

2006

**SWEEPING POLICY REFORM TOWARDS
A "SOUND MATERIAL-CYCLE SOCIETY"
STARTING FROM JAPAN AND
SPREADING OVER THE ENTIRE GLOBE:**

-THE "3R" LOOP CONNECTING JAPAN WITH OTHER COUNTRIES



Ministry of the Environment
Government of Japan

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Executive Summary

Focusing on the promotion of the “3Rs”—reduce, reuse, and recycle—this brochure summarizes the experience that Japan has accumulated in waste management and recycling policy over the years. In order to realize a Sound Material-Cycle Society (SMS) both domestically and internationally, it also presents the state of efforts now gaining ground overseas, building on the momentum of the “3R Initiative” that was agreed on at the G8 Summit of 2004.

First, this brochure examines the period from the end of World War II until the time of the “bubble economy”, providing an overview of waste-related measures implemented during this period as well as the background behind the enactment of the Waste Management Law. It also discusses the occurrence of illegal dumping and other forms of improper waste disposal and explains how waste management became a social problem.

Second, the brochure explains the process through which major policy reforms of waste management and recycling measures have been implemented over the past dozen years or so. This explanation focuses on three policy measures: 1) industrial waste¹, management based on the responsibility of the waste generator, 2) recycling measures grounded in extended producer responsibility and 3) municipal waste management promoted collaboratively and cooperatively by the central and local governments. Additionally, this section provides an overview of the status of policies.

Finally, this brochure discusses the basic concept leading to the formation of an international SMS and Japan’s role in achieving this. It further provides an overview of developments on the international stage, including the Ministerial Conference on the 3R Initiative in 2005 and the Senior Officials Meeting on the 3R Initiative in 2006, which were hosted by Japan.

¹ In this brochure, unless indicated otherwise, “waste” means valueless things and can be classified into “municipal waste” and “industrial waste,” in keeping with Japanese regulations. Industrial waste contains twenty types of waste from business activities, provided for exclusively under the Waste Management Law, such as combustion residue, sludge, waste oil and imported waste. Municipal waste is other waste to be treated by municipalities and is classified into “general waste,” such as garbage from households, and “human excrement”.

SECTION 1

THE SITUATION PRIOR TO THE REFORM OF WASTE POLICY IN JAPAN-FROM THE END OF WORLD WAR II TO THE EARLY 1990S

Making a new start following World War II, Japan realized economic development as its citizens desired more affluent lives. Amid this process, priority was placed on corporate profits and personal convenience, and there was no consensus nationally on the importance of investment in the appropriate treatment of waste, such as the reduction of waste generated, recycling, and final disposal.

As a result, various types of environmental pollution emerged one after another caused by illegal dumping and other forms of improper treatment of waste. Consequently, waste-related public concern and distrust increased.

This section examines Japan's approaches to realize proper waste treatment taken from the end of World War II to the early 1990s.

1. Postwar framework for waste disposal

Immediately after the end of World War II, the issue of waste was seen as a public sanitation issue that would resolve problems resulting from sanitation-related waste. However, as waste became more problematic both in quality and quantity during the period of Japan's high economic growth, the public came to see it as part of a broad range of environmental problems connected with responses to environmental pollution. Thus, enactment of the Waste Management and Public Cleansing Law (often called the "Waste Management Law") paved the way for the establishment of a waste disposal framework that addressed, among other points, clarification of the responsibilities and standards for dealing with waste, including industrial wastes.

1.1. From the end of the war to the period of high economic growth

1.1.1. The waste problem as a "public sanitation problem"

In Japan—a country that rebuilt its economy from scratch after World War II—due to the inflow of people into urban areas from peripheral areas, the treatment of general waste (garbage) and human waste has become problematic, particularly in urban centers.

The Public Cleansing Law was enacted in 1954, with a stated purpose of "improving public health by sanitarily disposing of waste and cleaning the living environment." This law aimed to establish frameworks for dealing with waste in municipalities, which are the major entity involved in such work. The existing systems at the time referred to garbage and human waste as "unsanitary substances," and they were intended to enable the disposal of such waste from a public health-based standpoint in order to maintain a sanitary and comfortable living environment.

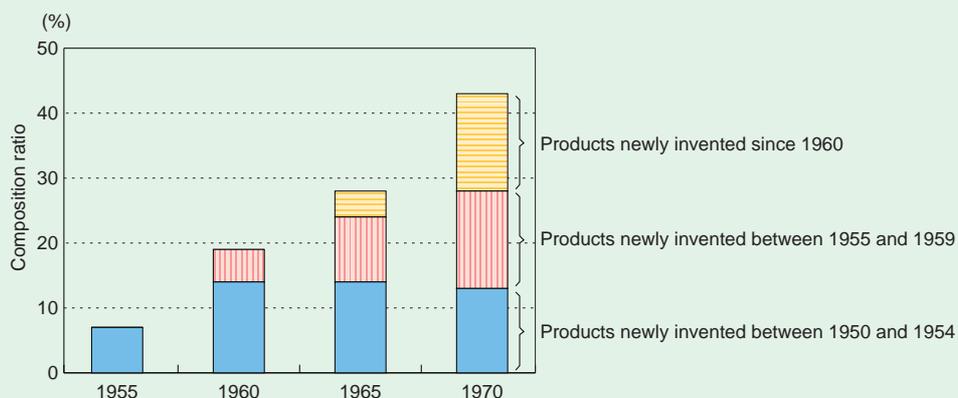
1.1.2. Changes in the waste problem during the period of rapid economic growth

From the mid-1950s to the end of the 1970s, Japan’s economy shifted from a period of reconstruction to a period of high economic growth. This transition led to major changes in Japanese lifestyles.

Such changes also had a major impact on the issue of waste. Higher incomes led to consumers’ demand for a more convenient lifestyle, which promoted electrification of homes, typified by the products called the “Three Holy Durables”: televisions, refrigerators, and electric washing machines. In particular, the popularization of television was a factor in the nationwide expansion of urban lifestyles, which was characterized by living in apartment blocks. Advertisements on television also became a factor behind large-scale consumption by increasing the public’s desire to purchase goods.

A large number of newly-invented products came into the market during this period. The appearance of many products (represented by the “Three Holy Durables”) contributed to the realization of a materially-affluent society. However, under large-scale production and consumption processes, the continuous appearance of new products and models soon made existing products obsolete, which resulted in increases in waste generation.

Breakdown of ratio of the value of newly invented products in manufacturing sector

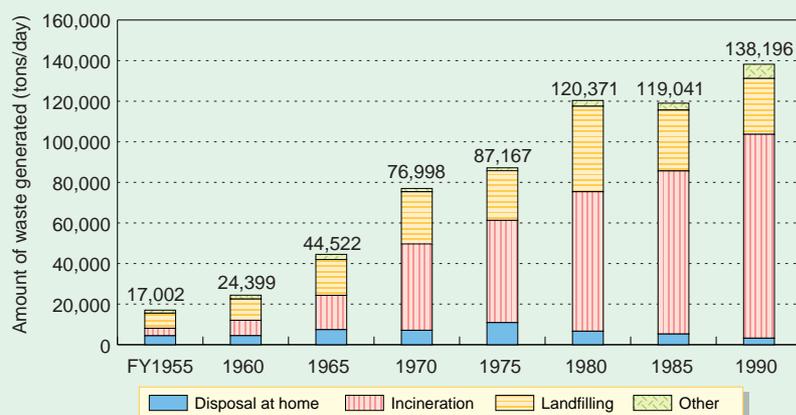


Source: *Economic Survey of Japan FY1971*

Moving into the 1960s—a time during which the aforementioned lifestyle changes progressed even further—the amount of waste generated increased considerably, particularly in urban areas experiencing population influx. With regard to how such waste was handled, nearly 40% was disposed of in unlined landfill or dumped in mountainous areas, rather than in soil-covered landfill. The burying of untreated waste in Japan, with its climate of high temperatures and humidity, attracts vast numbers of flies and mosquitoes. This situation led to neighborhood and residents’ associations acting to exterminate such insects. At the same time, the necessity of securing landfill sites became an urgent issue for Japan, a country with limited national land.

Given this situation, the “Emergency Measures Law for the Development of Living Environment Facilities” was promulgated in 1963. Based on this law, the government formulated the “First Five-Year Plan for Development of Living Environment Facilities,” which laid out a policy by which, in general, waste would be incinerated in urban areas, with the residue being disposed of in landfills.

