Results of the Second Progress Evaluation of the Second Fundamental Plan for Establishing a Sound Material-Cycle Society

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Central Environment Council of Japan

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I Introduction

As global environmental issues and worldwide resource constraints manifest themselves, there is a growing need to create a Sound Material-Cycle (SMC) society by making utmost use of the value of resources and ensuring material cycles in society.

In order for Japan to achieve its target of reducing greenhouse gas emissions by 25% from the 1990 level by 2020, which was stated by Prime Minister Hatoyama on occasions such as the United Nations Framework Convention on Climate Change summit in September 2009, the government needs to take various measures to establish a SMC society and Low-carbon Society, including transforming the social structure.

The Fundamental Law for Establishing a Sound Material-Cycle Society (Law No. 110 of 2000; hereinafter referred to as the "Fundamental Law"), instituted in May 2000, requires that the Fundamental Plan for Establishing a Sound Material-Cycle Society (hereinafter referred to as the "Fundamental Plan") should be formulated as the basic plan for implementing in a comprehensive and systematic manner measures relating to the establishment of a SMC society. Pursuant to this requirement, the Cabinet approved the First Fundamental Plan in March 2003 and the Second Fundamental Plan in March 2008.

The Second Fundamental Plan, which is based on the Basic Environment Plan, is positioned as the basic blueprint for building a "sustainable society," along with a "Society in Harmony with Nature," which will ensure that people can continue to fully enjoy the blessings of nature in the years ahead, and a "Low-carbon Society" as a means to combat global warming. The Fundamental Plan aims to realize these views by establishing an "SMC society," which minimizes environmental burdens arising from extraction and disposal of resources. While presenting a medium- to long-term view for the establishment of a SMC society, the Second Fundamental Plan includes a greater number of indicators and numerical targets for the establishment of a SMC society and describes the roles that citizens, NGOs/NPOs, universities, business entities, and local governments are expected to play and efforts that the national government should make.

Just like the First Fundamental Plan, the Second Fundamental Plan is subject to some requirements in order to ensure its steady implementation. These include evaluation by the Central Environment Council of the progress of measures carried out under the Fundamental Plan and intensive deliberation by the Central Environment Council on key evaluation items set for each fiscal year, followed by the reporting of policy directions to the government (Cabinet) as needed.

This report provides the results of the second evaluation of the Second Fundamental Plan. Prior to evaluation, three key evaluation items were defined: (1) progress of comprehensive efforts toward the three social visions—SMC society, Low-carbon Society, and Society in Harmony with Nature—with emphasis on the first and the third, (2) efforts by local governments and NGOs/NPOs to establish an SMC society in connection with the formation of SMC blocks, and (3) quantitative measurement and evaluation of material flow indicators and effort indices. The Council convened seven times for intensive deliberation since September 2009 and compiled the evaluation results reported herein.

With the interim report slated to be issued by the end of FY 2010, the present evaluation covers the results of material flow indicators and effort indices over the period through FY 2007 in principle, for which data are available (or through FY 2008, if the latest data are available), and policy measures and efforts that were implemented no earlier than February 2009, when the results of the first progress evaluation of the Second Fundamental Plan were reported to the Cabinet.

The Central Environment Council hopes that evaluation reports to date and the further advancement of measures based on the reports will help enhance efforts to establish an SMC society.

II Progress of numerical targets for the establishment of a SMC society

1. Progress toward targets concerning material flow indicators

Present situation

1 Indicators for which quantitative targets are set

The progress of the indicators for which quantitative targets are set is shown below. To indentify change over time, Table 1 compares numbers with those in FY 2000, the first year of SMC efforts.

Table 1 Changes in resource productivity, cyclical use rate, and final disposal amount.

		FY 2015 (target year)	FY 2000	FY 2005	FY 2006	FY 2007	Comparison with FY 2000
Resource productivity	Ten thousand yen per ton	42	26.3[1)]	32.8[1)]	34.7	36.1	+37%
Cyclical use rate	%	14-15	10.0	12.1	12.5	13.5	+3.5%
Final disposal amount	Municipal solid waste (million tons)	-	11	7	7	6	▲40%
	Industrial waste (million tons)	-	45	24	22	21	▲54%
	Total (million tons)	23	57	32	29	27	▲53%

1) Due to revision of conversion factors and the like, these numbers are different from those used for discussion for the formulation of the Second Fundamental Plan.

[Reference]

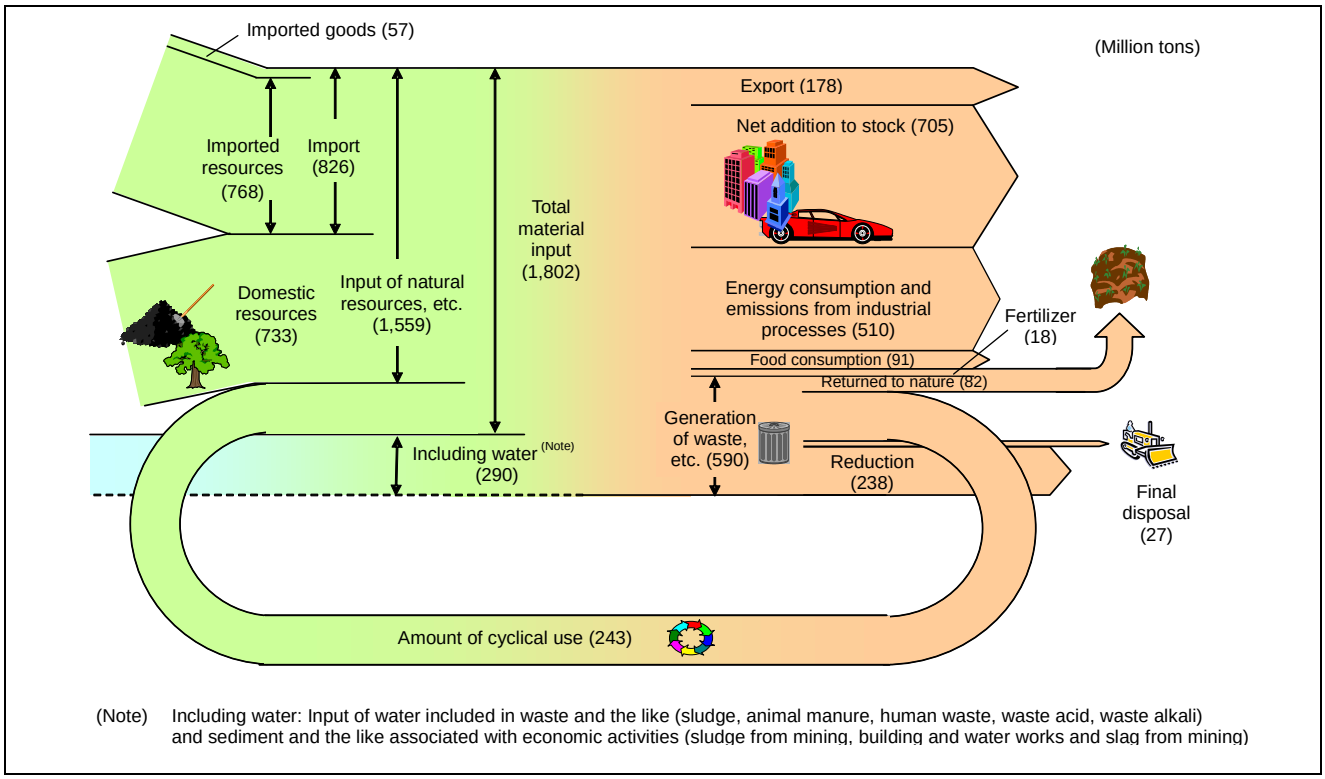


Figure 1 Illustration of material flow in Japan in FY 2007

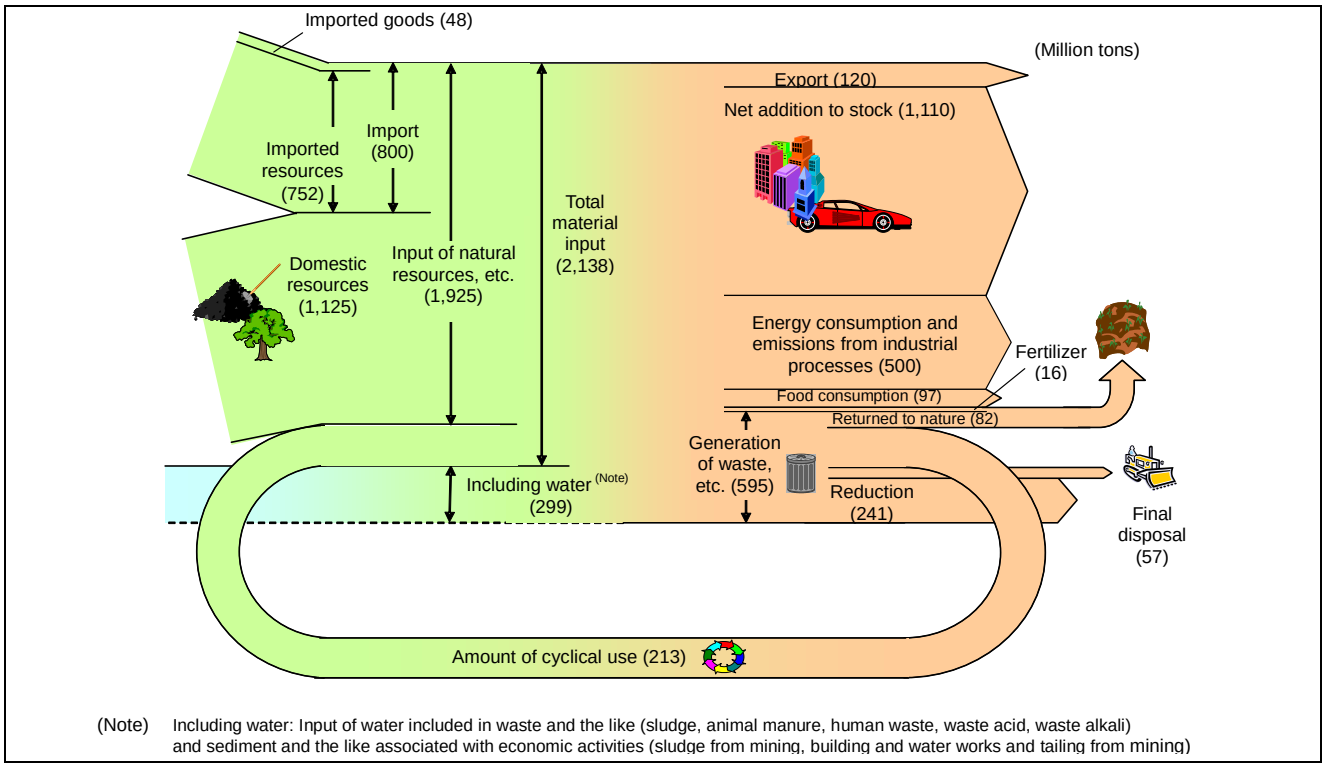


Figure 2 Illustration of material flow in Japan in FY 2000

(1) “Inlet”: Resource productivity

Japan’s resource productivity in FY 2007 was about 361 thousand yen per ton, up about 37% from about 263 thousand yen per ton in FY 2000.

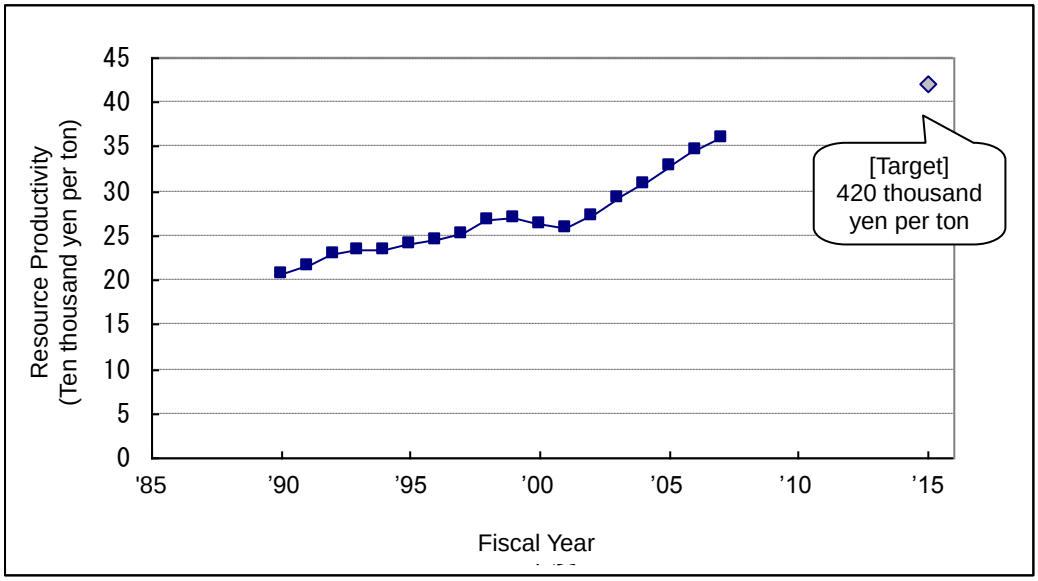


Figure 3 Changes in resource productivity

- Resource Productivity (= GDP/Natural resources input)
  Natural resources input indicate the amount of home-extracted and imported natural resources and imported products. It is an indicator that shows how effectively goods are used by industry and in people’s everyday lives (how much wealth people have created with fewer resources) by calculating the gross domestic product (GDP) from natural resources per unit input.

The breakdown of resource productivity indicates that Japan’s GDP increased from about 552 trillion yen (FY 2006) to about 562 trillion yen (FY 2007), while natural resources input in Japan declined from about 1,591 million tons (FY 2006) to about 1,559 million tons (FY 2007). The two elements of resource productivity both changed in the direction to improve resource productivity.

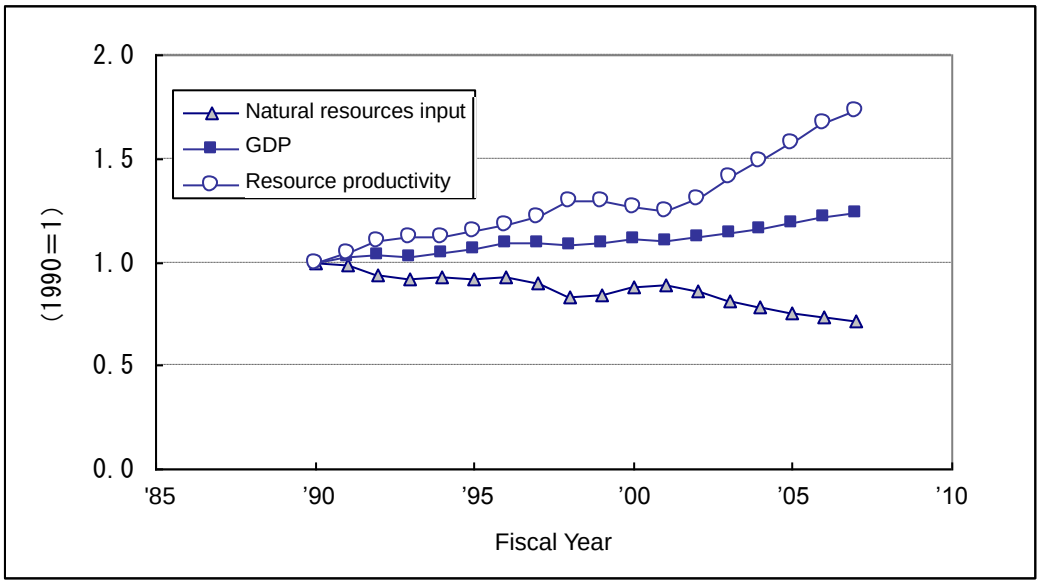


Figure 4　Changes in resource productivity, GDP and natural resources input

The breakdown of natural resources input shows that the input of non-metallic mineral resources, such as rock, earth and sand, has declined over the past few years. The breakdown by origin indicates that the input of domestic natural resources diminished.

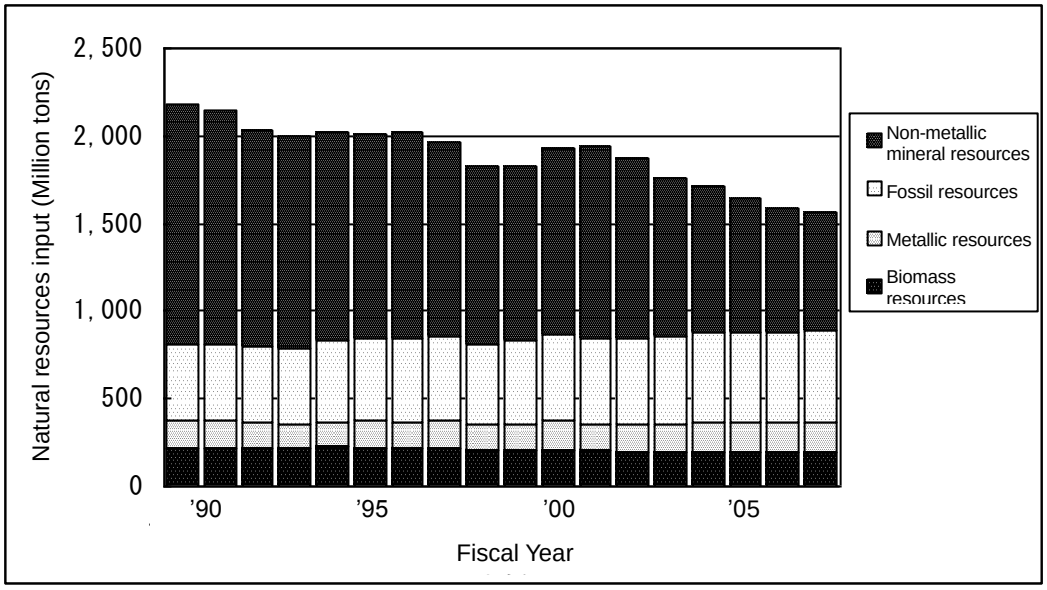


Figure 5　Natural resources input by resource type

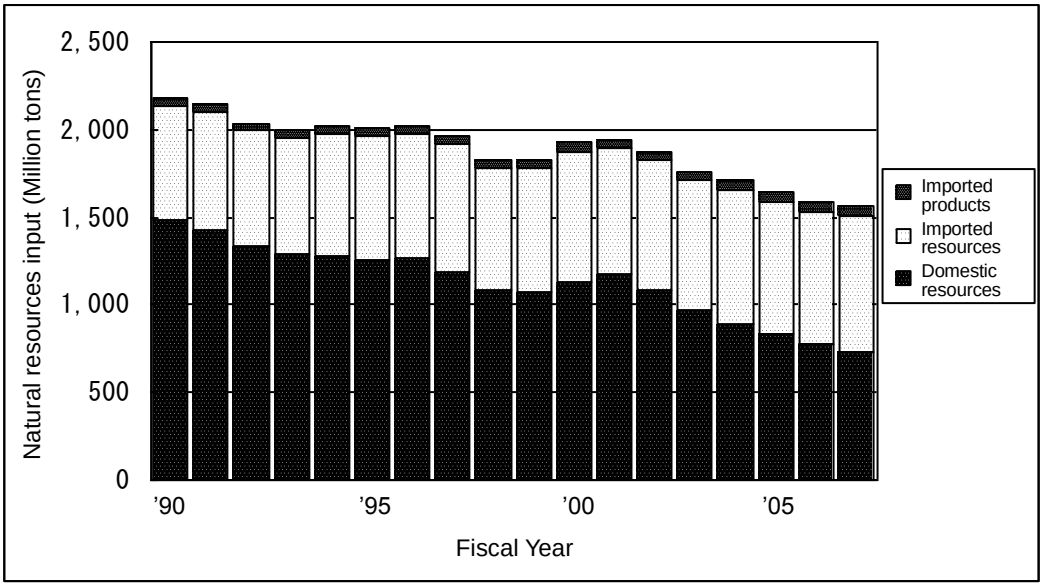


Figure 6 Changes in natural resources input by origin (domestic resources, imported resources/products)

The cause of increase in resource productivity from 2003 to 2007 was analyzed from two perspectives: unit requirement factors and structural factors. The results show that although there is variation from year to year, the increase can be attributed to both change in industrial structure and improved productivity in industries, in general (Notes 1 and 2).

Table 2 Contribution of unit requirement factors and structural factors to change in resource productivity

	Unit requirement factors	Structural factors	Total
Change in 2003-04	15%	85%	100%
Change in 2004-05	86%	14%	100%
Change in 2005-06	76%	24%	100%
Change in 2006-07	42%	58%	100%

(Note 1) There are three factors contributing to change: unit requirement, structure and import. The contributions above were calculated by assuming the contribution of the first two types of factors as 100%, with import factors excluded.

(Note 2) The past estimates were recalculated because the number of sectors covered in the transaction amount table (fixed-price evaluation) of the simplified extended interindustry relations table (Ministry of Economy, Trade and Industry) used for our estimates reduced to 73 from 2007 data onward. For this reason, past values are different from those presented in the progress evaluation report in last fiscal year.

[1] Improvements in unit requirement factors mean either that the same goods and services can be produced with smaller amounts of resources, or that goods and services with higher value can be produced with the same amounts of resources.

[2] Structural factors represent the impact on nationwide resource productivity exerted by change in the balance between goods and services involving large amounts of inducing materials input per value of final demand and goods and services involving small amounts of that.

(2) “Cycle” : Cyclical use rate

The cyclical use rate in FY 2007 was about 13.5%, up 3.5 points from about 10.0% in FY 2000.

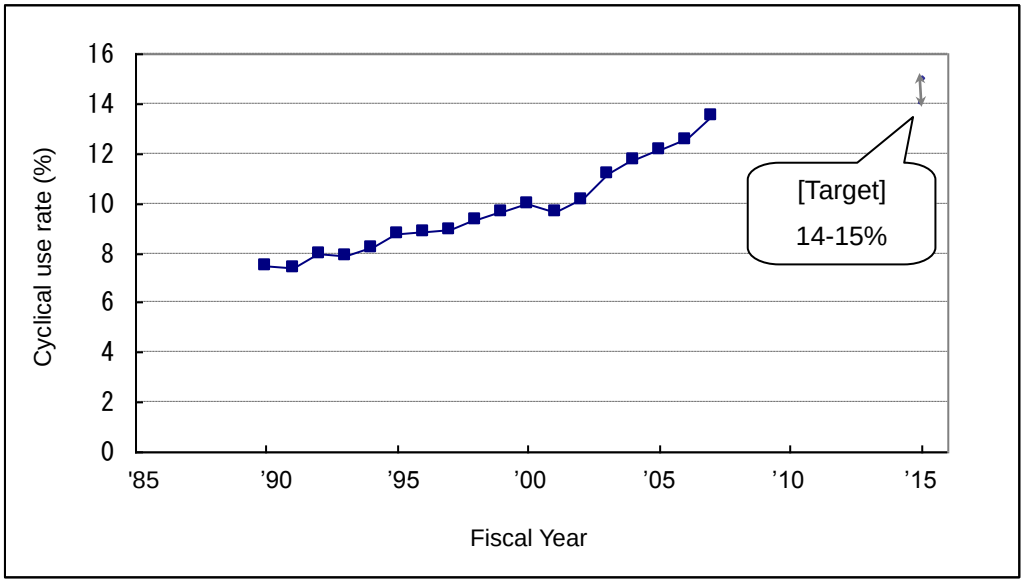


Figure 7 Changes in cyclical use rate

- Cyclical Use Rate (= Amount of cyclical use/(Amount of cyclical use + Natural resources input)
  This indicator shows what quantity of resources consumed by society (natural resources input) are cyclically used resources (reused and recycled resources).

The breakdown of the cyclical use rate shows that the amount of cyclical use increased from about 228 million tons (FY 2006) to about 243 million tons (FY 2007), and natural resources input in Japan declined from about 1,591 million tons (FY 2006) to about 1,559 million tons (FY 2007). Both elements changed in the direction to improve the cyclical use rate.

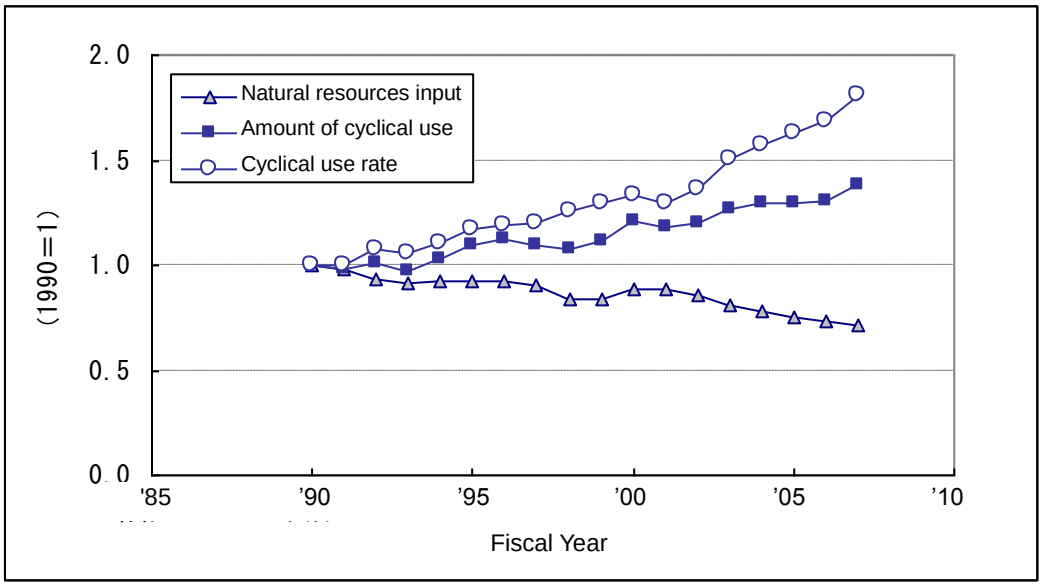


Figure 8　Changes in cyclical use rate, amount of cyclical use, and natural resources input

(3) “Outlet”: Final disposal amount

The final disposal amount in FY 2007 was about 27 million tons, down about 53% from about 57 million tons in FY 2000.

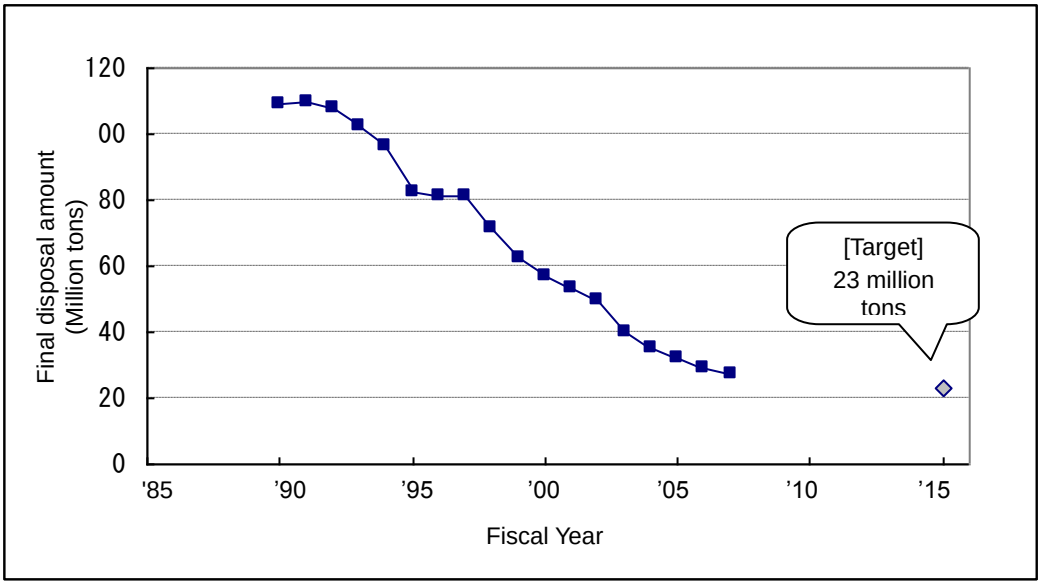


Figure 9 Changes in final disposal amount

- Final Disposal Amount
  "Final disposal amount" is the amount of waste disposed of at final disposal sites. It is the index that is directly connected to the urgent problem that the remaining capacity of final disposal sites is rapidly diminishing.

2 Supplementary indicators for which quantitative targets are set

The progress of the supplementary indicators for which quantitative targets are set is shown below.

Table 3 Changes in supplementary indicators for which quantitative targets are set

		Target	FY 2000	FY 2005	FY 2006	FY 2007	Comparison with FY 2000
Resource productivity excluding earth and rock resources input	Ten thousand yen per ton	77 (FY 2015)	58.3[1)]	61.3[1)]	63.0	62.9	+8%
GHG emissions from waste sector (coordination with efforts toward Low-carbon Society)	Million tons of CO_2 equivalent	Reduction by 7.8 (FY 2010)	43.0	40.9	40.7	40.8	-5%

1) Due to revision of conversion factors and the like, these numbers are different from those used for discussion for the formulation of the Second Fundamental Plan.

(1) Resource productivity excluding earth and rock resources input

Resource productivity excluding earth and rock resources (= non-metallic minerals) input was about 629 thousand yen per ton in FY 2007, up about 8% from about 583 thousand yen per ton in FY 2000. However, the FY 2007 value was smaller than that in FY 2006.

The breakdown shows that natural resources input in Japan excluding earth and rock resources increased from about 876 million tons (FY 2006) to about 894 million tons (FY 2007), causing resource productivity excluding earth and rock resources input to decline.

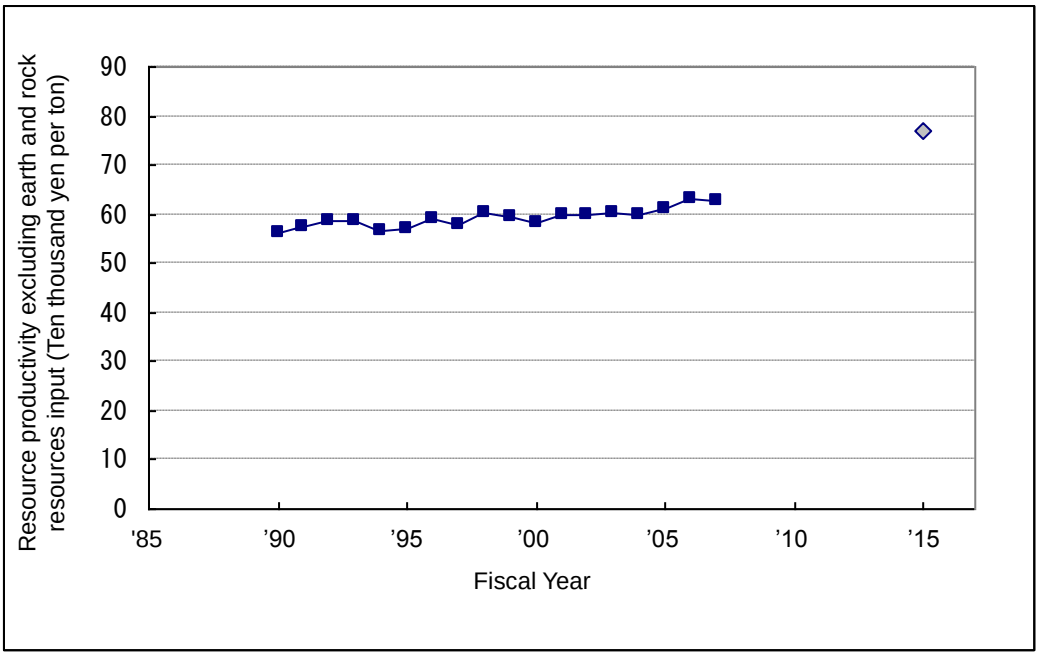


Figure 10 Changes in resource productivity excluding earth and rock resources input

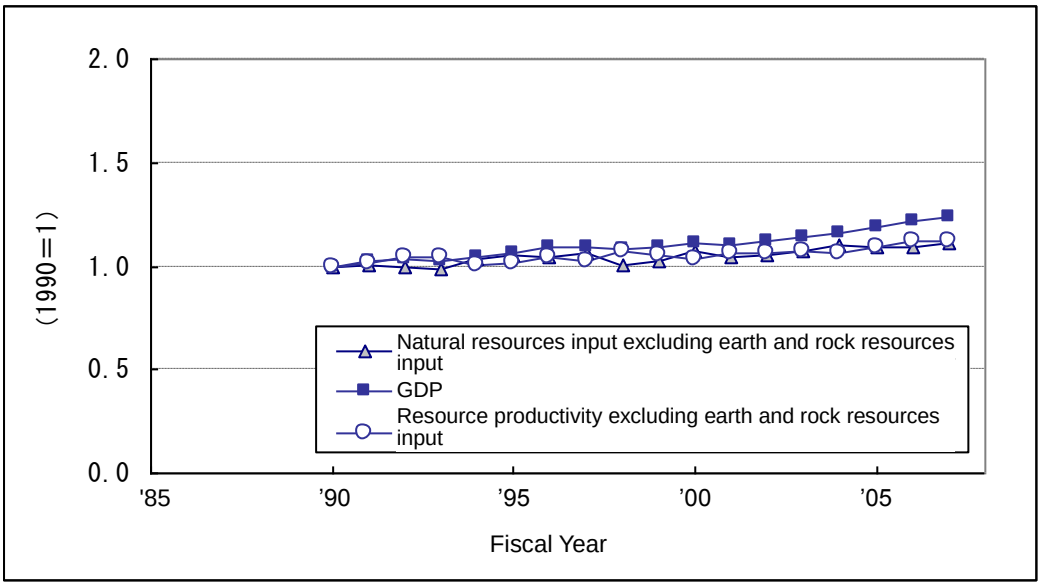


Figure 11 Changes in resource productivity excluding earth and rock resources input, GDP, and natural resources input excluding earth and rock resources input

(2) Coordination with efforts toward Low-carbon Society (GHG emissions from the waste sector)

GHG emissions from the waste sector were about 40.8 million tons CO_2 equivalent in FY 2007, down about 5% from about 43.0 million tons CO_2 equivalent in FY 2000. GHG emissions from the waste sector accounted for about 3% of Japan's total GHG emissions in FY 2007.

