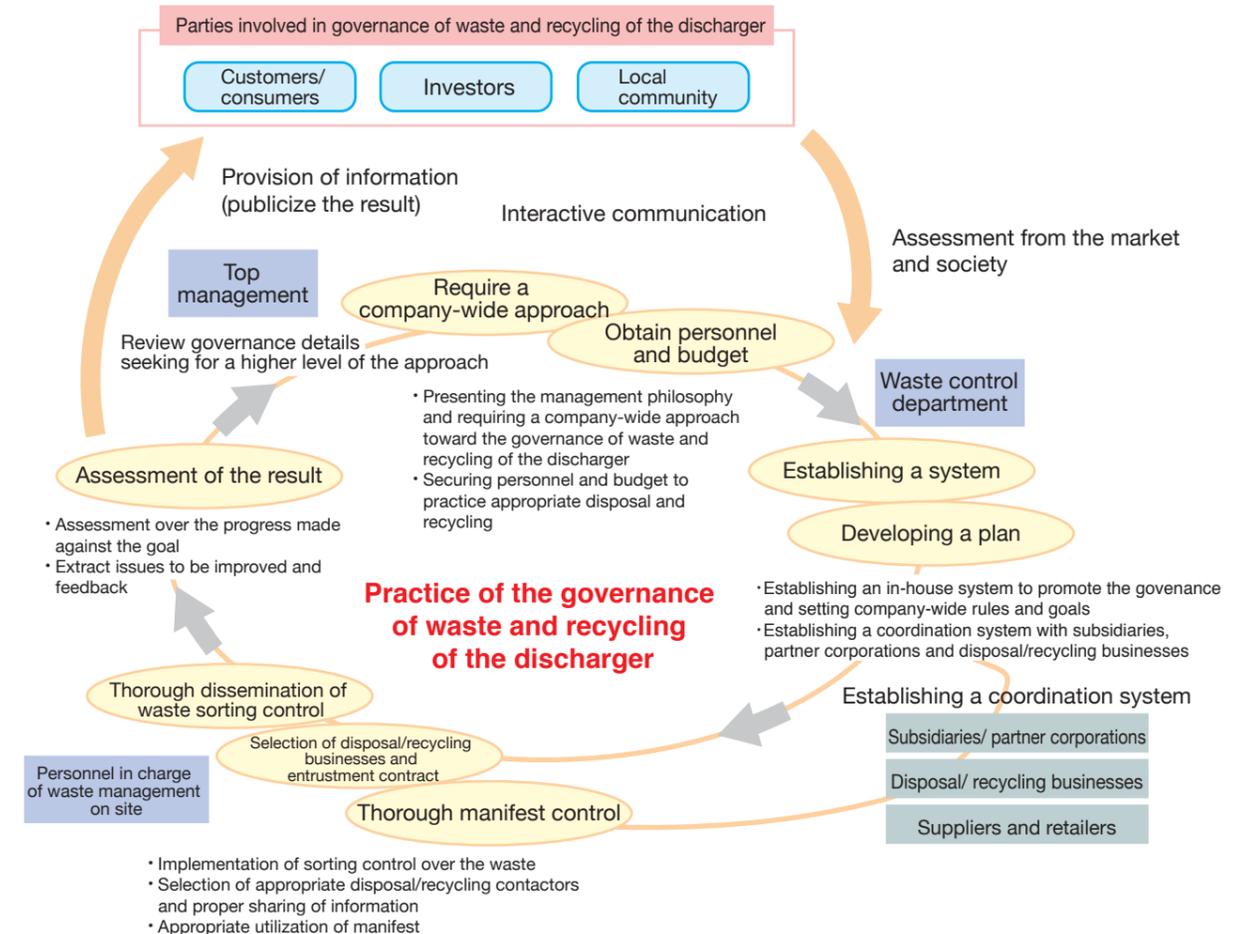
Necessity of a company-wide approach, where not only the personnel in charge of waste management on site but also entire organization from the top management to employees are involved in disposal and recycling of waste, is presented as a primary point. The importance to promote appropriate disposal, among others, through active involvement of top management by securing personnel and budget for the waste control department and requiring a company-wide approach, is emphasized.

Secondary, in order to mitigate the risk of inappropriate

discharge of the waste by the corporation, the significance of establishing a cooperative relationship with broader varieties of parties concerned including subsidiaries, partner corporations, retailers, disposal and recycling businesses to pursue appropriate treatment of the waste is highlighted. Coordination with disposal and recycling businesses has greater significance because it will enable the discharger to properly carry out disposal and recycling through opinion exchange about better methods of sorting, treatment and recycling of waste.

The third point to consider is the idea of provision and sharing information with a variety of third parties such as customers, consumers, investors including stockholders of the corporation, local community including local communities about approach made by the corporation. This effort allows the corporation to receive reasonable assessment over the approach made by them which help them further improve governance of waste and recycling.

Fig. II-35 Flow followed by a discharger to practice the governance of waste and recycling



13 Environmental Labels and Identification Marks

"Environmental Labels and Declarations" is a claim representing environmental aspects of the product and service of which general principles are provided by ISO14020 "Environmental labels and declarations - General principles", a standard issued by International Organization for Standardization (and JIS (Japan Industrial Standard) Q 14020) as a stimulator to promote supply and demand of eco-friendly products and services and possibility of continuous market-oriented improvement of the environment. It can be presented in the form of statements, symbols or graphics made on product or packaging labels, product literature, technical bulletins, advertising, publicity or similar applications.

JIS categorizes the environmental labels into three types based on the ISO standard.

(1) Type I: Environmental labels

The type I Environmental label is a label granted by third-party bodies operated in accordance with ISO 14024 (Environmental labels and declarations -Type I environmental labeling- Principles and procedures) issued in 1999 and JIS Q 14024 established in 2000. In this system, third-party accreditation bodies establish criteria among the environmental friendliness of products in comparison with other similar products in light of the entire life cycle for specific kinds of commodities, and certify some products as environmentally friendly in accordance with the criteria. Predetermined marks can be attached to certified products.

"Eco-Mark" in Japan, "Blue Angel" in Germany and "Nordic Swan" in North European countries are included in Type I labels.

"Eco-Mark" service is provided by the Japan Environment Association (<http://www.jears.or.jp>) which started its service in 1989 with 7 product items of "spray products in which the designated CFC is not used". They cover 42 product categories and 5,000 brands as of January 2005 as a result of annual extension of subject product categories and certified products.

Fig. II-36 Eco-Mark



(2) Type II environmental labels

The type II Environmental labels is a type in which self-declaration is made by businesses in accordance with ISO 14021 (Environmental labels and declarations -Self-declared environmental claims- Type II environmental labeling) issued in 1999 and JIS Q 14021 established in 2000. Since assuring reliability is essential in self-declared environmental claims and vague or unclear environmental claim would mislead consumers, definition is provided to the following twelve terms.

Compostable
Degradable
Designed for disassembly
Extended life product
Recovered energy
Recycled content [Preconsumer materials, postconsumer materials, recycled material, collected (recycled) materials]
Reduced energy consumption
Reduced resource use
Reduced water consumption
Reusable and refillable
Waste reduction

The type II label is based on self-declarations by businesses of their environmental consideration, indicating how environmentally friendly their products are, in the form of statements, symbols or graphics. Additionally, "Mobius Loop" is a symbol claiming "Recyclable" or "Recycled Content."

Fig. II-37 Mobius Loop



Industrial associations and companies also use their own original identification marks to indicate recycled products and materials to be selectively collected.

Fig. II-38 Identification Marks

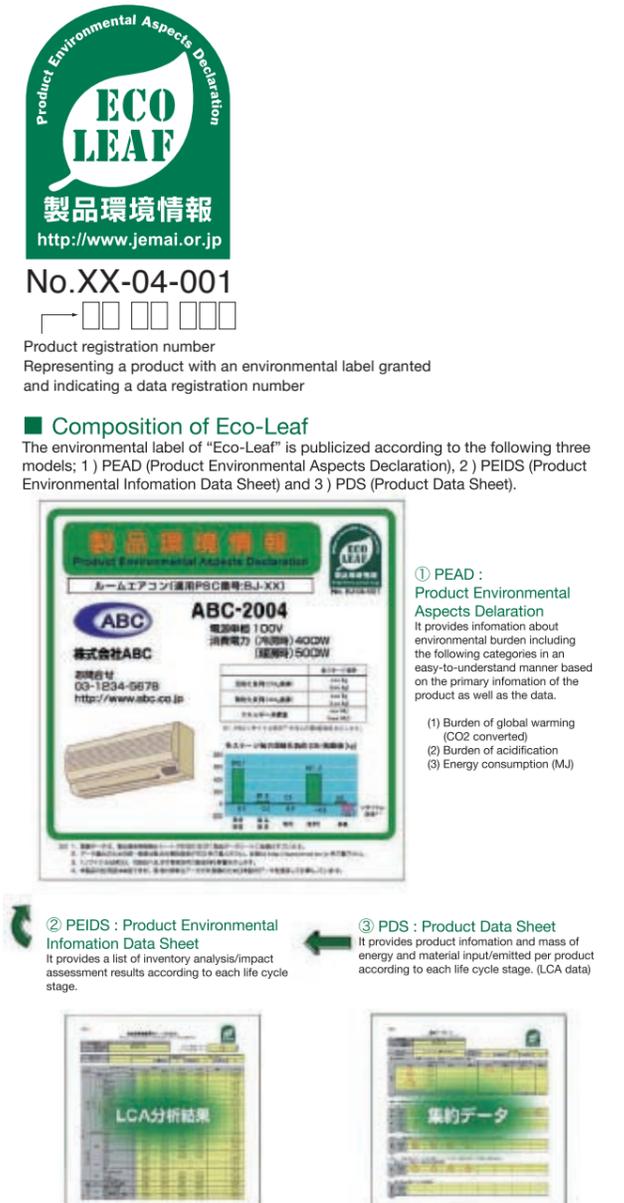


(3) Type III environmental labels

The type III environmental label indicates qualitative data on the environmental impact of products through the entire life cycle, from gathering of resources to manufacturing, use, and disposal/recycling, calculated by the life cycle assessment (LCA) method and using predetermined environmental indicators in accordance with ISO 14025 (Environmental labels and declarations - Type III environmental declarations - Principles and procedures) issued in June 30, 2006. Although only a few countries adopt the type III environmental labels.

As an example, Eco-Leaf is an environmental label that has been used in "Eco-Leaf Type III environmental labelling Program" since June 2002 by Japan Environmental Management Association for Industry (<http://www.jemai.or.jp>). 42 cineraria by product category are laid down and 409 product items are registered and publicized in the program in December 1, 2006.

Fig. II-39 Eco-Leaf environmental label



Assessment of overall recycling process



(Source: Japan Environmental Management Association for Industry)

14 Design for Environment (DfE)

(1) Toward realization of green product chain

In reducing environmental burden and minimizing material consumption and amount of waste generated through the entire life cycle of the product (from material acquisition and utilization to recycling and disposal of end-of-life product), it is essential to take the concept of the 3Rs into the designing and manufacturing, design for environment (DfE).

Although the idea of energy saving in the light of global warming should be incorporated into DfE in addition to the design and manufacturing requiring efficient material consumption, controlling waste amount, detoxification and an easy disassembly, bear in mind that the nature of those design aspects may conflict with each other.

By adopting DfE, a positive effect leading a variety of industries to promote development of eco-friendly products seems to be spreading. Effective material usage through cyclical use by utilizing recycled material made from used products in the same product category increases at some manufacturers.

Accelerating to expand a sound material-cycle society economic society demands materialization of "green product chain" in which environmental considerations are incorporated through "green manufacturing" by manufacturers and it will be assessed by green consumers and green markets.

Use of a range of information about environmental considerations taken into the product is essential to realize it. For efficient use of such information by each party concerned visualization and communication of each stage of the product life cycle (i.e., material procurement, production, distribution/retailing, consumption/purchase, discharge/taking back and reusing/recycling) is needed. Such information in addition to the traditional information about functions and price will become new evaluation criteria at the market resulting in bearing vital power to further stimulate the businesses who are properly evaluated and enabling them to produce more innovation.