Changes in disposal methods of general waste



Note: Figures for 1970 and earlier are total waste amount in special cleansing districts based on the Public Cleansing Law. Figures for 1975 exclude waste haulage brought in directly upon moving house, etc. Compiled based on: “Annual Report on Health and Welfare” and the “Quality of the Environment in the Japan”



Incineration of wastes to prevent the major infestation of flies at Yume-no-shima in 1965
Source: “Tōkyō-to Seisōjigyō Hyakunenshi” (100-year History of Sanitation Work in Tokyo)

However, the amount of waste generated increased at a pace far exceeding the forecasts by the municipal cleaning sector, with the amount of general waste generated per person per day increasing roughly 6% per year during the late 1960s. Furthermore, during this time, the amount of waste that is difficult to dispose of, such as bulky trash and plastic waste, also increased. In particular, the production of plastics grew by as much as 25% per year during the late 1960s. Moreover, the number of local governments that were approaching their plastic mix-rate limit in terms of the capacity of treatment facilities (10%) increased during this time. Facing these situations regarding waste, the cleaning sector in municipalities had to make difficult decisions concerning their waste policy.

1.2. From the end of the period of high economic growth to the period of “bubble economy”

1.2.1. Forming the framework of the Waste Management Law

The problem of waste generated in households was not the only issue that arose from Japan's high economic growth. Another issue was the problem of industrial waste generated through the production activities of businesses entities.

Industrial waste had traditionally been accumulated within the grounds of factories or handled through the efforts of individual companies. However, with the progress of urbanization and a shortage of final disposal sites (landfills), the number of cases in which waste was improperly treated increased. Moreover, it is estimated that the amount of industrial waste generated in 1967 was approximately 1.2 million tons per day. This was 24 times more than the amount of waste generated by households (50,000 tons). Much of this industrial waste was incombustible or required special processing to prevent environmental pollution. Consequently, it exceeded the capacity of municipal disposal systems.

This led to the abolition of the Public Cleansing Law and establishment of the Waste Management Law in the so-called [anti-] “Pollution Diet” in 1970. This move marked the first step toward the establishment of today's waste management system. The new law differed significantly from the Public Cleansing Law in that it stated “conservation of the living environment” (which included responses to pollution problems as well as disposal of waste as a sanitation issue) as one of its purposes and that it clarified the waste management responsibilities of businesses.

The Waste Management Law, which defines waste by classifying it as “municipal waste” or “industrial waste,” was the first law that established a legal definition of industrial waste. Moreover, like other pollution regulations, it placed responsibility for the treatment of waste generated through business activities on the businesses, based on the Polluter Pays Principle. Furthermore, the law stated that when a business manufactures, processes, or sells a product and the product (or its packaging, etc.) becomes waste, the manufacturer must ensure appropriate and easy disposal of that product, packaging, etc. In this way, it established the responsibilities of businesses that manufacture, process, sell, or engage in other activities related to products, packaging, etc.

In addition, the framework for waste management was also changed significantly. The responsibility for the disposal of municipal waste remained with municipalities, but the entire area of each municipality became the geographical basis for its waste management. For the newly-created category of industrial waste, disposal by businesses became the fundamental rule.

1.2.2. Establishment of disposal standards for hazardous waste

At the time, disposal of hazardous industrial waste was the most urgent problem. Consequently, at the time of the Waste Management Law's enforcement in 1971, in order to make every effort to protect public health, strict standards were established for the final disposal of contaminated remaining materials that contain mercury, cadmium, and other hazardous substances.

The government order for the enforcement of the law was revised in 1973. This revision led to the establishment of criteria for industrial waste to be handled as hazardous substances among industrial discharges of contaminated materials, etc., to be disposed of in landfills or released into the ocean.

1.2.3. Increasing seriousness of waste as a social problem

In this way, establishment of the Waste Management Law clearly defined industrial waste and clarified the management responsibilities and criteria for all types of waste. However, illegal dumping of industrial waste, which accounted for a large portion of waste generated, became a major problem.

Furthermore, it was not always the case that every municipality could secure sufficient capacity to dispose of waste, even municipal waste. As pollution problems occurred and public awareness of environmental pollution rose, the idea that waste should be managed within the area where it was generated gained ground. This sometimes led to clashes between local governments without enough final disposal sites and local governments that wished to avoid the inflow of waste from outside.



Blocking the hauling of waste into Koto Ward
Source: "Tōkyō-to Seisōjigyo Hyakunenshi" (100-year History of Sanitation Work in Tokyo)

As waste management issues became more and more prominent as a social problem, it became necessary to develop policy measures immediately.

After the formulation of the Waste Management Law, a variety of standards and laws was established to ensure proper waste disposal. In 1976, the Waste Management Law was revised, particularly in the areas of certain fulfillment of responsibility by waste-generating businesses and disposal companies and reinforcement of regulations in order to ensure appropriate final disposal². Furthermore, in 1976, methods for final disposal were classified into three types (isolated-type, inert-type, and controlled-type) in accordance with the particular substance's characteristics³. An additional step was the issuance of an "Cabinet

² Specifically, regulations for the issuance of orders demanding action were created, standards for consignment of disposal work were established, and disposal records of businesses responsible for disposal were stored as part of a system based on the responsibility of waste-generating businesses, etc. Furthermore, notification procedures were established and preliminary studies were implemented based on technical standards in order to ensure proper final disposal.

³ Final disposal sites of industrial waste are classified into three types: "isolated-type" sites for landfill disposal of hazardous industrial waste; "inert-type" sites for landfill disposal of industrial waste of a stable nature (waste plastic, waste rubber, metal scrap, etc.) that entails little risk of disruption for conservation of the living environment; and "controlled-type" sites for landfill disposal of other industrial wastes in order to prevent disruption for conservation of the living environment. Furthermore, it was established that fundamentally, final disposal sites for municipal waste would be controlled-type sites.

order establishing technical standards on final disposal sites for municipal waste and final disposal sites for industrial waste,” which set structural and maintenance standards in accordance with each type of site.

Together with the establishment of these legal systems, efforts to prepare a foundation of proper treatment progressed. This was achieved mainly through national subsidies for the building of treatment facilities of municipal waste and low-interest financing and special tax measures for the building of treatment facilities for industrial waste.

1.3. The period of the “bubble economy”

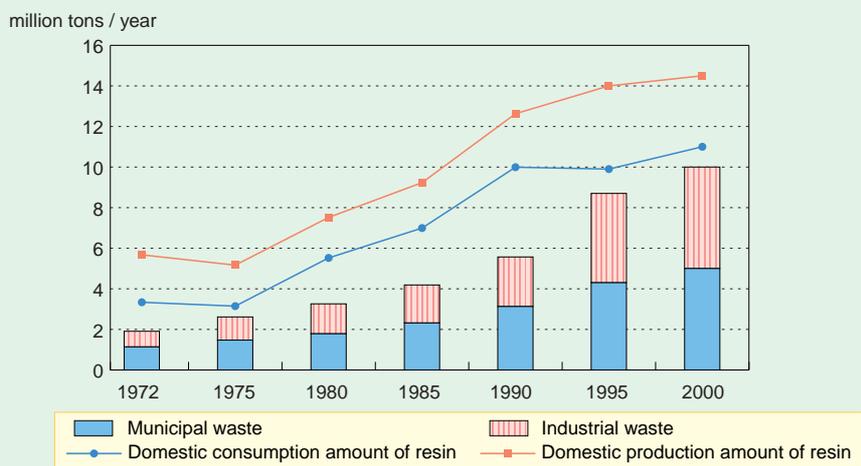
Gaining momentum after the Plaza Accord of 1985, the so-called “bubble economy” (1985 to the early 1990s) occurred, leading to an increase in waste generation.

1.3.1. Expansion of the waste problem in terms of both quality and quantity as a result of the bubble economy

At this time, the types of waste generated began to vary, reflecting broadening and diversifying consumer activities, progressing technical innovation, and other factors. Thus, the amount of waste for which it is difficult to give proper disposal — such as dry-cell batteries, large televisions, refrigerators and other household appliances — increased in terms of both quality and quantity.

At the same time, lifestyles changed drastically. The generation that had been employed during the affluent period of Japan’s high economic growth began showing a tendency to demand diverse rather than uniform lifestyles. This accelerated the development of such products that were manufactured in small volume but in great varieties as well as frequent delivery-based distribution, which led to greater use of plastic containers and wrapping materials for the products. The expansion of convenience stores which first appeared in the 1970’s and rapidly increased based on store networks and 24-hour operation can be described as one example of this kind of small volume and frequent distribution. This was also the time that use of synthetic resin bottles (“PET bottles”) started to be popularized.