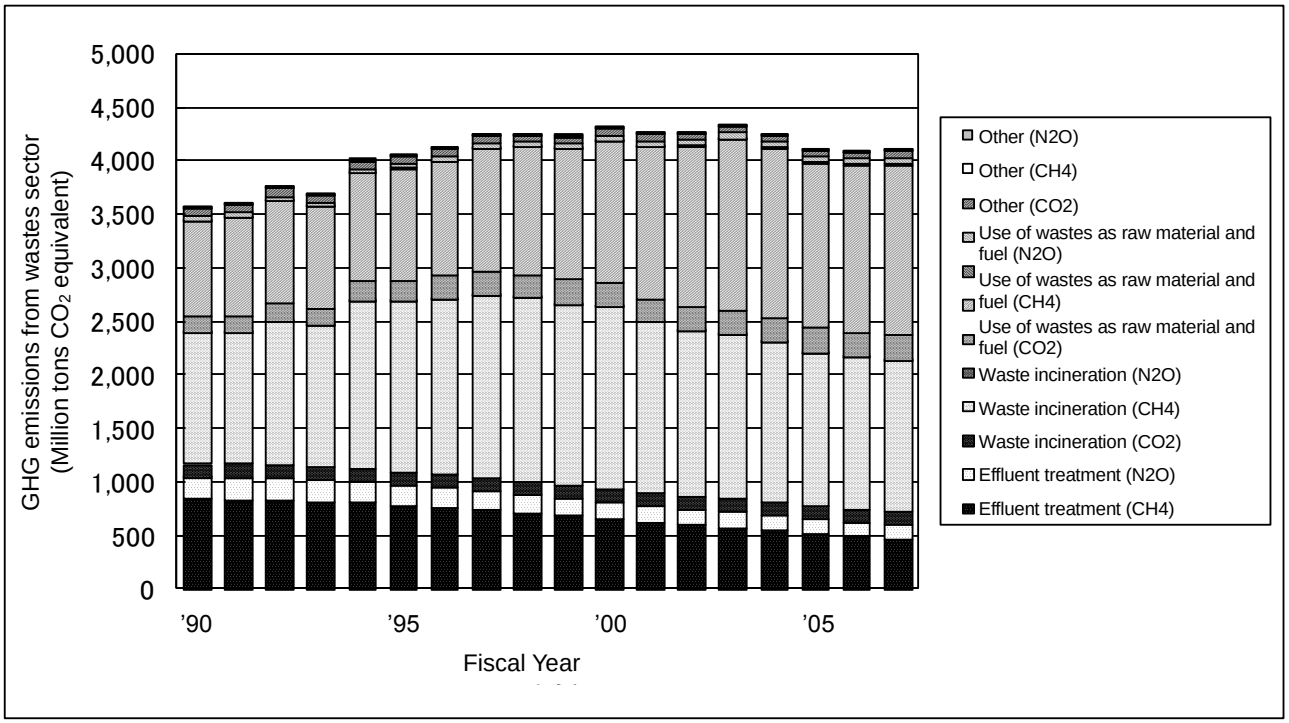


Figure 12 Changes in GHG emissions from the waste sector

In FY 2006, about 15 million tons CO_2 equivalent of GHG emissions were reduced outside the waste sector through the recycling of wastes as raw material and fuel, the use in waste power generation and otherwise. This is estimated to be an increase of about 75% from about 8.5 million tons CO_2 equivalent in FY 2000.

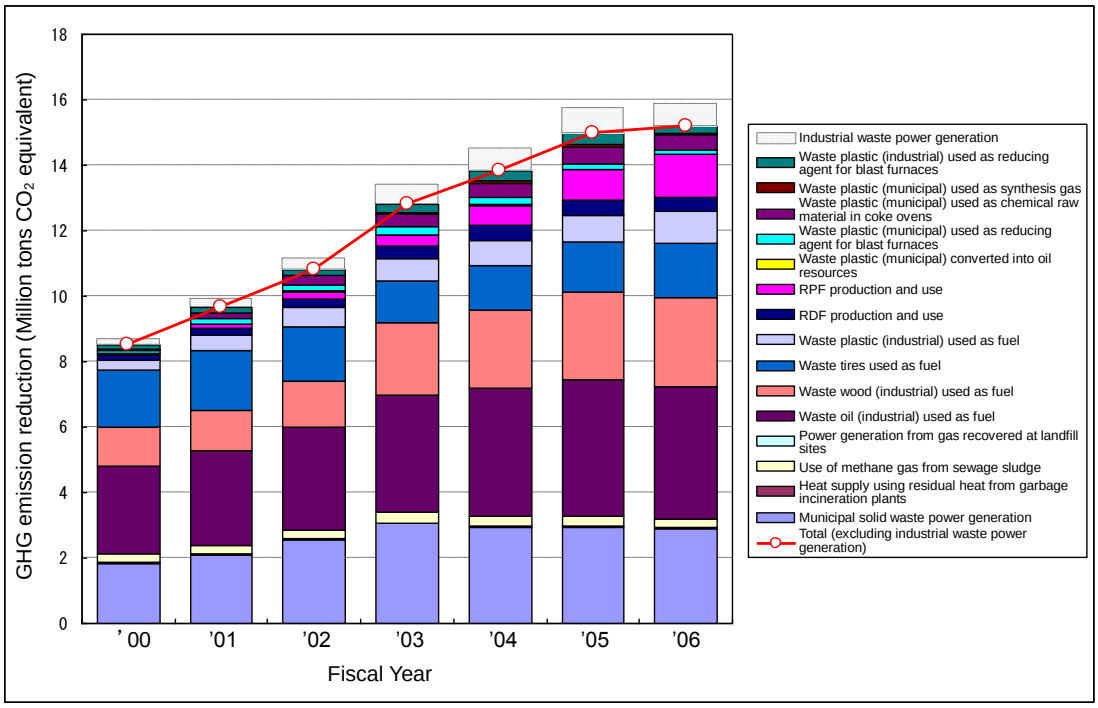


Figure 13 GHG emission reduction in other sectors through the recycling of wastes as raw material and fuel, the use in waste power generation, etc.

(Note) Industrial waste power generation is excluded from the total GHG emission reduction, and reductions from that are indicated only for reference. This is because industrial waste power generation overlaps with various industrial waste heat utilization and identifying and removing these overlaps is difficult.

3 Indicators to monitor changes

The progress of the indicators to monitor changes is shown below.

Table 4 Changes in indicators to monitor changes

		FY 2000	FY 2005	FY 2006	FY 2007 (FY 2008)[1)]	Comparison with FY 2000
Resource productivity of fossil resources	Ten thousand yen per ton	102	105	108	107	+5%
Biomass resources input rate	%	5.4	5.9	6.0	6.2	+0.8 points
TMR concerning metallic resources imported to Japan	Million tons	-	2,124	2,125	2,286	-
CR export volume	Million tons	7.2	21.6	23.9	22.5 [1)]	About 3 times greater
CR import volume	Million tons	3.7	3.9	3.9	4.9 [1)]	+32%
Total material consumption	Million tons	1,805	1,487	1,421	1,381	▲23%
Resource productivity by industry area	Ten thousand yen per ton	Separately indicated in (5)				

1) FY 2008 data are used for exports and imports of circulative resources (CRs) as the latest data.

(1) Resource productivity of fossil resources

Resource productivity of fossil resources was about 1.07 million yen per ton in FY 2007, up about 5% from about 1.02 million yen per ton in FY 2000. However, the figure in FY 2007 was smaller than that in FY 2006.

The breakdown shows that although the GDP increased, fossil resources input rose from about 510 million tons (FY 2006) to about 523 million tons (FY 2007), causing resource productivity of fossil resources to decline.

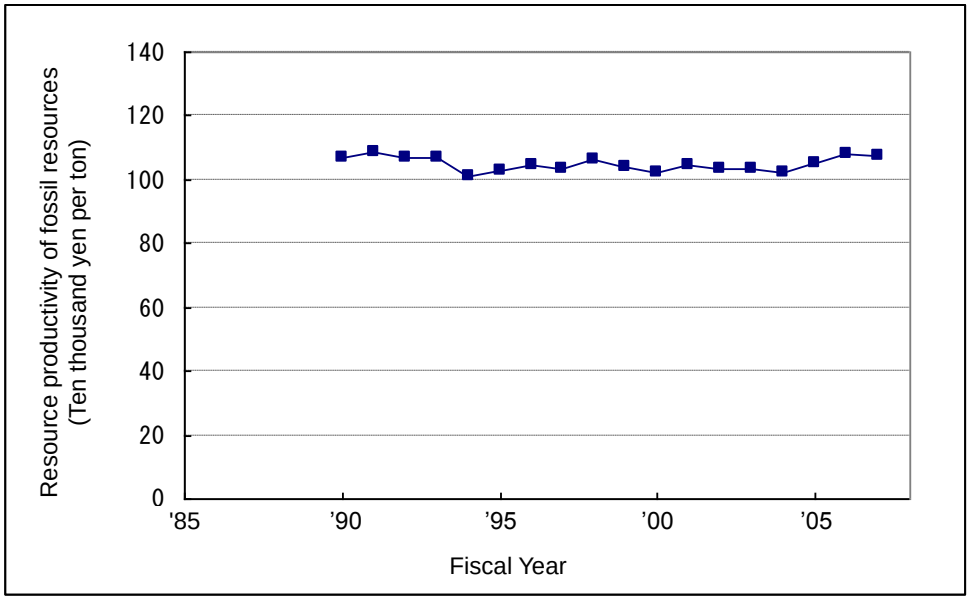


Figure 14 Changes in resource productivity of fossil resources

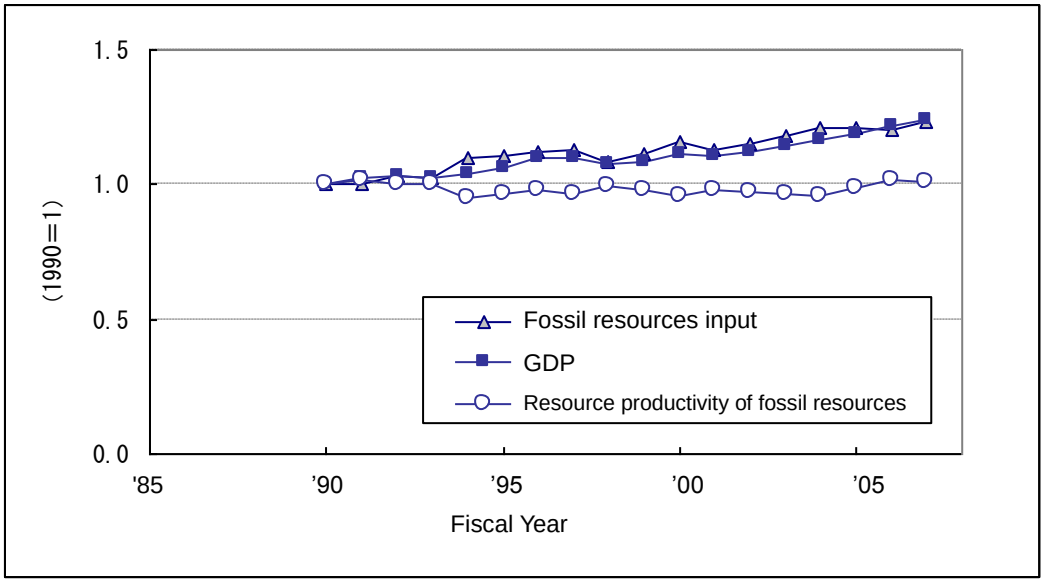
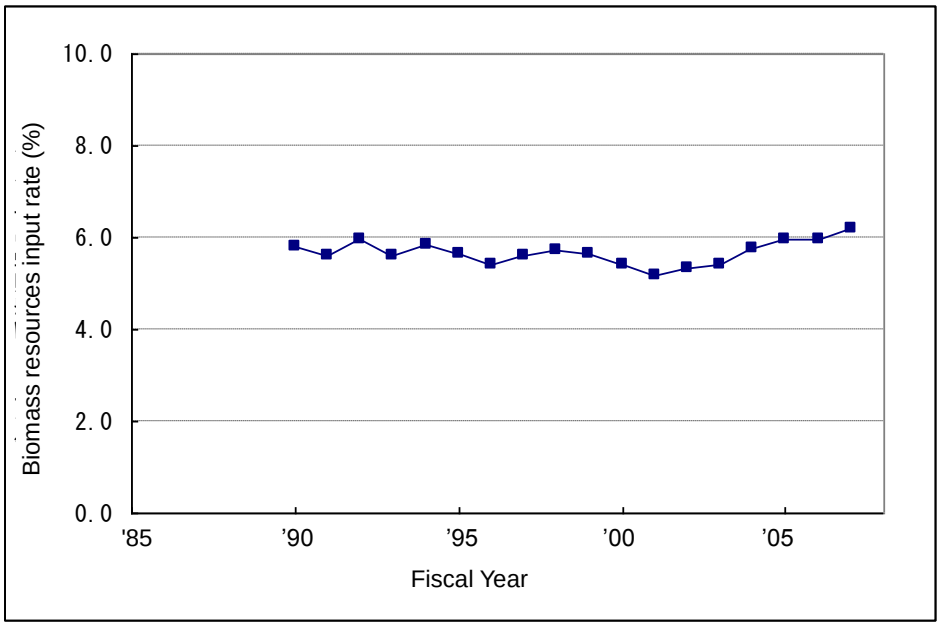


Figure 15 Changes in resource productivity of fossil resources, GDP, and fossil resources input

(2) Biomass resources input rate

The (domestic) biomass resources input rate was about 6.2% in FY 2007, up about 0.8 points from about 5.4% in FY 2000.

The breakdown shows that natural resources input declined while domestic biomass resources input began to increase in FY 2007. The two elements both changed in the direction to increase the biomass resources input rate.



* Biomass resources input rate = Domestic biomass natural resources input/Natural resources input

Figure 16 Changes in biomass resources input rate

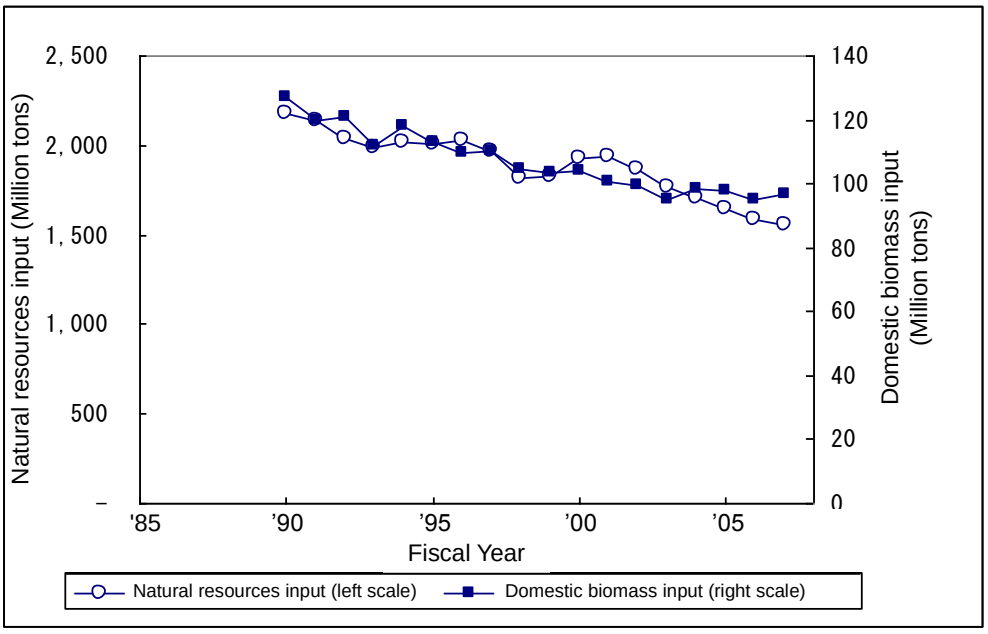
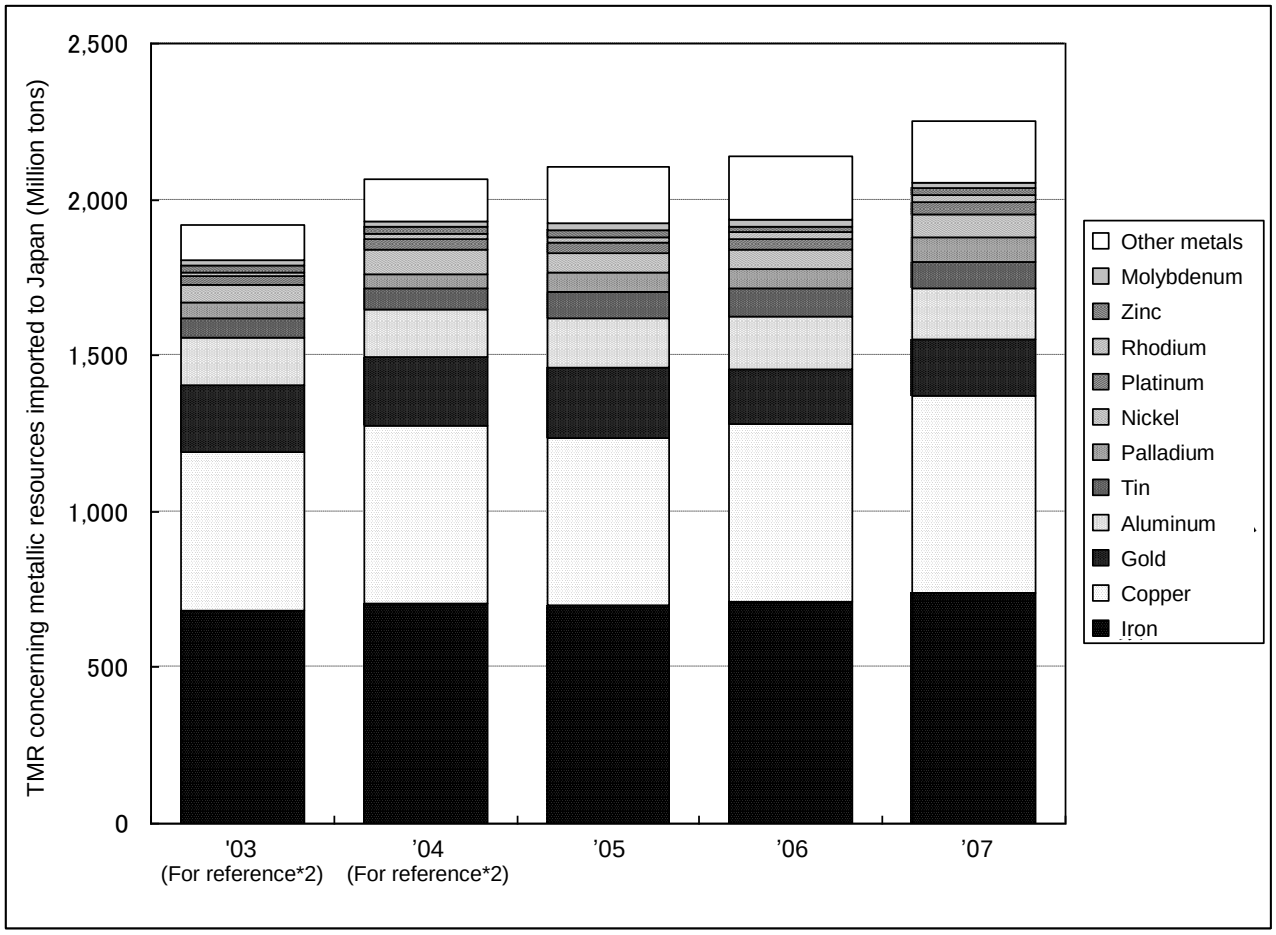


Figure 17 Changes in natural resources input and domestic biomass input

(3) TMR concerning metallic resources imported to Japan

Although the total material requirement (TMR) concerning metallic resources imported to Japan is still in trial calculation, estimation is expected to be about 2,254 million tons in 2007, up from about 2,141 million tons in 2006.



*1 The metallic resources are arranged in descending order of the TMR concerning metallic resources imported in 2007.

*2 The data for 2003 and 2004 are indicated only for reference because the values for silicon, uranium, arsenic, cadmium, and mercury were unavailable.

Figure 18 Changes in TMR concerning metallic resources imported to Japan

(4) CR export/import volume and total material consumption

The export volume of circulative resources (CRs) was about 23 million tons in 2008, which is about three times larger than about 7 million tons in 2000. However, the figure began to decline in 2007. The breakdown shows rapid growth of used paper, scrap iron and steel, slag, and scrap plastic compared with the 2000 level, although the overall decline has been observed since 2007.

The import volume of CRs was about 4.9 million tons in 2008, posting an increase from about 3.7 million tons in 2000.

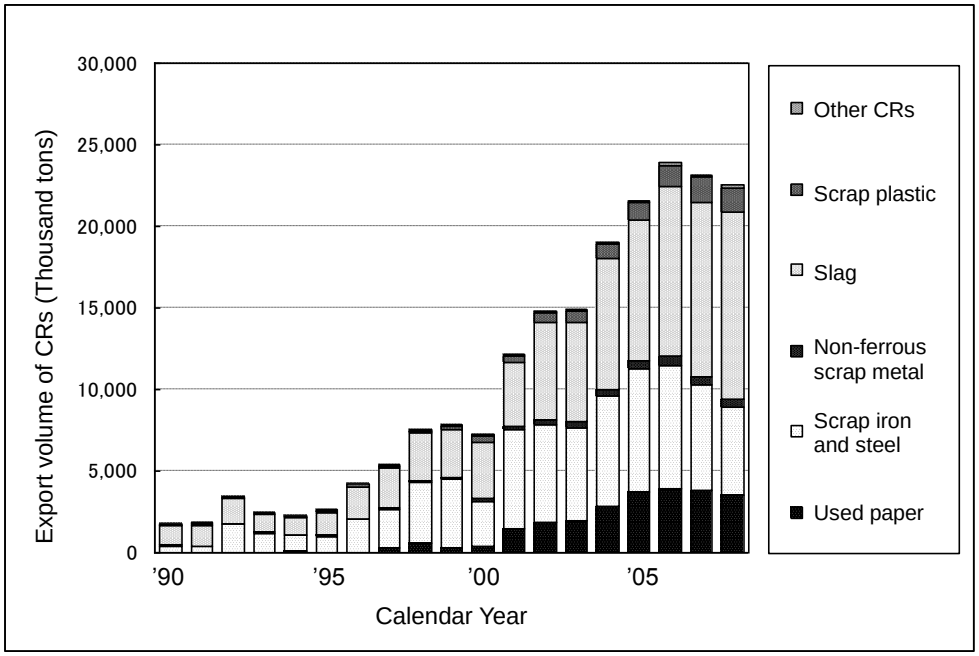


Figure 19 Changes in export volume of CRs

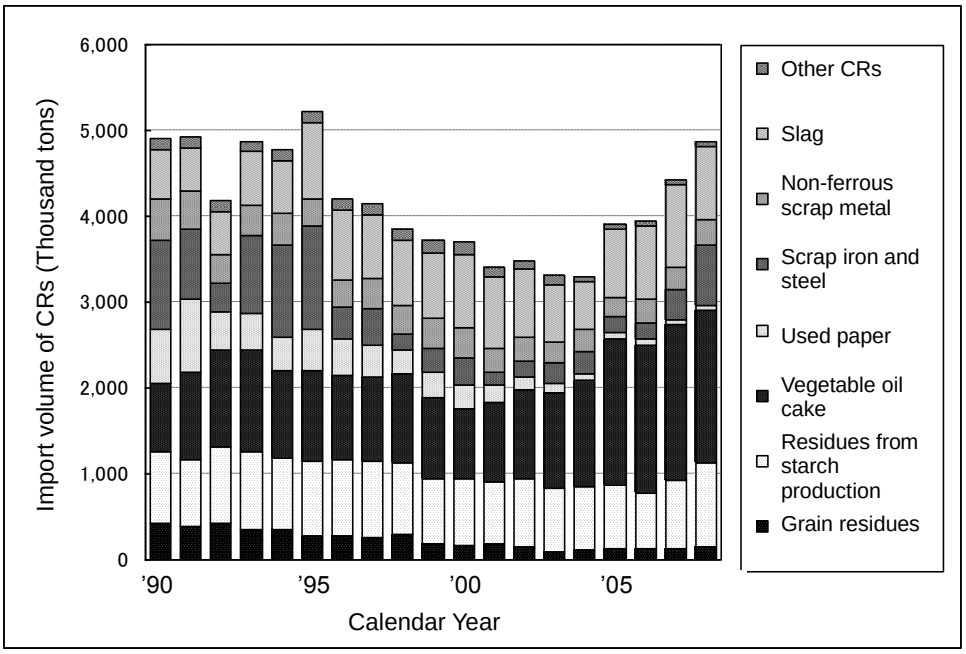


Figure 20 Changes in import volume of CRs

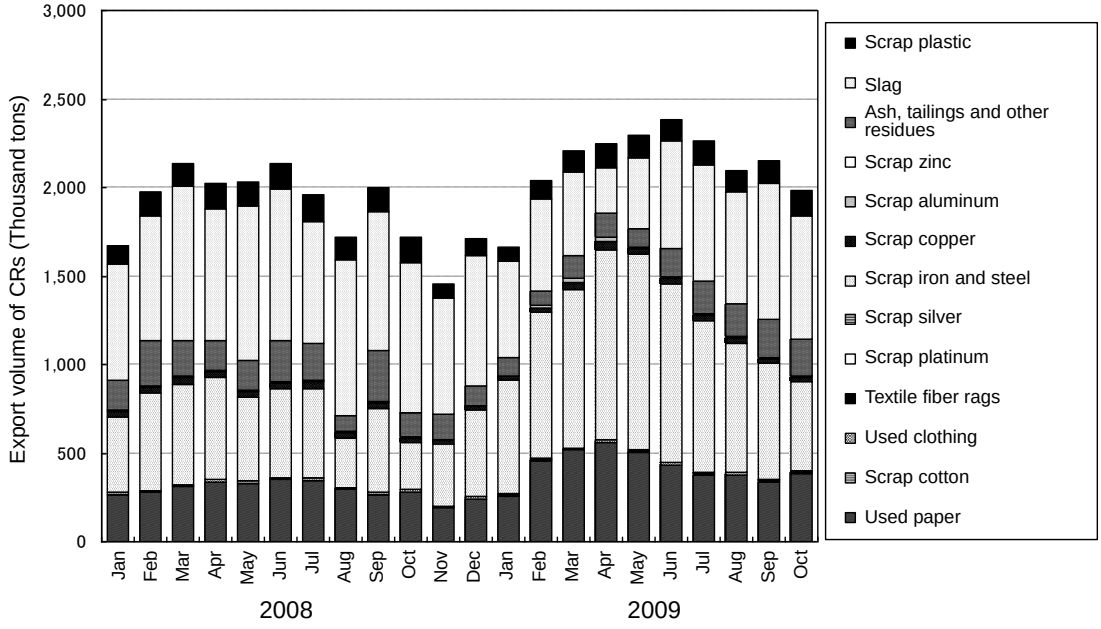


Figure 21 Changes in export volume of CRs (Jan. 2008-Oct. 2009)

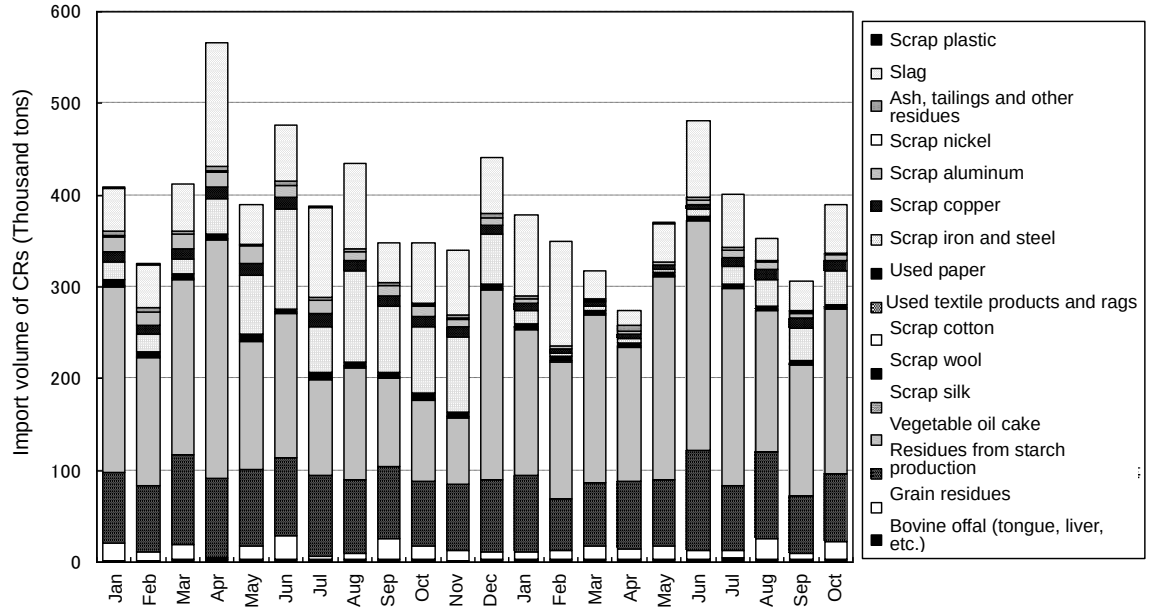
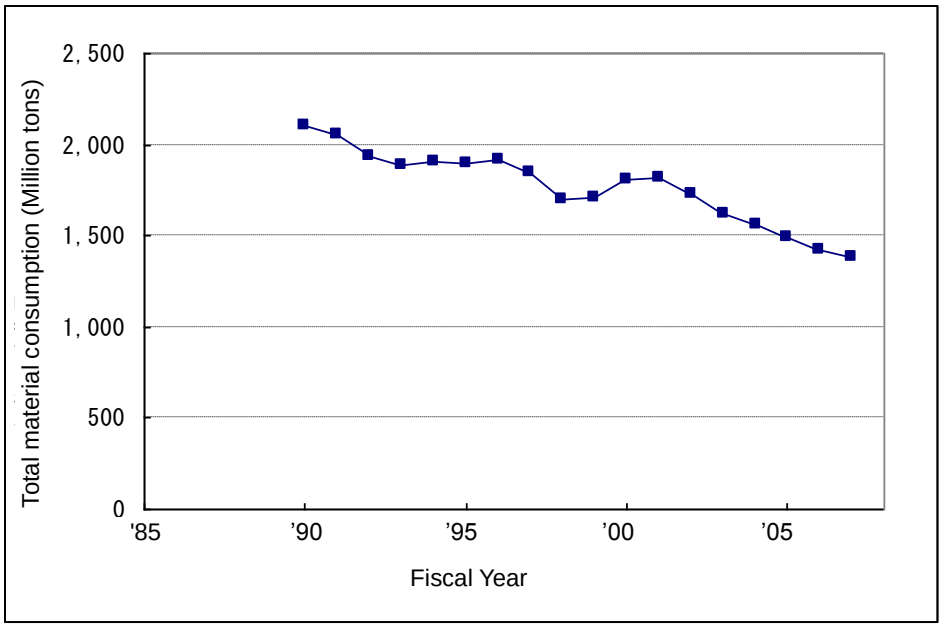


Figure 22 Changes in import volume of CRs (Jan. 2008-Oct. 2009)

Total material consumption refers to the total amount of materials directly consumed in domestic economic activities, and is calculated by subtracting the export volume from natural resources input. Its figure in FY 2007 was about 1.4 billion tons, down about 0.4 billion tons from about 1.8 billion tons in FY 2000. The breakdown indicates that natural resources input decreased, while the export volume increased over the same period. The two elements of total material consumption both changed in the direction to increase total material consumption.