Considering the current development of global trend of accelerated division of labor and market globalization, satisfying DfE based on the global point of view is critical.

ISO as international standards, therefore, provide Guide 64 (Guide for the inclusion of environmental aspects in product standards) and TR14062 (Environmental management - Integrating environmental aspects into product). IEC, International Electrotechnical Commission started to study environmental standards covering a variety of products seeking for international alignment at the WG2 of a new technical committee (TC111).

(2) Product assessment guidelines applied by industrial associations

In 1994, the Industrial Structure Council established the "Guidelines for Pre-Evaluation Manuals in Product Designing to Contribute to the Promotion of the Use of Recycled Resources" as a reference for manufacturers to achieve DfE.

Industrial associations developed "product assessment guidelines" applicable to their products in accordance with the Council Guidelines. They implement DfE by conducting

pre-evaluation under their own guidelines.

Product assessment (pre-evaluation) means that manufacturers, prior to production, investigate, estimate and evaluate the safety and resource/environmental impact of their products in the stages of production, distribution, use, discharge, and recycling/disposal, and amend their product designs and production methods as necessary, thereby reducing the resource/environmental impact.

Table II-5 Establishment/Revision of Product Assessment Guidelines of Industrial Associations

Name of association	Condition of product assessment guidelines	Name of association	Condition of product assessment guidelines
Japan Automobile Manufacturers Association (http://www.jama.or.jp)	July 1994 Guidelines for Pre-Evaluation in the Product Designing Stage for Promotion of Recycling established	Japan Electric Game Machine Association (http://www.nichidenkyo.or.jp)	Aug. 2001 Product Assessment Manual revised (to include 3R programs)
	Dec. 2001 Judgment Criteria Guidelines on Prevention of Generation of Used Products/Use of Recycled Resources or Parts established	Japan Electronics and Information Technology Industries Association (http://www.jeita.or.jp)	Sept. 2000 Environmental Designing Assessment Guidelines for Information Processing Devices revised (to include 3R programs)
Japan Bicycle Promotion Institute (http://www.jbpi.or.jp)	March 2002 Product Assessment Manual Guidelines on Bicycles revised (to include 3R programs and the statements on electric-assisted bicycles)	Japan Business Machine and Information System Industries Association (http://www.jbmia.or.jp)	July 2006 3R Designing Guidelines for Preparing Product Assessment Manual (copiers, etc.) established (including 3R programs)
	March 2006 Product Assessment Manual Guidelines on Bicycles revised (to include using of environmental impact substances)	Japan Industrial Association of Gas and Kerosene Appliances (http://www.jgka.or.jp) Japan Gas Association (http://www.gas.or.jp/default.html)	March 2001 Assessment Guidelines: Gas/Kerosene Appliances revised (to include 3R programs)
Association for Electric Home Appliances (http://www.aeha.or.jp)	March 2001 Product assessment Manual: Electric Home Appliances revised (to include 3R programs)	Japan Association of Kitchen & Bath (http://www.kitchen-bath.jp) Japan Reinforced Plastics Society, (Bath Tub Division) (http://www.jrps.or.jp) Japan Bath Unit Association	June 2003 Product Assessment Manual: Bath Units revised
	Sept. 2004 Product assessment Manual: Product assessment Manual: Electric Home Appliances revised (3rd edition) established	Japan Association of Kitchen & Bath (http://www.kitchen-bath.jp)	April 2001 Product Assessment Manual: Kitchen Components established (including 3R programs)
	May 2006 Product assessment Manual: Electric Home Appliances revised (4rd edition)	Japan Electric Lamp Manufactures Association (http://www.jelma.or.jp)	July 2002 Product Assessment Manual: Lamps and Stabilizers revised (including 3R programs)
Japan Office Institutional Furniture Association (http://www.joifa.or.jp)	April 2001 Guidelines on Environmental Measures for Office Furniture revised (to include 3R programs)	Japan Vending Machine Manufacturers Association (http://www.jvma.or.jp)	March 2002 Product Assessment Manual: Vending Machines revised (to include 3R programs) _ Title renamed to Product Assessment Guideline: Vending Machines
	April 2001 Product Assessment Manual: Metal Furniture established		March 2004 Product Assessment Guideline: Vending Machines revised (reviewing the assessment table)
	June 2002 JOIFA Environmental Self-Action Plan revised	Communication and Information Network Association of Japan (http://www.ciaj.or.jp)	Feb. 2004 Product Environmental Assessment Guidelines for Cellular Phones/PHS revised
Japan Luminaires Association (http://www.jlassn.or.jp)	Sept. 2001 Product Assessment Manual: Luminaires revised (to include 3R programs)	Aerosol Industry Association of Japan (http://www.aiaj.or.jp)	Aug. 2002 design Guidelines for Easily Recyclable Aerosol Containers
Japan Game Machine Association, Japan Electric Game Machine Association	Jan. 1998 Product Assessment Manual established		
Japan Game Machine Association	July 2001 Product Assessment Manual revised (to include 3R programs)		

Note: Based on interviews with the industrial associations concerned

Source: Industrial Structure Council, October 17, 2006 (revised)

15 International Promotion of the 3Rs

(3) Examples of DfE

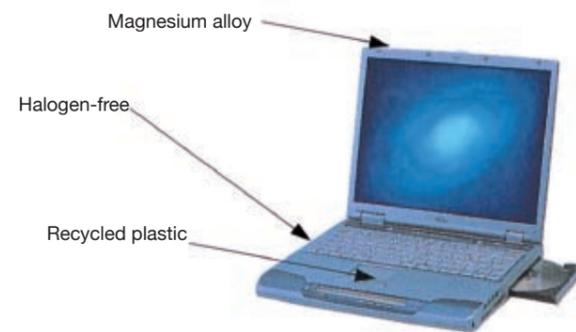
[1] Materials

In order to promote recycling of resin materials used for auto parts, Company A unifies part materials while encouraging more frequent use of easily-recyclable thermoplastic resin including polypropylene resin.

Fig II-41 Use of Recycling-oriented materials



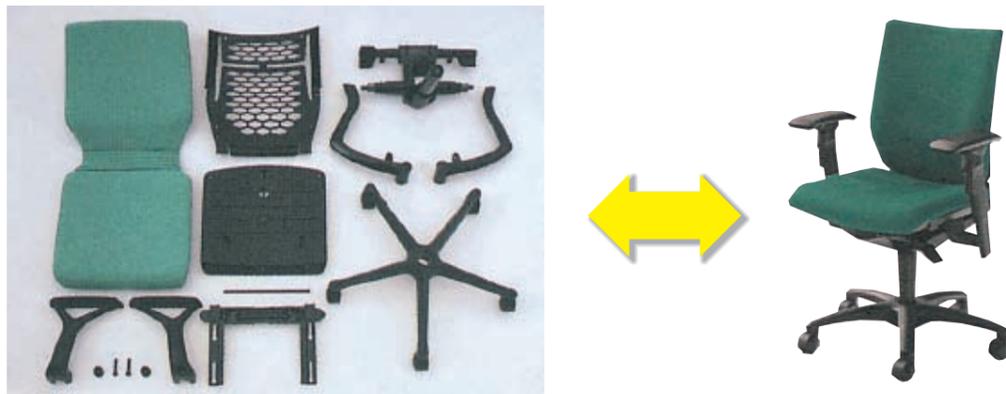
Company B uses easily-recyclable materials for personal computers, such as magnesium-alloy cases and halogen-free plastics.



[2] Recycling-oriented designs and material indication

Company C designs office chairs that can easily be dismantled by using single materials and indicates as many materials as possible, thereby promoting the recycling of materials.

Fig II-42 Recycling-oriented chair

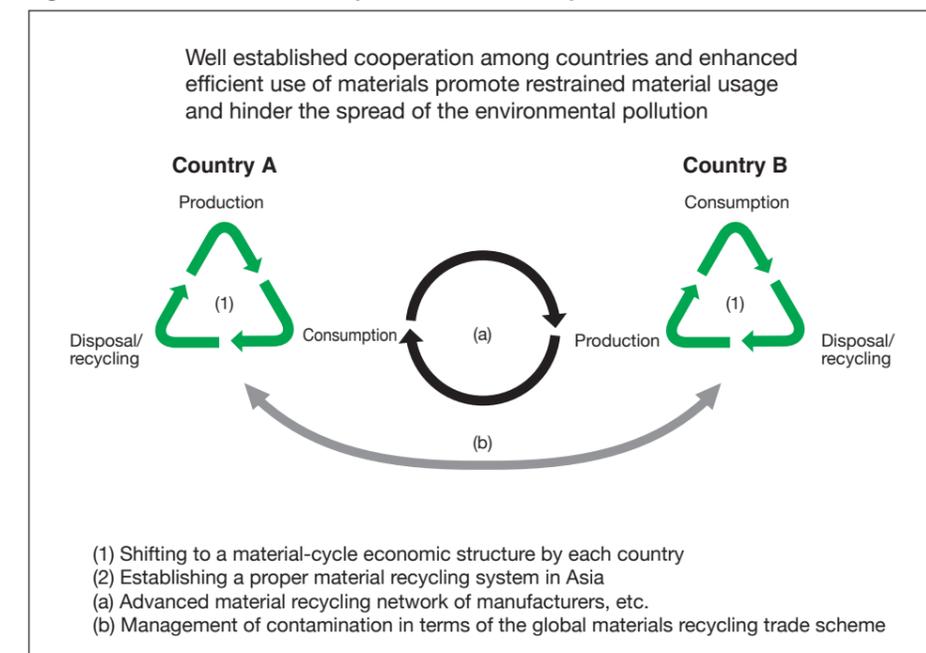


Recently, with the economic growth of Asian countries and the globalization of economy, the international trade amount of recyclable resources, such as scrap metal and used plastic, has been increasing in Asian area. Now, recyclable resources that were recycled only in Japan is becoming utilized globally. (For example, CRT glass cullet of television collected according to the rules of Home Appliance Recycling Law of Japan is exported as raw materials for CRT production in Asia.)

In addition, Japanese companies operating abroad are facing the problems of recycling and disposing wastes that is caused by their operation in Asian countries.

However, in many Asian countries, the legal systems and industrial infrastructure on recycling of resources haven't been built yet. Smooth international trade of recyclable resources will be interrupted if improper process of recycling causes environmental pollution in these countries.

Fig. II-43 Sustainable material-cycle economic society in Asia



Under this situation, The Working Group on Enhancing International Recycling, Waste Prevention and Recycling Sub-committee, Industrial Structure Council/METI, recommended a sound way of the international recyclable resources circulation system within Asian area in October, 2004.

In this report, it was said that each Asian countries must make further efforts in realizing "Sustainable Asia based on the 3Rs" (figure - II -43). To realize the goal, each country first makes a considerable effort into the construction domestic sound recycling system for recyclable resources. In addition, recyclable resources that can not be recycled in each country should be utilized efficiently between Asian countries

each other to reduce consumption of natural resources while preventing the expansion of environmental pollution.

To achieve this goal, METI has implemented following measures comprehensively.

- [1] Policy dialogues with Asian countries to share the information and the experience of policy making each other
- [2] Providing information of legal systems concerning recycling and disposal of wastes in Asian countries for Japanese companies and their overseas subsidiary
- [3] Technical cooperation with Asian countries on capacity building and improving recycling infrastructure
- [4] Building of an appropriate cross-border recycling network with an appropriate traceability system.

1 Glass Bottles

Glass bottles are recycled in two ways: by repeatedly using returnable bottles such as beer bottles, large-size bottles, and milk bottles, and by collecting one-way bottles, such as food/seasoning bottles, drink bottles, medicine/vitamin drink bottles, and reusing them as raw materials for glass bottles (cullets) (see Fig. III-2).

The cullet use rate has been increasing every year since

FY1989 and had already reached 91.3% by FY2005, exceeding the 91%-level that was expected to be achieved by FY2010 under the Law for Promotion of Effective Utilization of Resources (see Fig. III-1). The amount of glass bottles selectively collected and recycled under the Containers and Packaging Recycling Law was 780,000 tons (FY2005).