Changes in production volumes and waste volumes of plastics in Japan



Source: Compiled by the Ministry of the Environment from Plastic Waste Management Institute documents

Office paper is included among the waste collected by municipalities. Thus, with the development of office automation technology, the amount of used copy paper, computer paper, and other forms of wastepaper generated by offices also increased.

Similarly, regarding industrial waste, increased residential and office building demand in urban areas led to a boom for civil engineering and construction projects, which brought with it higher outputs of waste of construction materials.

The bubble economy continued until around 1991, when economic growth started to decline. Yet even since that time, the amount of waste generated has been relatively constant.

1.3.2. The emergence of social problems caused by hazardous substances which accompany waste management

In 1983, a major social problem came to light through a study by the Tokyo Metropolitan Research Institute for Environmental Protection on the risks of environmental pollution caused by mercury through the processes of incinerating or disposing discarded dry-cell batteries that contain mercury (mercury, alkali, manganese, etc.). At the same time, newspapers reported that dioxins had been detected in the incinerated ash of waste incinerators in urban areas. How to cope with the problem of the generation of dioxin at waste incineration facilities became a major issue.

Because it is difficult to secure final disposal sites in Japan, policy measures to reduce the amount of waste generated through incineration, compression, and crushing as forms of intermediate processing have been promoted.

However, even if waste volume is reduced through incineration, appropriate final disposal sites for the dumping of incinerated ash are required. The rapid increase in waste volume during the bubble economy led to the shortage of final disposal sites. At the same time, it became even more difficult to build new sites because of skyrocketing land prices and opposition from residents. In particular, major urban areas with excessive concentrations of population and industry faced an even more difficult situation, as they had to deal with both rapidly growing waste volume and difficulty in securing disposal sites.

Furthermore, when individual municipalities have difficulty in securing final disposal sites within their administrative area, they have no choice but to take their waste to final disposal sites in other municipalities. This results in large-scale movement of the waste. Industrial waste that is treated under the responsibility of businesses sees even greater large-scale movement than municipal waste, and there were many cases where such industrial waste was dumped illegally in forests, wilderness areas, etc.

2. Cases of improper disposal of waste

Economic activity in Japan has continued even after the period of high economic growth, bringing about a society with high material affluence. In addition, social changes have led to the large-scale consumption and normalization of disposable products in daily life. Growth in the volume of waste and the diversification of waste substances reflecting these changes made the appropriate disposal of waste very challenging. Thus, it became the case that officials—who faced waste well in excess of forecasts—took an approach of “well, in any event we need to get this off the streets” and had little choice but to deal with this problem in an after-the-fact and stopgap manner.

2.1. The problem of improper waste disposal, as typified by illegal dumping

Improper waste disposal, including illegal dumping, causes water contamination, soil pollution, and other forms of environmental pollution, as well as unnecessary financial burdens for the rehabilitation to its original state of soil that has been subjected to dumping.

Typical examples of inappropriate disposal

Example of intentional inappropriate disposal	Example of unintentional improper storage
<p>- Illegal dumping on Teshima Island, Kagawa Prefecture From 1983 to 1990, an industrial waste disposal company on Teshima Island, Kagawa Prefecture, labeled a large quantity of remnant materials, waste oil, sludge and other forms of industrial waste labeled as “having value” and brought it to a disposal site on the island managed by the company. This waste (approximately 560,000m³) was illegally disposed of through repeated controlled burns and landfilling. The waste contained not only heavy metals such as lead, chromium, and cadmium but also hazardous substances including PCBs and dioxins.</p> <p>Although the company's actions were discovered in 1990, measures to dispose of the waste and to prevent leakage of contaminated groundwater remains underway in Kagawa Prefecture. It is expected that the cost of disposal will reach some 45 billion yen.</p>	<p>- Improper storage in Iwaki, Fukushima Prefecture From 1985 to around 1998, an industrial waste disposal business in Iwaki, Fukushima Prefecture, illegally stored some 55,000 drums containing waste oil, waste alkali, and other contaminants in the open in forests and farmland covering approximately 5,000m² within the city. Because the drums, which had been left in the open for many years, began to leak waste oil and cause environmental pollution in the surrounding area, the prefecture issued a subrogation for removal and disposal of the drums as well as removal of contaminated soil. This resulted in a cost of some 3.6 billion yen.</p>

Source: Ministry of the Environment

At the time, however, there was a tendency to select waste treatment businesses that would undertake their operations as cheaply as possible despite the risks of inappropriate treatment. This was the tendency towards what is sometimes called “bad money drives out good.” Moreover, the legal system at the time was characterized by the following aspects:

- 1) There was no system to confirm proper treatment of the industrial waste at each step of the treatment process.
- 2) A management system for proper treatment by businesses that generate large quantities of waste had not been established.
- 3) Inferior businesses with malicious intent, such as those who have connection with gangsters in their management, had not been excluded from the market.

Furthermore, extensive coverage of illegal dumping of waste by the media led to public skepticism on the necessary construction of waste treatment facilities. This resulted in a “vicious circle” in which the shortage of appropriate treatment facilities led to increases in illegal dumping.

2.2. The PCB problem

Polychlorinated Biphenyls (PCBs) had been used in a wide range of items including electronic devices. However, the “Kanemi Oil Poisoning Incident” of 1968 led to a ban on the new production and use of PCBs in 1974.

In order to respond to this situation, the “Denki PCB Shori Kyokai” (the Association of the Treatment of PCB in Electronic Devices, established in 1973) and other organizations tried numerous times to build facilities for treating PCBs; however, such efforts were unable to dispel local residents’ strong concerns about exhaust gases and other issues, and thus they failed to gain public acceptance to prepare treatment systems.

Consequently, a large amount of PCBs has remained in storage for nearly 30 years without being processed. It has been reported that the danger of environmental pollution exists because, during this time, PCBs could be lost and their storage conditions have deteriorated.

SECTION 2

RECENT REFORM OF WASTE MANAGEMENT AND RECYCLING POLICY TOWARD REALIZING A “SOUND MATERIAL-CYCLE SOCIETY”

SECTION 2

Having experienced waste-related crises, Japan has reinforced its policy measures toward tackling waste issues. As it proceeds in this direction, Japan has moved from the development of policy to strengthen its “3R” (recycle, reduce, and reuse) framework and measures over the past dozen years. It has done so by seeing waste not simply as things to be disposed of, but rather as a valuable resource. In this way, Japan is steadily implementing approaches toward the establishment of a “Sound Material-Cycle Society (SMS)” with “circulative resources (CRs)”, such as waste that can be properly utilized and treated.

1. The three main trends of waste and recycling measures

Japan’s waste management and recycling policy follows three main trends.

The first involves the problem of industrial waste, which makes up the majority of all waste. Although, historically, treatment of such waste was implemented on the concept of “bad money drives out good,” successive legal reforms have been reinforced to secure the responsibilities of waste-generating businesses and brought about a shift in waste management systems.

The second involves the formation of recycling policy. Specifically, it is based on the concept of “extended producer responsibility (EPR)”, in which product manufacturers assume certain responsibility to secure proper treatment of the waste generated by their products, even at stages following their use.

The last trend involves the problem of municipal waste, which is the waste that is most familiar to people in their daily lives. Given the fact that the close collaboration between municipalities and the central government has resulted in significant successes in the treatment of dioxins, even stronger efforts based on local-national cooperation will be required in the future.

1.1. Reinforcing industrial waste measures based on the responsibility of waste-generating businesses

“Responsibility of waste-generating businesses” refers to the idea that businesses that generate waste should bear responsibility for its treatment through appropriate recycling, final disposal, etc. The foundation of this idea lies in the internationally-established “Polluter Pays Principle (PPP).” It sets forth the waste generator as the originator of environmental loads resulting from waste treatment and places responsibility for reducing the environmental loads on the generator.

1.1.1. Reinforcing responsibility of waste-generating businesses through revision of the Waste Management Law

The Waste Management Law was enacted in 1970 to set up a major division of roles, placing waste treatment responsibility for industrial waste with waste-generating businesses and responsibility for municipal general waste with municipalities. However, because this division of roles did not resolve the problems of continuing environmental pollution caused by improper disposal and large-scale illegal dumping, the Waste Management Law has undergone numerous additional revisions concerning industrial waste, which accounts for approximately 90% of all waste generation. The following subsections overview the main points of these revisions.