* Total material consumption = Natural resources input – Export volume

Figure 23 Changes in total material consumption

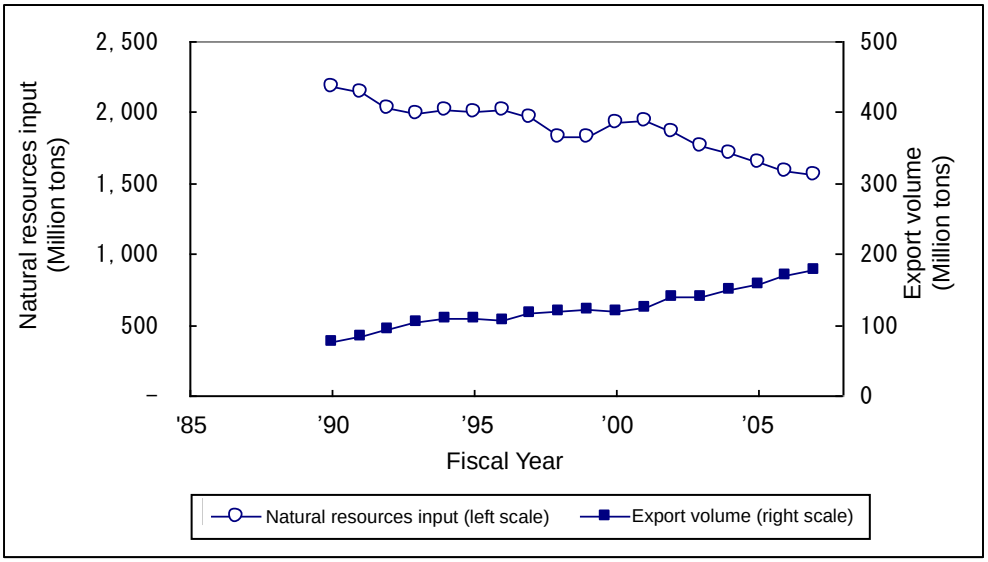


Figure 24 Changes in natural resources input and export volume

(5) Resource productivity by industry area

An analysis of changes in resource productivity since 2003 in individual industry areas found remarkable growth in transportation equipment in the manufacturing industry (machinery), along with the tertiary industry. However, compared with 2006 levels, the 2007 figures were larger in transportation equipment and construction but smaller in electric machinery and precision instruments.

Table 5 Changes in resource productivity by industry area

	'03	'04	'05	'06	'07	Comparison with previous year
Resource productivity (ten thousand yen per ton)						
Agriculture, forestry and fisheries	9.7	9.4	9.5	9.6	9.5	−0.1
Mining	0.1	0.2	0.2	0.2	0.2	0.1
Manufacturing (non-machinery)	14.2	14.0	13.9	13.6	14.1	0.4
Manufacturing (machinery)	35.4	36.5	38.7	40.6	40.2	−0.3
General machinery	33.0	33.5	34.6	36.1	35.3	−0.8
Electrical machinery	44.2	45.6	51.8	53.9	50.0	−3.9
Transportation equipment	28.0	29.2	29.3	31.4	34.5	3.1
Precision instruments	44.3	44.9	50.8	47.8	36.0	−11.8
Construction	8.0	8.4	9.2	10.1	10.1	−0.0
Building	18.4	18.5	19.7	21.3	22.1	0.8
Public works	4.5	4.4	4.8	5.0	5.0	−0.0
Other civil works	6.1	6.3	6.9	7.4	7.5	0.2
Tertiary industry	91.8	93.1	96.8	98.8	97.0	−1.8
Share of final demand value [%]						
Agriculture, forestry and fisheries	0.7	0.7	0.7	0.6	0.6	−0.0
Mining	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing (non-machinery)	9.9	9.8	9.5	9.4	9.4	0.0
Manufacturing (machinery)	14.6	15.6	16.0	16.7	17.3	0.6
General machinery	3.4	3.8	3.8	3.9	4.1	0.1
Electrical machinery	6.4	6.8	7.1	7.3	7.6	0.3
Transportation equipment	4.3	4.5	4.6	4.8	5.0	0.2
Precision instruments	0.5	0.5	0.6	0.6	0.6	−0.0
Construction	11.0	10.1	10.0	9.8	9.0	−0.8
Building	5.8	5.7	5.7	5.8	5.2	−0.6
Public works	3.5	2.9	2.8	2.5	2.3	−0.2
Other civil works	1.6	1.5	1.5	1.5	1.4	−0.0
Tertiary industry	63.8	63.8	63.7	63.5	63.7	0.2

*1 The past estimates were recalculated because the number of sectors covered in the transaction amount table (fixed-price evaluation) of the simplified extended interindustry relations table (Ministry of Economy, Trade and Industry) used for our estimates reduced to 73 from 2007 data onward. For this reason, past values are different from those presented in the progress evaluation report in last fiscal year.

*2 The above estimates are useful for observing changes in each industry but do not serve to compare data between different industries.

Evaluation results and problems

(1) Resource productivity

Resource productivity, which temporarily decreased in FY 2000 to FY 2001, has continued to rise since FY 2002. Resource productivity has been on the increase for the last five years.

One factor of this is that the real GDP grew, while natural resources input decreased since FY 2001. The decrease in natural resources input is mainly attributable to the decline in earth and rock resources input, which is assumed to reflect change in the volume of large-scale public works. Long-term change in Japan's industrial structure is another possible factor. Further analysis is needed in this regard.

Resource productivity posted another year-on-year increase in FY 2007, in line with the long-term upward trend of recent. On the other hand, in FY 2007 resource productivity excluding earth and rock resources input was less than that in FY 2006. This was because, although both the GDP and natural resources input excluding earth and rock resources input increased during this period, the growth of the latter exceeded that of the former.

An analysis of resource productivity by industry area found that resource productivity in FY 2007 was greater than that in FY 2006 in areas such as transportation equipment and construction but less in electric machinery and precision instruments.

Resource productivity of fossil resources in FY 2007 was also smaller than in FY 2006. The primary factor of this is assumed to be the fact that while the GDP increased, fossil resources input (on a weight basis) grew more than that mainly because of the economic recovery in FY 2007 and a significant increase in the amount of electricity generated by thermal power generation. This increase in thermal power generation is attributable to the drop in the capacity factor of nuclear power plants and the decrease in hydroelectric power generation due to water shortages.

A preliminary analysis of FY 2008 resource productivity indicates the impact of the economic conditions in the year, suggesting the need to continue monitoring economic trends.

(2) Cyclical use rate

The cyclical use rate in FY 2007 was even higher than that in FY 2006. This is attributable to the increase in the amount of cyclical use and the decline in natural resources input. While analyzing the state of cyclical use for each type of material, the government should carefully monitor future developments.

(3) Final disposal amount

The final disposal amount of both municipal solid waste and industrial waste continues to decrease. This indicates steady progress toward the fulfillment of the target, as observed in the previous evaluation. The government should keep an eye on the situation to see whether this trend will continue.

(4) GHG emissions from the waste sector

GHG emissions from the waste sector have remained constant in recent years.

GHG emissions calculated by subtracting from the waste sector's GHG emissions, the GHG emissions reduced outside the waste sector through the recycling of wastes as raw material and fuel, the use in waste power generation and otherwise are estimated to have declined over the same period.

(5) Biomass resources input rate

The biomass resources input rate, which represents domestically produced biomass resources input as a percentage of total natural resources input, in FY 2007 was greater than that in FY 2006.

The breakdown shows that this year-on-year increase is attributable to the fact that natural resources input decreased while domestic biomass resources input increased. The trend over the past few years indicates the rise in biomass resources input. With regard to domestic biomass resources input, the government should appropriately choose measures that will contribute to both a Low-carbon Society and a Society in Harmony with Nature, based on integrated decisions made from a life cycle assessment (LCA) viewpoint.

(6) TMR concerning metallic resources imported to Japan

Estimated TMR concerning metallic resources imported to Japan, which represents environmental burdens caused overseas by resource use in Japan, in FY 2007 was greater than that in FY 2006, reaching about 2,254 million tons. The increase in this TMR can be attributed mainly to the rise in the volume of import of copper and other metallic resources.

(7) CR export/import volume and total material consumption

The CR export volume in 2007 nearly tripled than that in 2000, but it began to decline in 2007. The CR import volume in 2008 was greater than that in 2007, showing an upward trend in recent years. Although the impact of the global financial crisis in the autumn of 2008 on either imports or exports cannot be clearly identified from the present data, future developments should be carefully monitored.

Total material consumption in FY 2007 decreased about 400 million tons from the FY 2000 level due to the decline in the input of natural resources, especially earth and rock resources, and the increase in the import volume of industrial products, such as steel and machinery.

(8) Cross-sectoral problems

While making effective use of research outcomes, the government should identify correlations between indicators and deepen the analysis of indicators.

Besides indicators to measure the progress of coordination with efforts toward a Low-carbon Society, the government should also improve the availability of waste-related statistics, which is needed for combating global warming, by compiling it faster, making preliminary statistics available, and increasing accuracy.

It should be noted that currently available data are neither enough to perform detailed analysis nor determine factors of change for some indicators. In the long run, the government should consider keeping track of more detailed information on material flow indicators, including that on the reality of waste management.

2. Progress toward targets concerning effort indices

Present situation

1 Indices for the set targets

The Fundamental Plan for Establishing a SMC Society (March 2008) sets the following targets for effort indices.

Table 6 Effort index targets

Category		Index	FY 2015 target
(1) Reducing the quantity of waste			
	(i) Reducing the quantity of municipal solid waste	(a) Amount of garbage discharged per person per day [*1]	Approx. 10% reduction from the FY 2000 level
		(b) Amount of garbage discharged from households per person per day	Approx. 20% reduction from the FY 2000 level
		(c) "Total amount" of waste generated by businesses	Approx. 20% reduction from the FY 2000 level
	(ii) Reducing the amount of industrial waste	Final disposal amount of industrial waste	Approx. 60% reduction from the FY 2000 level (approx. 80% reduction from the FY 1990 level)
(2) Changes in thoughts and actions to establishing an SMC society			
	(i) Having an intention of reducing the amount of waste, implementing cyclical use, and practicing green purchasing		Approx. 90% (as a result of a questionnaire survey)
	(ii) Taking action to reduce the amount of waste, implement cyclical use, and practice green purchasing		Approx. 50% (as a result of a questionnaire survey)
(3) Promoting SMC businesses			
	(i) Promoting green purchasing	Organization-wide green purchasing	Implementation by all local governments, about 50% of listed companies[*2], and about 30% of unlisted companies[*3]
	(ii) Promoting environmental business management	Number of ISO 14001 environmental management system certificates	(No numerical target)
		Number of certificates issued under the Eco Action 21	6,000
		Penetration of environmental reports and environmental accounting	(No numerical target)
	(iii) Expanding SMC business market	Market size	Approx. double the size in FY 2000

*1: Municipal solid waste generation, consisting of the designed amount of waste collected by local governments, the amount of waste directly brought in by businesses and the amount of recyclables collected by civic groups, was converted into the amount per person per day.

*2: Companies listed in the first and second sections of the Tokyo, Osaka and Nagoya Stock Exchanges

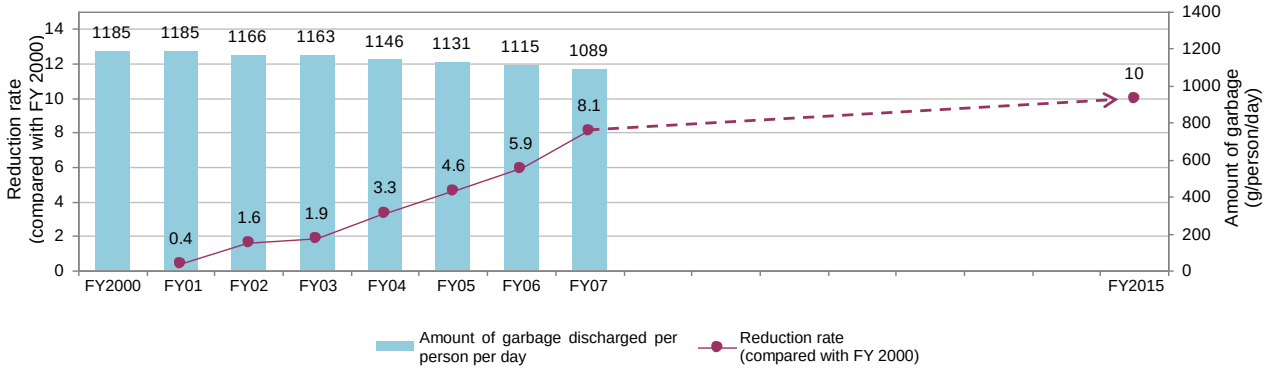
*3: Unlisted companies and business offices with 500 employees or more

(1) Reducing the quantity of waste

(i) Reducing the quantity of municipal solid waste

(a) Amount of garbage discharged per person per day

The amount of garbage discharged per person per day (municipal solid waste generation, consisting of the designed amount of waste collected by local governments, the amount of waste directly brought in by businesses and the amount of recyclables collected by civic groups, converted into the amount per person per day) in FY 2007 was 1,089 grams, showing a 8.1% decline from the FY 2000 level.



Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

Figure 25 Changes in amount of garbage discharged per person per day

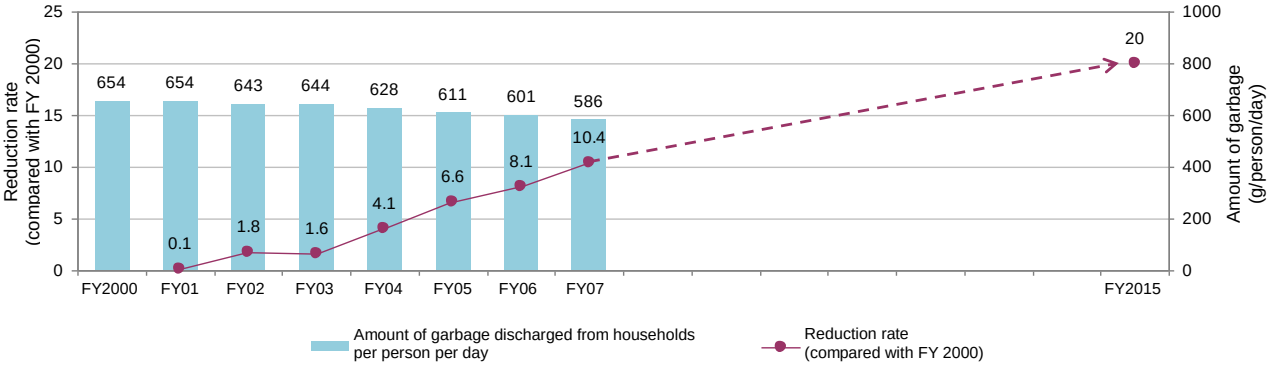
Table 7 Changes in amount of garbage discharged per person per day

	FY 2015 target	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Amount of garbage (g/person/day)	-	1,185	1,180	1,166	1,163	1,146	1,131	1,115	1,089
Comparison with FY 2000	▲10%	-	▲0.4%	▲1.6%	▲1.9%	▲3.3%	▲4.6%	▲5.9%	▲8.1%

Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

(b) Amount of garbage discharged from households per person per day

The amount of garbage discharged from households per person per day (excluding the amount of recyclables collected by civic groups, recyclable wastes, etc.) was about 586 grams in FY 2007, decreasing 10.4% compared with FY 2000.



Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

Figure 26 Changes in amount of garbage discharged from households per person per day

Table 8 Changes in amount of garbage discharged from households per person per day

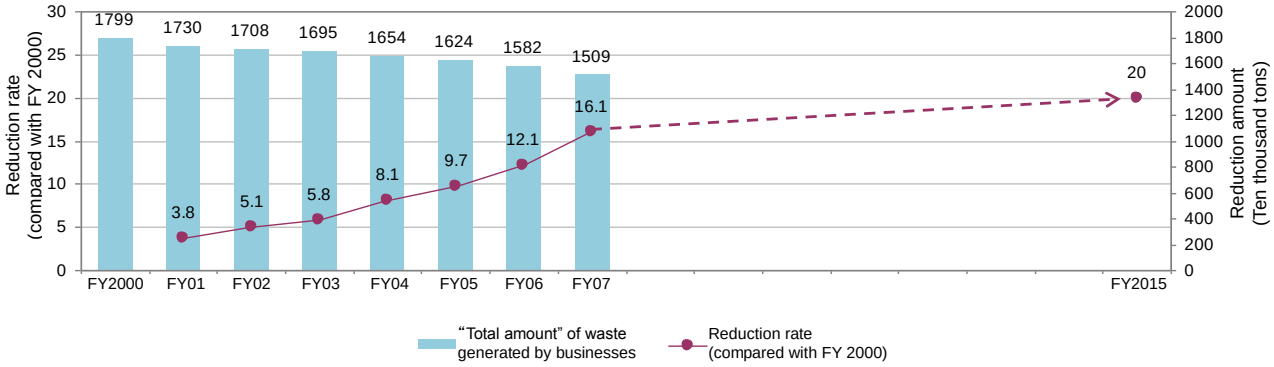
	FY 2015 target	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Amount of garbage (g/person/day)	-	654	654	643	642	628	611	601	586
Comparison with FY 2000	▲20%	-	▲0.1%	▲1.8%	▲1.8%	▲4.1%	▲6.6%	▲8.1%	▲10.4%

Source: Estimated from *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

* Estimates = (Total amount of garbage – Amount of waste from businesses – Amount of recyclables collected by civic groups – Amount of recyclable waste) / Total population / 365 or 366 days

(c) "Total amount" of waste generated by businesses

The "total amount" of waste generated by businesses was 15.09 million tons in FY 2007, posting a 16.1% decline from the FY 2000 level.



Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

Figure 27 Changes in total amount of waste generated by businesses

Table 9 Changes in total amount of waste generated by businesses

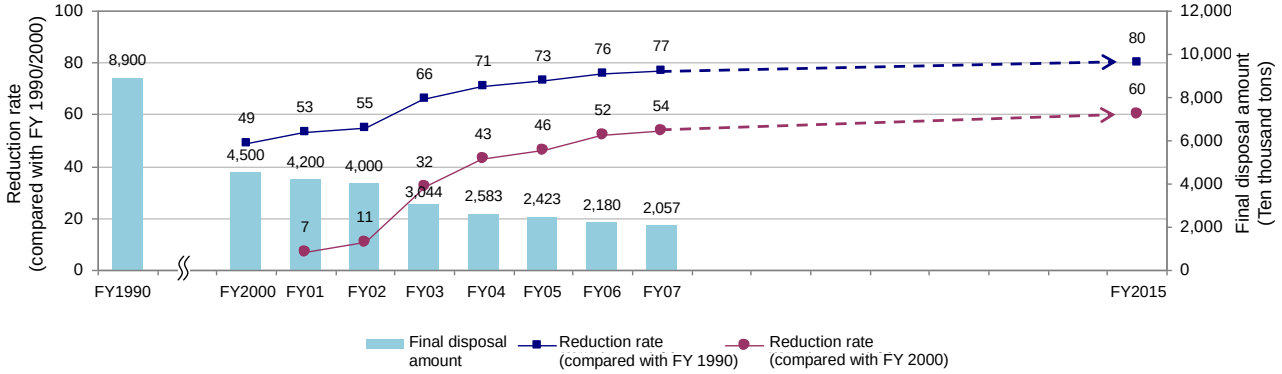
	FY 2015 target	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Amount of waste (ten thousand tons)	-	1,799	1,730	1,708	1,695	1,654	1,625	1,580	1,509
Comparison with FY 2000	▲20%	-	▲3.8%	▲5.1%	▲5.8%	▲8.1%	▲9.7%	▲12.2%	▲16.1%

Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

* Note that the progress of the effort indices described above does not necessarily cover the years following the formulation of the Second Fundamental Plan (March 2008). However, the data was updated to the extent possible for the purpose of preparing for the evaluation of the Second Fundamental Plan to be performed from the subsequent fiscal year onward and helping identify chronological change from the viewpoint of establishing an SMC society.

(ii) Final disposal amount of industrial waste

The final disposal amount of industrial waste in FY 2007 was about 20.57 million tons, showing a decline of about 54% from the FY 2000 level and about 77% from the FY 1990 level.



Source: *State of Discharge and Treatment of Industrial Waste (FY 2007 Results)*, Ministry of the Environment

Figure 28 Changes in final disposal amount of industrial waste

Table 10 Changes in final disposal amount of industrial waste

	FY 2015 target	FY 1990	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Final disposal amount (ten thousand tons)	-	8,900	4,500	4,200	4,000	3,044	2,583	2,423	2,180	2,057
Comparison with FY 1990	▲80%	-	▲49.4%	▲2.8%	▲55.1%	▲65.8%	▲71.0%	▲72.8%	▲75.5%	▲76.9%
Comparison with FY 2000	▲60%	-	-	▲6.7%	▲11.1%	▲32.4%	▲42.6%	▲46.2%	▲51.6%	▲54.3%

Source: *State of Discharge and Treatment of Industrial Waste (FY 2007 Results)*, Ministry of the Environment

(2) Changes in thoughts and actions to establishing an SMC society

An online questionnaire survey was conducted to assess changes in thoughts and actions to establishing an SMC society among citizens (1,000 replies received).

Since another survey on an SMC society was conducted as part of the Cabinet Office's "Public Opinion Poll on Environmental Issues" (June 2009), our survey of this fiscal year used the same questions and answer options as the poll, putting priority on comparing answers between the poll and the online survey.

Table 11 Outline of the surveys on changes in thoughts and actions to establishing an SMC society

	FY 2007 survey	FY 2008 survey	FY 2009 survey	Public opinion poll
Method	Online survey	Online survey	Online survey	Individual interviews
Period	August to mid-September 2007	September 11th to 16th, 2008	November 12th to 14th, 2009	June 4th to 14th, 2009
Target	Men and women in their twenties to seventies	Men and women in their twenties to seventies (Yahoo! Research monitors)	Men and women in their twenties to seventies (Yahoo! Research monitors)	People aged 20 or older
Area of residence	Respondents were extracted from each regional category according to population proportion in the FY 2005 population census.	Distribution of questionnaires to each regional category was adjusted according to population proportion in the FY 2005 population census.	Distribution of questionnaires to each regional category was adjusted according to population proportion in the FY 2005 population census.	Areas throughout Japan (stratified two-stage random sampling)
Valid replies	1,232	1,055	1,000	1,919

(Reference) Profiles of respondents of surveys on changes in thoughts and actions to establishing an SMC society

	FY 2007 survey				FY 2008 survey			
Gender	Men 50.7%		Women 49.3%		Men 48.6%		Women 51.4%	
Age	Twenties	15.7%	Thirties	18.6%	Twenties	17.2%	Thirties	16.7%
	Forties	15.6%	Fifties	19.0%	Forties	16.9%	Fifties	17.3%
	Sixties	15.4%	Seventies and over	15.7%	Sixties	15.9%	Seventies and over	16.0%
Area of residence	Hokkaido	4.3%	Tohoku	7.5%	Hokkaido	5.8%	Tohoku	7.3%
	Kanto	29.8%	Chubu	17.1%	Kanto	33.5%	Chubu	18.9%
	Kinki	17.1%	Chugoku	7.1%	Kinki	16.4%	Chugoku	6.0%
	Shikoku	4.1%	Kyushu & Okinawa	12.9%	Shikoku	2.5%	Kyushu & Okinawa	9.8%
	FY 2009 survey				Public opinion poll			
Gender	Men 50.0%		Women 50.0%		Men 46.2%		Women 53.8%	
Age	Twenties	16.6%	Thirties	16.7%	Twenties	7.8%	Thirties	15.9%
	Forties	16.7%	Fifties	16.7%	Forties	15.4%	Fifties	18.2%
	Sixties	16.7%	Seventies and over	16.6%	Sixties	24.1%	Seventies and over	18.6%
Area of residence	Hokkaido	4.2%	Tohoku	6.0%	Hokkaido	4.7%	Tohoku	8.0%
	Kanto	38.9%	Chubu	14.7%	Kanto	28.6%	Chubu	21.2%
	Kinki	21.6%	Chugoku	5.0%	Kinki	15.7%	Chugoku	6.8%
	Shikoku	2.2%	Kyushu & Okinawa	7.4%	Shikoku	3.4%	Kyushu & Okinawa	11.4%

(i) Having an intention of reducing the amount of waste, implementing cyclical use, and practicing green purchasing

The percentage of those interested in waste issues fell by 4 points from last fiscal year and was about 10 points less than the public opinion poll. This significantly low figure probably has something to do with the fact that the poll was an interview survey.

The rate of recognition of 3Rs was 10 points or more higher than the last fiscal year's survey and the public opinion poll. This must be partly because this year's survey presented an explanation of 3Rs before the question in order to let the respondents answer it with the explanation in view, as in the case of the poll.

The percentage of those trying to reduce garbage and recycle things was 3 points higher than in the public opinion poll and about 20 points higher than in last fiscal year's survey. The gap between this year's survey and the last fiscal year's was created probably because the previous survey provided the option "trying to some extent" (47.4%), which caused the answers to be more dispersed.

The percentage of those who chose the answer "Although I think the waste problem is serious, I buy a lot of things and dump a lot of things" was close to the equivalent figure in the poll, but 6 points higher than that in last fiscal year's survey.

Answers concerning the attitude toward green purchasing indicated almost the same results as both last fiscal year's survey and the poll.

Table 12 Changes in attitude toward 3Rs in general

	FY 2007	FY 2008	FY 2009	Poll
Interest in waste problems				
I am (very/somewhat) interested in waste issues*.	85.9%	86.1%	82.1%	92.4%
Recognition of 3Rs				
I know the term 3Rs (and its priorities/meaning)*.	22.1%	29.3%	40.6%	29.7%
Attitude toward waste reduction and cyclical use of waste				
I (always/sometimes) try to reduce garbage and recycle things.	79.3%	48.2%	70.3%	67.1%
Although I think the waste problem is serious, I buy a lot of things and dump a lot of things.	7.0%	3.8%	10.0%	10.8%
Attitude toward green purchasing				
I (always/as much as possible/occasionally) try to buy environmentally friendly products.	86.0%	81.7%	81.6%	81.8%
I do not try to buy environmentally friendly products at all.	11.0%	14.0%	14.6%	17.4%

* Before comparing answers to each question between the public opinion poll and this fiscal year's survey, a significance test was performed to compare statistical significance. Items with an asterisk (*) at the end of the sentence are those found to be significant at a significance level of 5%.

Source: *Questionnaire survey on SMC society* (conducted in November 2009), Ministry of the Environment

(ii) Taking action to reduce the amount of waste, implement cyclical use, and practice green purchasing

The percentages of those who use reusable shopping bags and who prefer simple packaging increased from those in last fiscal year's survey. This year's survey divided options for the relevant question into the two categories of "reusable chopsticks" and "disposable containers" in accordance with the public opinion poll.

Regarding the use of Internet auctions, there was a wide gap in results between the poll and the online surveys.

Although the percentage of involvement in purchase and sale of secondhand goods was higher in online surveys, that of involvement in purchase of reusable containers was higher in the public opinion poll.

Those who bring food trays and the like to stores for collection accounted for over 40% of the respondents, although the figure was 4 points lower than in the public opinion poll. This fiscal year's survey divided options for the relevant question into the two categories of "food trays" and "cellular phones" in accordance with the poll.

The percentage of purchase of recycled products made from regenerable materials in FY 2009 survey was almost the same as that in both the FY 2008 survey and the public opinion poll.

Table 13 Changes in major specific 3R actions

	FY 2007	FY 2008	FY 2009	Poll
Reduce				
I try to bring a reusable shopping bag when I go shopping and refuse free plastic shopping bags or excessive packaging*.	45.2%	64.3%	69.1%	62.0%
I try to choose stores that use simple packaging or that do not use disposable tableware (e.g. chopsticks).	11.5%	10.8%	13.5%	16.7%
I try to bring reusable chopsticks when I eat out so that I can refuse disposable chopsticks or tableware.	6.9%	12.0%	-	-
I carry reusable chopsticks with me.	-	-	10.2%	11.9%
I avoid using plastic or other disposable drink containers and disposable tableware.	-	-	21.5%	22.4%
Reuse				
I try to sell and buy things through Internet auctions*.	23.9%	30.5%	28.4%	8.3%
I try to sell and buy at secondhand stores, charity bazaars or flea markets*.	22.5%	23.8%	21.0%	16.1%
I buy products that use returnable containers, such as bottled milk*.	17.7%	10.0%	11.7%	19.6%
Recycle				
I bring food trays, cellular phones and the like to stores for collection.	45.8%	41.4%	-	-
I bring food trays and milk cartons to stores for collection*.	-	-	44.3%	48.5%
I bring cellular phones to stores for collection.	-	-	20.4%	17.5%
I actively buy recycled products made from regenerable materials.	19.9%	14.1%	14.6%	13.3%

* Found to be significant at a 5% significance level.
Source: *Questionnaire survey on SMC society* (conducted in November 2009), Ministry of the Environment

(3) Promoting SMC Businesses

(i) Promoting green purchasing

Regarding efforts to promote green purchasing, 62.2% of local governments said that the entire government made organizational efforts in FY 2008, and 13.8% reported that the government, although not entirely, made organizational efforts. The combined total is 76.0%, and the figure has remained flat for the past few years, although the share of each item varied. An analysis by category shows that although green purchasing of paper and stationery has advanced, a slight decline can be observed, suggesting the need to continue promotion of green purchasing.

Organizational efforts to promote green purchasing are made by over 70% of both listed and unlisted companies.

Table 14 Organizational efforts at local governments

	FY 2015 target	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
The entire government makes organizational efforts	100%	28.3%	30.4%	33.8%	63.3%	63.2%	62.2%
The government, although not entirely, makes organizational efforts		10.1%	11.1%	10.4%	12.8%	13.0%	13.8%

Source: *FY 2008 Questionnaire Survey on Green Purchasing at Local Governments* (announced in November 2009), Ministry of the Environment

* The data represents the sum of local government that answered either “The entire government makes organizational efforts” or “The government, although not entirely, makes organizational efforts” in at least one of the categories (e.g. stationery, equipment, OA equipment).