Fig. III-1 Amount of Glass Bottles Produced, Amount of Cullets Used and Cullet Use Rate

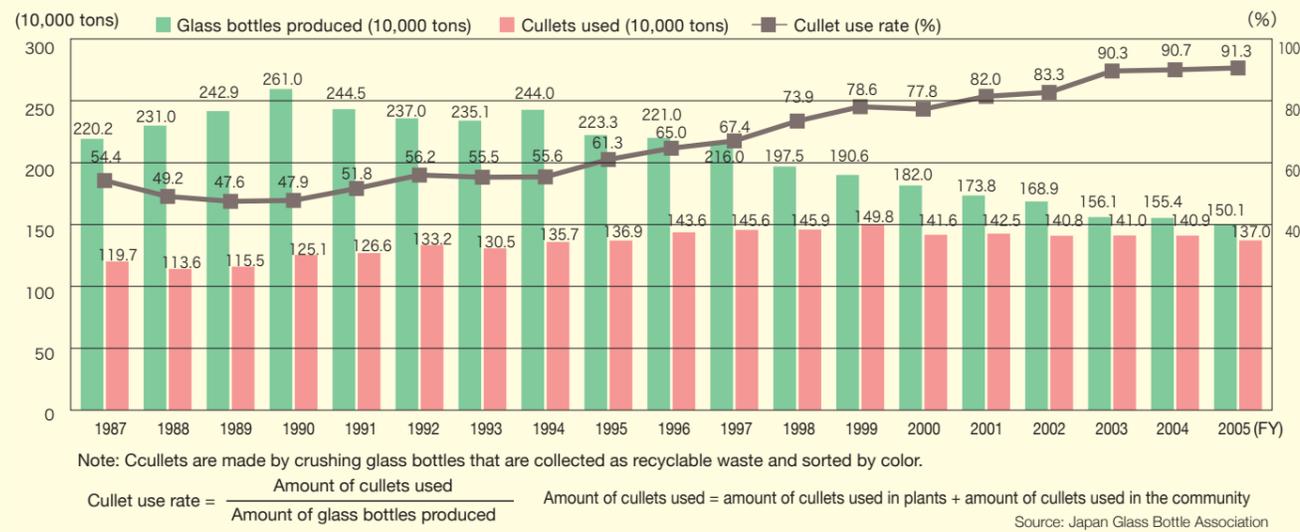


Fig. III-2 Flow of Recycling of Glass Bottles (FY2005)

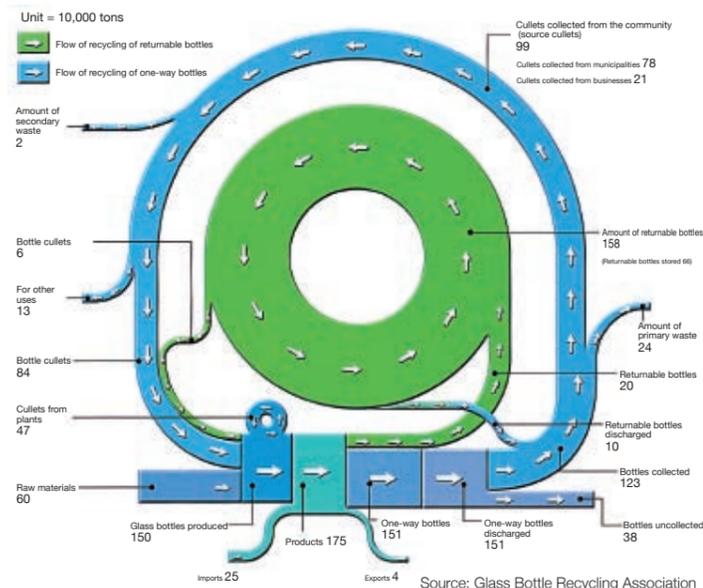
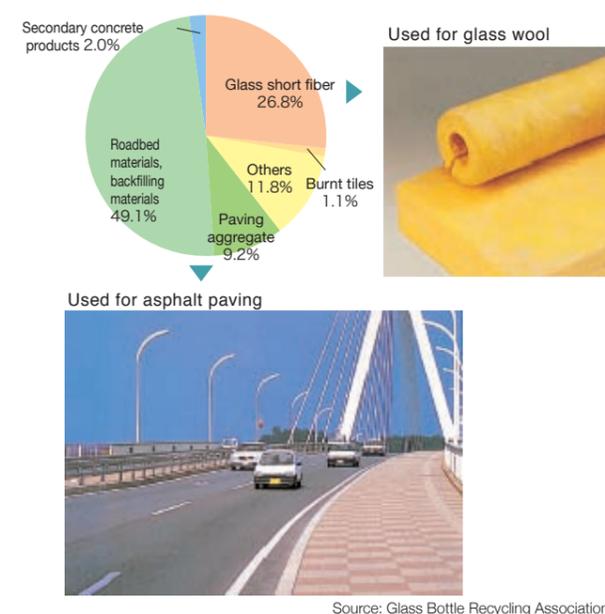


Fig. III-3 Ratio of Cullets Supplied for Other Uses (FY2005)



2 Steel Cans

The weight of steel cans recycled in 2005 was about 770,000 tons and the recycling rate was 88.7%, exceeding the 85% level targeted in the Guidelines for Waste Treatment and Recycling by Product Category (see Fig. III-4). Thus, recycling of steel cans is going smoothly, for the following reasons.

- [1] Further dissemination of separate collection (system itself) at each municipality
- [2] Steel selection is easily done with magnetized selector

[3] More facilities to recycle steel (75 iron mills are available nationwide)

[4] Used in a variety of products and recyclable within the same category

Steel cans are pressed into scraps and used as materials for electric and steel furnaces in iron-making plants. They are also used as materials for automobiles, home appliances, railroads, and ships as well as construction materials for buildings and bridges (see Fig. III-5).

Fig. III-4 Weight of Steels Cans Consumed, Weight of Cans Recycled and Recycling Rate

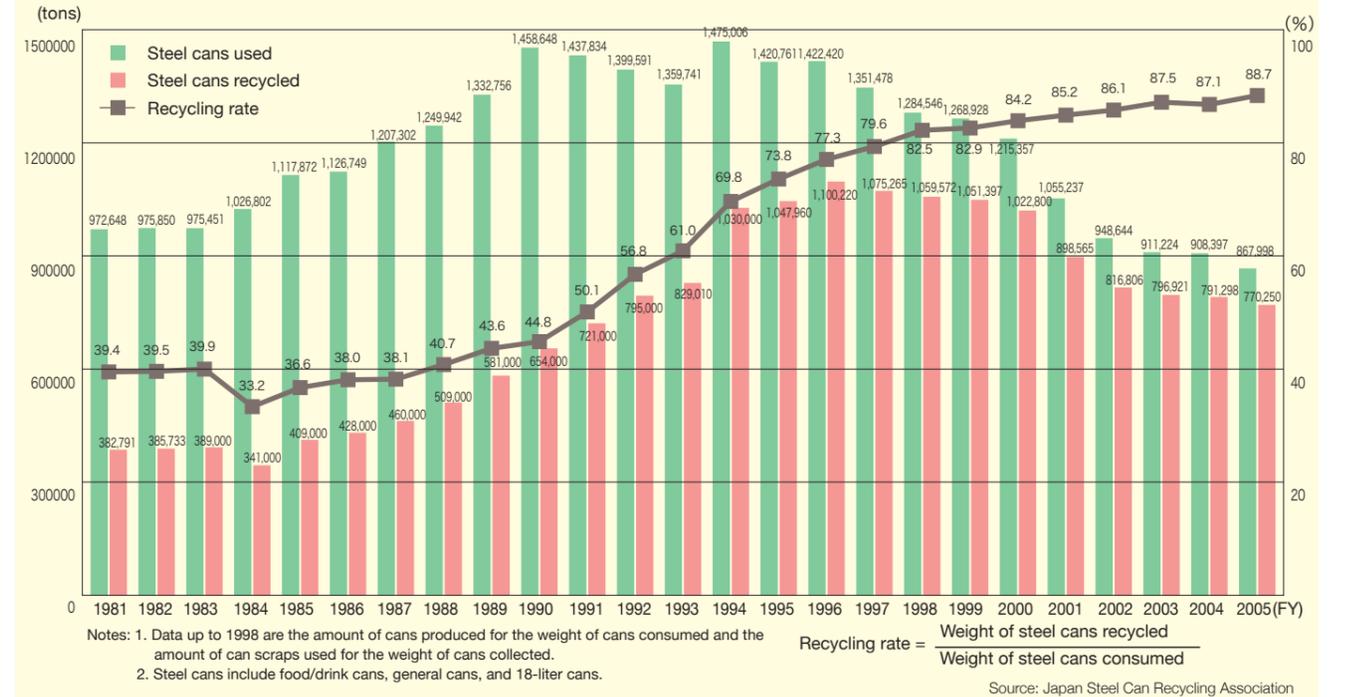
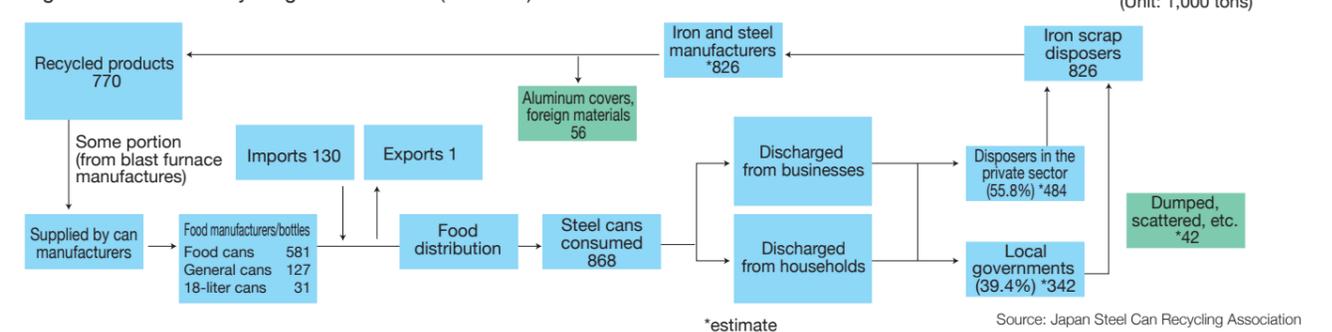


Fig. III-5 Flow of Recycling of Steel Can (FY2005)



3 Aluminum Cans

The weight of aluminum cans consumed, the weight of cans recycled and the recycling rate have been increasing year by year (see Fig. III-6) as the rate of canned beer and the rate of aluminum cans for drinks other than beer have been increasing. The recycling rate of aluminum cans has been improving due to:

- [1] the spread of sorted collection,
- [2] the large number of users of recycled cans, and
- [3] the ease of recycling aluminum cans.

In FY2005, the amount of aluminum cans recycled was 276,000 tons and the recycling rate was 91.7%, with

businesses being asked for their continuous cooperation and to conduct educational activities in order to achieve the 85% level set for by 2006 under the Guidelines for Waste Treatment and Recycling by Product Category. The weight of aluminum cans reused as materials was 158,000 tons in 2005 and the can-to-can rate was 57.3%. Aluminum cans are also reused for automobile engine blocks, motor housings, deoxidizers for iron-making and materials for pots and frying pans (see Fig. III-6 and III-7).