The manifest system

The objective of the manifest system is to prevent illegal dumping. This system enables an entity to accurately ascertain and manage conditions throughout the distribution flow of industrial waste and immediately identify the waste-generating businesses having responsibility for the treatment of that waste.

Revisions of the Waste Management Law made this system mandatory for “industrial waste under special control” from April 1993 and for all industrial waste from December 1998. Under this system, a waste-generating business has to fill in a manifest sheet when it consigns industrial waste to a collecting and transporting business. The collecting and transporting business stamps the manifest sheet to confirm that it has received the waste, and returns a copy of the manifest sheet to the waste-generating business.

Reinforcement of licensing conditions for waste disposal businesses

In order to eliminate unreliable treatment businesses, the 1997 and 2000 revisions of the Waste Management Law reinforced disqualifications for industrial waste treatment businesses. These reinforcements included the regulation that disqualifies businesses from receiving licenses for engaging in industrial waste treatment business if they have violated environmental statutes (such as the Waste Management Law) and been sentenced to fines or higher punishments within the past five years, been affiliated with organized crime, etc.

1.1.2. Promotion of appropriate treatment through the reinforcement of regulations to prevent illegal dumping

The three stakeholders of the central government (which is in charge of this system), local governments (which are responsible for the system's precise implementation and management), and waste-generating businesses (which have responsibility for waste treatment) jointly implement effective measures aiming at minimizing the negative environmental effect of illegal dumping that has already occurred.

Measures for rehabilitation to original state

It is extremely important to steadily implement measures to restore the conditions of dumped sites to the state before illegal dumping (rehabilitation to original state).

However, such rehabilitation often comes at great expense. While this expense should be, in principle, compensated under the responsibility of the business that committed the illegal dumping, in many cases the location of the business cannot be identified or the business does not have the financial capacity to afford the expense. This forces the central government, local governments, and other administrative bodies to deal with the situation.

(1) Increased flexibility and facilitation of procedures for rehabilitation to original state

When waste is disposed of in violation of disposal standards, such as illegally dumped waste, authorities are permitted to order the person or corporation that engaged in the disposal to take measures necessary to eliminate or prevent disruption for conservation of the living environment that is caused by the waste (a “restoration order”). However, because the conditions for issuing the restoration order had previously included the “occurrence of major interference in the preservation of living environments, or recognition that there is a possibility that such interference will occur,” confirmation of the severity of the disruption was required. In some cases unclear conditions prevented the effective issuance of the orders. These included the fact that specific standards for evaluating the severity of disruption were unclear, and that it was difficult to conserve the living environment without implementing necessary measures prior to ascertaining the severity.

Consequently, the Waste Management Law was revised in 1991 to replace “major interference with the preservation of living environments” with “occurrence of interference with the preservation of living environments.”

Moreover, although there is a system under the Administrative Subrogation Law to be applied when a disposing entity does not engage in rehabilitation to the original state despite receiving a restoration order, a 1997 revision of the Waste Management Law established exceptional procedures for the Administrative Subrogation Law and relaxed the conditions in the event that a prefectural governor takes measures to remove the waste. This revision makes it possible for prefectural governors to commence quickly with operations for rehabilitation to the original state.

In addition, the decision was made to fully enforce the principle of the “responsibility of the waste-generating business.” When a waste-generating business does not conduct with due diligence the securing of proper treatment in the process of waste generation to final disposal, the business becomes newly subject to a restoration order.

(2) Responsibility for bearing expenses of rehabilitation to original state

In order to ensure that operation of rehabilitation to the original state can be conducted even in cases when the disposing person or waste-generating business cannot be identified, the law was revised to establish a fund made up of contributions from industry and national treasury subsidies. Should illegal dumping of industrial waste occur after the execution of the revised law, financial assistance could be provided through this fund to

cover a portion of the costs that arise when a prefecture issues a subrogation.

Systematic approaches toward eradication of illegal dumping

Furthermore, in order to prevent illegal dumping before it occurs, an “Outline of the Action Plan toward Eradication of Illegal Dumping” was prepared in June 2004 as a comprehensive plan of policy measures against illegal dumping. This plan was prepared based on the need for measures at each stage of waste disposal flow, as well as measures to reinforce existing punishments.

Outline of the Action Plan toward Eradication of Illegal Dumping

- **Improving public awareness in the community**
 - **Strengthening policy measures against littered wastes in the neighborhood (application of the “broken window theory”)**
 - * Formulating guidelines for sorted collection, promoting reduction of waste in daily life, etc.
- **Strengthening the system for waste treatment**
 - **Securing treatment bodies and improving transparency of the waste treatment system**
 - * Pasting a notice bill on vehicles carrying waste, exhaustive administrative disposition, improving management system of transboundary movements of waste.
 - * Enhancing governmental support for efficient preparation of treatment facilities, and reinforcing safety measures for final disposal sites, etc.
- **Developing human resources supporting the system**
 - **Fostering excellent treatment operators and the development of administration system**
 - * Fostering excellent operators through formulating evaluation standards and special tax treatment.
 - * Human resource development in the central and local governments by dispatching experts and holding seminars on industrial waste treatment.
 - * Developing and expanding regional environmental offices and preparing prompt response system on the front line, and environmental monitoring (patrolling) system through setting up an illegal dumping prevention hot line.

Source: Ministry of the Environment

Creating a sound market that selects top-quality treatment businesses

Combined with full enforcement of treatment responsibility through regulations, the promotion of efforts to create a sound market in which top-quality industrial waste treatment businesses are fostered and in which these top-quality businesses are appropriately selected by waste-generating businesses is closely linked to the prevention of improper treatment. For this reason, projects aimed at fostering and evaluating such top-quality businesses are underway.

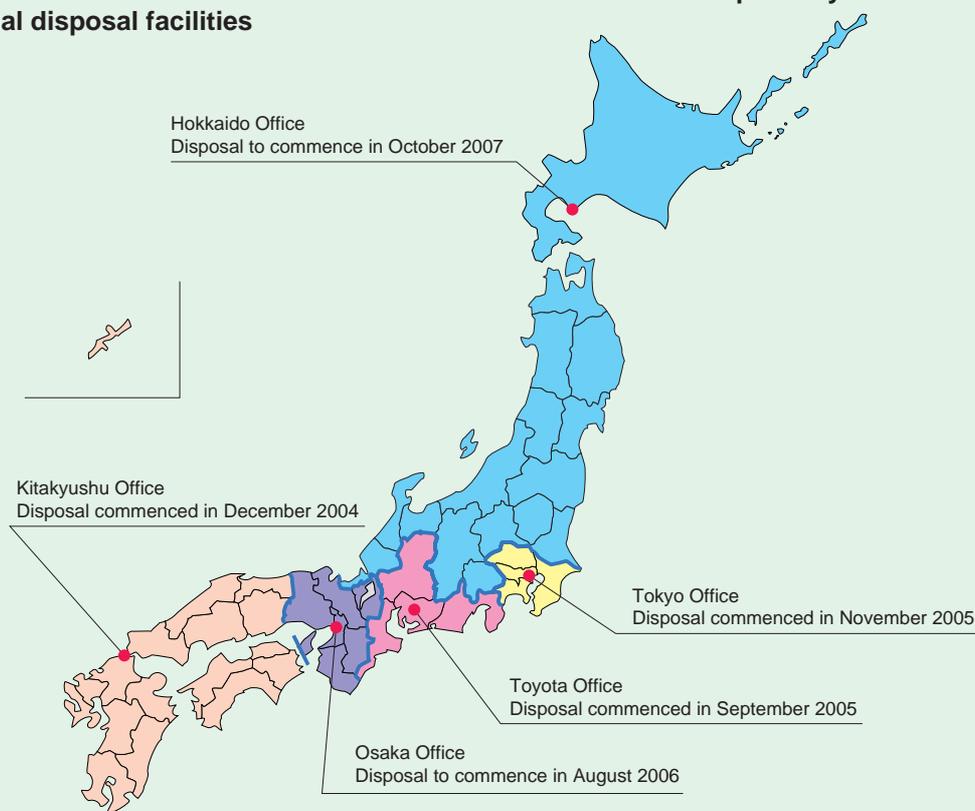
1.1.3. Eliminating adverse legacies under national leadership (disposal of PCB waste)

Because PCB waste has remained in long-term storage, and because, in some cases, its location has become unknown or its storage conditions have deteriorated, the danger of environmental pollution exists.