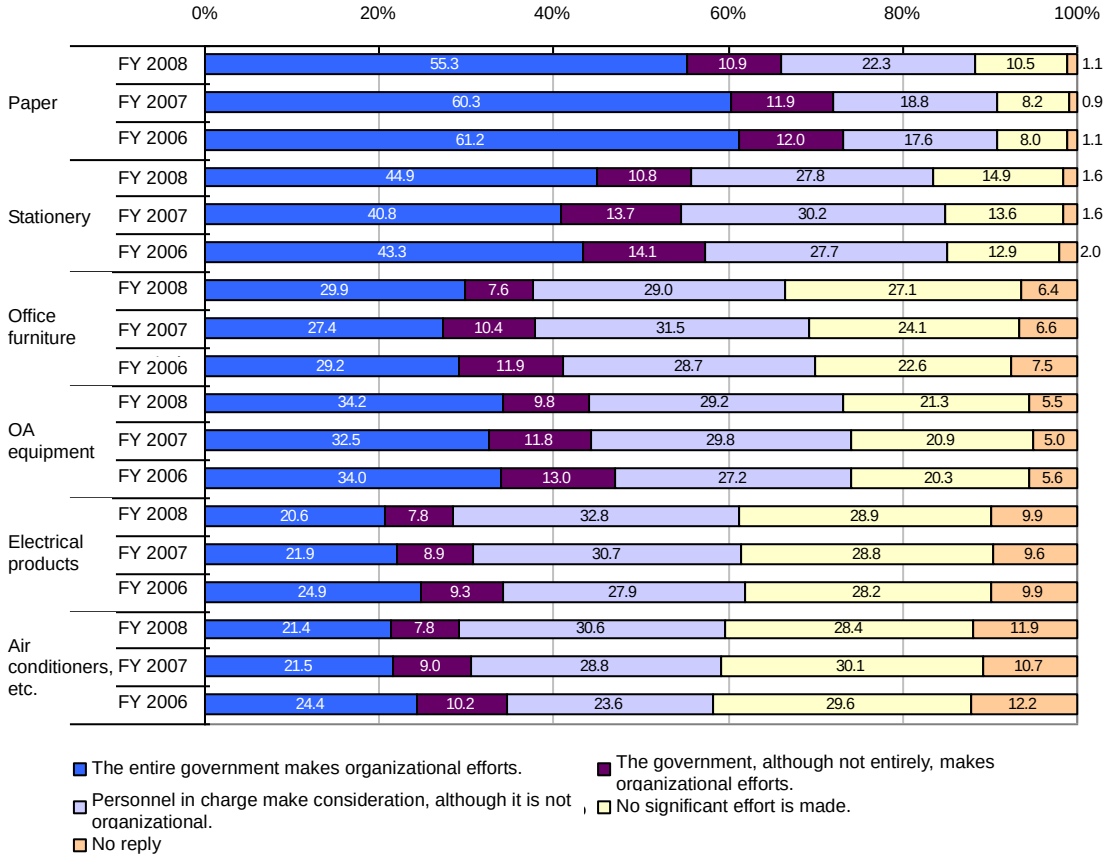


Figure 29 Organizational efforts at local governments

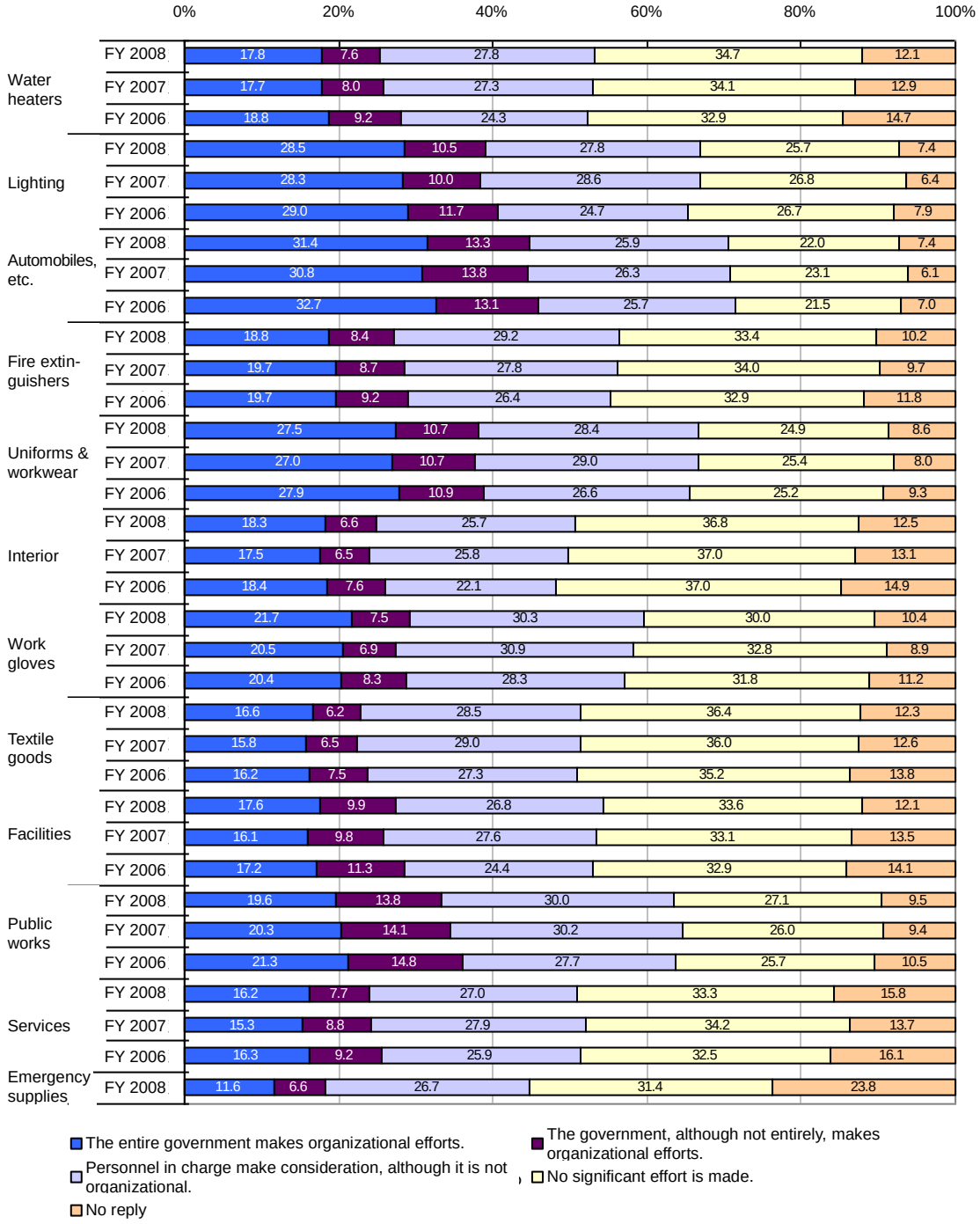


Figure 30 Organizational efforts at local governments

Table 15 Organizational efforts at companies

	FY 2015 target	FY 2004	FY 2005	FY 2006	FY 2007
Listed companies	Approx. 50%	63.7%	59.9%	65.7%	77.5%
Unlisted companies	Approx. 30%	49.9%	51.3%	55.5%	70.3%

Source: *Results of Survey on Environmentally Friendly Business Behavior in FY 2007* (FY 2008), Ministry of the Environment

* The data represent the sum of companies that said that they select green goods based on their own or industry-wide purchase guidelines or that they consider eco-friendliness when purchasing, although no purchase guidelines are in place. The percentage figures refer to the number of these answers as a percentage of valid replies.

(ii) Promoting environmental business management

The number of ISO 14001 environmental management system certified companies was 20,597 as of November 2008.

The number of certificates issued under the Eco Action 21, which enables SMEs to design and operate environmental management programs, was 4,084 at the end of October 2009.

Companies that prepare and publish environmental reports accounted for a little less than 50% of listed companies and a little less than 30% of unlisted companies.

Companies that have adopted environmental accounting accounted for a little less than 40% of listed companies and 20% of unlisted companies.

Table 16 ISO 14001 certification status

(cumulative total number of organizations certified by Japan Accreditation Board)

	August 2003	September 2004	September 2005	January 2007	January 2008	November 2008*2
Number of certified organizations*1	13,216	16,417	16,986	19,494	20,359	20,597

Source: Compiled based materials of the Japan Accreditation Board.
*1 Including organizations located overseas (August 2003 to end-January 2007).
*2 The figure as of November 10, 2008. The rest of data are as of the end of the given month.

Table 17 Number of certified companies under Eco Action 21

	FY 2015 target	October 2005	October 2006	October 2007	October 2008	October 2009
Number of certified companies	6,000	488	1,115	1,938	2,926	4,084

Source: Website of the Center for Sustainability, Institute for Global Environmental Strategies (Eco Action 21 Central Secretariat)

Table 18 Percentage of companies that prepare and publish environmental reports

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Listed companies	38.7%	45.3%	47.0%	51.8%	48.8%
Unlisted companies	17.0%	20.8%	24.6%	28.0%	26.9%

Source: *Results of Survey on Environmentally Friendly Business Behavior in FY 2007* (2008), Ministry of the Environment
* Including environmental reports as part of CSR reports.
* The percentage figures refer to the number of corresponding answers as a percentage of valid replies for each fiscal year.

Table 19 Percentage of companies that have adopted environmental accounting

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Listed companies	31.8%	36.9%	37.5%	39.8%	37.2%
Unlisted companies	17.2%	21.2%	22.7%	22.4%	20.0%

Source: *Results of Survey on Environmentally Friendly Business Behavior in FY 2007* (2008), Ministry of the Environment
* The percentage figures refer to the number of corresponding answers as a percentage of valid replies for each fiscal year.

(iii) Expanding SMC business market

The size of the SMC society business market in FY 2007 was 1.29 times as large as that in the base year of the target (FY 2000), and the number of staff employed by SMC businesses was 1.22 times as large as that in the base year. These represent an increase of 9.9% and 3.1% from the previous fiscal year (FY 2006), respectively.

The way of applying statistics for estimating the market size was changed because of the change in the source of the data for the building renovation and repair market.

Table 20 Changes in the SMC society business market

	Unit	FY 2015 target	FY 2000	FY 2005	FY 2006	FY 2007	Comparison with previous fiscal year
Market size	Hundred million yen	-	295,855	337,107	346,398	380,644	+34,246
	Comparison with FY 2000 (times)	2	-	1.14	1.17	1.29	-
Number of staff employed	Ten thousand people		53	60	63	65	+2
	Comparison with FY 2000 (times)	-	-	1.13	1.19	1.22	-

Source: Estimated by the Ministry of the Environment

(Reference) Scope of estimates

The estimates were made for industries considered as SMC society businesses among the categories of pollution management and resources management of the environmental industry classification by the Organisation for Economic Co-operation and Development (The Environmental Goods and Services Industry [OECD], 1999). In the pollution management category, manufacture of waste treatment equipment (e.g. intermediate treatment equipment), waste treatment services (e.g. industrial waste disposal), and waste treatment facility construction (e.g. disposal site construction) are included. In the resources management category, management of recycled materials (e.g. resource collection, distribution of secondhand goods) and management of other materials (e.g. building renovation and repair) are included.

(4) Steady implementation of individual recycling laws, plans and the like

(i) Waste Management and Public Cleansing Law

The amount of waste is decreasing, while the recycling rate and the reduction treatment rate are increasing, suggesting steady progress toward the target.

○ Basic Guidelines for the Comprehensive and Systematic Promotion of Waste Reduction Measures and Other Appropriate Treatments (Ministry of the Environment notification No. 34)

Table 21 Waste reduction (statutory targets)

		FY 1997		FY 2010 target based on FY 1997	Target amount			
					FY 2005		FY 2010	
Municipal	Amount of waste	53	-	Reduce by approx. 5%	51	-	49	-
	Recycled amount	5.9	(11%)	Increase from approx. 11% to 24%	10	(20%)	12	(24%)
	Reduction by intermediate treatment	35	(66%)		34	(67%)	31	(63%)
	Final disposal amount	12	(23%)	Reduce by roughly half	7.7	(15%)	6.4	(13%)
Industrial	Amount of waste	410	-	Restrict increase to12%	439	-	458	-
	Recycled amount	168	(41%)	Increase from approx. 41% to 47%	205	(47%)	217	(47%)
	Reduction by intermediate treatment	175	(43%)		197	(45%)	211	(46%)
	Final disposal amount	66	(16%)	Reduce by roughly half	36	(8%)	30	(7%)

Notes: The numbers are expressed in million tons. Parenthesized figures refer to the share as a percentage of the amount of waste in each fiscal year.
The Basic Guidelines define the amount of municipal solid waste as “designed amount of waste collected by local governments + amount of waste directly brought in by businesses + amount of recyclables collected by civic groups.”
Interim target year (FY 2005): Necessary reviews shall be conducted in consideration of the achievement status and changes in socioeconomic conditions.

Table 22 Waste reduction (progress)

		FY 2003		FY 2004		FY 2005		FY 2006		FY 2007	
Municipal	Amount of waste	54	-	53	-	53	-	52	-	51	-
	Recycled amount	9	(17%)	9	(17%)	10	(19%)	10	(19%)	10	(20%)
	Reduction by intermediate treatment	37	(69%)	36	(68%)	35	(66%)	35	(67%)	34	(67%)
	Final disposal amount	8	(15%)	8	(15%)	7	(13%)	7	(13%)	6	(12%)
Industrial	Amount of waste	412	-	417	-	422	-	418	-		
	Recycled amount	201	(49%)	214	(51%)	219	(52%)	215	(52%)		
	Reduction by intermediate treatment	180	(44%)	177	(43%)	179	(42%)	182	(42%)		
	Final disposal amount	30	(7%)	26	(6%)	24	(6%)	22	(5%)		

Sources: *Waste Disposal in Japan (FY 2007 Edition)* and *State of Discharge and Treatment of Industrial Waste (FY 2007 Results)*, Ministry of the Environment.

○Waste Disposal Facility Development Plan (Cabinet decision on March 25th, 2008)

Table 23 Development of waste disposal facilities (statutory targets)

	Targets and indicators (FY2007 and FY2012)	
	FY 2007 (estimates)	FY 2012
Total amount of waste (ten thousand tons)	Approx. 5,200	Approx.5,000
Waste recycling rate	20%	25%
Waste reduction treatment rate	98%	Roughly 100%
Remaining capacity of final disposal sites for municipal solid waste (years)	Maintain the FY 2007 level	
Total power generation capacity of incinerators (megawatts)	Approx.1,630	Approx.2,500
Diffusion rate of treatment by Johkasoh	9%	12%

Table 24 Development of waste disposal facilities (progress)

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Total amount of waste (ten thousand tons)	5,427	5,338	5,272	5,202	5,082
Waste recycling rate	16.8%	17.6%	19.0%	19.6%	20.3%
Waste reduction treatment rate	96.4%	96.5%	97.1%	97.5%	97.5%
Remaining capacity of final disposal sites for municipal solid waste (years)	14.0	14.0	14.8	15.6	15.7
Total power generation capacity of incinerators (megawatts)	1,441	1,491	1,512	1,590	1,604
Diffusion rate of treatment by Johkasoh	8.1%	8.4%	8.6%	8.8%	8.8%

Sources: *Waste Disposal in Japan (FY 2007 Edition)*, *Dissemination status of Wastewater Treatment Facilities at the End of FY 2007* (announced in August 2008), etc., Ministry of the Environment

(ii) Law for the Promotion of Effective Utilities of Resources

The recycling rate, which has already exceeded the target, has been flat over the last few years.

○Ministerial Ordinance to Define the Decision Criteria Concerning Voluntary Collection and Recycling of End-of-Life Personal Computers by Businesses Manufacturing or Otherwise Dealing with Personal Computers

Table 25 Recycling rate (statutory targets and progress)

	Target (rate)	Recycling rate		
		FY 2005	FY 2006	FY 2007
Desktop PCs	50%	75.2%	76.0%	75.1%
Laptop PCs	25%	53.2%	54.7%	53.7%
CRT monitors	55%	76.9%	75.8%	78.1%
LCD monitors	55%	66.3%	68.9%	70.7%

Source: *Announcement of the Implementation Status of Voluntary Collection and Recycling by Businesses under the Law for the Promotion of Effective Utilities of Resources* (announced in October 2008), Ministry of the Environment

○Ministerial Ordinance to Define the Decision Criteria Concerning Voluntary Collection and Recycling of Used Enclosed Storage Batteries by Businesses Manufacturing or Otherwise Dealing with Such Batteries or Products Using Such Businesses

Table 26 Recycling rate (statutory targets and progress)

	Target (rate)	Recycling rate		
		FY 2005	FY 2006	FY 2007
NiCad batteries	60%	73.2%	73.3%	73.5%
Nickel metal hydride batteries	55%	76.5%	76.6%	76.6%
Rechargeable lithium batteries	30%	63.0%	62.2%	64.1%
Small control valve-regulated lead batteries	50%	50.0%	50.0%	50.0%

Source: *Announcement of the Implementation Status of Voluntary Collection and Recycling by Businesses under the Law for the Promotion of Effective Utilities of Resources* (announced in October 2008), Ministry of the Environment

(iii) Act on the Promotion of Sorted Collection and Recycling of Containers and Packaging

The percentage of municipalities carrying out sorted collection reached 98% in FY 2007, covering over 99% of the population.

○(Reference) Amount of sorted collection and recycling of waste containers and packages and number of municipalities implementing sorted collection

Table 27 Amount of recycled waste and number of municipalities implementing sorted collection (progress)

		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Amount of sorted collection	Annual designed amount of sorted collection (tons)	3,193,868	3,427,713	3,643,250	3,456,893	3,339,817
	Annual amount of sorted collection (tons)	2,626,089	2,657,803	2,731,836	2,819,611	2,775,358
Amount of recycled waste	Annual amount of recycled waste (tons)	2,538,016	2,580,780	2,645,388	2,747,173	2,698,192
	Annual recycling rate	96.6%	97.1%	96.8%	97.3%	97.2%
Municipalities implementing sorted collection	Number of implementing municipalities	2,891	2,796	1,747	1,752	1,765
	Percentage of implementing municipalities	91.6%	91.6%	94.7%	95.9%	98.1%
	Population coverage	96.5%	96.6%	97.4%	99.0%	99.4%

Source: *FY 2008 Results of Municipal Sorted Collection and Recycling under the Act on the Promotion of Sorted Collection and Recycling of Containers and Packaging* (announced in November 2009), Ministry of the Environment
Note: The number of municipalities implementing sorted collection refers only to the collection of plastic bottles.

○(Reference) Sorted collection of plastic bottles as a percentage of production (collection rate)

Table 28 Sorted collection as a percentage of production (progress)

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Production (tons)	436,556	513,712	532,583	573,198	571,363
Amount of municipal sorted collection (tons)	211,753	238,469	251,962	268,226	283,646
Collection rate (%)	48.5%	46.4%	47.3%	49.3%	49.6%

(iv) Home Appliance Recycling Law

The recycling rate of home appliances has already exceeded the target and been improving steadily.

○Article 4 of the Enforcement Ordinance for the Law for the Recycling of Specified Kinds of Home Appliances (criteria for recycling)

Table 29 Recycling rate (statutory targets and progress)

	Target (recycling criteria)		Recycling rate (results)		
	~FY 2008	FY 2009~	FY 2006	FY 2007	FY 2008
Air conditioners	60%	70%	86%	87%	89%
TVs	-	-	77%	86%	89%
CRT TVs	55%	55%	-	-	-
LCD/plasma TVs	-	50%	-	-	-
Refrigerator & freezers	50%	60%	71%	73%	74%
Washing machines & laundry driers	50%	65%	79%	82%	84%

Source: *Announcement of the Results of Home Appliance Recycling by Home Appliance Manufacturers*, Ministry of the Environment

(v) Food Recycling Law

The implementation rate of the recycling of cyclical food resources has remained almost flat since 2005.

○ Basic Policy for the Promotion of Recycling and Related Activities for Treatment of Cyclical Food Resources

Table 30 Implementation rate of recycling (statutory targets and progress)

	Target	Recycling implementation rate (results)			
	FY 2012	FY 2004	FY 2005	FY 2006	FY 2007
Food manufacturing	85%	72%	81%	81%	81%
Food wholesale	70%	41%	61%	62%	62%
Food retail	45%	28%	31%	35%	35%
Food service	40%	17%	21%	22%	22%
Total food industry	-	45%	52%	53%	54%

(Target) The target implementation rate applicable to businesses in each food sector shall be above the annual reference implementation rate set for each business entity every fiscal year.
Source: Calculated based on the *Report on the Recycling and Related Activities for Treatment of Cyclical Food Resources*, Ministry of the Environment

(vi) Construction Waste Recycling Law

The recycling rates of asphalt and concrete blocks have already reached the target, and other figures have been approaching the target as well. However, the effective utilization rate of soil from construction work declined from the FY 2002 level.

○ Basic Policy for the Promotion of Sorted Demolition for Treatment of Specific Construction Materials and Recycling of Specific Construction Waste

Table 31 Recycling rate and other figures (statutory targets)

		Basic Policy	Plan 2008 for Promoting the Construction Waste Recycling		
		FY 2010	FY 2010 (interim target)	FY 2012	FY 2015
Recycling rate	Asphalt concrete blocks	95%	98% or higher	98% or higher	98% or higher
	Concrete blocks	95%	98% or higher	98% or higher	98% or higher
	Construction wood waste	-	75%	77%	80%
Recycling rate	Construction wood waste	95%	95%	95% or higher	95% or higher
	Construction sludge	-	80%	82%	85%
Amount of waste	Mixed construction waste	-	2.2 million tons (25% reduction from FY 2005)	2.05 million tons (30% reduction from FY 2005)	1.75 million tons (40% reduction from FY 2005)
Recycling rate	Entire construction waste	-	93%	94%	94% or higher
Effective utilization rate	Soil from construction work	-	85%	87%	90%

Table 32 Recycling rate and other figures (progress)

		FY 2002	FY 2005
Recycling rate	Asphalt concrete blocks	98.7%	98.6%
	Concrete blocks	97.5%	98.1%
	Construction wood waste	61.1%	68.2%
Recycling rate	Construction wood waste	89.3%	90.7%
	Construction sludge	68.6%	74.5%
Amount of waste	Mixed construction waste	3.375 million tons	2.928 million tons
Recycling rate	Entire construction waste	91.6%	92.2%
Effective utilization rate	Soil from construction work	83.0%	80.1%

Source: *Results of FY 2005 Survey on Construction By-Products* (announced in December 2006), Ministry of Land, Infrastructure, Transport and Tourism.

(vii) End-of-life Vehicle Recycling Law

The recycling rate of end-of-life vehicles has remained above the target since FY 2005.

○ Article 26 of the Enforcement Regulation for the Law for the Recycling of End-of-Life Vehicles (Requirement for the amount of recycling by automobile manufacturers)

Table 33 Recycling rate (statutory targets)

	Residues from automobile crushing			Air bags
	FY2005-FY2009	FY2010-FY2014	FY2015 and ahead	Since FY2004
Recycling rate	30%	50%	70%	85%

Table 34 Recycling rate (progress)

	FY 2005	FY 2006	FY 2007	FY 2008
Residues from automobile crushing	48-70%	63.7-75%	64.2-78%	72.4-80.5%
Air bags	93-95%	93.5-95.1%	92-94.7%	94.1-94.9%

Source: *Announcement of the Results of Automobile Recycling by Automobile Manufacturers*, Ministry of the Environment.

(viii) Law concerning Special Measures for Promotion of Proper Treatment of PCB Wastes

Both the number of business facilities storing PCB wastes and the quantity of PCB wastes in storage has been increasing since 2002, although the degree of increase varies by type of PCB waste.

○(Reference) Nationwide results of PCB waste storage notified under the PCBs Special Measures Law

Table 35 PCB waste storage (progress)

	Number of storing business facilities				Quantity of storage			
	2002	2003	2004	2005	2002	2003	2004	2005
High voltage transformers	1,804	2,162	2,688	3,684	15,077 units	15,430 units	18,687 units	20,731 units
High voltage capacitors	40,412	43,586	45,533	48,691	242,339 units	240,002 units	250,739 units	259,500 units
Low voltage transformers	270	401	427	548	38,121 units	34,679 units	35,949 units	36,001 units
Low voltage capacitors	2,624	3,295	3,520	3,748	1,367,724 units	1,796,644 units	1,836,705 units	1,955,864 units
Pole-mounted transformers	103	142	153	200	1,772,563 units	1,974,106 units	2,146,581 units	2,252,756 units
Stabilizers	11,273	11,944	12,358	13,846	4,824,973 units	5,099,425 units	5,551,983 units	5,740,284 units
PCBs	186	202	206	230	171 tons	93 tons	53 tons	56 tons
PCB-containing oil	599	785	1,060	1,447	163,632 tons	175,244 tons	176,489 tons	176,510 tons
Pressure sensitive copying paper	363	395	416	401	662 tons	722 tons	668 tons	655 tons
Wiping rags	494	650	886	1,101	239 tons	185 tons	225 tons	339 tons
Sludge	138	171	179	215	19,005 tons	19,611 tons	15,411 tons	34,080 tons
Other equipment	1,474	1,505	1,819	2,575	233,534 tons	97,186 units	114,915 units	121,852 units

* Data as of March each year

Table 36 PCB-containing products used at facilities storing PCB wastes (progress)

	Number of using business facilities				Quantity of use			
	2002	2003	2004	2005	2002	2003	2004	2005
High voltage transformers	399	557	943	1,347	2,639 units	2,377 units	3,449 units	5,173 units
High voltage capacitors	6,996	8,046	8,167	8,154	31,653 units	30,190 units	27,983 units	26,860 units
Low voltage transformers	69	58	84	94	453 units	838 units	2,679 units	810 units
Low voltage capacitors	257	277	284	279	33,093 units	41,505 units	40,097 units	36,292 units
Pole-mounted transformers	7	7	7	7	1,952,500 units	1,879,900 units	1,764,699 units	1,564,229 units
Stabilizers	2,173	2,019	1,828	1,662	664,947 units	557,929 units	485,261 units	419,633 units
PCBs	8	17	20	24	79 kg	76 kg	48 kg	89 kg
PCB-containing oil	12	14	16	14	3 kg	18 kg	165 kg	18 kg
Other equipment	160	335	520	1,026	8,928 units	8,175 units	3,708 units	5,492 units

* Data as of March each year

(ix) Law on Promoting Green Purchasing

Results of green purchasing show that the number of items for which the green purchasing rate remained almost unchanged from the previous year has rose, while that of items for which the green purchasing rate increased has declined.

○(Reference) Results of green purchasing by national and other government agencies

Table 37 Change in green purchasing rate from the previous fiscal year, for items for which comparable data are available (FY 2002 results)

Category	Paper	Stationery	Equipment	OA equipment	Electrical appliances	Lighting	Textile products	Services	Total
Increase in purchasing rate	2	41	7	6	4	2	5	1	68
Almost unchanged	1	6	1	1	0	0	1	0	10
Decrease in purchasing rate	0	0	0	0	0	0	1	0	1
Total	3	47	8	7	4	2	7	1	79

* The figures are expressed as the number of items.

Table 38 Change in green purchasing rate from the previous fiscal year, for items for which comparable data are available (FY 2003 results)

Category	Paper	Stationery	Equipment	OA equipment	Electrical appliances	Air conditioners	Lighting	Uniforms & workwear	Furnishing & bedding	Services	Total
Increase in purchasing rate	2	31	3	7	5	1	2	2	6	1	60
Almost unchanged	4	26	7	4	1	0	0	0	2	0	44
Decrease in purchasing rate	3	7	0	3	0	1	0	0	3	0	17
Total	9	64	10	14	6	2	2	2	11	1	121

* The figures are expressed as the number of items.

Table 39 Change in green purchasing rate from the previous fiscal year, for items for which comparable data are available (FY 2004 results)

Category	Paper	Sta-tionery	Equip-ment	OA equip-ment	Electrical appliances	Air conditioners	Lighting	Uniforms & workwear	Furnishing & bedding	Work gloves	Other textile goods	Facilities	Services	Total
Increase in purchasing rate	3	17	2	2	0	2	0	1	5	0	0	0	0	32
Almost unchanged	4	43	8	6	4	0	2	0	1	0	1	1	4	74
Decrease in purchasing rate	2	11	0	0	1	0	0	1	1	1	2	0	0	19
Total	9	71	10	8	5	2	2	2	7	1	3	1	4	125

* The figures are expressed as the number of items.

Table 40 Change in green purchasing rate from the previous fiscal year, for items for which comparable data are available (FY 2005 results)

Category	Paper	Sta-tionery	Equip ment	OA equip-ment	Electrical appliances	Air conditioners	Water heaters	Lighting	Uniforms & workwear	Furnishing & bedding	Work gloves	Other textile goods	Services	Total
Increase in purchasing rate	5	21	0	1	0	0	1	0	0	1	0	2	2	33
Almost unchanged	2	45	9	7	4	3	1	2	0	3	0	0	0	76
Decrease in purchasing rate	1	8	1	0	0	0	2	0	2	3	1	1	0	19
Total	8	74	10	8	4	3	4	2	2	7	1	3	2	128

* The figures are expressed as the number of items.

Table 41 Change in green purchasing rate from the previous fiscal year, for items for which comparable data are available (FY 2006 results)

Category	Paper	Stationery	Office furniture	OA equipment	Electrical appliances & air conditioners	Water heaters	Lighting	Fire extin-guishers	Other textile goods	Services	Total
Increase in purchasing rate	1	10	1	0	0	2	1	1	5	1	22
Almost unchanged	6	58	8	11	7	2	1	0	6	1	100
Decrease in purchasing rate	1	8	1	0	0	0	0	0	4	0	14
Total	8	76	10	11	7	4	2	1	15	2	136

* The figures are expressed as the number of items.

Table 42 Change in green purchasing rate from the previous fiscal year, for items for which comparable data are available (FY 2007 results)

Category	Paper	Stationery	Office furniture	OA equipment	Electrical appliances & air conditioners	Water heaters	Lighting	Fire extin-guishers	Other textile goods	Services	Total
Increase in purchasing rate	0	11	1	0	1	1	0	0	6	0	20
Almost unchanged	2	60	9	11	6	3	2	1	5	7	106
Decrease in purchasing rate	6	8	0	2	0	0	1	0	4	0	21
Total	8	79	10	13	7	4	3	1	15	7	147

* The figures are expressed as the number of items.

(x) Fluorocarbons Recovery and Destruction Law

Both the number of class-1 fluorocarbon recovery operators and the amount of recovery have been increasing year after year, along with the amount of fluorocarbons destroyed.

Table 43 Number of registered fluorocarbon recovery operators and number of permitted destruction operators (progress)

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Class-1 fluorocarbon recovery operators	24,171	25,637	26,824	27,668	27,487	29,728	30,850
Class-2 fluorocarbon recovery operators	25,821	26,927	29,982	29,291	28,584	18,626	13,706
Fluorocarbon destruction operators	61	78	79	81	82	75	74

* The figures for each fiscal year are as of April 1 of the next calendar year (e.g. FY 2008 figures are as of April 1st, 2009).

Table 44 Amount of fluorocarbon recovery and destruction from specified products (progress)

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Recovery from class-1 specified products (tons)	1,958	1,889	2,102	2,298	2,542	3,168	(*5)
Recovery from class-2 specified products (tons)	(*1) 389	638	(*2) 577	(*3) 28	(*3) 9	(*3) 0.2	(*3) (*5)
Fluorocarbon destruction (tons)(*4)	1,653	2,429	2,976	2,790	3,183	3,611	4,161

*1: October 2002-March 2003
*2: April-December 2004
*3: Fluorocarbon recovery from class-2 specified products (motor vehicle air conditioners) was transferred to the system under the End-of-life Vehicle Recycling Law in January 2005.
*4: The amount of fluorocarbon destruction includes fluorocarbons recovered under the End-of-life Vehicle Recycling Law.
*5: The FY 2008 data are under compilation.

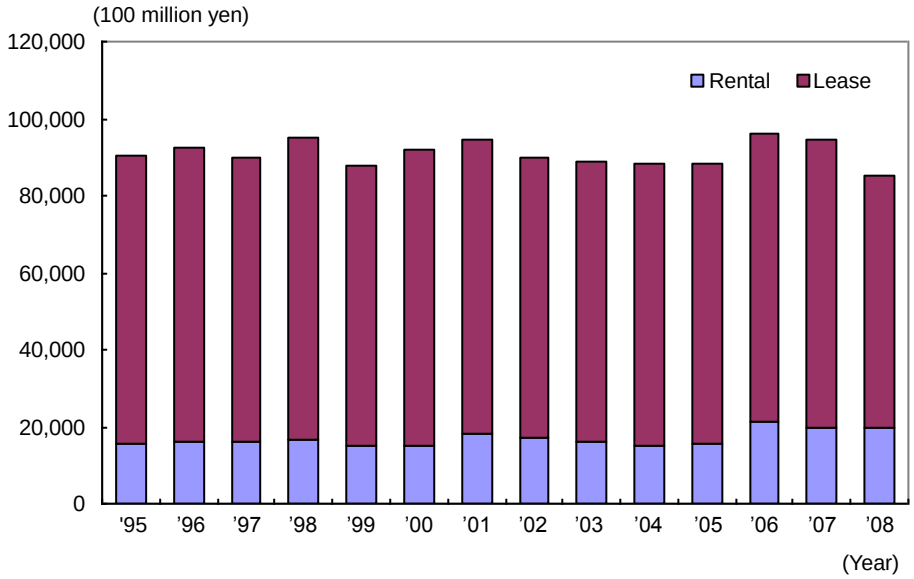
2 Indices to monitor changes

(1) Size of rental and lease business market and the shipping rate for refill products

(i) Size of rental and lease business market

The annual sales of rental and lease businesses have been declining since 2001, although there is some variation from year to year. The sales figure rose in 2006 but resumed the downward trend thereafter.

Annual sales in 2008 (real-time data) in the rental industry indicated a 29.5% increase from the 2000 level, and those in the lease industry a 14.3% fall.



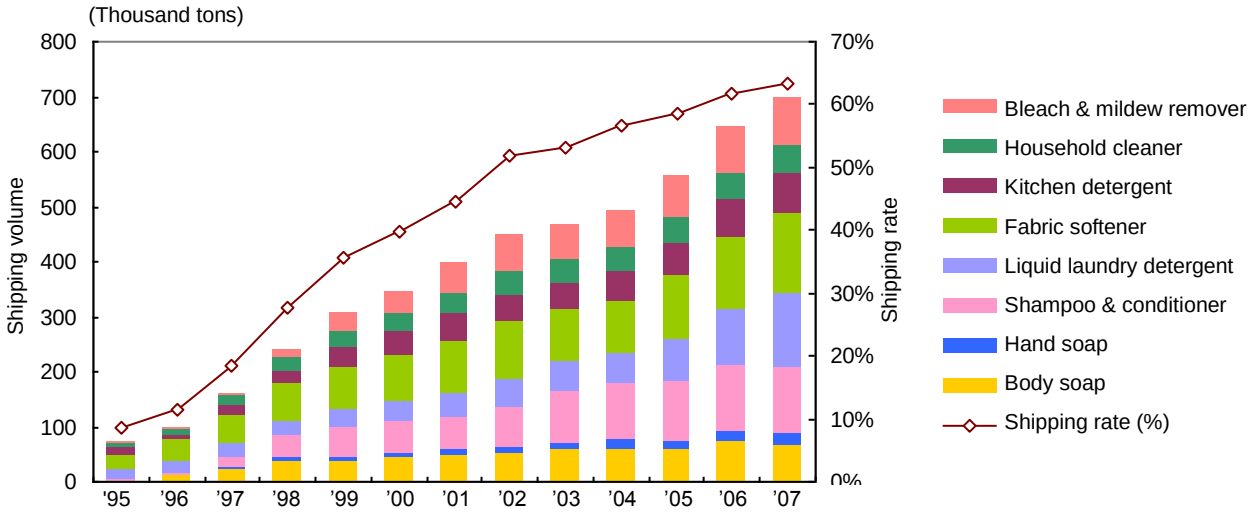
Source: *Survey of Selected Service Industries*, Ministry of Economy, Trade and Industry
* The 2008 data are real-time data.

Figure 31 Annual sales of rental and lease businesses

(ii) Shipping rate for refill products

The shipping volume of refill and replacement products has been steadily increasing. In particular, there was a sharp increase from 2005 to 2007, which is probably attributable to the impact of the increase in liquid laundry detergents and fabric softeners.

One major factor of the increase in the shipping volume of liquid detergents is assumed to be increased demand for liquid detergents, which are more soluble in water, due to the wider use of water-saving washing machines. Another factor would be the fact that more people use liquid detergents because technological innovation in detergent has reduced the amount of liquid detergent needed per wash to a level equivalent to that of powder detergent.