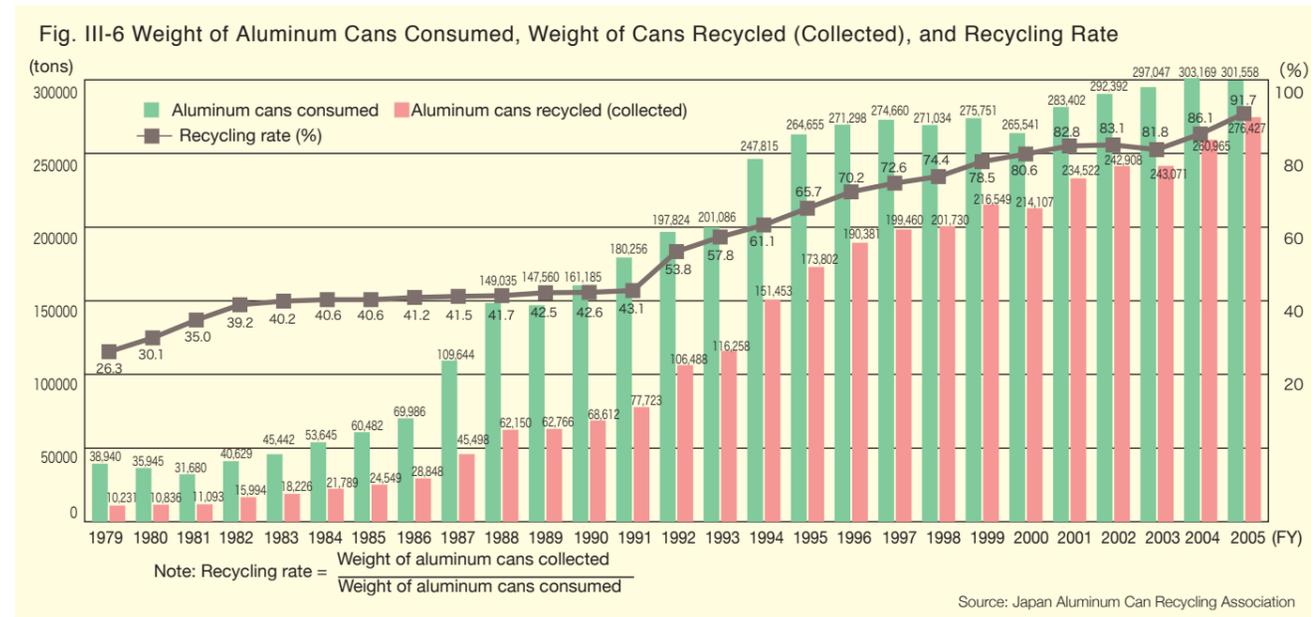
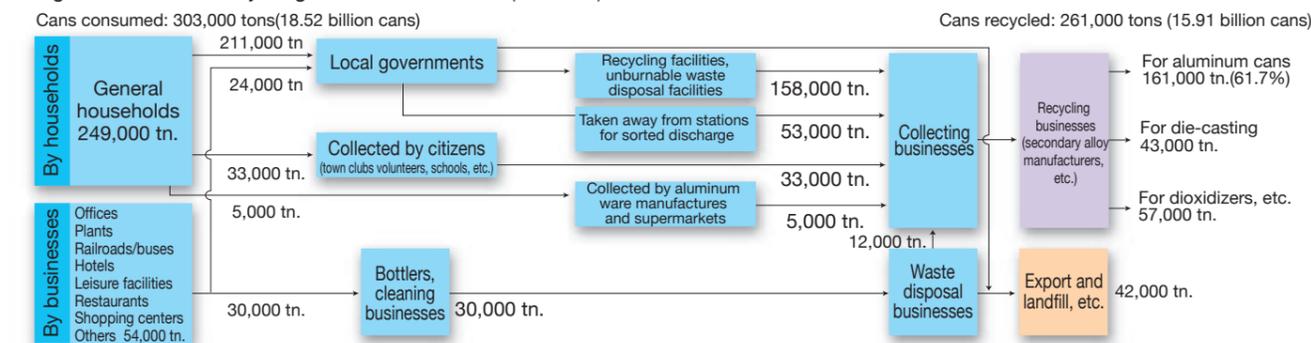


Fig. III-7 Flow of Recycling of Aluminum Cans (FY2004)



- Notes:
- The total amount of aluminum cans recycled is calculated by the Association based on the survey result reported by secondary alloy manufacturers.
 - The total amount of aluminum cans consumed is calculated by the Association based on the data provided by METI and other surveys.
 - The total amount of aluminum cans recycled according to routes is estimated by the Association.

$$\text{Can-to-can rate} = \frac{\text{Weight of cans reused for cans}}{\text{Weight of cans recycled}}$$

Source: Japan Aluminum Can Recycling Association

4 PET Bottles

PET bottles used for soft drinks, soy sauce and alcohol are to be labeled under the Law for Promotion of Effective Utilization of Resources (see page 18). The majority, 95%, of such PET bottles is used for soft drinks.

As for PET bottles that have been labeled since the Containers and Packaging Recycling Law was put into force in 1997, the amount of PET bottles produced, the amount of bottles separately collected and the collection rate have been increasing rapidly, as the amount of PET bottles produced for soft drinks increases (see Fig. III-8).

The number of PET bottles separately collected by municipalities is 252,000 tons, and the collection rate of PET bottles is 47.3% in FY 2005, of which 170,000 tons delivered to the designated body under the Containers and Packaging Recycling Law (Japan Containers and Packaging Recycling Association). However these delivered bottles decreased for the

first time after enforcement of The Law, with increase of managing bottles via independent route by municipalities. And the number of products recycled from PET bottles delivered to the designated body is 143,000 tons, of which about 45% was used carpets and other textile products, and about 41% as sheets for eggs cartons. Retailers also recovered PET bottles independently. The collection rate of PET bottles is 65.6% in FY 2005 if the 97,000 tons recovered from businesses, which has been confirmed by the Council for PET Bottles Recycling, is added.

The number of used PET bottles exported to around China and Hong Kong is increased in recent years. The amount of PET bottles exported from January, 2006 to November PET bottles turned over to the designated body under the Containers and Packaging Recycling Law are 170,000 tons within these collected PET bottles.

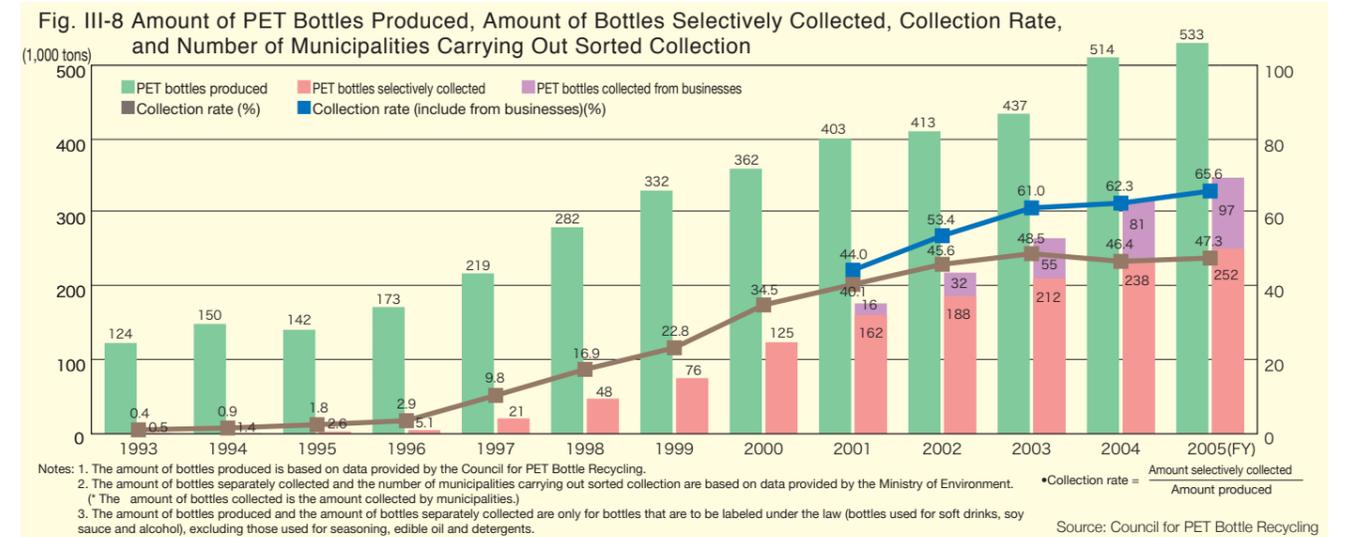
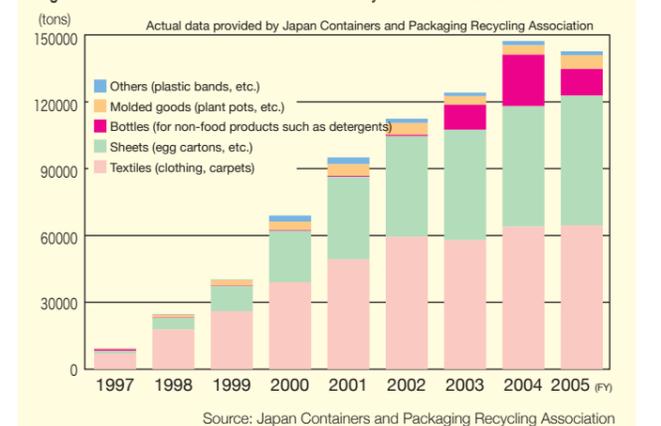


Fig. III-9 Products Recycled from PET Bottles



Source: Council for PET Bottle Recycling

Fig. III-10 Amount and Use of Products Recycled from PET Bottles



5 Plastics

Some important points with respect to recycling of plastic waste are as follows.

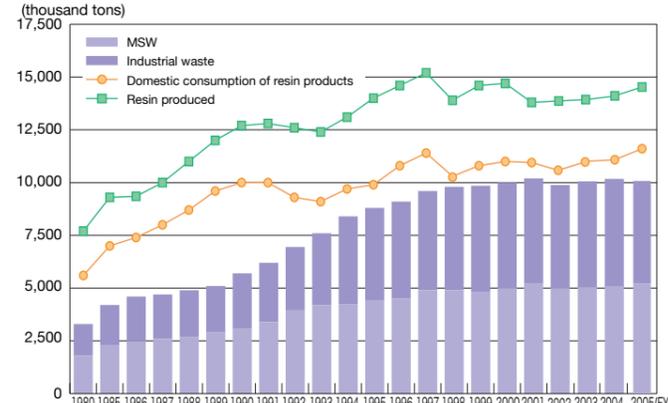
- [1] The effective use rate reached 62%.
- [2] Reuse of general waste plastic and amount of waste plastic recycled to produce RDF is significantly increasing.
- [3] Export of plastic scraps is increasing.

The amount of plastic waste generated in 2005 was 5.2 million tons as MSW and 4.86 million tons as industrial waste. Of the 6.28 million tons of plastic waste used effectively, 1.85 million tons were used as raw materials (material recycling), 290,000 tons were used for liquefaction, gasification or blast furnacing (chemical recycling), the majority of both (2.14 million tons), 620,000 tons were used as refuse-derived fuel (RDF), including raw material/fuel for cement (thermal recycling); 2.31 million tons were incinerated for power generation from waste (thermal recycling), and 1.21 million tons were incinerated for heat application (thermal recycling). (See Fig. III-12) Of the 1.85 million tons used as plastic materials, 930,000 tons were contained in finished products (the remaining 920,000 tons were production/processing waste), the majority of which was used in PET bottles (381,000 tons), followed by packaging film (130,000 tons) and agricultural use (75,000 tons) and polyethylene foam

including trays (71,000 tons). Meanwhile, the amount of plastic scraps exported in 2005 was 1,060,000 tons, up 210,000 tons from the previous year, which indicates that the international recycling system is being established, with China taking a leading role.

Active movements toward waste reduction and reuse can also be seen in the plastic industry. Resin manufacturers and processing businesses are making concerted efforts for technological development, such as thinning PET bottles and shopping bags and unifying the grades for materials of car bumpers.