This situation led to the establishment of the Law Concerning Special Measures against PCB Waste (PCB Special Measures Law) in FY2001, under the initiative of the central government, to build a disposal framework for it and to prepare disposal facilities on a nationwide scale. In concrete terms, regional disposal facilities for PCB waste are being established in five locations nationwide through the Japan Environmental Safety Corporation, which is a special company set up under the law.

Moreover, the central and prefectural governments are collaborating to set up a PCB waste treatment fund. This fund promotes the proper disposal of high-voltage transformers and condensers using PCBs that are stored by small- and medium-scale enterprises that have limited ability to bear their treatment costs.

Progress toward the establishment of Nationwide PCB waste disposal system based on regional disposal facilities



Source: Ministry of the Environment

1.2. Creation and enhancement of recycling measures through extended producer responsibility

In Japan, specific legal systems based on the concept of “extended producer responsibility” — an internationally shared concept studied at the Organization for Economic Cooperation and Development (OECD), such as recycling laws which differ according to the characteristics of items — have been prepared.

1.2.1. Background behind extended producer responsibility

Due to the delay of waste reduction and the shortage of waste disposal capacity, it has been becoming more and more difficult to find new locations for waste disposal. Therefore there is a necessity to take new policy measures aimed at reducing waste volume in the upstream of waste generation. Specifically, internationally recognized as an important issue, primarily in developed countries, is the question of how to transmit the necessary information to consumers to reduce waste generation beginning with the manufacturing stage.

1.2.2. Results of international discussions

Based on this recognition, the concept of extended producer responsibility came to be discussed at an OECD working group, later becoming internationally shared as an important approach in the 1990's. With Japan serving as a core member, an OECD project team commenced study of this approach in 1994. In 2001, a guidance manual for OECD member governments was prepared and published.

Extended Producer Responsibility in OECD "A Guidance Manual for Governments"

1) Definition	An environmental policy approach in which a producer's responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product's life cycle. Two related features of EPR policy: (1) the shifting of responsibility (physically and/or economically; fully or partially) upstream to the producer and away from municipalities; and (2) the providing of incentives to producers to incorporate environmental considerations in the design of their products.
2) Primary function	The transfer of the financial and/or physical responsibility of waste management from local government authorities and the general taxpayers to the producer
3) Four primary objectives	(1) Source reduction (natural resource conservation/materials conservation) (2) Waste prevention (3) Design of more environmentally compatible products (4) Closures of materials use loops to promote sustainable development
4) Effects	EPR can provide a pressure point to drive upstream changes in material selection and in the design aspects of a product. Appropriate signals can be sent to the producer to internalize substantial externalities from the final disposal of the product.
5) Responsibility	While sharing responsibilities across the product chain is an inherent part of EPR, a key characteristic of EPR is that the producer accepts a significant degree of the physical and/or financial responsibility of products at the post-consumer phase.
6) EPR policy instruments and measures	(1) Product take-back (2) Deposit/refund schemes (3) Material taxes, upstream combination tax/subsidy (4) Advance disposal fees (5) Standards: minimum recycled content requirements (6) Leasing/servicizing

Source: OECD, "Extended Producer Responsibility, A Guidance Manual for Governments" (2001), As edited and summarized by the Ministry of the Environment of Japan

1.2.3. Establishment of recycling systems based on extended producer responsibility

The concept of extended producer responsibility is clearly noted in the Fundamental Law for Establishing a Sound Material-Cycle Society⁴. Based on this and other concepts, Japan is establishing recycling systems for containers and packaging, household appliances, construction materials, food, and vehicles, corresponding to the particular qualities of each product.

⁴ The Fundamental Law for Establishing a Sound Material-Cycle Society stipulates that businesses engaged in manufacturing, sales, etc. of products, containers, etc., are responsible for restraining from becoming wastes the products, containers, etc. concerned, etc., by increasing the durability of the products, containers, etc., concerned and improving the system of carrying out repair work. It also stipulates that said businesses are responsible for the recovery and environment-friendly usage of the containers. (Fundamental Law for Establishing a Sound Material-Cycle Society, Article 11, Paragraphs 2 and 3)

Containers and packaging

“Containers and packaging” refers to bottles, cans, PET bottles, and other forms of product container and packaging that become unneeded after the product is consumed. Such containers and packaging account for approximately 60% of all household waste in terms of volume and approximately 20% in terms of weight.

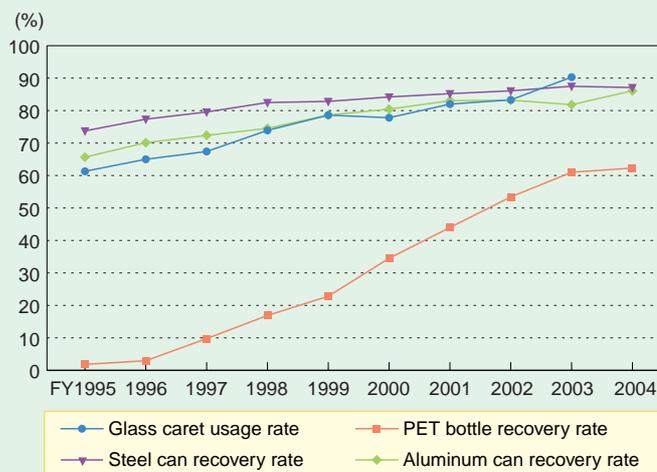
Aiming to reduce waste from such containers and packaging and to promote their effective use as recyclable resources, the Containers and Packaging Recycling Law was enacted in 1995. Efforts are currently underway to build a system for appropriate sorted collection of such containers and packaging as well as their recycling.

(1) Status of the current system

Ten years have passed since the system was first executed. During this time, sorted collection and recycling of waste containers and packaging has been progressing steadily. For example, the recovery rate for PET bottles, which was 9.8% when the system started in FY1997, had climbed to 46.4% in FY2004.

At the same time, businesses are also making efforts that include reducing their use of packaging. While such efforts have had a certain degree of success in reducing waste from containers and packaging, they are also tied to the innovation of new technologies, such as technologies for recycling old PET bottles into new PET bottles.

Changes in recovery and usage rates of packages and containers



Source: Ministry of the Environment

(2) Discussion on the review of the Containers and Packaging Law in the Council

With the Fundamental Law for Establishing an SMS providing fundamental principles for the 3Rs was enacted in 2000 and a series of recycling laws were enacted, the construction of an SMS has made progress. Moreover, because the Containers and Packaging Recycling Law was expected to have a review undertaken in its tenth year following its execution, the Central Environmental Council and Industrial Structure Council engaged in repeated and earnest discussions on how the system should be revised. These discussions continued over one and a half years.

Based on the final conclusions of these councils, the government submitted the “Bill for Partial Amendment of the Law for the Promotion of Sorted Collection and Recycling of

Containers and Packaging” to the 164th Diet (enacted on June 15, 2006).

Home appliances

The Law for Recycling of Specified Kinds of Home Appliances (Home Appliances Recycling Law) was enacted in June of 1998. In order to reduce household appliance waste and contribute to the effective use of resources, this law requires manufacturers and others to engage in recycling that meets or exceeds certain standards for four designated items: air conditioners, televisions, refrigerators and freezers, and washing machines. In addition, the law establishes a division of roles under which retailers are obliged receive these four types of appliances from consumers (waste generators) and to pass them to manufacturers, while consumers are obliged to pay recycling fees (“pay later” system) when they discard such items.

Following the execution of this law, the number of recovered appliances (i.e., the four types of home appliances) has increased year on year, with the total of all four types recovered reaching 11.62 million in FY2004. Furthermore, the recycling rates of recovered appliances greatly exceed the standard set forth under the law.

Electrical home appliance recycling plant



Source: Ministry of the Environment

Construction materials

For promoting the recycling of construction waste, the Law for the Recycling of Construction Materials (Construction Material Recycling Law) was enacted in May of 2000.

This law requires businesses that undertake construction work meeting certain conditions to engage in sorted demolition of construction waste and its recycling. The law establishes that the recycling rate for three items-concrete, wood building materials, asphalt/concrete-shall be improved to over 95% by FY2010.

Food

The Law for Promotion of Recycling and Related Activities for the Treatment of Cyclical Food Resources (Food Waste Recycling Law) was enacted in June 2000.