* Replacement products refer to parts (except nozzles) of spray products whose content should not be directly touched, such as bleaches and mildew removers.

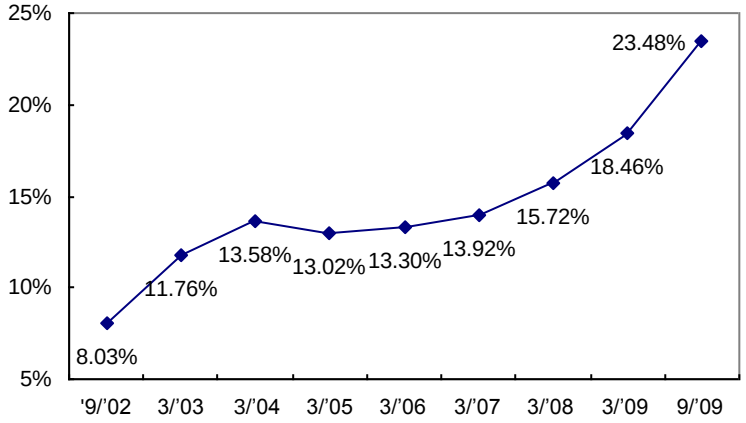
Source: *Changes in the Usage of Plastic Containers and Packages in the Soap and Detergent Industry (1995-2007)*, Japan Soap and Detergent Association.

Figure 32 Changes in shipping volume of refill and replacement* products

(2) Rate of refusal of free plastic shopping bags (rate of bringing reusable shopping bags) and the volume of sales of disposable products (imported chopsticks)

(i) Rate of refusal of free plastic shopping bags

The rate of refusal of free plastic shopping bags temporarily decreased in 2005 but resumed increase thereafter. In particular, a steep increase has been seen since 2007, pushing up the rate to over 23% in September 2009.



*Refusal rate = Number of customers who refused free plastic shopping bags / Number of customers who checked out

Source: Japan Chain Stores Association website.

Figure 33 Changes in rate of refusal of free plastic shopping bags

(ii) Volume of sales of disposable products (disposable chopsticks)

The production of disposable chopsticks made from domestic wood in 2008 was 520 million pairs, and the number of disposable chopsticks imported was 22.15 billion pairs, indicating that imported products account for 97.4% of the disposable chopsticks used in Japan. Production from domestic wood increased by 16.3% from the previous year, while the amount of imports decreased by 2.3%.

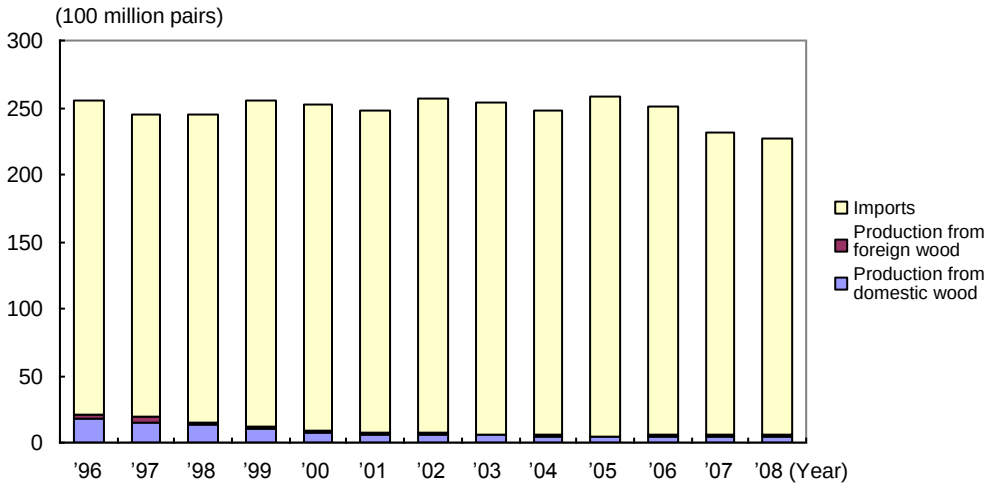
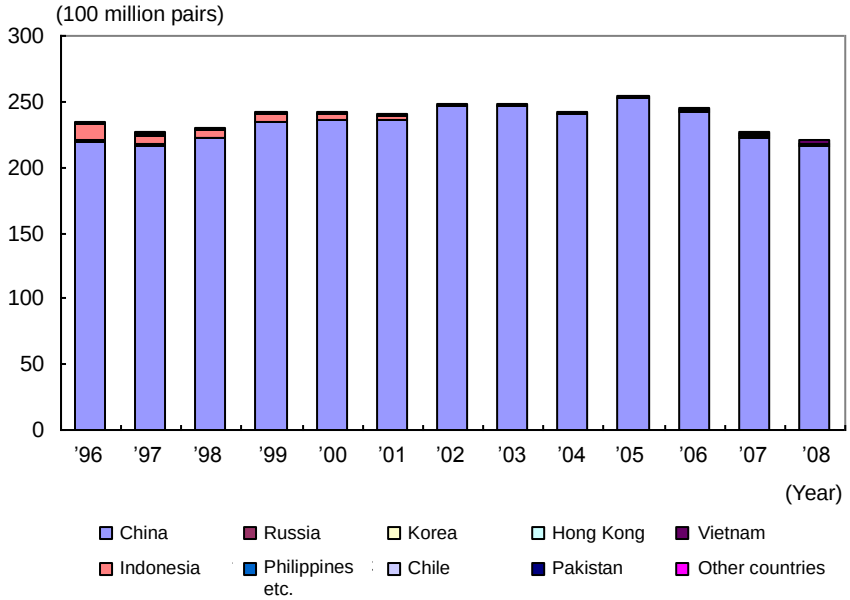


Figure 34 Domestic production and import volume of disposable chopsticks



* The production volumes are based on a survey by the Wood Industry Division, the Forestry Agency (data including estimates in prefectural surveys), and the import volumes are based on *Trade Statistics of Japan* by the Ministry of Finance.

Figure 35 Major import sources and import volume

(3) Size of the market for secondhand goods and the rate of use of returnable bottles

(i) Size of the market for secondhand goods

The number of businesses engaged in secondhand goods retail declined in 2007, but their annual goods sales have been growing. On the other hand, the annual goods sales of the used car retail industry have shown little change.

Major factors of growth of the secondhand goods market are probably (1) the rise in consumer needs due to higher awareness of 3Rs; (2) an increased number of price-conscious consumers; and (3) the supply of usable products to the secondhand goods market due to the increase in replacement with energy-efficient or advanced-function products (source: *Ensuring Safety and Reliability of Secondhand Goods*, issued in June 2007 by the Product Safety Subcommittee, Consumer Policy Committee, Industrial Structure Council, Ministry of Economy, Trade and Industry).

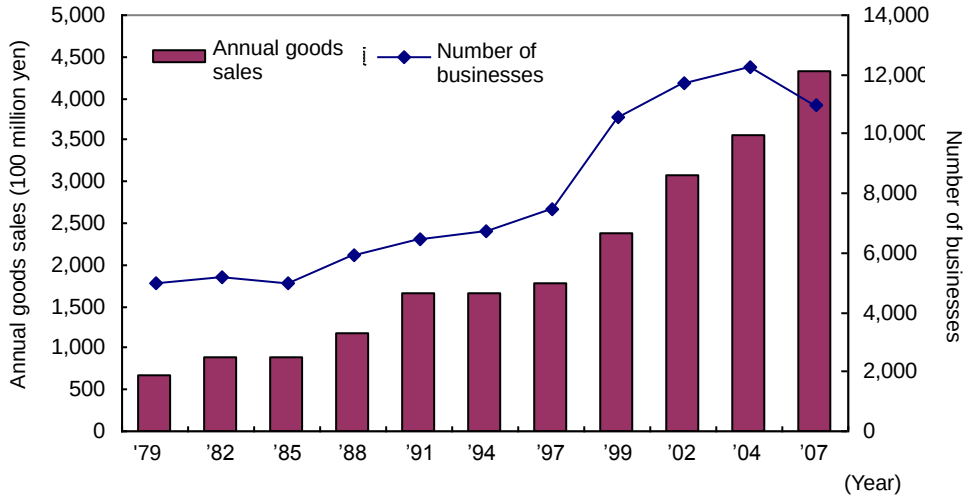
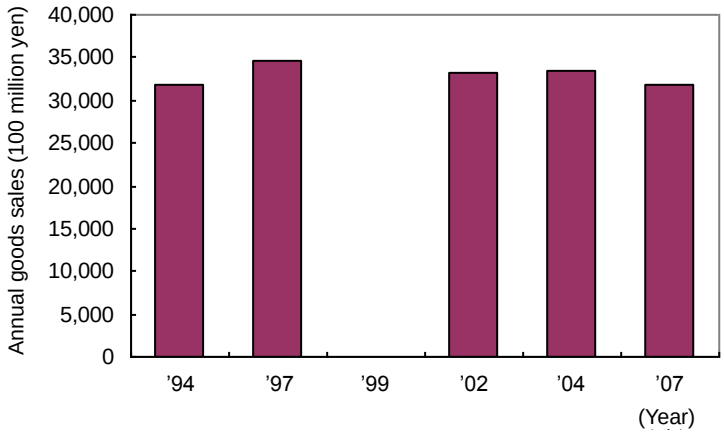


Figure 36 Secondhand goods retail industry[1] (incl. antique retail)



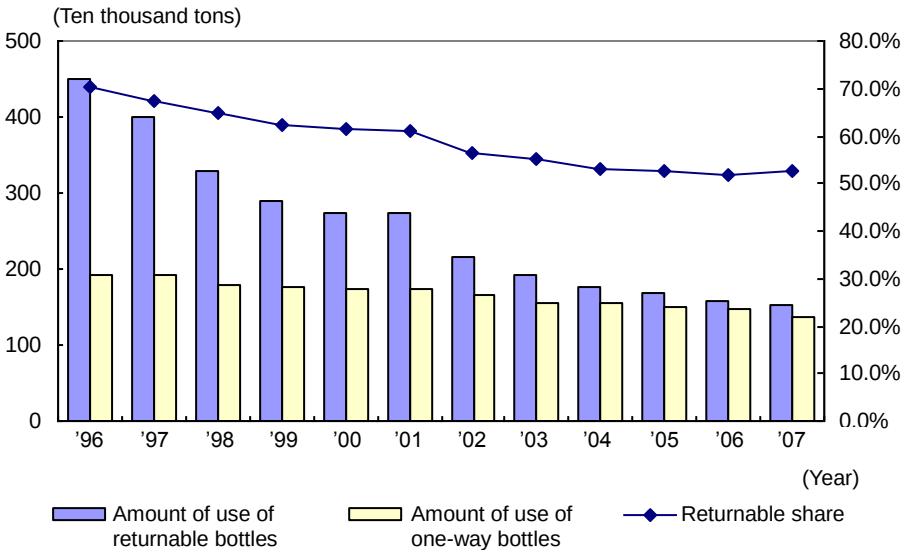
Source: *Census of Commerce Tables*, Ministry of Economy, Trade and Industry

Figure 37 Used car retail industry

[1] Businesses retailing mainly secondhand goods that are not categorized as other groups, including secondhand clothing, furniture, musical instruments, sporting goods, and shoes.

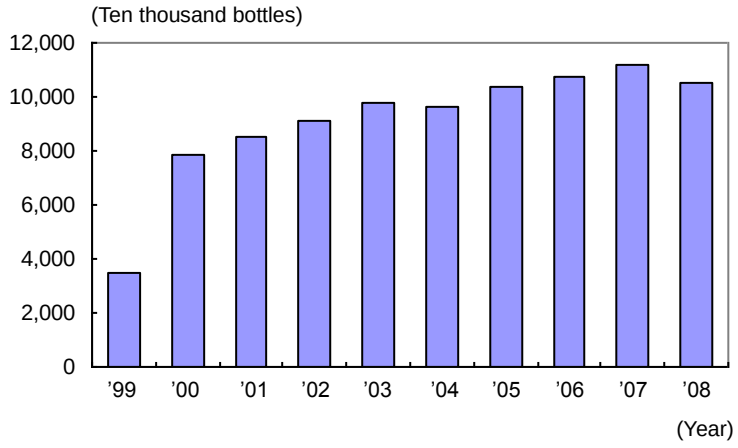
(ii) Rate of use of returnable bottles

The amount of use of returnable bottles has been declining, although the returnable share has remained constant. The use of “ecology bottles” and the shipping volume of R-marked bottles increased from 2000 to 2006, but have leveled off over the last few years.



* Returnable share = Amount of use of returnable bottles / (Amount of use of returnable bottles + Amount of use of one-way bottles)
Source: Compiled based on data provided by the Glass Bottle Recycling Promoter Association

Figure 38 Changes in amount of use of returnable bottles[2]

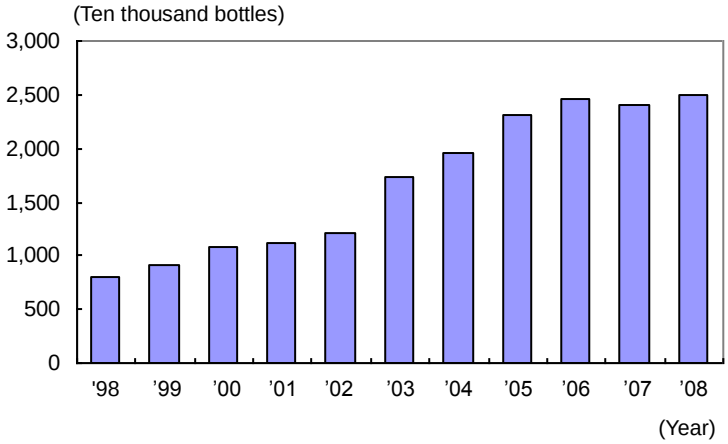


Source: Glass Bottle Recycling Promoter Association website

Figure 39 Usage of ecology bottles[3]

[2] Bottles that are collected, cleaned and refilled for sale as products again, including beer bottles, milk bottles and one-*sho* bottles (1.8 liter liquor bottles) (source: Japan Glass Bottle Association website).

[3] Bottles produced 90% or more on a weight basis from a cullet of mixed colors (blue, green, black, etc. other than clear and brown) (source: Glass Bottle Recycling Promoter Association website).



Source: Glass Bottle Recycling Promoter Association website.

Figure 40 Shipping volume of R-marked bottles[4]

[4] The R mark is a sign to easily identify a bottle as returnable. Returnable bottles that have been produced by a member of the Japan Glass Bottle Association under its prior permission can carry the mark (source: Japan Glass Bottle Association website).

(4) Number of stadiums introducing “reusable cups” and the like

(i) Number of stadiums that have introduced “reusable cups”

☐ Kose Sports Park athletics stadium (Kofu City)
Seating capacity: 17,000 people
Implementation period: From April 2004 to date
Target drinks: Soft drinks, beer
Recovery system: ¥100 deposit per cup refunded at redemption stands
Operation and management: Space Fuu (incorporated nonprofit organization)

Table 45 Results for the Kose Sports Park athletics stadium

	Number of games for which reusable cups were used	Cups used	Average recovery rate
2004	21	35,050	82.6%
2005	23	44,093	82.7%
2006	20	85,395	84.4%
2007	20	80,110	88.3%
2008 (Jan-Oct)	21	59,670	76.0%
Nov 2008-Oct 2009	25	72,583	86% (preliminary)

* The figures for 2009 are as of November.
Source: Compiled based on data provided by Space Fuu.

☐ Tohoku Denryoku Big Swan Stadium (Niigata City)
Seating capacity: 42,300 people
Implementation period: From March 2005 to date
Target drinks: Beer, *chu-hi* and other alcoholic drinks
Recovery system: ¥100 deposit per cup refunded at sales stands
Operation and management: Atago Corporation

Table 46 Results for Tohoku Denryoku Big Swan

	Number of games for which reusable cups were used	Cups used	Average recovery rate
2005	23	229,339	96.3%
2006	22	178,517	97.0%
2007	25	161,516	96.0%
2008	23	141,287	96.5%
2009	22	123,418	97.9%

* The figures for 2009 are as of Monday, November 16th.
Source: Compiled based on data provided by Atago Corporation

☐ Nissan Stadium (formerly International Stadium Yokohama)(Yokohama City)
Seating capacity: 72,327 people
Implementation period: From August 2004 to day
Target drinks: Soft drinks, beer
Recovery system: No deposit, collection at return stands
Operation and management: Yokohama Sports Association

Table 47 Results for Nissan Stadium (J.League soccer games & international friendly games)

	Number of games for which reusable cups were used	Cups used	Average recovery rate
2004	6	96,016	96.3%
2005	22	Approx. 213,000	95.8%
2006	18	141,091	96.8%
2007	22	223,730	94.5%
2008	19	164,277	94.2%

* The figures for 2007 include not only J.League soccer games (Yokohama F.Marinos, Yokohama FC) but also two international friendly games and a two-day music concert by Mr. Children.
* The figures for 2008 include J.League soccer games (Yokohama F.Marinos, Yokohama FC) and an additional game.
Source: Compiled based on data provided by Nissan Stadium

(ii) Use of reusable tableware at events

A survey of 40 organizations participating in the Reusable Eco-foodware Network (as of the end of October 2009) has reported the following results for events in Japan for which 1,000 or more pieces of reusable tableware (e.g. large bowls, plates, small bowls, soup bowls, cups, chopsticks, spoons, folks) were rented.

It should be noted that the results reported by Reusable Eco-foodware Network members indicate that events where less than 1,000 pieces of reusable tableware are used take place more frequently and that some member organizations have only less than 1,000 pieces in stock in the first place. In fact, reusable tableware was also used in small events that were not counted among the survey results.

A major event where a large amount of reusable tableware was used was “ap bank fes ’09,” an outdoor music event held in July 2009. During the three-day event, which attracted 84,000 visitors, 110,515 plates and 68,424 cups were used in total.

Table 48　Number of events where 1,000 or more pieces of reusable tableware were used (total number of replies from ten organizations)

Event type	Number of events
Festivals	54
School festivals	22
Music events	27
Sports events	5
Flea markets	4
Conferences	2
Other events	10
Total	124

Source: Global Environmental Forum

* Respondents: ABC Reusable Tableware, Shikoku Environmental Partnership Office, EXCAFE, Reuse Club Niigata, Association for Garbage Management in Fuji City, Smile Earth, Kasukawa Flower Road Association, Senri Recycle Plaza , A SEED JAPAN, Te to Te Club

(5) Number of fundamental plans for SMCs and the like at regional levels

Fundamental plans for SMCs and the like at regional levels range from independent fundamental plans to SMC-related sections included in basic environment plans or waste treatment plans. The number of prefectural governments that have formulated fundamental plans in place is 47 (100%) and that of municipal governments is 985 (54.2%). Among all prefectures, Toyama has the largest percentage of municipalities with fundamental plans (86.7%).

Table 49 Number of municipalities with regional fundamental SMC plans in place (FY 2007 results)

Prefecture	Number of municipalities	Municipalities with plans	Formulation rate	Prefecture	Number of municipalities	Municipalities with plans	Formulation rate
Hokkaido	180	77	42.8%	Shiga	26	20	76.9%
Aomori	40	17	42.5%	Kyoto	26	13	50.0%
Iwate	35	27	77.1%	Osaka	43	29	67.4%
Miyagi	36	19	52.8%	Hyogo	41	21	51.2%
Akita	25	14	56.0%	Nara	39	10	25.6%
Yamagata	35	24	68.6%	Wakayama	30	16	53.3%
Fukushima	60	23	38.3%	Tottori	19	9	47.4%
Ibaraki	44	21	47.7%	Shimane	21	16	76.2%
Tochigi	31	20	64.5%	Okayama	27	12	44.4%
Gunma	38	16	42.1%	Hiroshima	23	15	65.2%
Saitama	70	50	71.4%	Yamaguchi	20	11	55.0%
Chiba	56	33	58.9%	Tokushima	24	9	37.5%
Tokyo	62	48	77.4%	Kagawa	17	7	41.2%
Kanagawa	33	27	81.8%	Ehime	20	14	70.0%
Niigata	35	20	57.1%	Kochi	34	13	38.2%
Toyama	15	13	86.7%	Fukuoka	66	33	50.0%
Ishikawa	19	10	52.6%	Saga	20	12	60.0%
Fukui	17	10	58.8%	Nagasaki	23	13	56.5%
Yamanashi	28	13	46.4%	Kumamoto	48	12	25.0%
Nagano	81	45	55.6%	Oita	18	10	55.6%
Gifu	42	22	52.4%	Miyazaki	30	14	46.7%
Shizuoka	42	27	64.3%	Kagoshima	46	23	50.0%
Aichi	61	35	57.4%	Okinawa	41	22	53.7%
Mie	29	20	69.0%	Total	1,816	985	54.2%

Source: Compiled based on *Municipal Solid Waste Management Survey*, Ministry of the Environment.

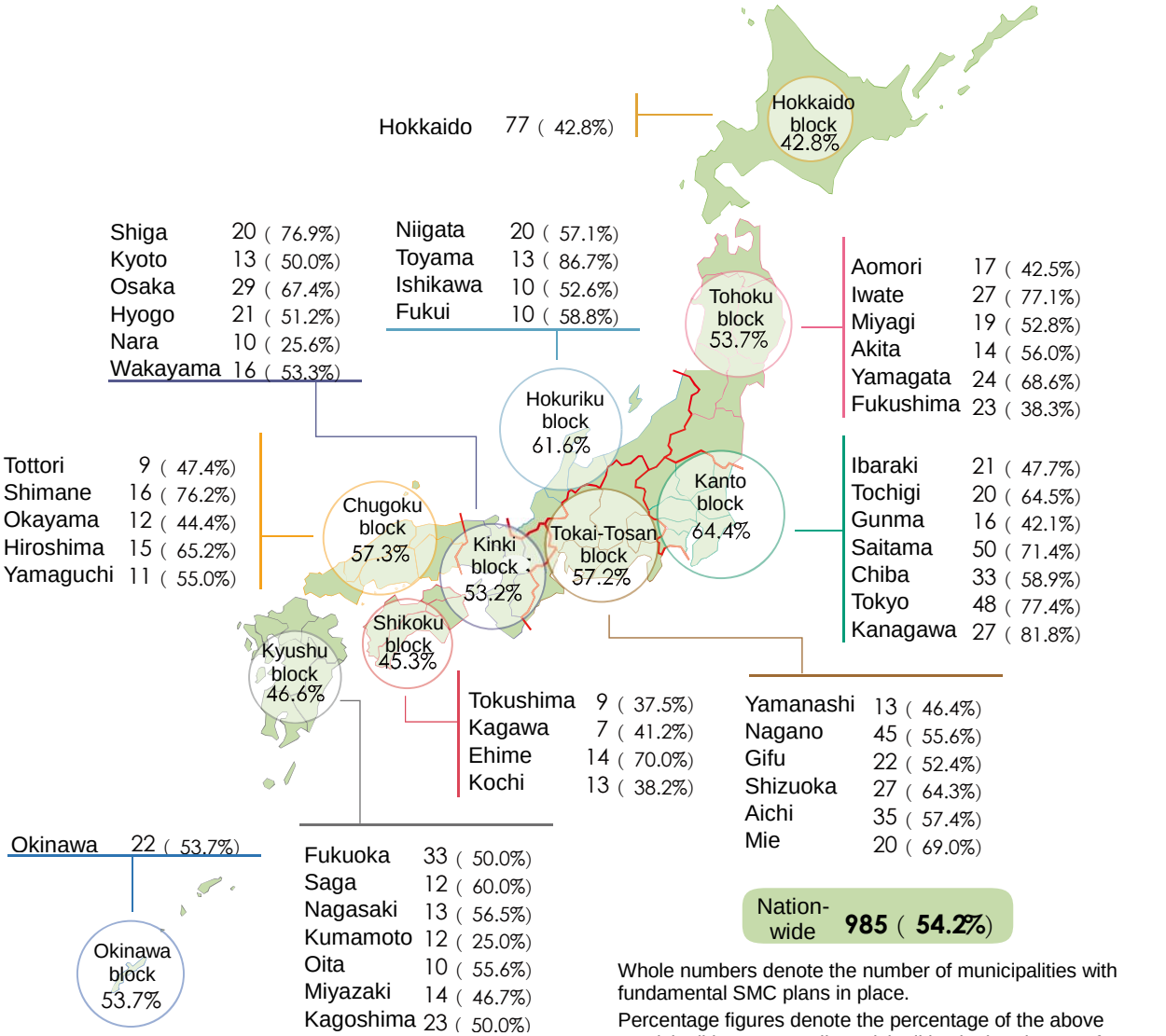
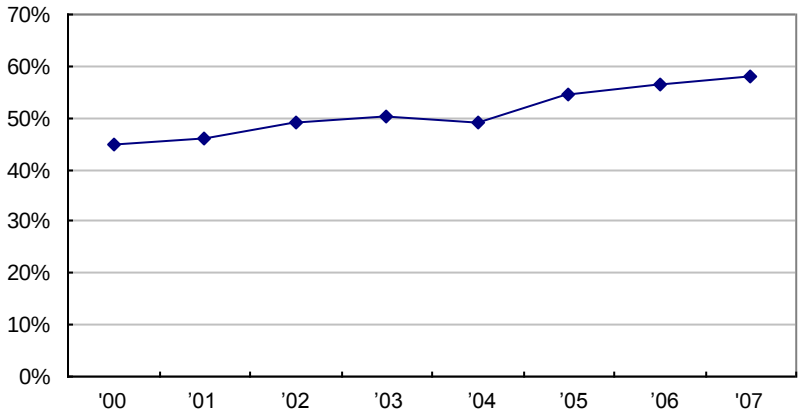


Figure 41 Formulation of regional fundamental SMC plans (FY 2007 results)

(6) Percentage of local governments that are implementing paid garbage collection and top municipalities in terms of waste reduction efforts

(i) Percentage of local governments that are implementing paid garbage collection

The percentage of local governments that are implementing paid garbage collection[5] has been steadily rising recently except FY 2004, when the merger of municipalities reduced the apparent percentage figure.



Source: Compiled based on *Municipal Solid Waste Management Survey*, Ministry of the Environment

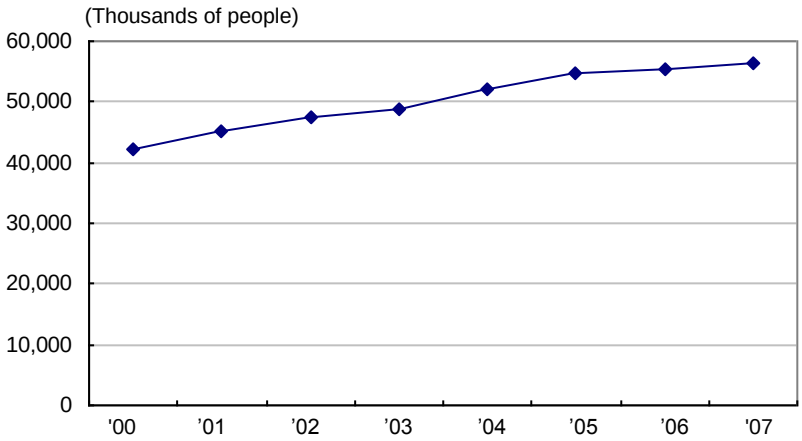
Figure 42 Changes in percentage of municipalities implementing paid garbage collection

Table 50 Implementation of paid garbage collection (number of local governments)

	2000	2001	2002	2003	2004	2005	2006	2007
Total number of municipalities	3,250	3,246	3,236	3,155	2,544	1,844	1,827	1,816
Number of municipalities implementing paid garbage collection	1,460	1,495	1,594	1,590	1,253	1,002	1,030	1,052
Percentage of municipalities implementing paid garbage collection	45%	46%	49%	50%	49%	54%	56%	58%

* The number of municipalities indicates the number for each fiscal year.
The 23 wards in Tokyo are counted as one municipality.

[5] The percentage of local governments that charge fees for disposal of domestic wastes (except wastes directly brought in and bulky wastes)



Source: Compiled based on *Municipal Solid Waste Management Survey*, Ministry of the Environment

Figure 43 Changes in population coverage of paid garbage collection

Table 51 Implementation of paid garbage collection (population)

	2000	2001	2002	2003	2004	2005	2006	2007
Total population (thousands of people)	126,734	127,007	127,299	127,507	127,606	127,712	127,781	127,066
Population covered by paid garbage collection (thousands of people)	42,221	45,294	47,468	48,713	52,107	54,586	55,504	56,468
Population coverage rate of paid garbage collection	33%	36%	37%	38%	41%	43%	43%	44%

* The population figures are as of October 1st in each year, based on the basic residents' register (except in FY 2007, whose figures are as of the end of the fiscal year [March 31st, 2008]).

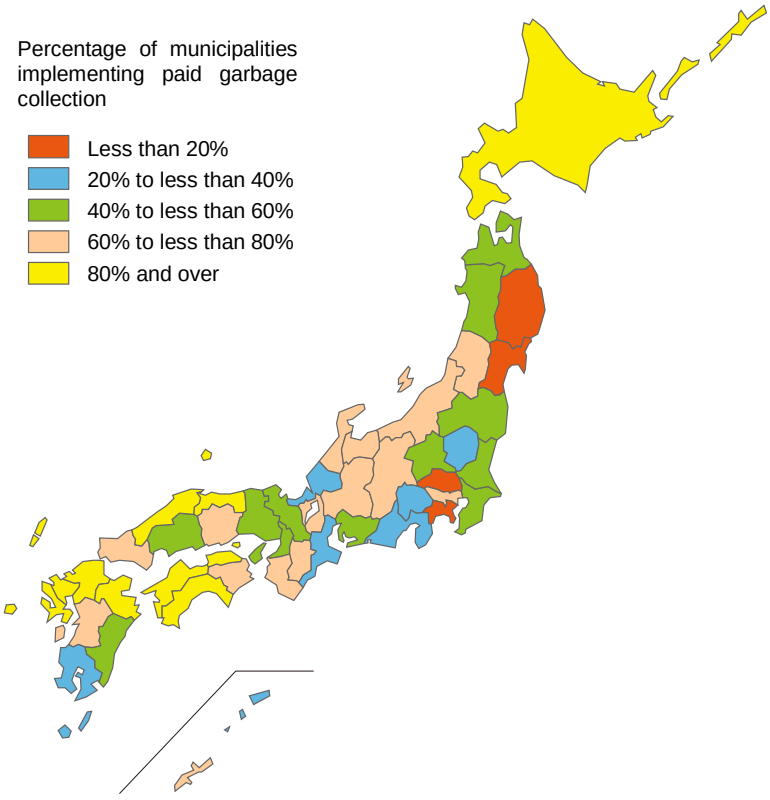


Figure 44 Implementation of paid garbage collection, by prefecture

(ii) Top municipalities in terms of waste reduction efforts

In more committed municipalities, such as those generating less amounts of garbage per person per day, waste reduction efforts are made through programs such as paid garbage collection and a campaign to reduce the use of free plastic shopping bags, in addition to awareness-raising.

Table 52 Top municipalities in terms of waste reduction efforts (with a population of 500,000 or more)

FY 2006				FY 2007			
Rank	Municipality (City, Prefecture)		g/person/day	Rank	Municipality (City, Prefecture)		g/person/day
1	Matsuyama,	Ehime	908.7	1	Matsuyama,	Ehime	849.2
2	Hachioji,	Tokyo	964.1	2	Hiroshima,	Hiroshima	938.6
3	Hiroshima,	Hiroshima	969.6	3	Hachioji,	Tokyo	944.7
4	Yokohama,	Kanagawa	1,045.8	4	Yokohama,	Kanagawa	996.3
5	Kagoshima,	Kagoshima	1,050.0	5	Kagoshima,	Kagoshima	1,013.9
6	Sagamihara,	Kanagawa	1,073.8	6	Sagamihara,	Kanagawa	1,045.8
7	Kawasaki,	Kanagawa	1,107.0	7	Saitama,	Saitama	1,083.9
8	Hamamatsu,	Shizuoka	1,117.4	8	Kawasaki,	Kanagawa	1,087.6
9	Saitama,	Saitama	1,126.9	9	Hamamatsu,	Shizuoka	1,094.9
10	Nagoya,	Aichi	1,142.4	10	Himeji,	Hyogo	1,110.3

Note) There are 28 cities with a population of 500,000 or more. The 23 wards in Tokyo are counted as one municipality.
Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

(7) Number of resource recovery facilities (recycle plazas and the like)

The total number of resource recovery facilities (excluding private ones) in FY 2007 decreased by seven from that in the year ago, although the total recycling capacity increased.