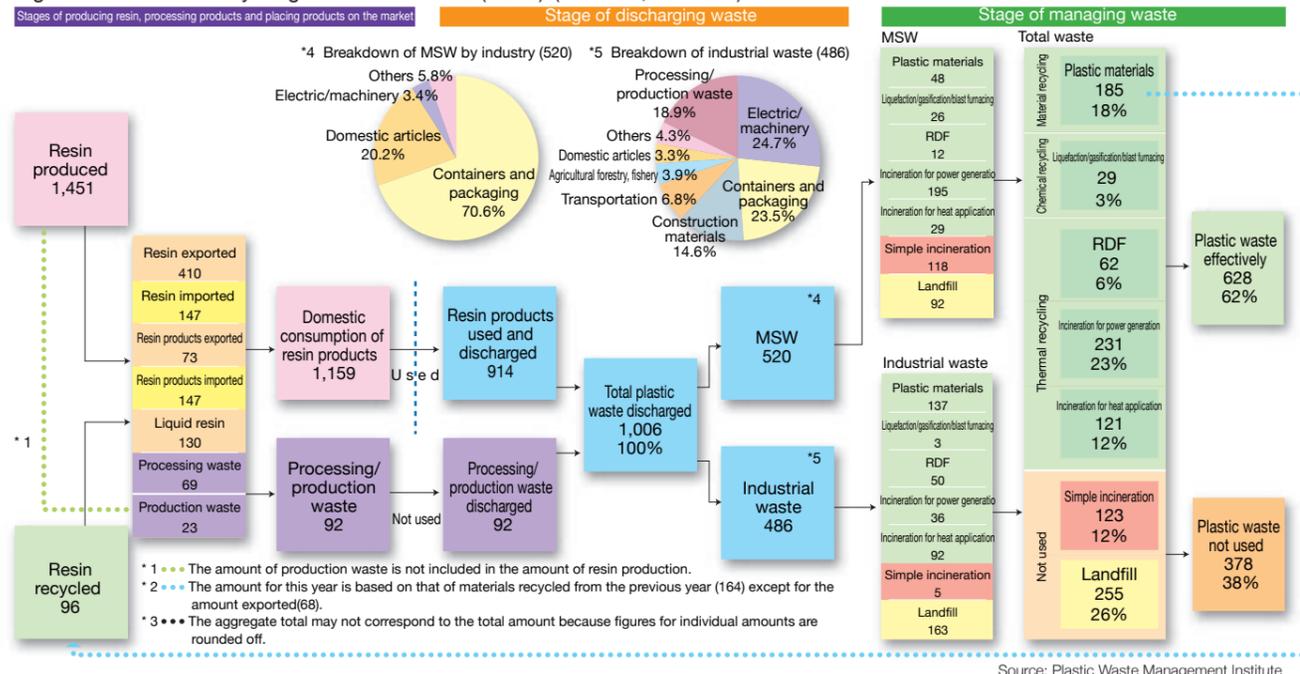
Fig. III-11 Amount of Plastics Produced and Discharged (thousand tons)



Notes: 1. The estimation method was changed in 1994; the amount of production/processing waste has been included in the total amount since then.
2. Domestic consumption of resin products = amount of resin produced - amount of resin exported + amount of resin imported - amount of liquid resin - amount of processing waste + amount of recycled resin input - amount of resin products exported and amount of resin products imported

Source: Plastic Waste Management Institute

Fig. III-12 Flow of Recycling of Plastic Waste (2005) (Unit: 10,000 tons)



6 Styrofoam

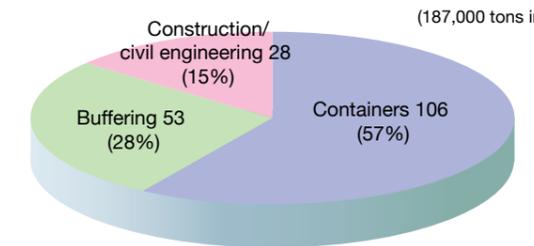
Styrofoam in a broad sense is divided into three types, according to the manufacturing method: expanded polystyrene (EPS) or styrofoam in a narrow sense; polystyrene paper (PSP); and extruded polystyrene (XPS). These three types of styrofoam are used and treated in final disposal differently.

- (1) **EPS:** It is used for containers for agricultural or fishery products or buffer packaging for home appliances and OA equipment, and generally discharged from businesses. The amount of EPS supply decreased slightly from about 240,000 tons in 1991 to about 200,000 tons in 2002. The amount of domestic distribution has been about 170,000 to 180,000 tons (see Fig. III-14), of which 57% is used for containers for fresh fish or vegetables/fruit, 28% for buffering, and the rest for construction/civil engineering (see Fig. III-13).

EPS waste is collected through wholesale markets, and large home appliance stores and supermarkets or by businesses engaging in intermediary treatment of industrial waste. The amount of EPS collected and recycled has been

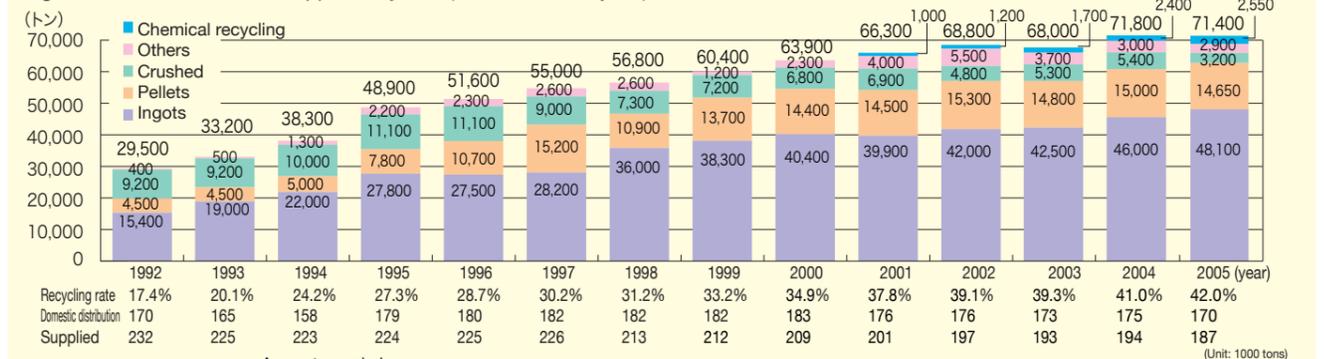
increasing year by year, reaching 71,400 tons (material recycling) with the material recycling rate at 42.0% in 2005. Collected EPS waste is recycled as ingots (about 80% is finally exported), reused as packaging, videocassettes or synthetic wood after being palletized, or used as mortar additives after crushing. Thermal recycling such as incineration for power generation was carried out for 29.1% of domestic distribution (2005). And the material recycling and energy recovery rate was 71.1%. Chemical recycling, such as reduction in blast furnacing, liquefaction or gasification, also started in 2001 (see Fig. III-14).

Fig. III-13 Amount of EPS Supplied, by use (thousand tons/year)



Source: Japan Expanded Polystyrene Recycling Association

Fig. III-14 Amount of EPS Supplied, by use (thousand tons/year)



- (2) **PSP:** It is used for many kinds of food containers such as trays, noodle cups, natto containers, and packed-meal cases. The amount of PSP food containers produced annually is about 115,000 tons, accounting for about 0.3% of domestic waste. Some food containers are made of resin other than PSP. By estimate, the total amount of food containers accounts for about 7% of the domestic consumption of resin products (about 11.59 million tons) (see Fig. III-12).

PSP food containers are mainly discharged from households and separately collected by municipalities as one of the commodities to be regulated under the

Containers and Packaging Recycling Law. Food trays, a typical example of PSP food containers, are collected by the industries concerned or by individual tray manufacturers at supermarkets or packaging stores in cooperation with such stores (self-collection system; see Fig. II-10). The rate of self-collected PSP trays exceeds 20% of the amount of production. (Source: Japan Polystyrene Foamed Sheet Industry Association)

- (3) **XSP:** It is used as heat-insulating construction materials and discharged by construction operations

7 Paper

In 2005, the production of paper/paperboard reached 30.95 million tons, the majority of which is consumed domestically (see Fig. III-15).

Used paper discharged from households is collected by local communities or municipalities. Used paper discharged from industries is collected by collecting trader, and used paper discharged voluminously from industries (ex. printing and bookbinding plants) is collected by tsuboage business and specialized engaged in collecting mainly industrial waste. In 2005, 22.32 million tons of used paper was collected and about 18.60 million tons of recycled paper was consumed (see Fig. III-16). Both the paper collection rate and the paper recycling rate (rate of used paper to the total paper-making raw materials) have been increasing year by year, reaching 71.1% and 60.3% in 2005 respectively (see Fig. III-17).

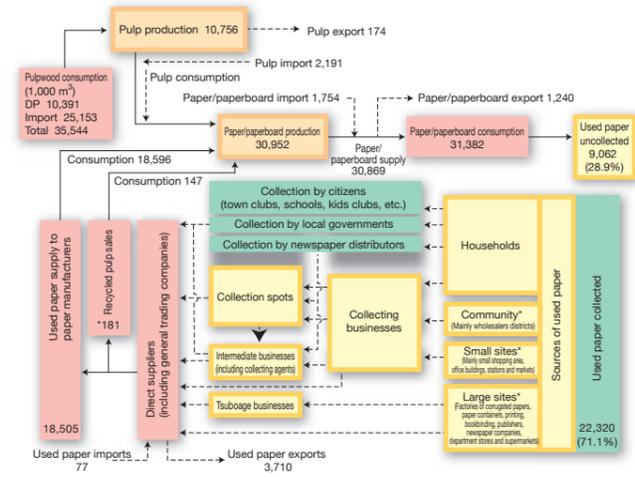
Target of the paper recycling rate is 62%, it is expected to be achieved by FY2010 under the Law for Promotion of Effective Utilization of Resources. In order to achieve this target and to advance the used paper recycling further, it is important to advance the used paper in the paper field where the paper recycling rate is low compared with the hardboard field. Therefore, it is expected that improvement of used paper recycling technology by paper manufacturer, and positively deepening understanding to the used paper use products and thoroughness of separately exhaust by consumer.

Under the Containers and Packaging Recycling Law, 71,012 tons of used paper containers were separately collected by

municipalities (see Fig. II-11) and 63,031 tons were recycled in FY 2005. Recycled paper is used for many kinds of paper products such as toilet paper and telephone books.

About 80% of the total amount of recycled paper is used for corrugated cases, newspapers, and magazines. In recent years, the export of the used paper expands rapidly, and 3.71 million tons are exported in 2005. Slightly less than 1% of total recycled paper is also used as cushion such as pulpmold, heat insulator for building, solid fuel, etc.

Fig. III-16 Generation and Distribution of Recycled Paper (2005: thousand tons/%)



Note: Figure with * is estimated on the condition that 80% of used paper was recycled as pulp.
Source: Annual Report of Paper, Printing, Plastics Products and Rubber Products Statistics, Japanese Trade Monthly Sheet

Source: Paper Recycling Promotion Center

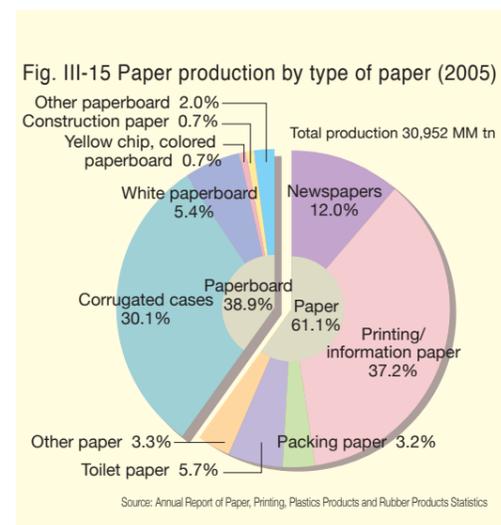
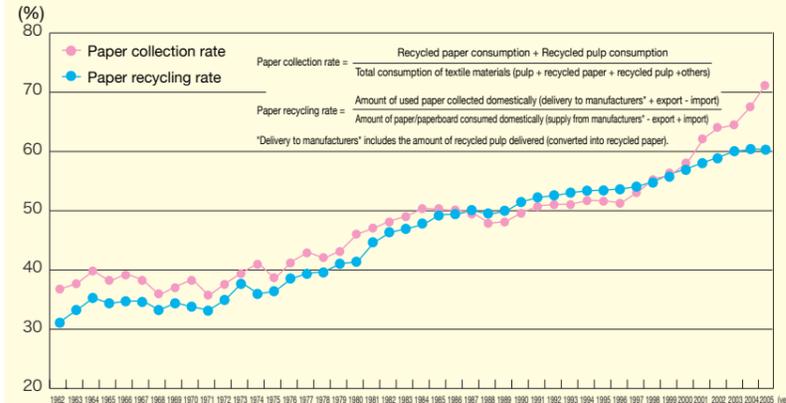