The law promotes recycling by food-related businesses (manufacturing, distribution, sales, restaurant operation and catering). In the “Fundamental Policy for Promotion of Recycling and Related Activities for the Treatment of Cyclical Food Resources,” the law establishes that the recycling implementation rate shall be increased to over 20% by FY2006.

Vehicles

Illegal dumping of end-of-life vehicles is occurring with considerable frequency due to the skyrocketing cost of disposing remnant materials that are generated during the process of the treatment of the vehicles. Such dumping is becoming a major social problem. To address this problem, the Law for the Recycling of End-of-Life Vehicles (Vehicle Recycling Law) was enacted in July 2002.

The law requires vehicle manufacturers and importers to recycle Freon, airbags, and remnant materials (destruction in the case of Freon). Moreover, as recycling goals, the law establishes that the remnant materials recycling rate shall be over 70% and the airbag recycling rate shall be over 85% by 2015.

1.3. Promoting municipal waste measures, etc., through collaboration between local and central governments

Municipal waste is most familiar to people in their daily lives. With regard to municipal waste, it is extremely important that each stakeholder plays its role under an appropriate division of responsibilities: the central government, which leads the management of the formation and reform of the legal system and other national systems, and local governments, which are familiar with actual conditions in their local societies, the consumers and businesses promoting the 3Rs (from product manufacturing to disposal technology).

1.3.1. Results of proper waste treatment through collaboration between local and central governments

Concerns regarding the generation of dioxins from incineration facilities led to both lawsuits being brought by residents demanding the shutdown of incineration facilities and escalating protests against the construction of such facilities.

In response, a framework for countermeasures was set up that included the establishment of the “Fundamental Guidelines for the Promotion of Measures against Dioxins” in March 1999 as well as enactment of the Law Concerning Special Measures against Dioxins in July 1999. As a result of these approaches, the yearly amount of dioxins discharged from incineration facilities throughout Japan, which was estimated to be approximately 5,000g in FY1997, fell by some 98% to approximately 64g in 2004.

1.3.2. Creating a sound material-cycle regions through collaboration between local and central governments

Creation of the Block Grant System for Establishing the 3R Society (3R Block Grant)

In past years, the central government provided financial assistance to municipalities that were establishing general waste disposal facilities (waste incineration facilities, etc.) through respective subsidies. However, after discussions between central and local representatives, the government and ruling parties on November 26, 2004 reached an agreement on an overall vision of the Trinity Reform, which is to be achieved by FY2006. Based on this agreement, it was decided that central government subsidies for the establishment of municipal waste treatment facilities would be reformed into block grants, and that the “Block Grant System for Establishing the 3R Society” would be set up from FY2005.

Heretofore, measures to cope with dioxin generated through waste incineration were promoted through national subsidies toward the preparation of municipal waste treatment facilities. However, taking a new approach that involves further promotion of such measures and creation of an SMS at the regional level, the central government will aim to promote the establishment of regional and comprehensive systems and to shift toward the SMS at the regional and the national level utilizing the 3R block grants. It will strive to achieve this goal by actively cooperating with municipalities while at the same time taking advantage of their autonomy, originality and ingenuity.

Cases of regional efforts to build an SMS at the local level

In FY2005, 87 Regional Plans for Establishing a Sound Material-Cycle Society were approved by the Minister of the Environment. The following is a breakdown of these plans.

Number of “Regional Plans for Establishing a Sound Material-Cycle Society (SMS)” approved by the Minister of the Environment (As of March31, 2006)

Number of plans approved (Unit: No. of plans)

Hokkaido	6	Saitama	2	Gifu	4	Tottori	0	Saga	0
Aomori	0	Chiba	0	Shizuoka	2	Shimane	1	Nagasaki	1
Iwate	1	Tokyo	2	Aichi	3	Okayama	1	Kumamoto	0
Miyagi	1	Kanagawa	1	Mie	3	Hiroshima	6	Oita	1
Akita	2	Niigata	2	Shiga	1	Yamaguchi	2	Miyazaki	1
Yamagata	0	Toyama	1	Kyoto	1	Tokushima	0	Kagoshima	4
Fukushima	2	Ishikawa	2	Osaka	3	Kagawa	0	Okinawa	5
Ibaraki	2	Fukui	1	Hyogo	7	Ehime	4	Total	87
Tochigi	0	Yamanashi	0	Nara	0	Kochi	2		
Gunma	0	Nagano	1	Wakayama	1	Fukuoka	8		

Source: Ministry of the Environment

1.3.3. Future approaches

Further promotion of efforts to establish an SMS at the local level.

When attempting to establish an SMS at the local level, efforts promoting reduced consumption of natural resources and environmental burden must be made through appropriate pursuit of reduction, reuse and recycling of total material input, resource extraction, waste output and energy consumption. At the same time, it is necessary to substantiate these efforts in combination with approaches toward the mitigation of climate change

In particular, because biomass-based waste (such as waste from households) can be utilized as a resource to be recycled in a sustainable manner and serve as a substitute for fossil resources, its utilization as a source of energy should be pursued.

In order to substantiate approaches toward the establishment of an SMS at the local level, municipalities are required to build municipal waste treatment systems based on regional characteristics that cover waste reduction, sorted collection, recycling, heat recovery and final disposal. The central government is currently preparing guidelines and presenting perspectives to municipalities that assist them in smoothly implementing such approaches. These perspectives deal with not only the application of the 3Rs towards waste but also power generation from waste as a means of mitigating climate change, energy recovery (including biomass recovery) and use of biomass.

1.3.4. Formulation of Regional Fundamental Plans for Establishment of an SMS

In the Fundamental Plan for Establishing a Sound Material-Cycle Society (Fundamental SMS Plan)⁵, each local government is expected to formulate a unique fundamental plan based on regional conditions. This plan is for the purpose of establishing an SMS in the region.

With regard to the formulation of fundamental plans in 47 prefectures and 14 government-designated cities in FY2004, 14 governments have plans prepared (13 governments in FY2003), 23 governments have other plans prepared which cover related content (16 governments in FY2003), and 24 governments have no applicable plan prepared (31 governments in FY2003).

Preparation of fundamental plans to promote a Sound Material-Cycle Society (SMS plan) at local government level

Preparation	Number of local governments	Numerical targets established		Intention to prepare SMS plan		
		Yes	No	Intend to prepare SMS plan	Intend to prepare other plan covering related content	Not to prepare
1. Plan prepared	14	10	4	6	15	3
2. Other plan prepared which covers related content	23	20	3			
3. No applicable plan prepared	24	—	—			
Total	61	30	7			

Notes: Survey targets: 61 local governments (47 prefectures and 14 government-designated cities)

Survey period: As of March 31, 2005

Source: Documents of SMS planning division of the Central Environmental Council

⁵ Based on Article 15 of the Basic Law for Establishing the Recycling-based Society, this plan was prepared for the purpose of comprehensive and systematic promotion of the policies for establishing a material-cycle society. The plan approved by the Cabinet in March 2003.

2. Crosscutting approaches that support the three main trends

When promoting approaches in line with the three trends in waste management and recycling measures, it is important that the utilization of scientific technology and the mind to utilize the inherent value of goods be valued among all three trends. The following presents the overview of such crosscutting approaches.

2.1. Promotion of various technical developments

Recycling systems do not simply aim towards recycling; they also strive to promote the entire 3R spectrum, which includes reduction of the generation and the promotion of the reuse of circulative resources.

2.1.1. “EcoDesign” approach

Efforts to promote the use of EcoDesign—which involves a consistent approach to the design and manufacture of environmentally-friendly products from the product design to the disposal stages—are being seen in a variety of fields. Among them is the preparation of a product assessment manual by the home appliance industries.

Meanwhile, researchers in production/design technologies and other fields as well as managers and technicians from a broad range of industries came together in 2000 to form the “Union of EcoDesigners.” The members of this union share information and discuss the results of research and development, new technologies and actual cases of EcoDesign application in order to promote wide implementation of the EcoDesign approach.

2.1.2. Reduction technologies

Innovations in production structure and other developments contribute to reduce the weight of PET bottles and other items by roughly 10 to 40% in weight. Moreover, containers and packaging for soaps and detergents that are disposed of by the consumer are being reduced through the development of condensed and refillable products. And, in addition to making products lighter and minimizing packing materials, the home appliances industry is creating products that are easily decomposed.

2.1.3. Reuse technologies

Because, compared to recycling, reuse involves less additional energy consumption and environmental pollution, it takes priority over recycling. Reuse approaches begin with awareness and actions by each citizen that place value on things. It is true that such approaches in daily life have not been progressed substantially. Thus, in Japan, efforts are underway toward introducing movable dishwashers and promoting reusable cups at event halls.