Table 53 Number of resource recovery facilities

	Resource recovery facilities														Refuse-derived fuel plants		Other facilities		Total	
	Sorting		Compression & packaging		Composting		Feed production		Methanation		Other		Subtotal							
	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)	Number of facilities	Capacity (tons/day)
FY 2005	804	17,650	799	17,040	86	1,347	4	83	6	184	126	2,711	1,044	21,266	60	3,424	63	2,111	1,167	26,801
FY 2006	841	20,226	828	17,214	94	1,335	2	37	8	233	135	3,038	1,085	23,652	65	3,466	68	2,258	1,218	29,375
FY 2007	859	18,689	850	17,869	92	3,359	3	62	–	–	138	3,618	1,088	24,155	67	3,577	56	2,236	1,211	29,969
(Private sector)	329	49,913	412	42,193	165	23,056	33	3,605	–	–	831	164,442	1,421	242,486	119	11,306	176	21,309	1,716	275,101

Notes)

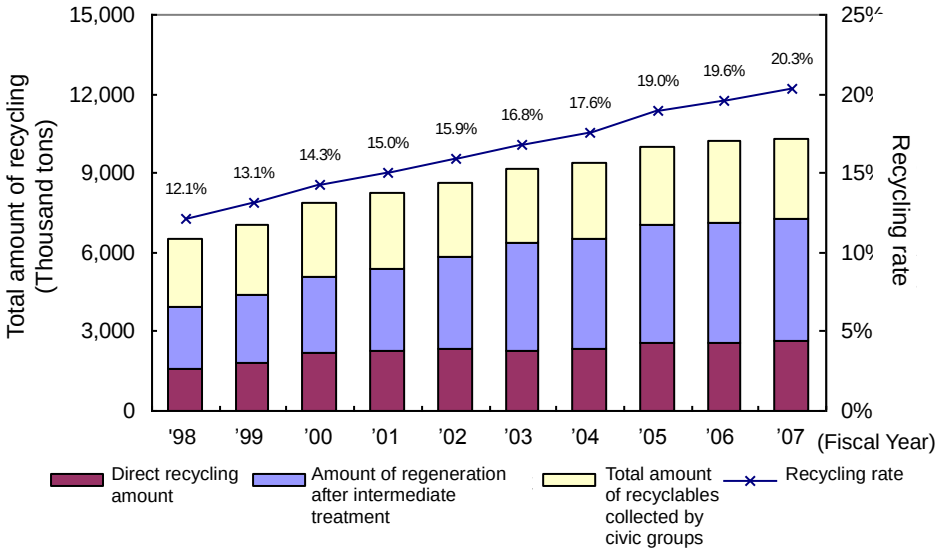
- The figures, except those for the private sector, refer to facilities established by local governments or municipal administrative associations. These include facilities whose construction started in the given fiscal year as well as nonoperating facilities, but exclude decommissioned facilities.
- "Resource recovery facilities" refer to facilities to sort noncombustible wastes, compression and packaging facilities (including pretreatment facilities and facilities located within the premises of final disposal sites), facilities to compost combustible waste and raw garbage, facilities to produce feedstuff from waste, and methanation facilities that are not categorized as "bulky waste disposal facilities" or "refuse-derived fuel plants."
- High rate composting facilities are included in "garbage composting facilities" under "resource recovery facilities."
- Methanation facilities are included in "refuse-derived fuel plants" from FY 2007 onward.

Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

(8) Rate of recycling of municipal solid waste, total amount of recyclables collected by civic groups, top municipalities in terms of recycling efforts, percentage of local governments that are implementing sorted collection, and amount of sorted collection by municipalities by item, and the like.

(i) Rate of recycling of municipal solid waste and total amount of recyclables collected by civic groups

The recycling rate of municipal solid waste has been increasing steadily.



$$\text{Recycling rate (\%)} = \frac{\text{Direct recycling amount + Amount of regeneration after intermediate treatment + Total amount of recyclables collected by civic groups}}{\text{Total amount of garbage disposal + Total amount of recyclables collected by civic groups}} \times 100$$

Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

Figure 45 Rate of recycling of municipal solid waste and total amount of recyclables collected by civic groups

(ii) Top municipalities in terms of recycling efforts

In municipalities more committed to recycling, sorted collection of recyclables is more commonly and strictly implemented, and recyclables are more often collected voluntarily by civic groups, such as children's clubs and neighborhood associations.

Table 54 Top local governments in terms of recycling efforts (with a population of 500,000 or more)

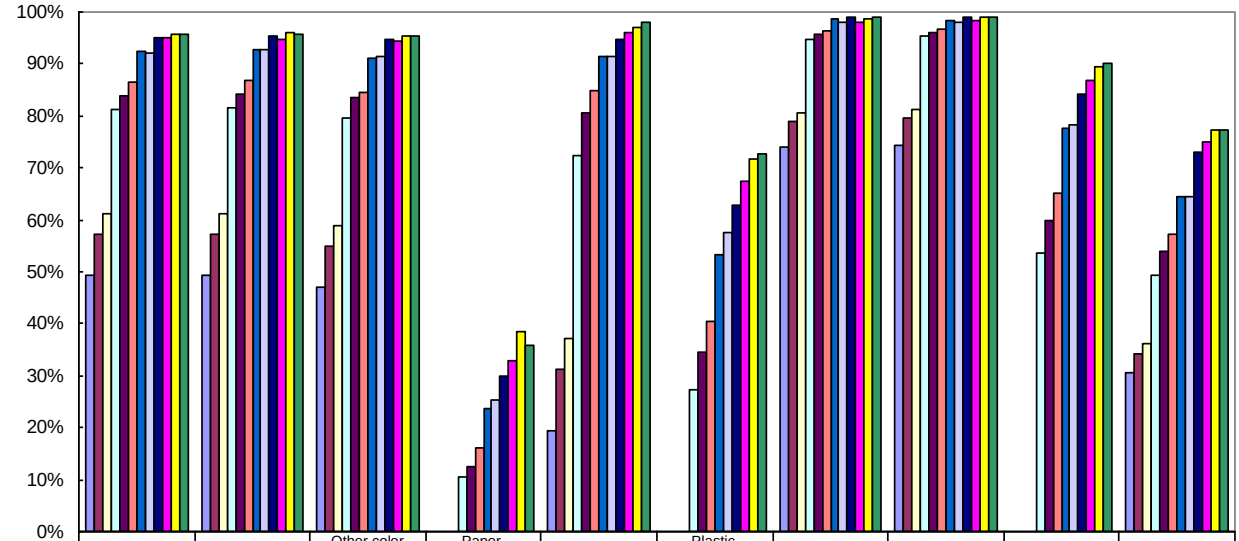
FY 2006				FY 2007			
Rank	Municipality (City, Prefecture)		%	Rank	Municipality (City, Prefecture)		%
1	Hachioji,	Tokyo	32.1	1	Kitakyushu,	Fukuoka	29.2
2	Yokohama,	Kanagawa	26.0	2	Hachioji,	Tokyo	27.5
3	Chiba,	Chiba	24.9	3	Yokohama,	Kanagawa	26.7
4	Nagoya,	Aichi	24.4	4	Chiba,	Chiba	26.1
5	Saitama,	Saitama	22.5	5	Nagoya,	Aichi	24.7
6	Himeji,	Hyogo	21.9	6	Sagamihara,	Kanagawa	19.9
7	Funabashi,	Chiba	20.9	7	Saitama,	Saitama	19.5
8	Hamamatsu,	Shizuoka	19.3	8	Niigata,	Niigata	19.4
9	Niigata,	Niigata	18.8	9	Hamamatsu,	Shizuoka	18.1
10	Sagamihara,	Kanagawa	18.1	10	Himeji,	Hyogo	17.7

Note) There are 28 cities with a population of 500,000 or more. The 23 wards in Tokyo are counted as one municipality.
Source: *Waste Disposal in Japan (FY 2007 Edition)*, Ministry of the Environment

(iii) Percentage of local governments that are implementing sorted collection and amount of sorted collection by municipalities by item

The percentage of local governments implementing sorted collection sharply increased around FY 2000 and has remained high since then. The latest implementation rates are as high as around 99% for steel and aluminum cans and more than 98% for plastic bottles

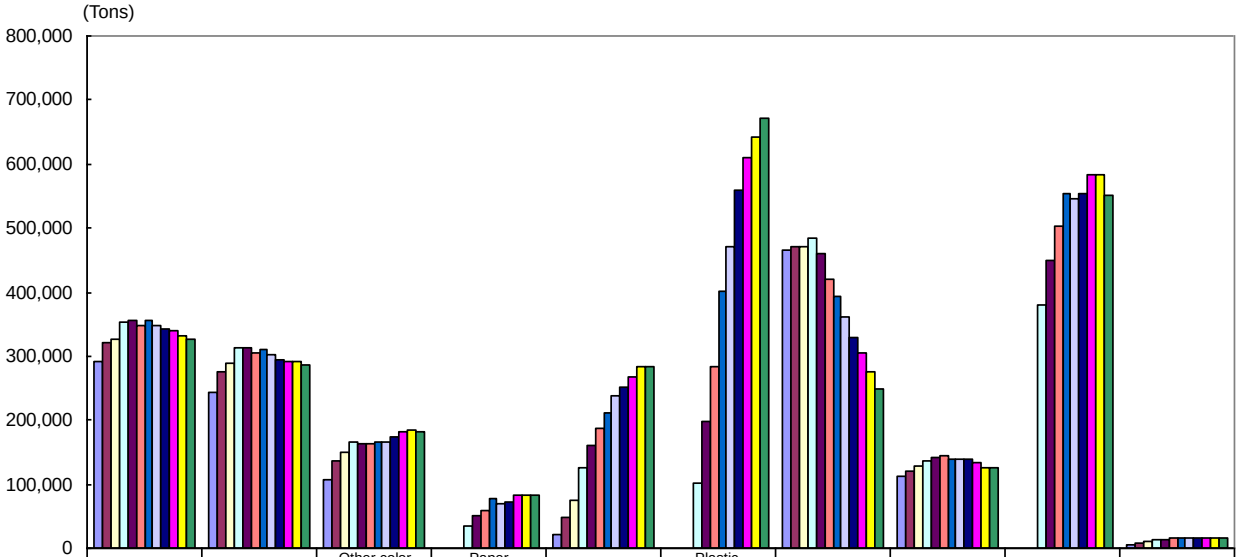
The amount of sorted collection has increased notably for plastic containers.



	Clear glass containers	Brown glass containers	Other color glass containers	Paper containers and packages	Plastic bottles	Plastic containers and packages	Steel containers	Aluminum containers	Carton containers	Paper drink containers
FY1997	49.5%	49.5%	47.2%		19.4%		74.1%	74.3%		30.5%
FY1998	57.2%	57.3%	54.8%		31.1%		79.0%	79.5%		34.1%
FY1999	61.2%	61.3%	58.9%		37.3%		80.7%	81.4%		36.2%
FY2000	81.1%	81.5%	79.5%	10.6%	72.5%	27.3%	94.9%	95.3%	53.5%	49.5%
FY2001	83.9%	84.3%	83.4%	12.4%	80.6%	34.5%	95.6%	95.9%	59.8%	54.1%
FY2002	86.4%	86.8%	84.7%	16.2%	84.9%	40.4%	96.5%	96.8%	65.1%	57.2%
FY2003	92.3%	92.6%	91.0%	23.7%	91.6%	53.4%	98.8%	98.5%	77.5%	64.4%
FY2004	92.2%	92.6%	91.3%	25.3%	91.6%	57.5%	98.1%	97.9%	78.3%	64.4%
FY2005	95.1%	95.4%	94.7%	29.9%	94.7%	62.9%	99.0%	99.1%	84.1%	72.9%
FY2006	95.0%	94.8%	94.5%	32.8%	95.9%	67.5%	98.1%	98.5%	86.9%	74.9%
FY2007	95.6%	95.9%	95.3%	38.4%	97.2%	71.8%	98.8%	99.1%	89.6%	77.4%
FY2008	95.7%	95.8%	95.3%	35.8%	98.1%	72.7%	98.9%	98.9%	90.0%	77.2%

Source: *FY 2008 Results of Municipal Sorted Collection and Recycling under the Act on the Promotion of Sorted Collection and Recycling of Containers and Packaging*, Ministry of the Environment

Figure 46 Percentage of municipalities implementing sorted collection, by fiscal year



	Clear glass containers	Brown glass containers	Other color glass containers	Paper containers and packages	Plastic bottles	Plastic containers and packages	Steel containers	Aluminum containers	Carton containers	Paper drink containers
FY1997	292,775	243,916	107,533		21,361		464,662	112,527		6,644
FY1998	322,284	274,374	136,953		47,620		471,638	121,214		8,939
FY1999	326,110	290,127	149,332		75,811		471,127	128,541		9,574
FY2000	352,386	312,539	164,551	34,537	124,873	100,810	484,752	135,910	380,290	12,565
FY2001	355,157	311,993	162,481	49,723	161,651	197,273	461,357	141,408	448,855	13,136
FY2002	348,698	304,172	163,903	57,977	188,194	282,561	419,667	145,789	502,903	15,696
FY2003	356,977	309,857	165,011	76,878	211,753	401,697	393,650	139,321	554,309	16,636
FY2004	346,671	301,262	166,076	69,197	238,469	471,488	362,207	139,477	547,149	15,807
FY2005	341,748	293,825	174,082	71,012	251,962	558,997	329,535	139,535	554,820	16,320
FY2006	339,019	292,323	181,385	81,815	268,266	609,215	304,578	134,458	584,312	15,921
FY2007	332,417	290,570	185,644	82,957	283,441	643,114	275,353	126,334	583,195	16,586
FY2008	327,037	286,521	180,987	83,804	283,646	672,066	249,507	124,881	550,200	16,706

Source: *FY 2008 Results of Municipal Sorted Collection and Recycling under the Act on the Promotion of Sorted Collection and Recycling of Containers and Packaging*, Ministry of the Environment

Figure 47 Actual amount of sorted collection, by fiscal year

(9) Number of environmental learning and exchange meetings held by local governments and the like, and number of applications submitted to the "Assistance Program for Local Communities for Establishing an SMC Society"

The number of municipalities holding 3R-related environmental learning sessions in FY 2007 was 611 (33.6%), and they held 12,852 learning sessions in total.

There are three types of 3R-related exchange meetings. The number of meetings was small for town meetings, at 1,691, but as large as over 15,000 for both briefing sessions and study tours.

The number of applications submitted from all around Japan to the "Assistance Program for Local Communities for Establishing a SMC Society" was 54, of which seven were selected for implementation.

Table 55 Number of municipalities holding 3R-related environmental learning sessions or exchange meetings, and number of sessions/meetings held (FY 2007 results)

Prefecture	3R-related environmental learning sessions		3R-related exchange meetings					
			Town meetings		Briefing sessions		Study tours	
	Number of municipal-cities	Number of sessions	Number of municipal-cities	Number of meetings	Number of municipal-cities	Number of sessions	Number of municipal-cities	Number of tours
Hokkaido	23	590	4	323	22	451	35	636
Aomori	9	120	2	24	6	116	4	105
Iwate	20	437	3	121	10	205	6	28
Miyagi	14	88	2	10	12	717	16	210
Akita	5	46	3	73	8	316	3	5
Yamagata	11	68	1	2	5	42	12	33
Fukushima	11	101	2	10	6	116	17	208
Ibaraki	12	98	3	11	5	104	16	245
Tochigi	9	115	2	18	5	188	5	66
Gunma	9	138	1	1	5	205	13	275
Saitama	24	663	1	54	16	181	20	187
Chiba	20	256	3	21	8	369	14	333
Tokyo	34	825	12	116	28	2170	37	286
Kanagawa	22	538	2	11	13	1552	16	316
Niigata	12	259	1	8	9	2322	12	555
Toyama	8	588	1	10	3	9	5	56
Ishikawa	8	93	1	2	4	124	5	68
Fukui	8	102	3	11	4	106	6	37
Yamanashi	6	179	4	14	3	34	7	30
Nagano	28	233	4	24	17	344	26	71
Gifu	15	101	0	0	7	69	14	92
Shizuoka	23	484	1	3	14	404	19	220
Aichi	26	417	2	12	14	477	18	953
Mie	14	168	1	2	9	349	9	164
Shiga	17	86	1	0	8	43	12	139
Kyoto	13	368	4	293	5	33	8	166
Osaka	24	901	4	130	12	667	21	1655
Hyogo	17	365	3	34	9	1340	13	597
Nara	9	67	1	0	4	28	9	114

Prefecture	3R-related environmental learning sessions		3R-related exchange meetings					
			Town meetings		Briefing sessions		Study tours	
	Number of municipal-cities	Number of sessions	Number of municipal-cities	Number of sessions	Number of municipal-cities	Number of sessions	Number of municipal-cities	Number of sessions
Wakayama	5	102	2	14	5	58	7	44
Tottori	9	363	1	1	4	36	2	8
Shimane	7	63	2	20	6	137	7	64
Okayama	10	143	0	0	4	11	4	20
Hiroshima	6	379	3	22	6	353	7	240
Yamaguchi	6	617	1	24	6	245	5	325
Tokushima	5	19	0	0	2	25	3	15
Kagawa	4	30	1	8	1	8	6	21
Ehime	8	52	2	45	6	95	4	268
Kochi	6	69	1	136	3	31	4	14
Fukuoka	21	1267	4	50	13	269	12	5540
Saga	12	61	2	3	5	45	6	28
Nagasaki	7	33	1	6	5	55	7	83
Kumamoto	14	209	3	10	8	720	10	132
Oita	8	62	1	2	5	47	4	44
Miyazaki	10	236	2	8	7	394	7	43
Kagoshima	12	167	2	2	13	284	13	362
Okinawa	10	486	2	2	5	66	10	53
Total	611	12,852	102	1,691	375	15,960	516	15,154

Source: Compiled based on *Municipal Solid Waste Management Survey*, Ministry of the Environment

Evaluation results and problems

(1) It was found that the rate of reduction in the quantity of municipal solid waste from the FY 2000 level has been steadily decreasing. The FY 2007 results show that the amount of garbage discharged per person per day declined by 8.1% compared with FY 2000 (reduction target for FY 2015 is 10%), the amount of garbage discharged from households per person per day by 10.4% (reduction target for FY 2015 is 20%), and the "total amount" of waste generated by businesses by 16.1% (reduction target for FY 2015 is 20%). Although measures taken to date have contributed to increasing the reduction rate year after year, the reduction rate of the amount of garbage discharged from households per person per day has not been as large as those of the other indices. Toward the achievement of the targets, the government should enhance and strengthen measures for all these indices.

(2) The reduction rate of the final disposal amount of industrial waste has also grown steadily. However, the current rate is still far below the FY 2015 target, and the growth of the reduction rate has slowed down in recent years. These results suggest that the government should continue the promotion of measures while analyzing whether this index is becoming saturated in the current industrial structure.

(3) Findings about changes in thoughts and actions to establishing an SMC society are as follows. Regarding thoughts, 82.1% of the survey respondents said that they are interested in waste issues, indicating a high awareness level. With regard to specific actions, as much as around 70% were found to take such actions to reduce waste as refusing free plastic shopping bags, requesting simple packaging at stores, and often using refill products. By contrast, the percentages of respondents who take actions such as avoiding disposable products and refraining from using plastic or other disposable drink containers and disposable tableware remained small, although indicating yea-on-year increase. In terms of actions toward reuse and recycling, as much as over 70% of respondents reported that they sort household garbage by type and bring it to the designated collection site, and that they wash bottles collected as recyclables so that they are easy to recycle. However, the percentage of affirmative answers to questions about the use of reusable containers and recycled products was small. These questions asked about actions concerning the purchase of products using reusable containers, such as beer or milk bottles, and the eagerness to buy recycled products made from regenerable materials.

These results show that a relatively large percentage of people have awareness, while the percentage of people taking action is limited depending on the type of action.

Recognizing that the Cabinet Office conducted the "Public Opinion Poll on Environmental Issues" in June 2009, this year's survey used conditions close to those used in the poll, including questions and the areas of residence of the respondents. This decision was made to put priority on comparing answers between the poll and the online survey. A comparison of the opinion poll and the online survey found no significant difference, with distribution of answers very similar between them, except in certain questions, such as those concerning the use of Internet auctions. These results suggest the need to further improve the accuracy of the Internet survey in consideration of the fact that some questions are influenced by the respondent's access to the Internet.

(4) The percentage of local governments making organizational efforts to promote green purchasing has leveled off recently. To achieve the FY 2015 target of 100%, the central government should encourage local governments further by disseminating guidelines or otherwise so that local governments can independently push forward with their own programs. Indices related to companies' organizational efforts to promote green purchasing and the implementation of environmental business management show that the number of companies implementing an environmental management system has been steadily increasing, although the percentages of companies publishing environmental reports and companies having

adopted environmental accounting both reduced from the previous year's level. This indicates that the government should analyze the factors of this decline and improve the survey methodology in a manner that allows more accurate assessment of the reality.

(5) Progress has been made toward the target concerning the SMC business market. The size of the market in FY 2007 was 1.29 times as large as that in FY 2000, and the number of staff employed by SMC businesses was 1.22 times as large.

SMC businesses that have grown compared with FY 2000 include those engaged in acceptance of wastes from the manufacturing industry, distribution of secondhand goods and wholesale of recycled resources. The overall SMC business market has been expanding. SMC business sectors that indicated a high growth rate are acceptance of wastes from the manufacturing industry, recycling of waste personal computers, businesses dealing with secondhand household electrical appliances and personal computers, and production of commercial products from recycled resources (plastic bottles, paper containers and packages, plastic containers and packages, and iron scrap).

By the current definition, SMC businesses refer to businesses related to the "Waste and Recycling field" in the Fundamental Plan. However, this definition needs to be reviewed as appropriate because the production and widespread use of environment-friendly products may lead to a medium- to long-term scale-down of business to recycle and treat traditional products containing hazardous substances that do not lend themselves to cyclical use or final disposal.

(6) Among the indicators to monitor changes, the annual sales of the rental and lease businesses have been declining since 2006, although the rental business indicated an increase. In the questionnaire survey, the percentage of respondents who use rented or leased products to avoid unneeded purchases whenever possible was small but increased from the year-ago level. The future trend of this indicator should be carefully monitored.

The shipping volume and the shipping rate of refill products have been steadily increasing, with the shipping rate in 2007 reaching over 60%. In the questionnaire survey, as much as over 70% of respondents said they often use refill products, suggesting that refill products have become a common choice for consumers when buying consumable goods.

Since only limited information is available on refill products currently, this analysis covers changes in data in the soap and detergent industry alone. It is necessary to consider ways of collecting data on refill products in other industries, such as food.

(7) The rate of refusal of free plastic shopping bags was nearly 23.5% in September 2009. The fact that almost 70% of respondents in the questionnaire survey said that they refuse free plastic shopping bags or request simple packaging at stores shows that refusing free plastic shopping bags have become more of common practice. The latest rate of increase in this refusal rate is much greater than that in 2008 and before.

The domestic production of disposable chopsticks and the number of disposable chopsticks imported have been falling since 2005. A detailed analysis of these data indicates that products made from domestic wood have increased. These trends can be attributed to not only the increase in the percentage of people carrying reusable chopsticks but also the decline in the number of restaurants using disposable chopsticks and the impact of China's regulations on exports to Japan.

Along with data on the volumes of production and sales, the progress of conversion from disposable to reusable products should be assessed. Data on the use of thinned wood are also hoped to be collected.

(8) The rate of use of returnable bottles has been flat lately. Even in the questionnaire survey, only a small percentage of respondents said they buy products using reusable containers, such as

beer or milk bottles. This suggests the need for further efforts, such as measures to urge consumers to choose returnable bottles.

(9) Reusable cups and tableware are continued to be adopted by stadiums and various events.

However, the questionnaire survey found that the percentage of respondents thinking such reusable items should be used by all means or used if possible was smaller than in the previous year's survey, while that of respondents saying they would rather prefer these reusable items not to be used remained flat. The main reason for this preference was anxiety about hygiene. These results indicate the need to take measures to meet today's needs for safety and reliability and thereby eliminate the psychological anxiety of users.

(10) Although fundamental plans for SMCs and the like at regional levels range from independent fundamental plans to SMC-related sections included in basic environment plans or waste treatment plans, 100% of prefectural governments and 54.2% of municipal governments have their fundamental SMC plans in place. The next survey should examine more deeply the details of the regional fundamental SMC plans and their implementation status. The survey also found steady progress in regional efforts, as demonstrated by the increase in the percentage of local governments that are implementing paid garbage collection or sorted collection. However, the recycling rate decreased from the year-ago level even in some of the top municipalities in terms of recycling efforts. The government should continue its efforts to establish an SMC society at the regional level by disseminating documents such as the "Handbook on the Introduction of Paid Collection of Municipal Solid Waste" and the "Guidelines for Municipal Solid Waste Management Systems for Establishing a SMC Society at the Municipal Level," which define standard garbage classification for sorted collection.

(11) On the whole, citizens are highly aware of a SMC society and more commonly take actions to reduce waste, although efforts have slowed down or leveled off in certain areas. To motivate citizens with improved awareness to take actual action, the government should push forward with incentive programs, such as paid garbage collection, a point program, and a commendation program. More accurately identifying consumption trends and using results in communicating information to encourage people to take action will remain important as well.

For areas where a slowdown or a leveling off is observed, the cause should be analyzed to identify which factor has led to that phenomenon—insufficient effort or saturation due to maturity of effort—and to take appropriate measures in response. Therefore, future surveys should focus on more details, including factor analysis.

Regarding SMC businesses, for which efforts seem to steadily advance year after year, it is important to analyze real situations because efforts in certain areas have experienced decline.

III Evaluation of efforts by various entities

This chapter describes the results of evaluation of the present state of efforts by different types of entities—citizens, NGOs and NPOs, universities and similar bodies, business organizations, local governments, and the State—based on effort indices and hearing survey results.

1. Efforts by citizens

(Expected role of citizens in the Second Fundamental Plan)
Citizens are expected to realize that they are, as consumers and community residents, themselves dischargers of waste and the like, and that they are imposing burdens on the environment and therefore should accept responsibility for their own waste problems. They are also expected to be aware of the roles they should play in the establishment of an SMC society, conduct themselves accordingly, and take further steps to modify their lifestyles in order to enable the establishment of an SMC society.

<Related effort indices>
- ○ Reducing the quantity of municipal solid waste (amount of garbage discharged per person per day, amount of garbage discharged from households per person per day)
- ○ Changes in thoughts and actions to establishing an SMC society
- ○ Size of rental and lease business market
- ○ Shipping rate for refill products
- ○ Rate of refusal of free plastic shopping bags
- ○ Volume of sales of disposable products
- ○ Size of the market for secondhand goods
- ○ Rate of use of returnable bottles

Present situation

(1) Both of the two indices show that the amount of garbage is decreasing. The amount of garbage discharged per person per day was 1,089 grams in FY 2007, showing an 8.1% decline from the FY 2000 level. The amount of garbage discharged from households per person per day was about 586 grams in FY 2007, decreasing 10.4% compared with FY 2000.

(2) Regarding effort indices related to reduction, the size of the rental and lease business market, the shipping rate for refill products, and the rate of refusal of free plastic shopping bags have all increased, and the volume of sales of disposable products has dropped. Regarding effort indices related to reuse, the size of the market for secondhand goods has been expanding, while the rate of use of returnable bottles has leveled off.

(3) Findings from effort indices concerning thoughts and actions to establishing an SMC society are that while a relatively large percentage of survey respondents returned positive answers to questions about awareness, some questions, such as one about the active purchase of recycled products, received a small percentage of positive answers. The results suggest that measures are needed, such as providing information and giving incentives in a manner that would encourage citizens with high awareness to take action.

Evaluation results and problems

(1) With respect to the amount of waste, it was found that the reduction rate of the amount of garbage discharged from households per person per day was smaller than that of the total amount of waste generated by businesses. The questionnaire survey on citizens' thoughts and actions to evaluate effort indices revealed that although citizens' awareness is high, this has not

led to actual actions, as in the previous survey.

(2) Citizens are expected to be aware that they should play a part in establishing an SMC society and voluntarily take action, such as cooperating in sorted collection by the local government and collection of recyclables by civic groups, using the recycle plaza, returning mobile phones for collection, and buying recycled products.

(3) The State and local governments should take measures to encourage each citizen to take action, while using economic instruments and emphasizing the concepts of “Reduce” and “Reuse.” This also requires them to develop social infrastructure, such as a regional agreement for collaboration among different types of entities, with a view to establishing a framework that facilitates civic actions to “Reduce” and “Reuse”. Another important measure is to provide information and raise awareness using approaches such as increasing the visibility of information by having products made from CRs carry a special mark.

(4) Environmental education should go beyond school education and extend to life-long learning. To make environmental education more effective, every entity, including government, should work in cooperation to provide such education on a community basis for all generations. With many local governments offering environmental learning and exchange meetings, each citizen is expected to participate in the establishment of an SMC society.

2. Efforts by NGOs, NPOs, universities and similar bodies

(Expected role of NGOs, NPOs, universities and similar bodies in the Second Fundamental Plan)
NPOs, NGOs, universities and the like are expected to conduct activities and to make advanced efforts that contribute to establishment of an SMC society, so that their social significance will be enhanced through collection of up-to-date information and transmission of technical knowledge. They are also expected to coordinate activities of various entities aimed at facilitating the establishment of an SMC society.

Present situation

(1) In the present evaluation, we conducted a hearing on efforts to establish SMC blocks. To identify efforts by NGOs and NPOs, this hearing focused on regional reuse and recycling activities involving citizens (Women’s Empowerment 21 Japan: WE21 Japan), a specified non-profit corporation).

(2) WE21 Japan runs 53 charity recycling stores (mainly selling secondhand clothing) in Kanagawa and uses profits from this business to operate the organization and support independence of Asian women. In FY 2008, the stores attracted about 440,000 customers and received secondhand goods from about 90,000 donors. Sales totaled approximately 320 million yen, of which about 60% were used for operating costs and about 40% for the support program. WE21 Japan defines rules on the use of trays and packaging in its “Guidelines for Appropriate Packaging” in an effort to maintain quality while conserving resources. For regional circulation of unsold clothes, the organization remodels them, makes fabric sandals from them, and even collaborates with young artists to convert old clothes into art objects with added value. The NPO also recycles clothes in cooperation with local used textile dealers.

(3) Our survey also indicated that efforts by NGOs and NPOs are spreading vertically and laterally in many parts of the country. NPOs and NGOs cooperate with one another across regions or collaborate with different kinds of entities, such as government and universities. For example, WE21 Japan works in cooperation with NGOs and NPOs that conduct similar programs in Fukushima and Tokyo.

Evaluation results and problems

(1) NGOs and NPOs are expanding activities toward establishment of an SMC society. However, restrictions on the way that CRs are reused or recycled sometimes hinder smooth activities of NGOs and NPOs. Measures should be taken to expand the range of application of reused and recycled products.

(2) It is essential that NGOs and NPOs exchange information with the local government and other various entities on a day-to-day basis to work in coordination with one another to deepen efforts. Nevertheless, it is noteworthy that efforts by NGOs and NPOs are expanding across regions (laterally) and entities (vertically). They should continue to further their efforts by effectively using intermediary supporting organizations and financial support, including donations.

(3) Universities and other research institutes were not subject to any hearing survey in this fiscal year's evaluation, but are expected to continue to enhance specialized and academic knowledge and provide objective and reliable information, with a view to supporting other entities' activities and efforts.

3. Efforts by business organizations

(Expected role of business organizations in the Second Fundamental Plan)
Business organizations are expected to fulfill their corporate social responsibility, which is vital to their sustainable growth, by conducting business activities in a manner that takes account of environmental issues. This should include compliance with laws and regulations and prevention of the incurrence of unnecessary social costs such as those incurred as a result of illegal dumping. They are also expected to further promote efforts toward, as well as increase the transparency of, responsible cyclical use and disposal of waste, construction of information networks with consumers, and disclosure of relevant information, based on discharger's responsibility and extended producer responsibility (EPR).

<Related effort indices>
- ○ Reducing the quantity of municipal solid waste (amount of garbage discharged per person per day, amount of waste generated by businesses)
- ○ Reducing the amount of industrial waste
- ○ Promoting green purchasing
- ○ Promoting environmental business management
- ○ Expanding SMC business market
- ○ Size of rental and lease business market
- ○ Shipping rate for refill products
- ○ Volume of sales of disposable products
- ○ Size of the market for secondhand goods
- ○ Rate of use of returnable bottles
- ○ Number of stadiums introducing reusable cups and the like

Present situation

(1) For the present evaluation, a hearing of six organizations and business entities was conducted as follows. Japan Business Federation) was asked about the progress of its Voluntary Action Plan on the Environment, the Japan Chemical Industry Association about efforts in the chemical industry, and the Japan Federation of Construction Contractors about efforts in the construction industry. To assess efforts on an individual business basis, our hearing survey also included AMITA Corp., a business engaged in the recycling of resources and making a comprehensive effort toward an SMC society and a Society in Harmony with Nature; UNY Co., Ltd., a general merchandise chain following best practice toward establishing SMC blocks; and

JFE Engineering Corp., which represents a good example of a community-based enterprise effort.