Fig. III-17 Paper Collection Rate and Paper Recycling Rate (%)



Source: Paper Recycling Promotion Center

8 Vehicles and motorcycles

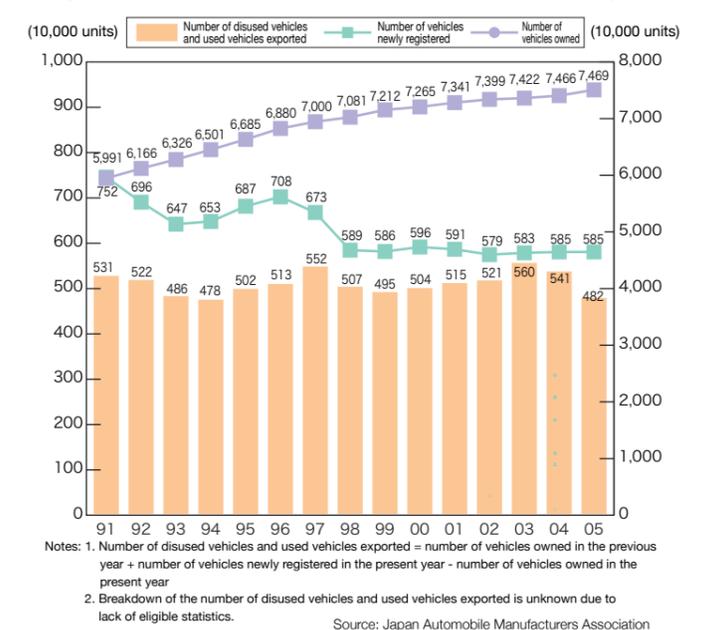
In 2005, the number of vehicles owned was 74.69 million while the number of disused vehicles has remained almost unchanged in the past decade at around 4 million a year (see Fig. III-18). The recycling system for end-of-life vehicles has already been established in the form of infrastructure for collecting iron scraps. In this system, the collection rate is nearly 100% and the recycling rate has reached 90% (see Fig. III-19). In May 1997, the Ministry of International Trade and Industry (the current Ministry of Economy, Trade and Industry) published the End-of-Life Vehicle Recycling Initiative, which set specific numerical targets such as improving the recycling rate for end-of-life vehicles to 95% or over by 2025 and reducing the amount of end-of-life vehicles dumped into landfill to 1/5 of the amount in 1996.

Shredder dust generated from end-of-life vehicles (waste remaining after shredding dismantled ELVs) was mainly used as landfill. But the shortage of final waste disposal facilities means we need to decrease the quantity of shredder dust used as landfill. Furthermore, fees are needed when car owners dispose of cars because of the rising landfill fee and changes in the fee for iron scraps. Under these circumstances, the recycling system of ELVs was in disarray at one time, and there was concern about illegal disposal.

It contributes to global warming when car air conditioners and CFCs are not treated properly. Airbags are an obstacle in car dismantling and need professional treatment. In view of these circumstances, the End-of-life Vehicle Recycling Law is enacted as of January 2005. The number of vehicles has been pay deposit of

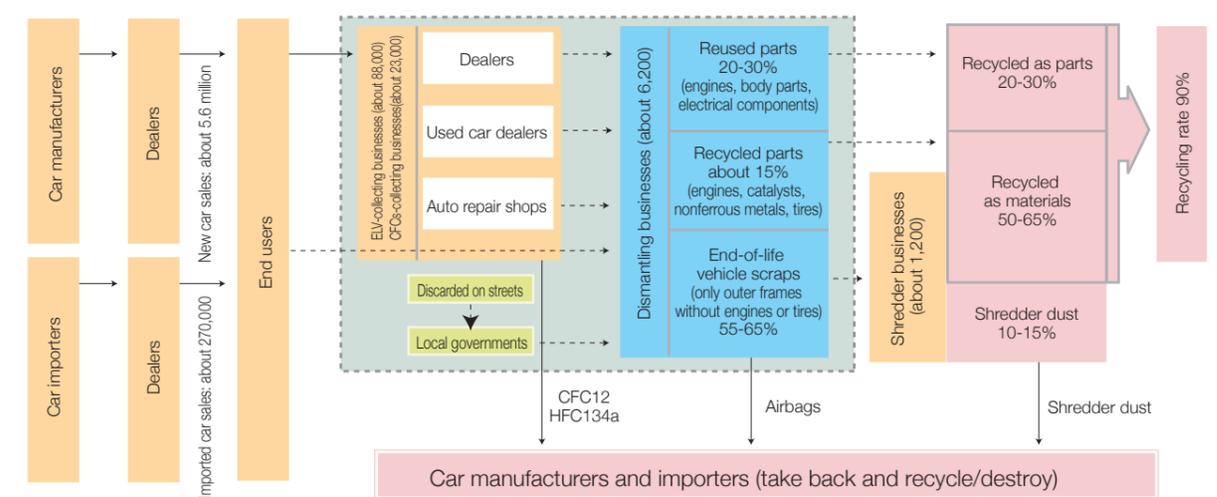
accounting officials is about 70.92 million (about 682.2 billion yen) in November, 2006. As the Law for Promotion of Effective Utilization of Resources includes automobiles in the specified resource-saving products and the specified reuse-promoting products, the automobile industry works on the recycling of resin parts, development of recycling technology in consideration of the discarding stage, development of new materials and car structures that will contribute to recycling, and implementation of material marking.

Fig. III-18 Number of Disused Vehicles and Used Vehicles exported



Notes: 1. Number of disused vehicles and used vehicles exported = number of vehicles owned in the previous year + number of vehicles newly registered in the present year - number of vehicles owned in the present year
2. Breakdown of the number of disused vehicles and used vehicles exported is unknown due to lack of eligible statistics.
Source: Japan Automobile Manufacturers Association

Fig. III-19 Flow of Recycling of End-of-Life Vehicles and the Current Recycling Rate (March 2006)



Note: The same businesses may operate as a dealer, used car dealer, or auto repair shop.

$$\text{End-of-life vehicle recycling rate} = \frac{\text{Weight of vehicles supplied for recycling}}{\text{Weight of vehicles collected}}$$

Source: Ministry of Economy, Trade and Industry

Motorcycle manufacturers that are members of Japan Automobile Manufacturers Association and participating

System of motorcycle recycling

There are 190 (designated) collecting sites for disused motorcycles in Japan. Businesses dealing with the disused motorcycles recycling system (15,000 shops) are clearly identified with the sticker so that users can readily recognize.

For disposal/recycling of disused motorcycles, 14 facilities are properly established nationwide. Proper treatment is provided to the motorcycles in consistency with the instruction manual developed by participating manufacturers and importers.

Since recycling fee is paid at the time of purchase when buying a new motorcycle bearing a recycling label, motorcycle shops take the motorcycle without charging a user with the fee when it is disused. For motorcycles without recycling label, users pay the fee for recycling.

An electronic information system is introduced by the designated body to collect the motorcycle, disposal/recycling facilities and management company for more efficient management of recycling fees, information and distribution of motorcycles. Traditional manifest is replaced by the control voucher (recycling fee receipt integrated) to manage the distribution until it is taken for recycling.

motorcycle importers established a voluntary motorcycle recycling system in October 2004.

Fig. III-20 Motorcycle recycling system

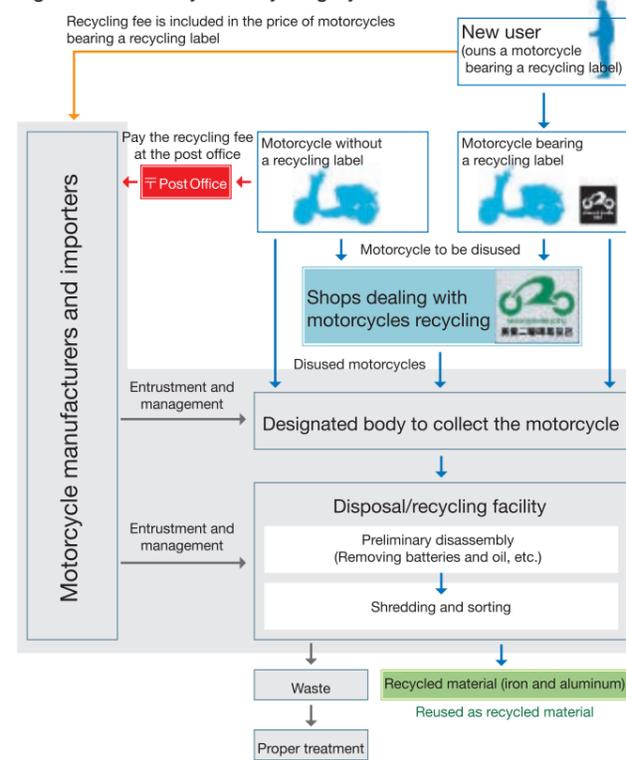
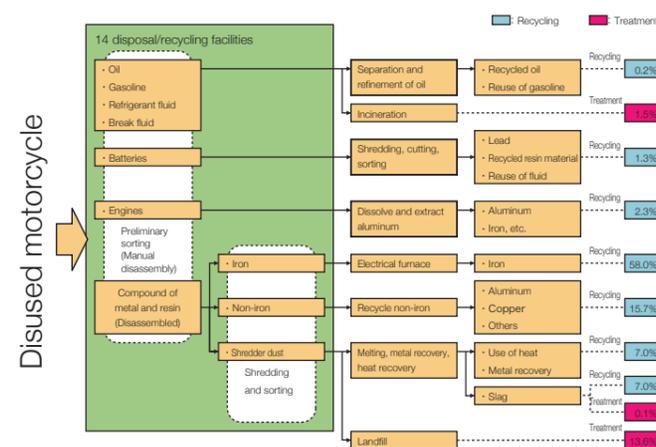


Fig. III-21 Flow of disposal/recycling of disused motorcycles (by weight)

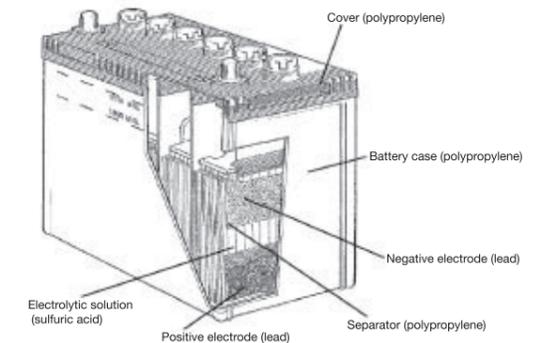


9 Lead batteries for Vehicle

25 million vehicle batteries for new vehicles or maintenance are brought into Japanese market annually. The life of vehicle batteries is roughly 3-5 years depending on usage.

Due to the nature of vehicle batteries, plastic such as polypropylene and large amount of lead and sulfuric acid is contained in it so that a proper disposal, therefore, is vital.

Fig. III-22 Structure of vehicle batteries

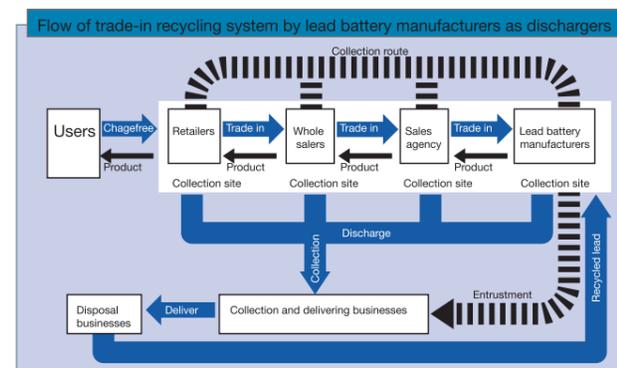


The current recycling system of vehicle batteries is established. The members of the Battery Association of Japan that are battery manufacturers voluntarily purchase recycled lead batteries and take back and recycle them and 20 million lead batteries are expected taken back annually.