2.1.4. Recycling technologies

In Japan, the systematization of recycling has spurred the development of waste treatment and recycling technologies as well as design and manufacturing technologies for environ-

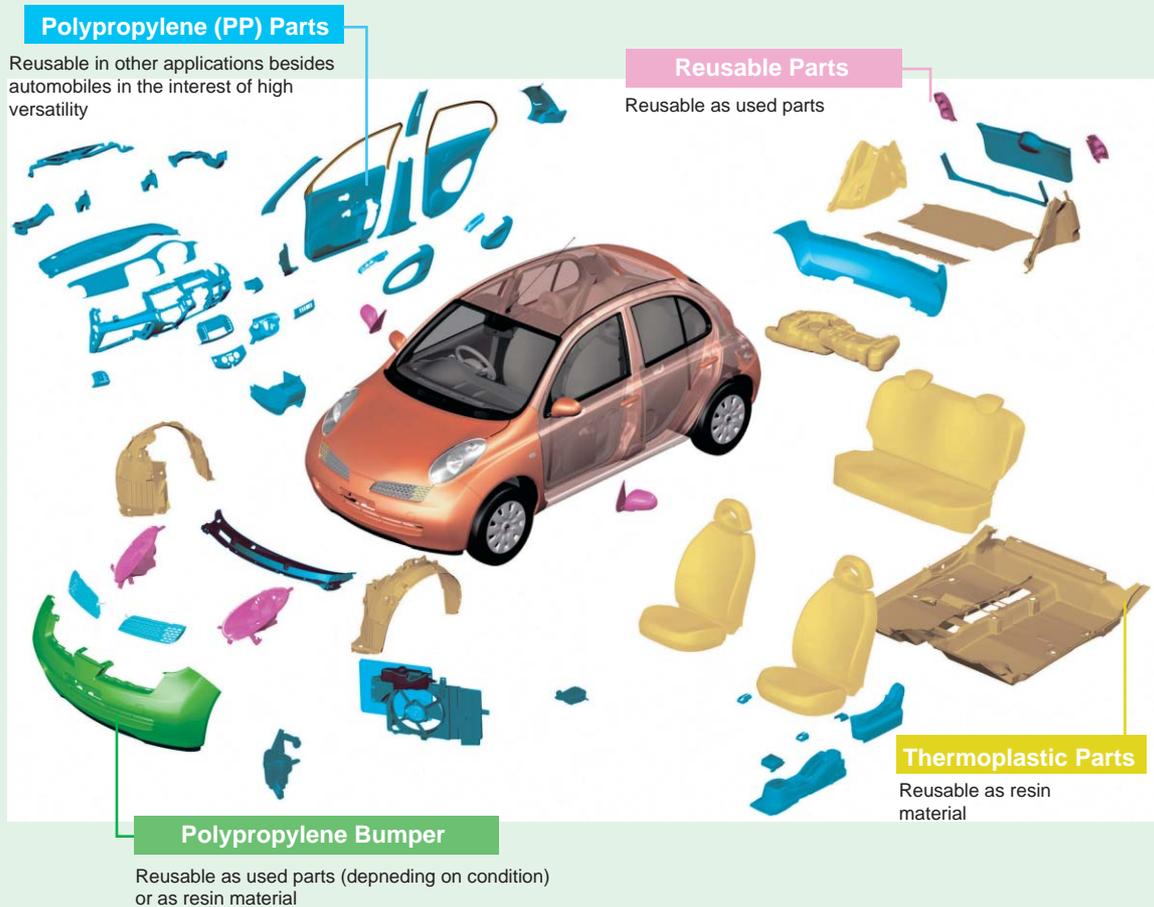
mentally-friendly products. These technologies extend gradually upstream in the product manufacturing process.

For example, at smelting facilities for nonferrous metals, advanced smelting technologies are being utilized to treat in a non-polluting manner substances that can cause environmental load and to recover and recycle rare metals.

Furthermore, practical application of so-called “bottle-to-bottle” recycling technologies-which chemically break down used PET bottles and return them to their basic ingredients-is being realized.

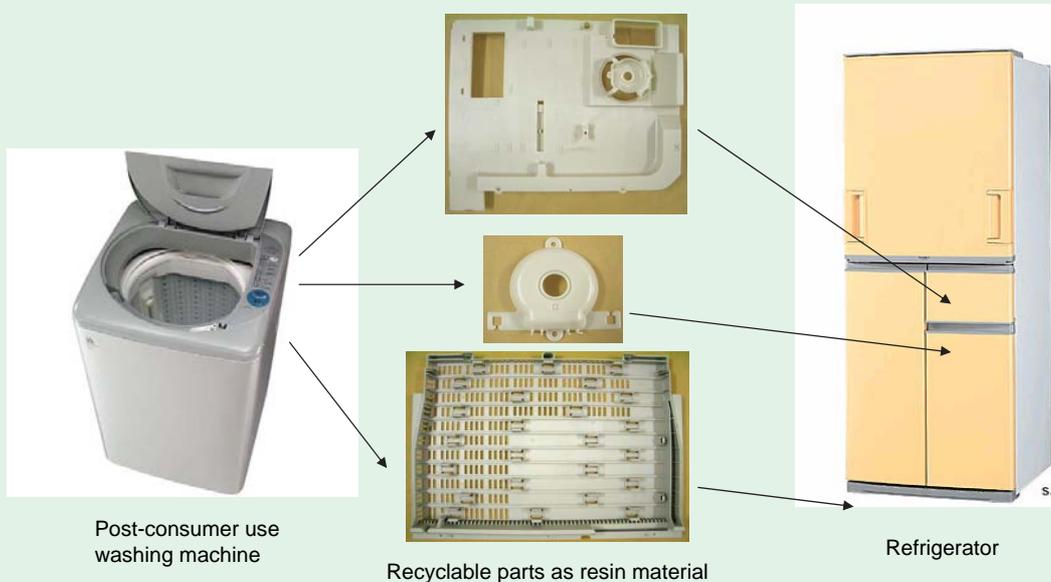
And, technologies for the manufacturing of easy-to-recycle products is also progressing, influenced to some degree by the Home Appliance Recycling Law and the End-of-life Vehicle Recycling Law.

Example of design for the 3Rs: Automobile



Source: Ministry of the Environment

Example of Design for the 3Rs : Washing machine



Source: Documents of SMS planning division of the Central Environmental Council

2.1.5. Incineration technologies

Major advancements have been seen in Japan's intermediate waste treatment technologies. For example, technologies regarding exhaust gases through strict management of incineration temperature are being practically applied, as are technologies to effectively utilize heat generated from incineration for electric power generation. The total amount of electric power generated by waste incineration facilities grew 1.5 times more during the four years from FY2000 to FY2003.

2.1.6. Final disposal technologies

Various efforts are being made with regard to the final disposal of residue that remains even after appropriate treatment and recycling. These include: 1) reducing the amount of final disposal, 2) ensuring that waste delivered into final disposal sites is harmless, 3) upgrading the structure of final disposal sites and 4) upgrading the treatment technologies of effusion from final disposal sites. Moreover, concerns about groundwater contamination caused by the elution of heavy metals have led to the introduction of double-layer seepage control sheets and closed-system disposal sites (roofed disposal sites that do not allow rainwater to penetrate).

2.2. New approaches toward lifestyle change

Establishment of an SMS requires more than just technology. It also needs each citizen to change his or her lifestyle based on the spirit of *mottainai*, which is based on the recognition of the value of things with a sense of respect as well as to make efforts towards specific activities that reduce environmental burden. This represents an important issue for the future.