(2) According to the results of the FY 2008 follow-up survey of the Voluntary Action Plan on the Environment [Establishment of an SMC Society edition], compiled by Nippon Keidanren in March 2009, the final disposal amount of industrial waste in FY 2007 was equal to that in the previous fiscal year, at 8.62 million tons (an 85.3% reduction from 58.60 million in FY 1990). The target is to reduce the final disposal amount of industrial waste by 86% from the FY 1990 level by FY 2010.
Forty industries participate in the Voluntary Action Plan, and these are composed of 31 industries that are counted in the calculation of the final disposal amount of industrial waste and nine others (industries such as finance and real estate that principally do not generate industrial waste). These forty industries have announced industry-specific targets and progress of efforts. Keidanren intends to remain committed to its target by requesting industries to reduce the final disposal amount of industrial waste and promote 3Rs with determination to prevent the final disposal amount from increasing regardless of change in the economic conditions so that the FY 2010 target of the Voluntary Action Plan can be achieved. Since the target year of the current Voluntary Action Plan is FY 2010, Keidanren plans to discuss the Voluntary Action Plan for FY 2011 and ahead.
Regarding the recycling of containers and packages, the Liaison Committee for 3R Promotion Organizations has established a voluntary action plan for the 3R promotion for containers and packages, and announces follow-up results every year.

(3) The Japan Chemical Industry Association describes the chemical industry as an aggregate of many manufacturers of heterogeneous chemicals, and says that wastes from the industry widely vary in type. The industry's target in its voluntary action plan is to reduce the final disposal amount of industrial waste by 88% from the FY 1990 level by FY 2010 (from 2,886 thousand tons in FY 1990 to 346 thousand tons in FY 2010). As of FY 2007, an 85% reduction from the FY 1990 level was achieved, making the final disposal amount to reach 442 thousand tons.
Before final disposal, about 55% of wastes from the chemical industry are reduced in amount, about 41% of them are recycled for use by cement manufacturers, organic/inorganic chemical industries, chemical fertilizer manufacturers and other industries, and the remaining 4% are disposed of in landfills (FY 2008 results).
Technologies used by chemical industries to reduce the amount of waste generation include one to manufacture chemical raw materials from waste plastic; one to reduce ammonium sulfate, a by-product of the traditional manufacturing process, by changing the method of manufacturing caprolactam (a raw material of nylon); one to reduce the disposal amount of hydrochloric acid, a by-product of the manufacturing of chlorine (primary raw material of polyurethane), by producing chlorine by oxidation of hydrogen chloride; and one to collect rare metals from waste catalysts.

(4) The FY 2010 targets set by the Japan Federation of Construction Contractors in its "Environmental Voluntary Action Plan for the Construction Industry" are a 96% recycling rate for concrete blocks, a 98% recycling rate for asphalt concrete blocks, a 65% recycling rate (95% when including shrinkage by treatment) for construction wood, a 75% recycling rate (including shrinkage by treatment) for construction sludge, a 50% reduction rate for the amount of mixed construction waste, and a 91% recycling rate for construction waste. In FY 2005, the industry achieved a 98% recycling rate for concrete blocks, a 99% recycling rate for asphalt concrete blocks, a 68% recycling rate (91% when including shrinkage by treatment) for construction wood, a 48% recycling rate (75% when including shrinkage by treatment) for construction sludge, a 40% reduction rate for the amount of mixed construction waste, and a 92% recycling rate for construction waste. All the targets, except the construction wood recycling rate

(including shrinkage by treatment) and the mixed waste reduction rate, have already been accomplished.
Efforts made by the construction industry include (i) recycling of sludge under the individual designation system for the civil engineering works; (ii) appropriate disposal of hazardous substances and recycling of materials by sorting wastes at demolition sites; and (iii) restrained waste generation, recycling by outsourced disposal, and recycling under the wide-area certification system at new construction sites. There are also pioneering initiatives on an independent basis, such as the one aiming at zero-emission construction throughout the life cycle through collaboration among the owner, the architect, and the contractor.

(5) AMITA Corp. carries out in Kyoto and Tochigi a profit-making project that focuses on what it calls “forest dairy farming,” rough grazing in poorly-tended satoyama (community-based forest area). In this scheme, grazed dairy cattle eat undergrowth in the forest, produce milk, and level the ground, while their wastes are returned to the forest, creating a material cycle. At the same time, this grazing saves the trouble of cutting undergrowth and thereby facilitates forest thinning. Through forest dairy farming, the company aims to create a win-win relationship between people, forest and cattle by combining them in multiple ways, while establishing a regional material cycle and creating new jobs. AMITA is also engaged in biogas power generation by methane fermentation of food wastes and uses its by-products as liquid or fermented fertilizer. Through these efforts, the firm hopes to build connections among local entities and create a sustainable society based on a material cycle involving the entire region.

(6) Every store of UNY Co., Ltd., measures wastes and sorts them by category (classified into 19) for recycling. This initiative has helped stores reduce the amount of waste gradually (about 5% reduction a year on a sales basis).
In cooperation with the Aichi Prefectural Federation of Agricultural Co-operatives, UNY has also created a food recycling loop in which to recycle food wastes into fertilizer, use it to grow farm products, and sell them at stores. This loop was certified as a recycling business plan in 2007 under the Food Recycling Law.
The company has been promoting the reduction of containers and packages for more than 20 years through efforts such as charging customers for plastic shopping bags. In 2007, 330 million plastic bags were used at its stores, but the number was reduced by about 100 million in 2008.
UNY also collects containers and packages at stores with a view to eventually selling products recycled from them. Milk cartons and food trays are recycled into toilet tissue and benches, respectively, and sold at stores. In addition, bioplastic is being used for certain containers and packages on a trial basis.

(7) JFE Engineering Corp. takes advantage of its strength as a steelworks and runs various community-based recycling businesses. For food recycling, it recycles locally collected raw garbage at its methane gas fermentation facilities. The company has also been engaged in the recycling of fluorescent lights for 15 years and rendered 4,500 tons of fluorescent lights harmless in FY 2008. JFE Engineering now focuses on recycling the glass recovered from them into fluorescent tube glass again and supplies about 1,000 tons of such recycled glass to fluorescent tube manufacturers annually. For the recycling of dry batteries, the company collects about 1,500 tons of dry batteries annually and recovers zinc and other metals contained in them. Regarding plastic bottle recycling, about 14,000 tons of plastic bottles are recycled into PET flakes annually. JFE Engineering also recycles approximately 700,000 household electrical appliances annually. At the company, R&D is underway to recover lead from cathode-ray tube glass in an inexpensive way.

Evaluation results and problems

(1) Industry-wide efforts should continue, considering that although the reduction rate of the final disposal amount of industrial waste has been rising steadily, the pace of reduction has slowed down recently.

(2) The size of the SMC business market is expanding. Industry should maintain this trend, recognizing that the expansion of SMC businesses will contribute to the increase in employment. Industry is expected to continue efforts to enhance SMC businesses.

(3) The target year of Nippon Keidanren's current voluntary action plan is FY 2010. With no target set for FY 2011 and ahead, Keidanren is expected to formulate a new voluntary action plan in line with the targets and provisions of the Second Fundamental Plan.

(4) Keidanren's voluntary action plan sets different targets for each industry by using indicators whose definition varies by industry. Keidanren should consider setting targets with unified definitions for all industries to the extent possible so that each industry's efforts can be communicated to citizens more plainly.

(5) Industry-wide commitment toward the achievement of targets in the Second Fundamental Plan should be furthered. Efforts should be made by not only industries participating in Keidanren's voluntary action plan, but also non-participating industries, such as water service, agriculture and health. Attention should also be paid to industry-academia collaboration and technological development.

(6) Some of the wastes from industry have limited applications or are approaching the limits of reduction and recycling. This suggests the need for activities to secure the steady recycled uses of wastes produced in large amounts. It is essential to expand the commercial use of recycled products, develop recycling technologies, find applications of recycled products, and secure the uses of them, in addition to arousing demand for recycling.

(7) Another important approach is for individual businesses to actively disclose information on their individual efforts toward an SMC society, such as the status of use of recycled products.

(8) All stakeholders, including project owners, designers (e.g., environmentally conscious designs), contractors (e.g., strictly restraining waste generation), manufacturers (e.g., environmentally conscious designs, collection of own product after the end of their life, promotion of recycling), and waste treatment businesses (e.g., disclosing the recycling status), should act in a concerted manner toward the goal. At the same time, regional efforts to establish an SMC society should involve not just business organizations but also government, consumers and local citizens.
Particular emphasis should be placed on encouraging collaboration between different businesses or between businesses and consumers to create a system for recycling resources. For example, business organizations should take the initiative by dealing with returnable bottles and other reusable and recyclable products so that other businesses and consumers can be urged to choose such products and cooperate in reuse. This way, business organizations are expected to take action to provide consumers with an opportunity to contribute to the establishment of an SMC society.

(9) For CRs that are recycled in a wide area, there is a need to establish an efficient and effective method of collecting resources in a manner that coordinates with existing systems.

4. Efforts by local governments

(Expected role of local governments in the Second Fundamental Plan)
Local governments have a central role to play in facilitating efforts to establish an SMC society at the local level. They are, therefore, expected to consistently enforce laws and regulations that are appropriate to the natural and social conditions of each local area and conduct responsible cyclical use and disposal of waste. They are also expected to play important roles in coordinating various entities so that opportunities for cooperation are provided to entities across industry sectors. Prefectural governments in particular are expected to lead and coordinate the efforts of local authorities and concerned entities from a broad-based standpoint. Meanwhile, local authorities are expected to play their roles as lower tiers of government and to cooperate closely with each other.

<Related effort indices>
- ○ Promoting green purchasing
- ○ Percentage of local governments that are implementing paid garbage collection
- ○ Top municipalities in terms of waste reduction efforts
- ○ Number of resource recovery facilities
- ○ Rate of recycling of municipal solid waste
- ○ Total amount of recyclables collected by civic groups
- ○ Top municipalities in terms of recycling efforts

Present situation

(1) Many local governments make their own effort. Local governments with any program underway to promote green purchasing account for 76.0%. Fundamental plans for SMCs and the like at regional levels, although ranging from independent fundamental plans to SMC-related sections included in basic environment plans or waste treatment plans, have been formulated by 47 prefectural governments (100%) and 985 municipal governments (54.2%). The number of municipalities holding 3R-related environmental learning sessions is 611 (33.6%). These efforts by local governments should be continued.

(2) For the present evaluation, we conducted a hearing of the Chiba City government, Chiba, which conducts a program in cooperation with citizens, and the Chichibu City government, Saitama, which carries out a program using forest biomass.

(3) The Chiba City government, Chiba, revised the “Chiba City Basic Plan for Municipal Solid Waste (Garbage) Management” in FY 2007 with the aim of reducing greenhouse gas generated in the garbage incineration process, formulating the vision for the three incineration plants in operation, and expanding the remaining capacity of the final disposal sites. Its target is to reduce the amount of garbage to be incinerated by one third, which specifically means reducing the amount of waste generation by about 100 thousand tons by FY 2016.
Toward this target, the local government conducts a pilot project in which household raw garbage, which is collected as part of combustible waste, is separated from other combustible wastes before collection with the help of local citizens in order to use it for the production of biogas at methane gas fermentation facilities. This project helped the model district to reduce the share of raw garbage included in combustible waste from the pre-project figure of 30.5% to about 14% after the start of the program, contributing to the cyclical use of raw garbage. The Chiba City government plans to decide whether to extend the project to the entire city, based on the trial results.

(4) The Chichibu City government, Saitama, conducts biomass power generation using forest biomass. As of the end of April 2009, its biomass power generation plant has operated 582

days, produced electricity for 5,599 hours, achieved a total output of 398 megawatt-hours, transmitted 284 megawatt-hours or electricity, heated 2,238 tons of water, and used 627 tons of wood chips. The plant also produces about 600 liters of charcoal a day as a by-product, which is used as a soil conditioner, water purification agent and so forth.

For the collection of remaining materials on woodland, such as uncollected thinned wood, the city government hired four people in September 2009 under the urgent employment program.

According to the estimates, the city's power generation using wood biomass has brought benefits such as improving the condition of 16.8 hectares of forest, adding to the city-owned forest the capacity to absorb 54 tons of CO_2 a year through the improved condition, fixing 386 tons CO_2 equivalent of carbon a year through log production from the city forest, and reducing 234 tons of CO_2 equivalent a year as a result of power generation and hot water supply from the wood biomass power plant.

The Chichibu City government also formulated the Biomass Town Vision in February 2009, with a commitment to the establishment of an SMC society based on the natural environment, a concept involving conserving forest, water and farmland.

Evaluation results and problems

(1) Local governments are expected to further their effort to promote green purchasing because their proactive actions are essential in this regard. This should include actively disclosing the status of green purchasing at each local government.

(2) SMC blocks, which are formed by different entities working in cooperation and actively playing their respective roles, will lead to community invigoration. Every local government should formulate a basic plan for the establishment of an SMC society, evaluate its progress and revise the plan appropriately, while searching for the optimal form of SMC block that capitalizes on regional characteristics and is suitable for the nature of the local CRs. In addition, local governments should promote environmental learning and life-long study by fostering collaboration between schools and local citizens and effectively using local CRs.

(3) Since community-based efforts to establish an SMC society cannot make progress without the understanding of local citizens, local governments should provide a comprehensive explanation to them to gain their understanding. In this endeavor, local governments should act as a coordinator that brings together different local entities, including citizens, NPOs, community associations and universities, to push forward with efforts in a concerted manner.

(4) To sustain such efforts as part of community development, local governments should, in addition to striving to reduce their own project costs, emphasize activities to ensure the stable and continuous implementation of resource-recycling projects, such as capacity building for local leaders (private enterprises, NPOs, etc.) and infrastructure development for enhancing the local capacity for responsible resource recycling.

5. State initiatives

(Basic direction of State initiatives for the establishment of an SMC society in the Second Fundamental Plan)

(1) The State will promote cooperation and collaborative efforts among concerned entities such as local governments, while comprehensively promoting steps the whole nation can take to move toward the establishment of an SMC society, including the measures set out in the following section. In doing so, the State will ensure sufficient cooperation among government ministries and agencies while making concerted efforts to effectively and efficiently implement appropriate enforcement of relevant laws and regulations and management of businesses.

(2) In promoting these efforts, the State will need to examine measures from a broader perspective and by going beyond the existing framework for State measures, and to implement a combination of consistent policy approaches including a regulatory approach, economic approach, voluntary approach and information approach, while giving consideration to important elements of policies concerning technology, value systems, social systems and the like. The State will coordinate such efforts with other environmental policies such as those concerning the establishment of an SMC society through cooperation between the State and local governments, establishment of an international SMC society in East Asia and other regions, and measures to prevent global warming etc., in particular, and promote efforts that will generate synergistic effects.

(3) To appropriately evaluate and examine the progress and the current status of the measures being taken, the State will act promptly to further promote the collection, analysis and disclosure of data on material flow and waste and the like. In addition, the State will develop information infrastructures to ensure that entities can access, use and exchange such information in a timely and appropriate manner.

Present situation

To assess the present situation of the State initiatives, a survey and a hearing of government ministries were conducted.
The following results were identified based on these activities.

1. Domestic initiatives

(1) Efforts toward a sustainable society which integrates a sound material-cycle society, Low-carbon Society and Society in Harmony with Nature

[1] Promotion of comprehensive efforts toward an SMC society and a Low-carbon Society

(i) Efforts to promote cyclical use mainly through reduction and reuse

The State is promoting initiatives that contribute to greenhouse gas emission reductions, by restraining waste generation and fostering cyclical use, including reuse and recycling. The State is also enhancing activities to disseminate information on advanced efforts throughout the country and supporting pioneering regional initiatives so that the results can be assessed and communicated to other parts of the country. In FY 2009, emphasis has been placed on two Rs, including support for a project to demonstrate the sale by weight of prepared foods, using reusable/returnable containers.

(ii) Promotion of thermal recycle through the introduction of waste power generation, etc

The State is facilitating the introduction and expansion of waste power generation and heat utilization by sbsidizing high-efficient waste power generation plants, biomass utilization facilities, etc. for global warming mitigation. This has resulted in the increase in the number of waste power generation plants and their total power generation capacity. It is noteworthy that a new program has been added in FY 2009 to change the subsidy rate for the construction of high-efficiency waste power generation plants to 50% under the Subsidy to Promote the Establishment of an SMC Society.

(iii) Greenhouse gas emission reductions by effectively using renewable energy and biomass CRs

In September 2009, the “Fundamental Law for the Promotion of Utilization of Biomass” came into force. The aim of this new law is to comprehensively and systematically promote measures to increase the use of biomass.

In addition to promoting biogas production by efficiently recovering methane from raw garbage or other materials, the State implements measures to expand the use of cellulosic biofuels, which do not compete with food, including R&D on technologies to produce biofuels from cellulosic biomass (e.g., paddy straws, construction wood waste, herbaceous/wood biomass crops). Projects in FY 2009 include a pilot project on waste biomass utilization, such as the treatment of separated raw garbage, and the development of a total production system that encompasses every phase from cultivating biomass crops to producing ethanol by innovative technology.

(iv) Construction of venous distribution networks

By prompting the construction of harbor facilities, such as piers to handle CRs, and supporting the development of related facilities, including transshipment and storage facilities, the State helps locate recycling hubs in waterfront areas and thereby facilitates the formation of marine venous distribution networks. Key measures taken in FY 2009 are the establishment of common rules for the handling of CRs at harbors and institutional improvements to create a recycling chain that takes advantage of marine transportation.

[2] Promotion of integrated efforts toward an SMC society and a Society in Harmony with Nature

(i) Formulation of the National Strategy on Biological Diversity 2010 (under deliberation by the Joint Committee on Natural Environment and Wildlife, the Central Environment Council, as of February 2010)

The Cabinet is expected to approve in March 2010 the “National Strategy on Biological Diversity 2010,” the first national strategy on biodiversity under the Basic Act on Biodiversity (Law No. 58 of 2008). The draft of this National Strategy stipulates that the government shall promote integrated measures to establish a Society in Harmony with Nature and an SMC society.

(ii) Sustainable use of renewable resources in nature

The State promotes the effective use of biomass resources and the like based on the Biomass Nippon Strategy, and the appropriate forest maintenance and lumber use. In FY 2009, the State has focused on forest sink measures, which are essential to the creation of a Low-carbon Society, and other measures conducive to a sustainable society, such as those to expedite the improvement of forests under difficult conditions for thinning and other maintenance. These measures have led to the appropriate maintenance of forests as a renewable resource.

(iii) Efforts to preserve satochi-satoyama

The States implements comprehensive programs to foster a Society in Harmony with Nature by promoting the effective use of herbaceous/wood biomass (e.g., thinned wood, remaining materials on woodland) and the appropriate preservation and utilization of satochi-satoyama. In particular, in the agriculture, forestry and fisheries sectors, State measures place emphasis on the conservation of biodiversity, such as the preservation of countryside areas and satochi-satoyama. In FY 2009, the State has focused on programs such as one to spread the use of the Ikimono (wildlife) Mark, a sign carried by agricultural, forestry and fishery products to indicate their awareness of biodiversity.

(iv) Efforts to promote long-life houses

To build a stock of high-quality houses that can be used over the long term, the State advances the spread of long-life, high-quality houses. In FY 2009, after the enactment of the Law on the Promotion of Long-Life, High-Quality Houses in June, long-life, high-quality house construction plans were certified for 38,571 houses (total in June-December 2009)

under the law. The State has also established a tax exemption program for certified long-life, high-quality houses (in FY 2008 and FY 2009) and implemented a program to promote long-life, high-quality houses.

(2) Creation of a sound material-cycle society based on geographical blocks

(i) Infrastructure development through the formulation of regional plans to establish local SMC blocks of appropriate size

Regional plans are being developed in individual regional blocks. In FY 2009, Regional Environment Offices have taken the initiative in conducting surveys in the Chubu, Kinki and Kyushu blocks in cooperation with various local entities.

Under the Subsidy System to Promote the Establishment of an SMC Society, the State encourages initiatives to build SMC blocks by supporting municipalities constructing integrated facilities for safe and reliable treatment and recycling, as well as to use as an energy source, of garbage and human waste. Key measures in FY 2009 are subsidizing half the cost to construct high-efficiency waste power generation plants, promoting the establishment of facilities (satellite centers) that allow efficient garbage collection and transportation, enhancing equipment for efficient sludge treatment, and increasing support for the formulation of plans to extend the service life of waste treatment facilities.

(ii) Establishment of SMC blocks according to the characteristics of CRs

(a) CRs (common)

The State provides assistance aimed at developing pioneering efforts to establish SMC blocks in different regions, while promoting studies to underpin SMC block development and the effective use of waste biomass. Support in FY 2009 has been focused on the establishment of a raw garbage recycling system among others.

The Eco-Town program positions the “zero emission plan” as the basic scheme for the development of an environmentally friendly regional economy and society, and pushes ahead with this concept as the key to regional development. Under this program, 26 areas have been approved to date and are striving to create an eco-friendly town in innovative ways. In July 2009, the State estimated the Eco-Town’s effect of reducing the environmental burden and found that CRs are used very efficiently in Eco-Towns and that CRs are procured and used for commercial production within Eco-Towns. These results revealed that Eco-Towns can play the central role in a regional material cycle.

(b) Biomass CRs

The State aims to have the Biomass Town Program adopted by 300 municipalities by the end of FY 2010. In line with the Biomass Nippon Strategy, the Biomass Town Program aims to the make regional parties concerned cooperate to establish a comprehensive biomass utilization system under the leadership of municipal governments. As of the end of January 2010, 225 municipalities have announced participation in the program. The State accelerates these efforts according to the “Biomass Town Acceleration Strategy,” set up in March 2009.

Other efforts in progress include the recycling business plan (recycling loop) under the Food Recycling Law, eco-feed (feed produced from food waste), and the composting of livestock manure. As of the end of October 2009, 14 projects have been certified under the Food Recycling Law.

(c) Effective use of sewage sludge

The effective use of sewage sludge has been encouraged because sewage sludge contains many kinds of organic matter and useful minerals and is therefore considered as a large potential source of resources and energy. In FY 2007, although the recycling rate of sewage sludge was as high as approximately 77% (including recycling into

construction materials), only about 22% was used for green space, agricultural land and energy (sewerage biomass recycling rate). The State will continue to stress the effective use of sewage sludge as biomass. In FY 2009, a feasibility study on the recovery of phosphorus from sewage and sewage sludge and the use of such phosphorus had been conducted.

(d) CRs recovered from products and CRs containing non-renewable resources

A system for effective and appropriate recycling of rare metals is being developed. Key measures taken in FY 2009 were a pilot project to collect end-of-life small household electrical appliances, studies on effective and efficient collection methods, and the development of technologies to replace or effectively use scarce elements, such as a platinum-free catalyst and a lithium-free rechargeable battery.

In addition to strictly enforcing various recycling laws, the State appropriately uses wide-area treatment certification and recycling certification systems under the Waste Management Law. By the end of FY 2008, 73 cases involving municipal solid waste and 169 cases involving industrial waste were certified under the wide-area treatment certification system, and 63 municipal solid waste cases and 48 industrial waste cases were certified under the recycling certification system.

(3) Innovation in individual lifestyles

(i) Environmental education and environmental learning

Environmental education and environmental learning are provided for all generations on various occasions. Following the revision of the Fundamental Act of Education and the School Education Act, the State revised the National Curriculum Standards for elementary and junior high schools in March 2008 and those for senior-high schools in March 2009 in order to enhance provisions concerning environmental education. For example, revisions concerning the establishment of an SMC society were made in relation to the effective use of resources by saving water and electricity (social studies in elementary school), the importance of economic and technological cooperation in solving issues concerning the global environment, natural resources and energy and the establishment of a sustainable society (social studies in junior high school), and the recycling of metals and plastic (science in senior high school). In addition to school education, the State promotes the establishment of environmentally conscious school facilities (eco-schools) to foster regional education on environmental conservation and energy. Many schools carry out these measures in cooperation with local NGOs and NPOs in a manner that contributes to life-long learning. To raise public awareness of efforts to restrain the amount of waste containers and packages, the State commissioned in January 2009 an additional 22 people to act as containers and packaging discharge control personnel (commonly called 3R Promotion Meisters, 91 people in total), who are responsible for giving instructions and advice to consumers.

(ii) Awareness-raising

To publicize pioneering and excellent practices and encourage people to change their lifestyles though information provision and awareness campaigns, the State holds various events (e.g., the National and Regional Conventions for the Promotion of the 3Rs) during 3R Promotion Month, posts relevant information on its website, and distributes brochures. Measures taken in FY 2009 include organizing the National Convention for the Promotion of the 3Rs in Chiba City, holding Regional Conventions for the Promotion of the 3Rs, and waging a campaign for environmentally friendly shopping, which involved prefectural governments.

(4) Promotion of sound material-cycle businesses

(i) Facilitation of the procurement of eco-friendly goods

The State promotes the procurement of eco-friendly goods under the Law on Promoting Green Purchasing, in cooperation with organizations such as the Green Purchasing Network. The State is required to review designated procurement items (the types of goods that state agencies and other institutions should give higher priority in choosing goods to purchase) specified in the Basic Policy for the Promotion of Procurement of Eco-Friendly Goods and Services under the above law, along with the criteria for determining them, in a timely manner. In 2009, revisions were made to 39 items as a result of review. These include the addition of ten new items, the removal of one item, and the introduction of a total evaluation scheme for “copy paper.”

The State disseminates the Guidelines for Green Purchasing Programs, which were set up to urge local governments to implement programs to promote green purchasing. In FY 2009, the State plans to prepare a handbook describing the decision criteria in an easily understandable manner, while showing environmental labels displayed on commercial products.

(ii) Provision of information

For the convenience of green purchasers, the website of the Ministry of the Environment shows environmental and other related labels used in Japan. As of the end of FY 2008, information on 133 labels was available on the website, with additional information expected to be posted in FY 2009.

(iii) Support for introduction of environment management systems and preparation and announcement of environmental reports and environmental accounting records

The State supports the preparation of environmental reports and environmental accounting records and other activities in line with the guidelines. In FY 2009, the State has increased the publicity of this support through the website and other media.

(iv) Studies on economic instruments

The State studies approaches that use market mechanisms to encourage various entities to make voluntary 3R efforts. Measures taken in FY 2009 include assessment of the current situation and challenges concerning the 3R promotion method that uses a point earning program to urge consumers and citizens with high awareness to take action.

(v) Development of excellent waste-treating enterprises

By fostering excellent waste-treating enterprises, the State tries to create an environment in which “bad money does not drive out good money.” In FY 2008, to develop larger number of excellent industrial waste-treating enterprises, the State waged an awareness campaign for ‘’excellence evaluation system for industrial waste-treating enterprises’’ and organized awareness-raising workshops. As of the end of December 2009, 300 enterprises (or 2,771 in the number of approved projects) have been found to meet the excellence evaluation standards. Under original systems established by prefectures, 185 enterprises (or 712 projects) have been certified.

(vi) Financial support

The State conducts studies to establish a system to allow the market to appropriately evaluate the environmental capacity of products, services and companies that are deemed environmentally conscious, so that the results can be linked to investment and financing. State activities in this regard in FY 2009 include supporting companies committed to CO_2 emission reductions with an interest subsidy and providing grants for ecofunds and loans

based on environmental ratings. At the same time, the Expert Committee on the Environment and Finance of the Central Environment Council is holding discussions on further promotional measures.

(5) Enhanced framework for the appropriate use and disposal of CRs

(i) Implementation of measures to promote recycling

With an eye toward reducing environmental burdens associated with waste treatment, the State enhances and reinforces necessary policy frameworks, including various recycling and waste management systems. In January 2010, the Central Environment Council issued a report titled “Directions of the Review of the Waste Management System.”

The State prompts municipalities to adopt paid collection of municipal solid waste, which contributes to waste reduction, through measures such as the dissemination of the Handbook on the Introduction of Charge for Collection of Municipal Solid Waste. The Guidelines for Municipal Solid Waste Management Systems for Establishing an SMC Society at the Municipal Level and the Standards of Accounting for Municipal Solid Waste are also disseminated to encourage municipalities to gradually improve the quality and efficiency of their sorted collection and waste management systems in order to make progress in the recycling of household waste and energy recovery from household waste by waste power generation or other means. The primary goal in FY 2009 is to foster the wider use of the above guidelines mainly by improving tools to support documentation based on the Standards of Accounting for Municipal Solid Waste.

Regarding the Law for the Promotion of Effective Utilities of Resources, the State surveyed its enforcement status for the regulated sectors and products in FY 2009 to assess the progress of effort.

Under the system to finance municipalities established pursuant to the Containers and Packaging Recycling Act, appropriations in FY 2008 were provided to 1,408 municipalities in September 2009.

Under the Home Appliance Recycling Law, LCD TVs (except portable TVs etc.), plasma TVs and laundry driers were added to the list of appliances subject to recycling by manufacturers and other entities on April 1, 2009. The criteria for recycling were revised at the same time.

With respect to the Food Recycling Law, the State is committed to reducing food loss, such as leftovers, because the amount of food waste has been slowly increasing. Certain progress has been made, as demonstrated by the fact that the recycling rate for food waste is increasing and the amount of food waste presumably subjected to simple incineration or landfill is decreasing. FY 2009 has seen, as in the previous fiscal year, the steady increase in the number of certified recycling business plans and the number of registered recycling business operators, which both contribute to the improvement of the recycling rate among food business operators.

Construction waste recycling is promoted by the implementation of measures in line with the “Plan 2008 for Promoting the Construction Waste Recycling” and enforcement of the Construction Waste Recycling Law. In FY 2009, based on the “Report on Evaluations and Studies on the Implementation Status of the Construction Waste Recycling System,” the State has taken necessary measures, such as the revision of ministerial ordinances related to the Construction Waste Recycling Law, and considered the cascade use of construction waste, which allows concrete blocks and other wastes to be repeatedly used for more valuable purposes according to the value of each resource.

In connection with the End-of-life Vehicle Recycling Law, government measures have proven effective as demonstrated by the fact that the numerical target concerning the recycling of vehicle crushing residues (shredder dust) and air bags has been accomplished (FY 2008 results). Since the End-of-life Vehicle Recycling Law was approaching the time of statutory review (due February 2010) after five years from the enactment, a joint committee of the Central Environment Council and the Industrial Structure Council started a review in

July 2008. As a result, the “Report on Evaluations and Studies on the Enforcement Status of the End-of-life Vehicle Recycling System (Draft)” was issued in November 2009.

Regarding the appropriate disposal of asbestos, the State continues to promote the use of the certification system for treatment to render asbestos harmless, which was established by revising the Enforcement Ordinance for the Waste Management Law in 2006.

The treatment of PCB waste is managed in line with the Fundamental Plan for PCB Waste Treatment, formulated by the State. For specific PCB wastes, such as PCB-containing high voltage transformers and PCB-contaminated materials, the State is improving the treatment system using wide-area treatment centers operated by Japan Environmental Safety Corporation. The State intends to establish a treatment system for waste electrical appliances contaminated by trace amounts of PCBs (collectively called electrical equipment with trace PCB contamination) whereby the Minister of the Environment’s certification of the treatment process to render waste harmless, along with permission from the prefectural governor, is required under the Waste Management Law. Related ministerial ordinances and notifications were revised In November 2009.

Regarding ship recycling, “The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009” was adopted in May 2009. The State has started a demonstration experiment of ship demolition.

(ii) Measures to combat illegal dumping and inappropriate disposal

Under the manifest system, which verify that wastes have been appropriately transported and disposed of, adoption rate of the electronic manifest system was about 14% (FY 2008 results). In light of this, the State aims to expand the use of electronic manifests.

Pursuant to the “Action Plan toward Eradication of Illegal Dumping,” which was formulated and announced in FY 2004,” all entities, including citizens, business organizations, local governments and the State, work together every year since FY 2007 to conduct the “National Campaign to Eradicate Illegal Dumping” under the initiative of Regional Environment Offices mainly during Nationwide Illegal Dumping Monitoring Week (May 30 [Zero-Waste Day] to June 5 [Environment Day] every year). The campaign includes public-awareness and monitoring activities. The State also assists prefectural governments in bringing violators to account for illegal dumping, by dispatching experts in IT utilization, field surveys and related laws. In FY 2009, further progress has been made to eradicate illegal dumping through a pilot project that aims to prevent the occurrence or spread of illegal dumping by using satellite images.

To address unsolved illegal dumping cases, the State provides financial support under the Law on Special Measures concerning Removal of Environmental Problems Caused by Specified Industrial Wastes for projects that started no later than June 16, 1998 and aim to remove problems harming the living environment caused by illegal dumping of industrial waste. For projects launched on or after June 17, 1998, financial support is provided pursuant to the Waste Management Law.

(iii) Development of final disposal sites

Although the shortage of the remaining capacity of final disposal sites for municipal solid waste has improved due to the decline in the final disposal amount, the capacity continues to decrease, with landfill space remaining scarce. To address the situation, the Ministry of the Environment supports the development of final disposal sites and other municipal solid waste treatment facilities through the Subsidy to Promote the Establishment of an SMC Society. In FY 2008, subsidies were provided for 33 projects to develop final disposal sites under this system. Likewise, although the shortage of the remaining capacity of final disposal sites for industrial solid waste has improved due to the decline in the final disposal amount, the capacity remains scarce especially in large city regions. The State will continue to foster the development of final disposal sites. To promote the construction of industrial waste treatment facilities involving the public sector, government subsidies are provided for projects conducted by waste treatment centers or other entities to develop final disposal sites for

industrial waste. In FY 2008, subsidies were offered to projects to construct controlled landfill sites for industrial waste conducted by five business organizations.