Although this system exerted some effectiveness and functionality, there was a concern that collection of batteries became stagnant due to increased amount of imported vehicle batteries of which recycling requirements were not

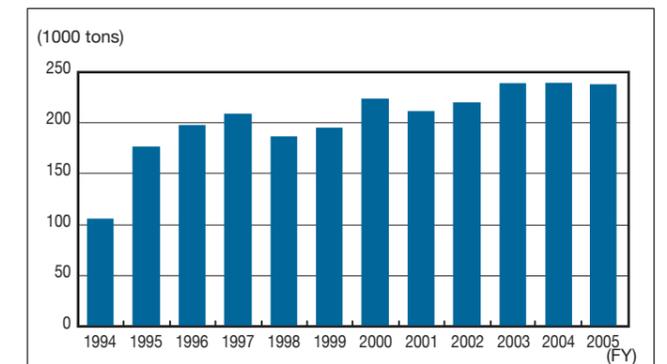
necessarily met and possibility that disused batteries would become chargeable if the market price of lead had significantly dropped. In view of these circumstances, the reports are collected and sorted at the joint meeting of the Central Environment Council in order to assure the effectiveness of collection and recycling of imported batteries and establish a continuous and stable system which is less susceptible to the trend of the lead market.

Fig III-23 Present recycling system of vehicle batteries



Source: Battery Association of Japan

Fig. III-24 Amount of lead collected

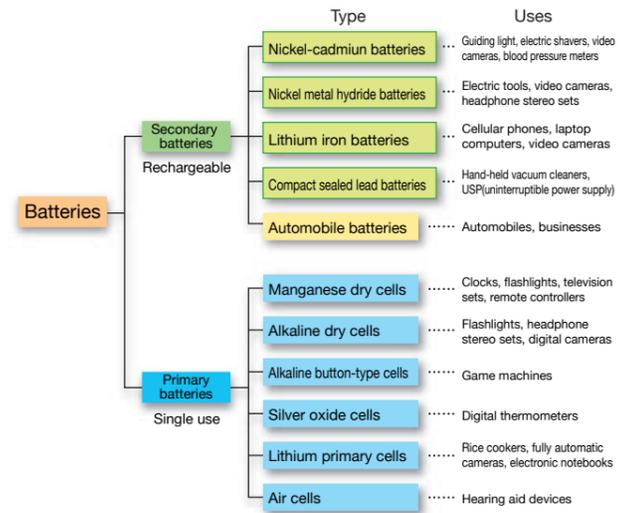


Source: Yearbook of Mining, Non Ferrous Metals, and Products Statistics (to December 2001)/ Iron and Steel, Non-ferrous metal, and Fabricated Statistics (from January 2002)

10 Compact Secondary Batteries (Rechargeable Batteries)

There are many types of batteries/cells, as shown in Fig. III-25.

Fig. III-25 Types of Batteries/Cells



Among these types of batteries/cells, the Law for Promotion of Effective Utilization of Resources stipulates that compact rechargeable batteries (nickel-cadmium batteries, nickel metal hydride batteries, lithium ion batteries, and compact sealed lead batteries) shall be collected and recycled by manufacturers of compact rechargeable batteries, and collected by manufacturers of equipment that uses such batteries (29 items; see page 18). Collection and recycling of compact rechargeable batteries is carried out by the Japan Portable Rechargeable Battery Recycling

Center (JBRC), which consists of manufacturers of compact rechargeable batteries and manufacturers of equipment that uses such batteries and Mobile Recycling Network which consists of Telecommunications Carriers Association and Communications and Information Network Association of Japan. Compact rechargeable batteries are collected from cooperative shops such as electric appliance home improvement retailers and bicycle shops, and registered businesses engaging in electric works and building maintenance, municipalities, and schools, and mobile phone retailers, and then converted by recycling contractors into nickel, cadmium, cobalt, lead, and iron. The amount of compact rechargeable batteries collected has been increasing year by year, and in FY2005, 3,677 tons in total of such batteries were collected (see Fig. III-1). The recycling rate differs among types of compact rechargeable batteries, ranging from 50% to 76% (FY2005). *JBRC collects nickel-cadmium batteries, nickel-metal hydride batteries, lithium ion batteries, and compact sealed lead batteries for four home-use items (cordless phones, headphone stereo sets, video cameras and hand-held vacuum cleaners). Mobile Recycling Network collects lithium batteries for cellular phones.

Fig. III-26 Collection Box of Compact Rechargeable Batteries (JBRC)

Please put used compact rechargeable batteries (domestic use only) into the recycling boxes located at shops that are members of the Rechargeable Battery Recycling Club. You can search for these collection spots on the JBRC Website.(http://www.jbrc.com).



Source: Japan Portable Rechargeable Battery Recycling Center

Table III-1 Amount of Compact Secondary Batteries (Rechargeable Batteries) Collected

	Voluntary collection(t)	Disposed (t)	Recycled (t)	Recycling rate(%)	Statutory target(%)
Nickel-cadmium batteries	947 (975)	853 (878)	625 (647)	73.3 (73.7)	60
Nickel metal hydride batteries	125 (110)	113 (99)	86 (76)	76.1 (76.8)	55
Lithium iron batteries	224 (226)	208 (216)	131 (119)	63.0 (55.1)	30
Compact sealed lead batteries	2,381 (3,939)	2,381 (3,938)	1,190 (1,970)	50.0 (50.0)	50
Total	3,677 (5,278)	3,554 (5,159)	2,032 (2,831)		

Notes: The upper figures are actual data of FY2005 while figures in parenthesis indicate a sum of FY2004 based on the data publicized by JBRC, Battery Association of Japan, Telecommunications Carriers Association and Communications and Information Network Association of Japan (Mobile Recycling Network)

11 Cellular phones and Personal Handy Systems (Cell-phones)

The number of subscribers of cell-phones in Japan exceeds 90 million as of the end of March 2005 resulting in a 70% dissemination rate against population. Many subscribers tend to purchase latest models within a short time of period (2 to 2.5 years) and many cell-phones are disposed.

Cell-phones use rare metals such as gold, silver and palladium as well as general metals of copper, aluminum or iron. On top of it, some parts contain toxic material, e.g., GaAs which requires extra-careful treatment since it will be environmental burden if disposed as non-burnable waste. The Law for Promotion of Effective Utilization of Resources obliges collection and recycling of batteries (compact secondary batteries).

Recycling of cell-phones is promoted by Mobile Recycling Network which consists of cell-phone manufacturers and telecommunication carriers. Body of cell-phones, rechargers and batteries are voluntarily collected at distributors at no cost and they are recycled as metal materials. Environmental Impact Assessment for cellular phones and PHS is established as a guideline for the manufacturers and assessments are implemented.

Fig III-27 Cell-phone collection shop



Fig. III-28 Flow of recycling of cell-phones

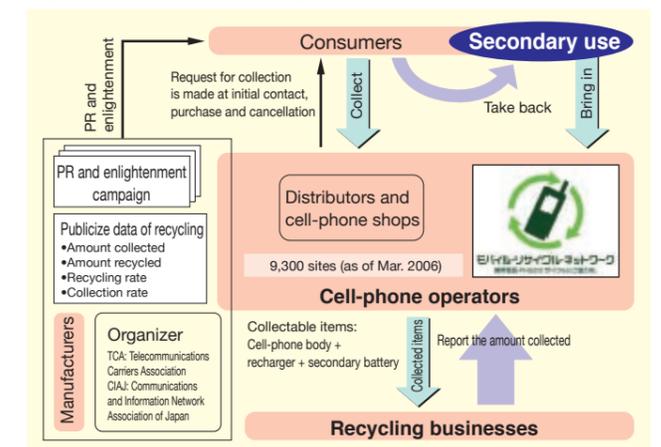


Table III-2 Factual data of recycling of cell-phones

		FY2000	FY2001	FY2002	FY2003	FY2004	FY2005
Cell-phone body	Amount collected (one thousand units)	13,615	13,107	11,369	11,717	8,528	7,444
	Weight collected (t)	819	799	746	821	677	622
	Amount recycled (t)	—	151	138	155	129	—
	Recycling rate (%)	—	19	19	19	19	—
Recharger	Amount collected (one thousand units)	3,128	4,231	3,355	4,387	3,181	3,587
	Weight collected (t)	328	361	251	319	288	259
	Amount recycled (t)	—	83	57	75	52	—
	Recycling rate (%)	—	23	23	24	23	—
Battery	Amount collected (one thousand units)	11,847	11,788	9,727	10,247	7,312	6,575
	Weight collected (t)	304	264	193	187	159	132
	Amount recycled (t)	—	139	102	103	84	—
	Recycling rate (%)	—	53	53	55	53	—

Notes: Collection rate is calculated at the time of new purchase and cancellation of the contract using the following formula.

Amount recycled is calculated by the following formula.

Amount recycled = recycling rate _ weight collected

Recycling rate = Rate of metal content of the cell-phone

12 Personal Computers

In accordance with the Law for Promotion of Effective Utilization of Resources enacted in April 2001, computer manufacturers have been required to design products that consider the 3Rs (reduce, reuse, and recycle), and are also obliged to collect and recycle disused computers for business use. Manufacturers have also been required to collect and recycle computers discharged from households. Accordingly, computers sold on or after October 1, 2003, and discharged from households are, in principle, to be collected at designated collection spots, free of charge, and recycled. Computers subject to collection are; desktop PCs including body, CRT display and LCD, and laptop PCs. Standard peripheral devices such as keyboards and mouse are collected if they are discharged with PCs.

Unlike large-sized home electric appliances, disused PCs of home-use is not necessarily leave the end-user when a new PC is bought due to its distribution system feature, since purchasers take the product home and transferring data from the old PC is common. A different system from large-sized home electric appliances is established for PCs.

At present, collection system is established by cooperation between Japan Portable Rechargeable Battery Recycling

Center (JBRC) and Japan Post designating post offices as collection spot of disused PCs from households so that the PCs are collected through "Eco Yu Pack", parcel service for disused PC collection. The number of computers collected from households reached a total of 332,000 in 2005.

Fig. III-29 Number of computers collected

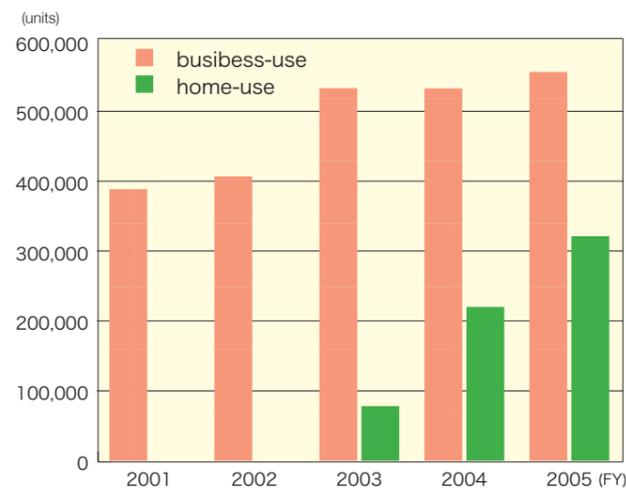
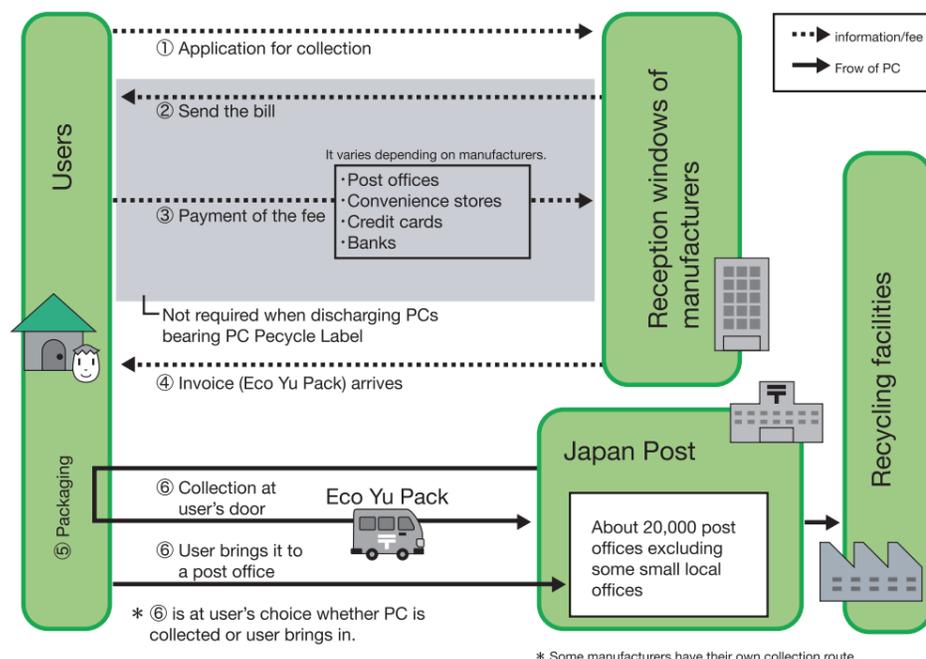