(iv) Development of landfill sites at sea

To allow harbor areas to accept waste in excess of the capacity of disposal sites on land only after rendering it as small as possible in amount, construction of landfill sites at sea is in progress at 18 ports and in Osaka Bay in FY 2009.

(v) Measures to address marine litter issues

The State addresses marine litter issues by means of financial support etc. In FY 2009, the Law for the Promotion of Marine Litter Disposal (Law No. 82 of 2009) was instituted and came into force. The State strives to fully implement measures required by the law. As part of financial support, the State formulated the “Community-Based Green New Deal Fund,” which helps parties concerned in region cooperate to steadily take effective measures to combat marine litter issues in the region. With respect to floating waste, the State collects drift-wood and other drifting wastes as well as oil leaked from ships in enclosed sea areas of Tokyo Bay, Ise Bay, the Inland Sea, the Ariake Sea and Yatsushiro Sea.

(vi) Facilitation of delivery of waste plastic bottles separately collected by municipalities to designated corporations

There is a need to facilitate delivery of waste plastic bottles separately collected by municipalities to designated corporations, in line with the Basic Policy. If such wastes are delivered to business organizations other than the designated corporations, municipal governments should verify that the business has appropriately disposed of the delivered wastes, with every measure to conserve the environment taken. For this reason, the State surveys municipalities on waste disposal by their own ways and raises awareness of actions pursuant to the Basic Policy. Survey results show that the amount of waste plastic bottles that are separately collected by municipalities and disposed of by designated corporations accounts for 68.0% (based on the plans) in FY 2009, suggesting the gradual increase in the disposal amount by designated corporations.

(6) Sophistication of 3R technology and systems

(i) Support for joint efforts by supply chain members

The State conducts a program to reduce the input of resources throughout a product’s supply chain. For FY 2009, 30 model projects have been selected for implementation. These projects are setting good examples of resource-efficient manufacturing by using material flow cost accounting and eco-friendly designs.

(ii) Manufacturing phase

Basic research needed for the promotion of 3R measures is conducted systematically under the 3R Program. In FY 2009, the State is revising the “Strategic Technology Roadmap.”

(iii) Phase in which discarded or end-of-life products are put to cyclical use or appropriate disposal

The State focuses on mobile phones and small household electrical appliances. To establish a system to appropriately and effectively recycle rare metals, the State has been carrying out a pilot project to collect end-of-life small household electrical appliances since FY 2008 and studying effective and efficient collection methods based on the results. These results have also been used to evaluate the rare metal content of collected end-of-life small household electrical appliances, to assess the harmfulness involved in the recycling of these

appliances, and to discuss appropriate disposal of these appliances. Regarding mobile phones, the State promotes environmentally conscious designs in the manufacturing phase and hosts events to ask consumers to submit their end-of-life mobile phones for collection. At collection sites, a pilot project for collection promotion is conducted.

In addition, the State conducts a demonstration project for mixed collection of waste plastic.

(iv) Support for R&D

The State fosters R&D on waste treatment by supporting scientific studies to advance the establishment of an SMC society, while implementing administrative measures and improving technical standards concerning the safe and appropriate management of waste and the establishment of an SMC society.

(7) Accurate interpretation and provision of information related to the establishment of a sound material-cycle society and development of human resources

(i) Collection and provision of accurate information

Discussions have been held to collect information on material flows in Japan, the amount of each type of waste, the status of cyclical use and disposal of various wastes, as well as to meet the need to combat global warming and other problems. Activities in FY 2009 include summarizing and discussing challenges to be solved before compiling more accurate waste-related statistics faster, and discussing the directions of indicators incorporated in the Second Fundamental Plan, such as hidden flows and TMR, industry-specific resource productivity, and material flow indicators that allow international comparisons.

To provide citizens with information on national environmental policies, including those aiming for an SMC society, the State has held a session to read *Quality of the Environment in Japan* at nine sites in FY 2009.

(ii) Human resources development

The State conducts programs to develop and effectively use human resources, including the containers and packaging discharge control personnel system and workshops on industrial waste management. Seminars for teachers and other instructors of environmental education and environmental learning have also been held.

2. Efforts to establish an international sound material-cycle society

(1) International expansion of Japan’s systems, technology and experience

(i) Promotion of the 3R Initiative

To put into practice the 3R Initiative proposed by Japan and the Kobe 3R Action Plan agreed on at the G8 Environment Ministers' Meeting in 2008, the State supports Asian countries’ 3R national strategy making. As of FY 2009, Japan assists six Asian countries in 3R national strategy making, including Vietnam and Indonesia, where the strategy is undergoing government approval procedure.

(ii) Establishment of SMC cities based on the eco-town model

To improve the level and efficiency of the “environmental capacity” of Japanese companies, including medium- and small-sized businesses, in the 3Rs field, the State provides packaged support for technological development, demonstration experiments and overseas activities on a regional basis and thereby intends to expand the market for 3R-related industries. For example, to transfer the know-how of Japanese local governments to Chinese counterparts, Japan-China SMC city cooperation (Eco-Town cooperation) is in progress between Kitakyushu City and Cities of Qingdao, Tianjin and Dalian and between

Hyogo Prefecture and Guangdong Province, after agreement between the two governments and between the local governments concerned. In FY 2009, Kitakyushu and Dalian reached an agreement on cooperation. To support these efforts, the State conducts feasibility studies for infrastructure development and develops relevant human resources. In FY 2009, two study projects were carried out in preparation for cooperation. Both countries shared views on the progress of these cooperation projects at the Japan-China Resource Recycling Policy Dialogue (Director-General level) held in June 2009. Similar studies have been performed on the implementation of the same kind of SMC city cooperation (Eco-Town cooperation) with ASEAN members.

In June 2009, Environment Ministers of Japan and China signed the "Memorandum of Understanding on Cooperation in Construction of Environment-friendly Cities of Kawasaki and Shenyang." Pursuant to this memorandum, the State assists the establishment of an eco-friendly city through the development of venous industry in the circular economy in Kawasaki and Shenyang. In cooperation with the Kawasaki City government and the National Institute for Environmental Studies, the State contributes to studies on the introduction of circular economy policy and technological systems in Shenyang and provides policy and technical information, such as the environmental conservation effects of Eco-Towns across Japan.

(iii) Support for the diffusion of safe and hygienic human waste treatment systems

Japan aims to contribute to the resolution of international hygiene issues based on its outstanding technologies and experiences in human waste treatment facilities and Johkasoh. With this goal in mind, the State strives to develop an international network on human waste treatment systems and build a domestic framework for transferring such technologies to other countries and developing human resources.

(iv) Acceptance of trainees

The State invited national and local government officials and business personnel from China and other countries to provide education, such as a briefing on Japan's 3R policy (133 trainees accepted by the end of November 2009).

(v) Expansion of recycling businesses overseas

Under Japan-China SMC city cooperation, inter-city cooperation has led to the creation of business opportunities.

In FY 2009, Japan has provided subsidies and other assistance for two demonstration projects to recycle waste electric appliances and effluent in Asia. In January 2010, the State plans to organize an international fair for 3R-related companies.

(vi) Public awareness activities and environmental education in developing countries

To involve more citizens in the establishment of a sustainable society, including an SMC society, the State works in cooperation with UNESCO to implement the "Decade of Education for Sustainable Development (ESD)," an initiative led by UNESCO in line with the United Nations' resolution.

(vii) 3R promotion activities by the Japan International Cooperation Agency

The Japan International Cooperation Agency (JICA) supports and promotes 3R activities in the private sector, including (i) development of a legal framework at the national level, (ii) enhancement of local governments' capacity for waste management through the establishment of systems and plans for 3R activities, and (iii) provision of economic incentives and support for technological development. For example, JICA conducts the Project for Implementation Support for 3R Initiative in Hanoi City, assists China's promotion of a circular economy, and supports Mexico's formulation of a national 3R program. In FY

2009, JICA launched a 3R promotion project in Cuba. JICA will cooperate on the capacity building of developing countries through project assistance based on policy dialogue conducted by the Ministry of the Environment.

(2) Realization of material-cycle societies across East Asia

(i) Regional 3R Forum in Asia

At the Environment Ministers' Meeting of the East Asia Summit in October 2008, Japan proposed to East Asian counties the idea of establishing a “Regional 3R Forum in Asia” as Asia’s platform for international 3R promotion, and won their endorsements. In November 2009, Japan organized an Inaugural Meeting of the Regional 3R Forum in Asia in Tokyo in cooperation with the United Nations Centre for Regional Development. The meeting was attended by government representatives of 15 Asian countries, international organizations, aid agencies, experts in 3Rs and so on and endorsed the “Tokyo 3R Statement towards the Establishment of the Regional 3R Forum in Asia.” The Statement stipulates that under the Regional 3R Forum in Asia, the participants will foster high-level policy dialogue on 3Rs, facilitate assistance for the implementation of 3R projects in participating countries, share information useful for 3R promotion, and foster the networking of parties concerned. The next meeting of the Regional 3R Forum in Asia will be held in 2010 in Malaysia. The Forum is expected to promote 3Rs and establish SMC societies across Asia by holding meetings in different parts of Asia..

To develop international collaboration among various entities, Japan supports the following organizations: the Asia 3R Citizen’s Forum, which was organized in November 2009 in cooperation with the Regional 3R Forum in Asia with the participation of NGOs and NPOs of Japan, the Republic of Korea and Indonesia, and the 3R Conference for Asian Local Governments, which was held in October 2009 to bring together local governments from seven Asian countries.

(ii) Stronger partnership through bilateral and multilateral meetings with East Asian countries

(a) Multilateral meetings

Japan deepens cooperation on the establishment of an SMC society in East Asia through frameworks such as the Tripartite Summit and the Tripartite Environment Ministers Meeting among China, Japan, and Korea (TEMM). At the second Tripartite Summit in October 2009, the “Joint Statement on Sustainable Development” was adopted, which reaffirmed that the three countries would strengthen cooperation on 3Rs and other environmental issues, and encouraged the development of a tripartite joint action plan which is to be adopted at TEMM12 in 2010. Under TEMM, seminars on an SMC society, circular economy and 3Rs have been held in the three countries to exchange information on each country’s efforts and discuss coordinated approaches. Japan intends to promote the establishment of SMC societies in East Asia by deepening cooperation under these frameworks.

(b) Bilateral meetings

Commitment to cooperation for the establishment of an SMC society was reaffirmed on occasions such as the Second Japan-China High-Level Economic Dialogue in June 2009 and the 12th Japan-Korea Joint Committee on Environmental Protection and Cooperation in September the same year. Japan also shared information and reinforced cooperation through the Japan-China Policy Dialogue on Waste Management and Recycling in May 2009 and the Japan-Korea Policy Dialogue on Waste Management and Recycling in August the same year.

(iii) Promotion of joint international study on responsible resource recycling in Asia

A joint international study was launched in FY 2009 to evaluate the Asia-wide

environmental and economic impact and effects of resource recycling, including international movements of waste for disposal, and to discuss the way of responsible resource recycling in Asia. Its inaugural workshop was held to coincide with the Inaugural Meeting of the Regional 3R Forum in Asia.

(iv) Prevention of illegal transboundary movement

(a) Domestic monitoring structure

The State raises awareness of the system by holding briefing session for business organizations (held in nine locations by the end of January FY 2009), provides preliminary consultation on individual cases (provided on about 39,000 cases by the end of January FY 2009), and strengthens measures to prevent illegal transboundary movement at the border, such as inspections in cooperation with the customs authorities.

(b) Promotion of networking projects in Asia

The Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes, the Asian Network has been established for the capacity building for the implementation of the Basel Convention in Asia and the creation of a framework for information exchange among the member countries. The Asian Network works toward the sharing of import and export regulatory information among the member countries and holds an annual workshop for continuous discussion on the prevention of illegal transboundary movement of hazardous wastes in Asia. In January 2010, Japan hosted this workshop, where customs officers were invited for the first time.

(v) Support for capacity building for responsible disposal in each country

A major principle in establishing an international SMC society is that wastes must be responsibly disposed of in the country where they originate. Based on this principle, Japan assists developing countries in establishing a disposal system for hazardous wastes, by means of the framework for projects for environmentally sound management of e-waste, including the project for the responsible management of computer hardware wastes in the Asia Pacific region under the Basel Convention. In FY 2009, an Asia-Pacific e-waste training workshop was held to discuss the present situation and challenges concerning the management of e-waste in Asia.

(vi) Clear criteria for identifying household electrical and electric appliances exported as used goods

Hazardous substance-containing electrical appliances discarded by households should not be exported in the name of used goods if they are unsuitable for secondhand use. To prevent this from happening, the State considers establishing clear criteria for identifying used appliances to be exported for reuse under the Basel Convention. In FY 2009, such criteria were established and implemented for end-of-use CRT TVs being exported for reuse.

(vii) Facilitation of international flow of waste in ways that are desirable for environmental protection

Japan should, to the extent within its capacity, accept and dispose of wastes generated by Japanese companies outside Japan that cannot be responsibly disposed of in developing countries but can be in Japan, because that would benefit to global environmental conservation as long as appropriate disposal can be ensured in the country. From this perspective, in January 2010, the Central Environment Council compiled a report proposing issues such as the direction of the review of the waste import and export system.

(viii) Development of an international venous distribution network

To promote the development of an international venous distribution network that is appropriate, efficient, and safe and secure, as part of efforts to facilitate the international flow of waste in ways that are desirable for environmental protection, the State has analyzed the status of international CR flows and identified associated challenges by FY 2009.

(3) Construction of 3R research and information network and common rules in Asia

(i) 3R Knowledge Hub

As a platform for developing and disseminating technologies, policy information and knowledge concerning the promotion of 3R policy in Asian countries, Japan supports the 3R Knowledge Hub implemented at the Asian Institute of Technology (AIT) and helps it to be developed as an information and technology center. Assistance provided in FY 2009 was for the collection of best 3R practices and 3R-related research results.

(ii) Initiation and collection of best practices

Japan cooperates with the United Nations Environment Programme Regional Resource Centre for Asia and the Pacific (UNEP/RRC.AP) in the implementation of 3R pilot projects and collection of best practices in Asia through the Thematic Working Group on Solid and Hazardous Waste of the Regional Forum On Environment And Health In Southeast And East Asian Countries, which was jointly operated by the United Nations Environment Programme (UNEP) and the World Health Organization (WHO).

Japan also cooperates on feasibility studies for city-level 3R pilot projects in Asia by the Asian Development Bank (ADB).

(4) Japan's contribution toward improvement of international resource productivity

(i) International joint research in resource productivity and other material flow indicators

International joint research projects are in progress, as demonstrated by the fact that the International Panel for Sustainable Resource Management established by UNEP announced its first research report in October 2009, which focused on biofuel. Japan supports the Panel and OECD's work on material flows and resource productivity, with a view to developing common international material flow indicators and tools to measure such indicators. To develop more accurate international material flow indicators, Japan contributes to the advancement in international research through activities such as holding awareness-raising seminars aimed at incorporating Asia's policy needs in the above initiatives. To widely publicize the state of the material flow in Japan to many parties at home and abroad, the State created a brochure titled *Material Flow in Japan*, an introduction to the overall material flow in the country in various categories. The brochure, available in both Japanese and English, was distributed to other countries on the occasion of international conferences to raise their awareness.

Evaluation results and problems

1. Domestic initiatives

(1) Regarding the comprehensive efforts toward an SMC society and a Low-carbon Society, the State should contribute to the goal of reducing GHG emissions by 25% from the 1990 level by 2020 using approaches to an SMC society. Emphasis should be placed on making steady progress in restraining waste generation and fostering reuse, recycling and heat recovery from waste in order to maximize the synergy between efforts toward an SMC society and those toward a Low-carbon Society. In the area of introduction of waste power generation, it is important to utilize power generation facilities as efficiently as possible by allowing stable incineration through garbage collection covering wider areas. There is a need to discuss waste power generation models that can be sustained, including measures

to encourage small and medium waste disposal operators, which have been less interested in heat recovery, to introduce heat recovery. To promote 3Rs more efficiently and effectively, the State should perform LCA-based evaluations and publish the results. GHG emission reduction efforts through the promotion of biomass use should be made in light of international evaluations based on LCA. Construction of venous distribution networks should be advanced with emphasis on efforts to achieve the target number of companies operating in Recycle Ports.

An important approach to integrated efforts toward an SMC society and a Society in Harmony with Nature is to push forward with both efforts toward an SMC society and those toward a Society in Harmony with Nature, in view of the 10th Conference of the Parties to the Convention on Biological Diversity (COP 10) to be held in Japan in October 2010. Although activities are in progress to effectively use biomass, efforts in this area have been weaker than comprehensive efforts toward an SMC society and a Low-carbon Society, suggesting the need to expand activities beyond biomass. The State should also develop the method of assessing the effect of a Society in Harmony with Nature.

(2) For the creation of a SMC society based on SMC blocks, the State should focus on infrastructure development through the formulation of regional plans to establish SMC blocks of appropriate size that would lead to community invigoration, and on the establishment of SMC blocks according to the characteristics of CRs.

For the first goal, the formulation of regional plans to establish SMC blocks of appropriate size, the State should continue the formulation of plans in individual regions. Although many prefectural and municipal governments have already developed regional fundamental plans, these range from independent fundamental plans to SMC-related sections included in basic environment plans or waste treatment plans, depending on the region. The State should further investigate them and evaluate individual regions from various viewpoints to identify the progress of efforts in line with the regional plans and have the plans reviewed as needed. The formulation and review of these regional plans should be coordinated with related plans and schemes, including Eco-Town and Biomass Town programs.

For the second goal, the establishment of SMC blocks according to the characteristics of CRs, it is essential for parties concerned to work in cooperation while effectively combining various measures, such as efforts under different recycling laws, innovation of lifestyles, and the promotion of SMC businesses. Support should be provided continuously through frameworks such as the Subsidy to Promote the Establishment of an SMC Society. Regarding biomass CRs, all stakeholders should make a concerted effort to widely implement the Biomass Town Program toward achieving the target set by the Biomass Nippon Strategy, with the awareness that biomass CRs are suitable for recycling within a community or a region. Along with this, attention should be paid to appropriately evaluating the progress of the Biomass Town Program. Composting livestock manure and food waste to search for the possibility of sustainable agriculture is also important. The State should continue efforts under individual recycling laws to address CRs recovered from products and CRs containing non-renewable resources and improve the recovery systems for them.

(3) Important approaches to innovation in individual lifestyles are enhancing environmental education as part of school education and providing environmental education in communities as part of life-long learning. Although the State conducts awareness-raising activities and provision of information, there is a need to check whether such efforts are not one-sided and to develop programs that foster mutual learning among different entities. To promote the use of returnable bottles and the like, the State should identify the effect of each approach, such as the point earning program and deposit and other charging systems. To further encourage individuals to take action, information on the identified effects should be provided in a way that is easy to understand, together with a description of quantitative benefits to 3Rs. In light of advances in the reduction in the use of plastic shopping bags, the State should wage a national 3R campaign with a view to expanding the target of priority efforts. Efforts by individual citizens in the household sector are also important because in

the area of anti-global warming measures, CO2 emissions from this sector have increased from the base year. Although the amount of household waste has been decreasing year after year, its rate of reduction is not as large as that of the total amount of waste generated by businesses. This indicates the significance of encouraging citizens to act with environmental considerations and developing low-carbon and SMC-conscious lifestyles.

(4) To promote SMC businesses, the State should continue to take the initiative in implementing green purchasing. Efforts by local governments should be furthered by raising awareness of the guidelines for local governments and performing evaluations according to them. With studies on environmental labels and economic instruments in progress, the State should develop tools to measure the effects, which are prerequisite to these efforts. It would also be effective to promote SMC businesses needed in the current economic conditions. The State should prompt dischargers of industrial waste to make efforts to appropriately manage waste and reduce the final disposal amount.

(5) Appropriate use and disposal of CRs should be fostered by continuing to pay attention to the results of individual recycling laws. In light of the social situation, the State should effectively discuss measure to encourage recycling. Continuous issues to be tackled include addressing items less often recycled under the Construction Waste Recycling Law, recovering rare metals contained in mobile phones and other small household electrical appliances, promoting recycling as advanced as that being applied to home electrical appliance, and increasing the transparency of recycling activities of individual entities in order to boost consumers' efforts. To enhance the use of recycled products, it is also important to implement programs whereby dischargers of waste can easily use such products.
Although the population with access to Johkasoh has been increasing year after year, the growth of its diffusion rate has been slowing down. The construction of Johkasoh should be further promoted to achieve the 2012 target.
Regarding measures related to more than one ministry, such as public relations for 3Rs and the use of biomass, coordination between ministries is needed so that they can make a concerted effort.
Prevention of illegal dumping also requires continued measures jointly implemented by all parties concerned.

(6) Efforts to sophisticate 3R technology and systems should be maintained in line with the Fundamental Plan and the Strategic Technology Roadmap. Particular emphasis should be placed on R&D aimed at addressing the problem of the limited uses of CRs, which was pointed out by the parties concerned.
It is also essential to study the environmental impact of waste treatment and disposal, including the evaluation of the toxicity of discarded products containing chemicals, heavy metals or other toxic substances, and the development and dissemination of technologies for environmentally sound treatment of such wastes.

(7) One problem in the area of accurate interpretation and provision of information related to the establishment of an SMC society and development of human resources is particularly related to waste management statistics. Information gathered on some topics, including livestock manure is insufficient or takes longer before announcement than other statistics. The State should discuss ways to improve the accuracy and compilation speed of such statistics. This discussion should include that for distinguishing oil waste from biomass waste wherever possible, from the viewpoint of integration of efforts toward an SMC society with those toward a Low-carbon Society. Human resources should be developed by maintaining attention to those for waste treatment and other SMC businesses and by using and nurturing human resources to provide environmental education and practice 3Rs in schools and communities.

2. Efforts to establish an international sound material-cycle society

(1) The Regional 3R Forum in Asia is considered to be highly effective as a platform for international collaboration among Asian governments, international organizations, aid agencies and many other entities. It is hoped that this forum will help match each country's waste management state and needs with programs conducted by international organizations, enhance support for 3R projects from aid agencies and developed countries, and even allow Japanese 3R technologies and systems to be provided more organically according to each country's needs. Japan should continue to cooperate with NGOs and NPOs in recipient countries, while working in coordination with the Forum.

(2) Cooperation on the establishment of SMC cities has made steady progress between Japan and China, with the possibility of cooperation with other countries or regions under consideration. By continuing this effort, Japan should conduct specific joint projects with Asian countries, such as capacity building for policymaking on 3Rs and wastes management, development of best 3R and waste treatment practices, and collaboration with various private entities, including NGOs and NPOs, and thereby assist Asian countries in establishing their own SMC societies. An example of cooperation with regions outside Asia is the launch of a project to promote the 3R Initiative in Latin America by JICA. In Africa and other regions where future development is expected, no cooperation projects have been implemented due to geographical distance and local political and social conditions. Japan should promote specific cooperation on resource recycling and other areas with countries and regions with international importance.

(3) Japan should continue to promote joint international study on responsible resource recycling in Asia, with the formulation of the "East Asia Sound Material-Cycle Society Vision" in view, and seek a framework for responsible resource recycling in East Asia. Japan needs to maintain the initiative in sharing outcomes on occasions such as the Regional 3R Forum in Asia and bilateral and multilateral policy dialogues and in achieving a common understanding of the need to establish an East Asia-wide SMC society.

(4) Efforts to prevent illegal transboundary movement have been proven effective, as a result of continuation of the domestic monitoring system, initiatives in Asia, and programs to support the improvement of Asian countries' capacity for responsible waste treatment. These efforts should be continuously enhanced in light of changes in the international situation, such as the decline in the export destinations of TV CRT cullet. Japan should, to the extent within its capacity, accept and dispose of wastes generated by Japanese companies outside Japan that cannot be responsibly disposed of in developing countries but can be in Japan, as long as appropriate disposal can be ensured in the country. Discussions at the Expert Committee on Waste Treatment System need to be carefully monitored. Criteria and standards for the eco-friendliness of products throughout their life cycle and the quality of CRs have yet to be widely disseminated in Asia to date. Further efforts should be made to ensure stable resource recycling.

(5) For Asian countries to establish their own SMC societies, it is imperative for them to share information, such as each country's systems, status and needs. Through the Regional 3R Forum in Asia, established this fiscal year, Japan should urge other countries to share information, knowledge and experience and continue to advance efforts to construct 3R information centers by using information gained through joint international studies on resource recycling in Asia.

(6) UNEP's International Panel for Sustainable Resource Management is expected to release reports in many fields in 2010 as well. The OECD's work on material flows and resource productivity has started as a full-scale project to follow up the G8's Kobe 3R Action Plan. As these developments show, joint international studies on shared material flows and indicators are expected to expand further. In such a situation, Japan should promote the formulation of

common international indicators by continuously supporting joint international studies conducted by UNEP and the OECD, based on Japan's advanced experiences in both research and policy on material flow indicators, for which trends have been calculated annually for comparison with numerical targets set in the Fundamental Plan.

(7) The United Nations Commission on Sustainable Development (CSD), which follows up the initiatives toward the achievement of the Millennium Development Goals (MDGs), sets waste management as a theme for 2010-2011. Japan, which has a track record in taking the initiative in the international promotion of 3Rs in the G8 and then in Asia, should make active contribution to the CSD with the goal of facilitating responsible waste management and 3Rs worldwide.

IV Overall evaluation results and problems

1. Priority examination points

(1) Integrated efforts toward the three target societies

As a result of comprehensive efforts toward an SMC society and a Low-carbon Society, GHG emissions from the waste sector reduced about 5% from the FY 2000 level. The reduction in GHG emissions outside the waste sector through the recycling of wastes as raw material and fuel, the use of wastes for waste power generation and otherwise in FY 2006 was estimated to be about 75% greater than that in FY 2000, indicating that the cyclical use of waste has contributed to the establishment of a Low-carbon Society. These efforts should also continue to contribute to an SMC society with the goal of reducing GHG emissions by 25% from the 1990 level by 2020.

Regarding integrated efforts toward an SMC society and a Society in Harmony with Nature, it should be noted that efforts toward an SMC society even contribute to a Society in Harmony with Nature, because these efforts aim to not only minimize the new extraction of non-renewable resources in nature but also minimize wastes eventually discharged to nature by promoting the sustainable use of biomass and other renewable resources in nature, extending the useful life of resources in society, and recycling used resources in society as CRs. With the 10th Conference of the Parties to the Convention on Biological Diversity (COP 10) to be held in Japan in October 2010, Japan should push ahead with efforts toward an SMC society and a Society in Harmony with Nature.

To create a sustainable society, activities to establish these three societies should be conducted in a manner that produces synergy, with emphasis on 3Rs and other initiatives to establish an SMC society.

(2) Promotion of the establishment of SMC blocks

Efforts are underway at the regional, prefectural and municipal levels to formulate regional plans to establish SMC blocks. These plans should be developed based on the understanding of locally available CRs, available facilities and entities concerned, while considering coordination with other related plans. Recognizing that the local government is expected to act as a coordinator in each region, all the entities should work in cooperation to formulate a regional plan.

For the establishment of SMC blocks according to the characteristics of CRs, such as biomass CRs, CRs recovered from products and CRs containing non-renewable resources, efforts under individual recycling laws and collection systems should be enhanced, and the Biomass Town Program and other initiatives should be implemented.

In many regions, local governments, NPOs and NGOs, business organizations and other entities have been cooperating to conduct pioneering programs to establish an SMC society. It is hoped that these programs will be enhanced, become self-reliant, and be connected to programs in other regions.

It is also necessary for each region to work in line with the local plan for an SMC society and evaluate and review the progress of the local effort.

(3) Quantitative measurement and evaluation of material flow indicators and effort indices

It was found that progress has been made toward the targets with respect to all the material flow indicators—resource productivity, the cyclical use rate, and the final disposal amount. With regard to effort indices, the public awareness of an SMC society was found to be high, with specific actions becoming more of common practice. The SMC business market and its employment have been growing. On the other hand, certain efforts, including green purchasing by local governments, indicated a slowdown or a leveling off of growth. Continuing to seek the targets for both material flow indicators and effort indices is essential.

Given that currently available information is sometimes not enough to analyze the factors of trends in these indicators, it is important to compile statistics faster and more accurately and gather detailed information on the amount of materials so that deeper analysis can be performed.

2. Other points

(1) Regarding lifestyle innovation, recent economic conditions and other factors have led to the spread of awareness of eco-friendly lifestyles in which people avoid wasteful buying (so-called "ecolife"). This idea should take root, instead of being a temporary trend. To take advantage of citizens' high awareness of an SMC society, including the concept of "*mottainai*," conditions that facilitate 3R efforts should be provided. To prompt people to take action, community-based environmental learning as part of life-long education needs to be promoted, along with more extensive environmental education at school.

(2) Promotion of SMC businesses should continue in consideration of the possibility that an expanded market will contribute to increased employment.

(3) In relation to efforts toward an international SMC society, the Regional 3R Forum in Asia is expected to work as a platform for dialogue among countries, international organizations and many other entities. It is hoped that on this platform, the 3R promotion activities in Asia will be expanded by comprehensively using various initiatives, such as policymaking and joint projects with international organizations.
With international efforts underway by UNEP's International Panel for Sustainable Resource Management, the OECD and other institutions to develop common methods of measuring material flows and indicators, Japan should lead international debate on the development of indicators for the establishment of an SMC society by communicating its advanced efforts and experiences in such indicators to other countries and actively participating in these activities. This is important in further expanding the 3R Initiative and ensuring the implementation of the Kobe 3R Action Plan.

3. Future directions

The whole government should promote efforts to establish an SMC society, while giving higher priority to the following points.

- The government should discuss a new vision of SMC society from a long-term viewpoint. This discussion should take into consideration the goal of reducing GHG emissions by 25% from the 1990 level by 2020 and the possibility that major changes have occurred to the systems assumed for the current vision of the establishment of an SMC society, such as fluctuations in the price of CRs and other resources, change in industrial structure, and development of infrastructure.

- With the goal of reducing GHG emissions by 25% from the 1990 level by 2020 and upcoming COP 10 in October 2010 in view, the government should coordinate efforts toward a Low-carbon Society with those toward a Society in Harmony with Nature. The first step should be to continue 3R-related efforts in a manner that produces synergy between these two. Wastes that cannot be reused or recycled should be subject to consideration of heat recovery, including waste power generation. Waste power generation and heat recovery projects should be implemented in such a way that power generation facilities are used as efficiently as possible through measures such as allowing stable incineration based on wide-area garbage collection. In addition, technology development should be promoted to establish energy-efficient 3R and waste treatment systems. Biomass use, which is an effective approach to both a Low-carbon Society and a Society in Harmony with Nature, should continue to be

enhanced, although efforts toward a Society in Harmony with Nature should seek approaches in non-biomass fields.

- For the promotion of the establishment of SMC blocks, the government should survey the status of various efforts to establish SMC blocks by various entities at the regional level, while continuing to encourage the formulation of regional plans for SMC blocks. At the same time, the government should provide support in such a way that local citizens, NGOs and NPOs, business organizations, local governments and other entities can cooperate to establish SMC blocks in coordination with efforts toward a Low-carbon Society and a Society in Harmony with Nature so that SMC blocks will lead to community invigoration. Institutional problems should also be studied to facilitate regional efforts toward an SMC society.

- The government should make full use of wastes as resources in order to create a virtuous circle for the environment and the economy; be committed to boosting SMC businesses and restraining waste generation in a way that recycling-based lifestyles take root; and strategically advance 3Rs and other efforts to establish an SMC society through the promotion of SMC businesses. Appropriate disposal of waste should be fostered as a precondition for this.

- With the aim of conserving the global environment and promoting SMC businesses, the government should promote the acceptance and appropriate disposal of wastes generated by Japanese companies outside Japan that cannot be responsibly disposed of in developing countries but can be in Japan.

- The government should deepen the analysis of indicators, while continuing to evaluating relations between indicators, based on research results and other findings. This analysis should include the identification of the cause of the slowdown in any indicators (e.g. whether the slowdown is attributable to sluggish efforts or saturation of efforts). Compiling waste-related statistics faster, making preliminary statistics available, and increasing accuracy of such statistics are also important. Since currently available data are sometimes not enough for a detailed analysis of changes in indicators or the identification of the cause of such changes, the government should discuss the method of gathering more detailed information on material flow indicators and more down-to-earth effort indices, including information on the status of waste disposal.

- The government should disseminate 3Rs in Asia in light of the local economic and social conditions. Further efforts should be made to promote 3Rs beyond Asia as well.

4. Conclusion

We conducted the second progress evaluation for the Second Fundamental Plan. As in the previous fiscal year, the survey intended to identify the actual status not just based on objective data on material flow indicators and effort indices but even by conducting interviews with NGOs, NPOs, business organizations, local governments, and relevant ministries and agencies.

The progress evaluation found that efforts toward an SMC society have been making steady progress as a whole, whereas there are problems to be solved concerning these efforts as well as the survey method.

As mentioned in the introduction, it should be noted that the latest available data concerning material flow indicators are from FY 2007, which is before the formulation of the Second Fundamental Plan. With an interim evaluation due next fiscal year, we will perform it with attention to how the trends in indicators before the formulation of the Second Fundamental Plan have changed after the formulation. By performing the interim evaluation this way, we aim to ensure that the latter half period of the Second Fundamental Plan will see more steady progress.