Fig. III-30 Flow of Collection and Recycling of Disused Home-use Computers



IV Others

October is a month for promoting 3Rs

"The month for promoting 3Rs" was originally "the month for promoting recycling" in the light 1R in the Law for the Promotion of Utilization of Recycled Resources enacted in October 1991. Subsequently, more comprehensive approach is demanded through 3Rs (Reduce of wastes, Reuse and Recycling), not only 1R, in order to overcome the constraint of environment and material and keep sustainable development. Basic ideas of 3Rs is defined by the Basic Law for Establishing the Recycling-based Society and specific approaches of 3R is provided in the Law for Promotion of Effective Utilization of Resources, successor of the Law for the Promotion of Utilization of Recycled Resources, and then extensive effort have been made to disseminate 3Rs since 2004 when the month is renamed to "The month for promoting 3Rs".

• The 3R Logo

This is the logo created in 2003 by the Reduce, Reuse, Recycle Promotion Association to encourage active participation and cooperation in 3R activities.

<Design Concept>

Making one step forward for people, the earth and the sky.

The Rs represent "reduce", "reuse" and "recycle".

The three figures are taking one step forward, evoking a sense of progress. Orange represents people, green earth, and blue the sky.



About the Reduce, Reuse, Recycle Promotion Association

Recycling Promotion Association, the predecessor of the Reduce, Reuse, Recycle Promotion Association, was established in September 1991 aiming at developing a sound material-cycle society and carrying out extensive national recycling activities through close cooperation among governments, consumers and industries.

The organization changed its name to Reduce, Reuse, Recycle Promotion Association in June 2002 and carry out extensive national activities especially in October, the month for promoting 3Rs.

Major activities

- (1) Implement the month for promoting 3Rs in October
- (2) Recognition of distinguished people in promoting 3Rs

Headquarters

Clean Japan Center

6th floor, No. 16 Kowa Building, 1-9-20 Akasaka, Minatoku, Tokyo 107-0052 Tel: 03 (6229) 1031

http://www.cjc.or.jp

Japan Environment Association

2nd floor, Prime Kanda Building, 1-11-9 Azabudai, Minatoku, Tokyo 106-0041 Tel: 03 (5114) 1251

http://www.jeas.or.jp

Support system

1 Subsidy system

(1) Support scheme for medium and small size companies and venture companies (R&D project for practical applications)

Financial support is provided with R&D project implemented by medium and small size companies through public invitation. The rate of the financial support is within two thirds of the entire R&D cost with the upper limit of 45 M yen.

(2) Subsidy for R&D project of local industry creation (support projects 3R practical application)

Subsidy for R&D project for local industry creation. It supports R&D project for the benefit of establishing a sound material-cycle society through practical application of 3R and activating local economy by creating a new industry or business. The duration for the project is 2 years or less and the rate of the financial support is within two thirds of the entire R&D cost. (One project receives the subsidy between 30M to 100M yen a year.)

2 Financing system

Loans offered by Development Bank of Japan, Okinawa Shinko Kaihats Kiyu Koko (public loan corporation), Japan Finance Corporation for Small Business, and National Life Finance Corporation

Loans with low interest are available at introduction of new equipment for the benefit of 3Rs if such an activity satisfies a certain degree of requirements.

3 Tax break system

Taxes including special initial depreciation of equipment, property tax and business office tax is diminished at introduction of new equipment for the benefit of 3Rs if such an activity satisfies a certain degree of requirements.

4 Support system by Energy Saving Law and Law for Supporting Recycling

Activities including introduction of new equipment and R&D for the benefit of 3Rs; purchasing new equipment; R&D to streamline energy use; and overseas project to restraint CO2 emission caused by energy consumption in view of energy saving, are eligible to receive support system such as guarantee of liabilities and special cases applied to medium and small size companies on the premise that such an activity satisfies a certain degree of requirements.

5 Environmental community business Project

Discover the environmental community business in which local industries and citizens cooperate through public invitation and support them to launch and grow their business.

6 Eco-town Project

Subsidy is provided to partially cover the construction fee to build a recycling facility in which local public organizations and private businesses cooperate. The subsidy rate varies depending on the project; a half of the cost is subsidized for the application of the first state-of-the-art technology in Japan; and one thirds for a pacesetter project. Subsidy for municipalities

Overview of the project:

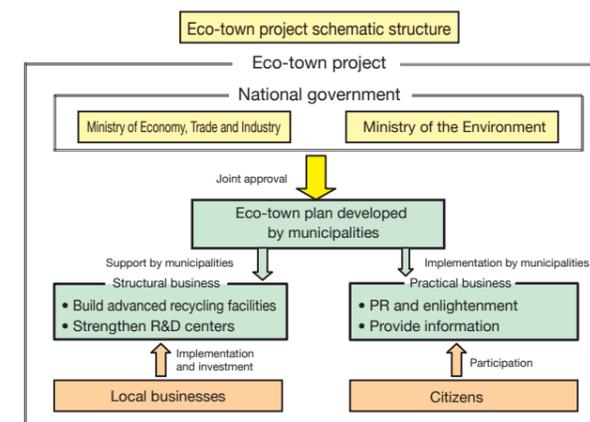
Objective:

- (1) Regional development through activation of environmental industries making most of regional industrial experiences
- (2) Establishing a sound material-cycle society through control of waste amount and promotion of recycling considering regional uniqueness

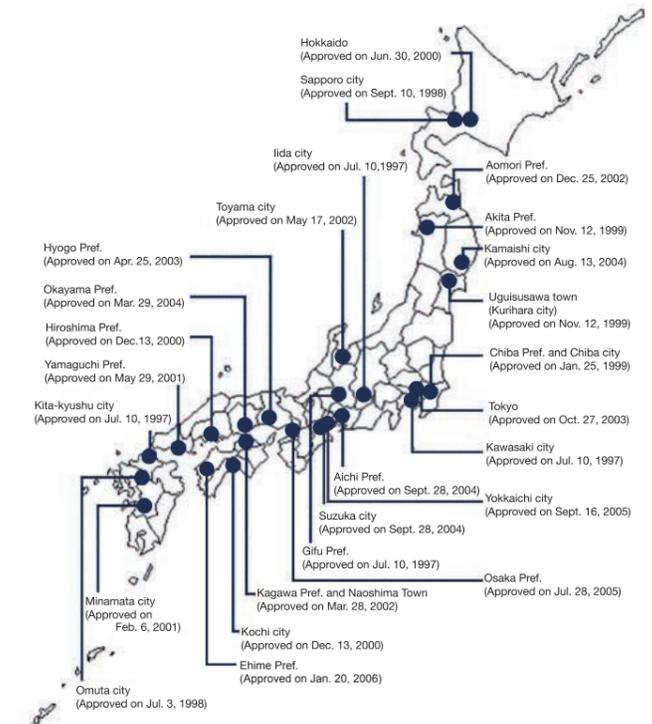
Procedure:

- (1) Municipalities develop their own "Eco-town plan -city plan harmonized with environment-" with their unique features integrated.
- (2) METI and the Ministry of Environment jointly approve the plan that can be a role model for other municipalities.
- (3) Financial support is provided with local public organizations and private businesses with regard to the construction of a recycling facility for the benefit of promoting a pacesetter sound material-cycle society according to the approved plan.

Note: Although the approval system for eco-town project (2) is continuously put in place, the financial support (3) was abolished due to the structural reform as of FY 2005.



Areas approved for Eco-town project (As of December 2006: 26 regions)



More details with regard to (1), [1] and [2], contact engineering department of the local bureau of economy and industry
 More details with regard to (2) and (3), call 03 (3501) 1511 (Recycling Promotion Dept. Industrial Science and Technology Policy and Environment Bureau, METI)

More details with regard to (4), (5), (6) and (7), call 03 (3501) 1511 (Harmonized Industry Promotion Dept. Industrial Science and Technology Policy and Environment Bureau, METI)

Local contact

Ministry of Economy, Trade and Industry

**METI Hokkaido Natural Resources, Energy and Environment Department
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<http://www.hkd.meti.go.jp/information/recycle/index.htm>

**METI Tohoku Natural Resources, Energy and Environment Department
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3-3-1 Honcho Aobaku Sendai city 980-8403
Tel: 022-263-1206 (direct)
<http://www.tohoku.meti.go.jp/kankyo/index.htm>

**METI Kanto Natural Resources, Energy and Environment Department
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1-1 Shintoshin Chuoku Saitama city 330-9715
Tel: 048-600-0292 (direct)
<http://www.kanko.meti.go.jp/seisaku/kankyo/recycle/index.html>

**METI Chubu Natural Resources, Energy and Environment Department
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2-5-2 Sannomaru Nakaku Nagoya city 460-8510
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**METI Kinki Natural Resources, Energy and Environment Department
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1-5-44 Otemae Chuoku Osaka city 540-8535
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<http://www.kansai.meti.go.jp/kankyo.html>

**METI Chugoku Natural Resources, Energy and Environment Department
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6-30 Hacchobori Nakaku Hiroshima city 730-8531
Tel: 082-224-5676 (direct)
<http://www.chugoku.meti.go.jp/policy/energy.html>

**METI Shikoku Natural Resources, Energy and Environment Department
Environmental Protection and Recycling Division**
3-33 Sun-port Takamatsu city 760-8512
Tel: 087-834-3954 (direct)
http://www.shikoku.meti.go.jp/1_sesaku/index.html#kankyo

**METI Kyushu Natural Resources, Energy and Environment Department
Environmental Protection and Recycling Division**
2-11-1 Hakataeki higashi Hakataku Fukuoka city 812-8546
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<http://www.kyushu.meti.go.jp/seisaku/recycle/frame.htm>

**Okinawa General Bureau Department of Economy, Trade and Industry
Environmental Protection and Natural Resources Division**
2-21-7 Maeshima Naha city 900-8530
Tel: 098-864-2065 (direct)
<http://www.ogb.go.jp/move/pickup/kankyo/01.htm>

**Ministry of Economy, Trade and Industry
Industrial Science and Technology Policy and Environment Bureau
Recycling Promotion Division**
1-3-1 Kasumigaseki Chiyodaku Tokyo 100-8901
Tel: 03-3501-4978 (direct)
<http://www.meti.go.jp/policy/recycle/>

Visit the website to study more about “3R policy”.

Update of activities, legal information, and statistical information is available.

<http://www.meti.go.jp/policy/recycle/>

The screenshot shows the Japanese Ministry of Economy, Trade and Industry website. The main heading is "3R政策" (3R Policy) with sub-headings "Reduce (リデュース)", "Reuse (リユース)", and "Recycle (リサイクル)". Below this, there is a section titled "Respect 3R" with a logo. The page also features a sidebar with navigation links for "生活者" (Consumers), "NPO・NGO", "事業者" (Businesses), and "自治体" (Local Governments). A news section at the bottom lists several articles related to recycling and waste management.