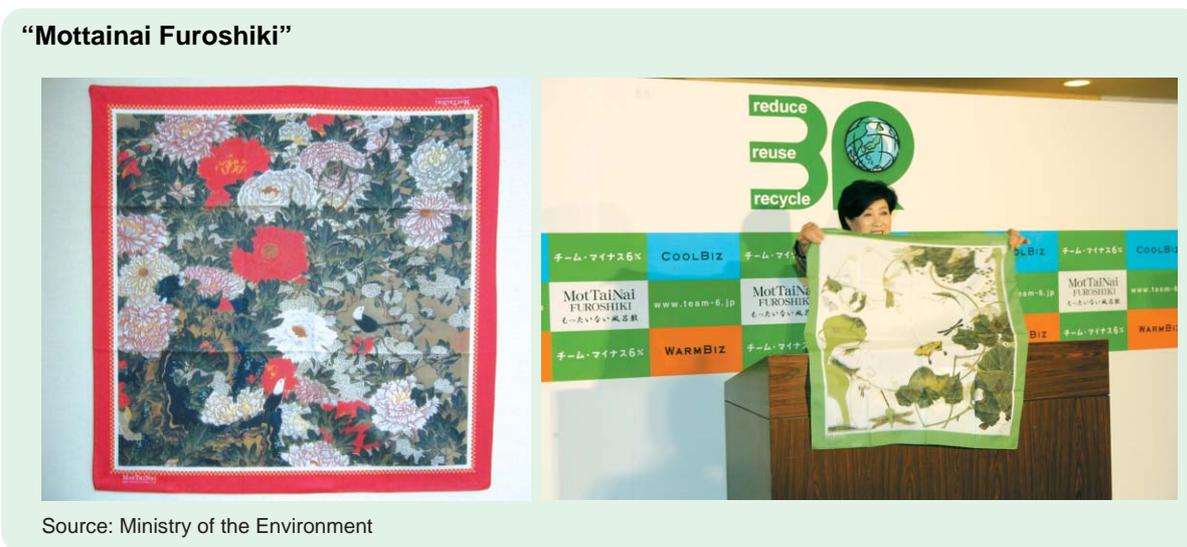
Given this perspective, it will be necessary to promote changes to new lifestyles that realize a society which is affluent as well as sustainable. Current endeavors in this direction

include the Slow Food movement in Europe and LOHAS (Lifestyles of Health and Sustainability) in the United States.

2.2.1. Lifestyle-based approaches, such as the popularization of the furoshiki

The volume of containers and packaging that are disposed as waste after a single use (such as wrapping materials and plastic shopping bags) reaches some 600,000 tons a year. Among approaches to address this problem is the utilization of the *furoshiki*, which is a traditional product of Japan. The *furoshiki* has many advantages; it can be reused numerous times, cannot be torn easily, and does not take up storage space. Furthermore, the colors and patterns of the *furoshiki* can be chosen in accordance with the user and the season. Moreover, it can wrap objects of any size and shape, from fruit to wine or sake bottles. Thus, the *furoshiki* can be described as a facet of Japanese culture that is rooted in the spirit of *mottainai*⁶ — that is, making full use of the inherent value of items.

Based on this facet of Japanese culture, the Ministry of the Environment is encouraging the shift to lifestyles that do not generate waste in daily activities. Taking *Mottainai Furoshiki* as a symbol of such a shift in lifestyle the Ministry promotes the popularization of the use of *furoshiki* and the carrying of reusable shopping bags.



Source: Ministry of the Environment

2.2.2. Approaches by citizens in their everyday lives

At the same time, activities that involve collecting recyclable items — old newspapers and magazines, used clothing, etc. — and then handing them over to resource collection businesses can be seen in all parts of the country. This is known as “community-based collection of recyclables” The amount of items collected in FY2003 reached approximately 2.83 million tons, which marked a 150% increase over ten years before. This kind of community-based collection of recyclables is playing a major role in reducing waste by thorough sorting and, according to FY2003 data, the amount collected in this way accounts for 30% of the total amount of recycled municipal waste (approximately 9.16 million tons).

⁶ The *mottainai* spirit is currently spreading internationally, spurred by its introduction at a ministerial-level meeting of the UN’s Status of Women Committee and other venues by Ms. Wangari Maathai, Assistant Minister for Environment and Natural Resources of Kenya and a Nobel Peace Prize Laureate. Ms. Maathai was impressed with this *mottainai* philosophy during a visit to Japan in 2005.

2.2.3. Enhancing education to improved the awareness of future generations

The Ministry of the Environment has prepared a “Junior Eco-Club Program” as an enjoyable means of supporting independent environmental activities and learning among children in their home regions. This program, which is implemented in collaboration with local governments, is a typical example of educational approaches aimed at those who will play a central role in the society of the future-our children.

A Junior Eco-Club can be registered simply by bringing together two or more children with an assisting adult (supporter). Once registered, the club is free to take a variety of actions based on the interests and concerns of the children, including town cleanup activities, nature observations along rivers, and activities aimed at experiencing the natural environment.

2.2.4. New developments in “green” purchasing activities

Approaches from the demand side are progressing based on the “Law Concerning the Promotion of Eco-Friendly Goods and Services by the State and Other Entities” (Law on Promoting Green Purchasing), which was enacted in 2000.

Referring to goods and services that are useful in reducing environmental burden as “eco-friendly goods, etc.,” this law stipulates that the central government and other organizations shall formulate and disclose policies toward the further procurement of eco-friendly goods, etc., promote measures toward establishment of specific targets, and publicly announce the extent to which the targets were achieved each fiscal year. In addition, it recommends that local governments and other organizations as well as businesses and private citizens endeavor to choose eco-friendly goods, etc., whenever possible. The details of eco-friendly goods, etc., are being deliberated by the “Commission for the Investigation of Specific Items for Procurement” that is made up of academic experts in the field and others. As of FY2005, 214 items in 17 classifications have been designated as eco-friendly goods, etc.

3. Current status and future targets of waste management and recycling measures based on approaches implemented to date

When looking at conditions in Japan thus far, what first becomes apparent is that the amount of waste generated has increased significantly in line with economic growth, particularly during the period of high economic growth. Even today, the amount of waste generated remains roughly unchanged. Consequently, waste reduction has become an important issue. A second point is that, as various recycling systems are strengthened, more and more resources are being used in a cyclical manner through recycling and other efforts. However, use of such resources has not necessarily reached its peak. Thus, considering the remaining capacity of final disposal sites and other factors, even further efforts will be required to reduce waste.

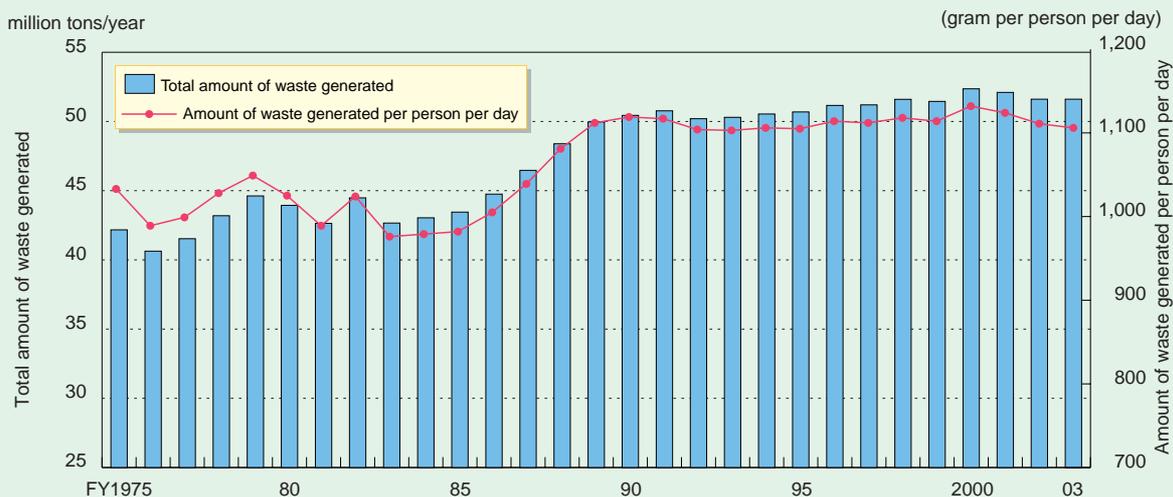
3.1. Arrangement of annual data pertaining to waste and recycling

3.1.1. Changes in the amount of waste produced

Changes in the amount of generated municipal waste

From FY1983 to FY1990, the amount of generated municipal waste increased rapidly. As a result, the Waste Management Law was revised in 1991 to add measures of waste reduction and to reinforce the responsibility of stakeholders. In later years — from FY1991 to FY2002 — the amount of municipal waste generated has remained roughly unchanged at a high daily amount.

Changes in amount of municipal waste generated



Source: Ministry of the Environment

Changes in the amount of industrial waste generated

Like municipal waste, the amount of industrial waste generated increased rapidly until FY1990. Since then, it has seen no major fluctuations, hovering around the 400 million-ton level. Thus, the amount of waste generated has remained roughly stable since the collapse of the bubble economy.

Changes in amount of industrial waste generated

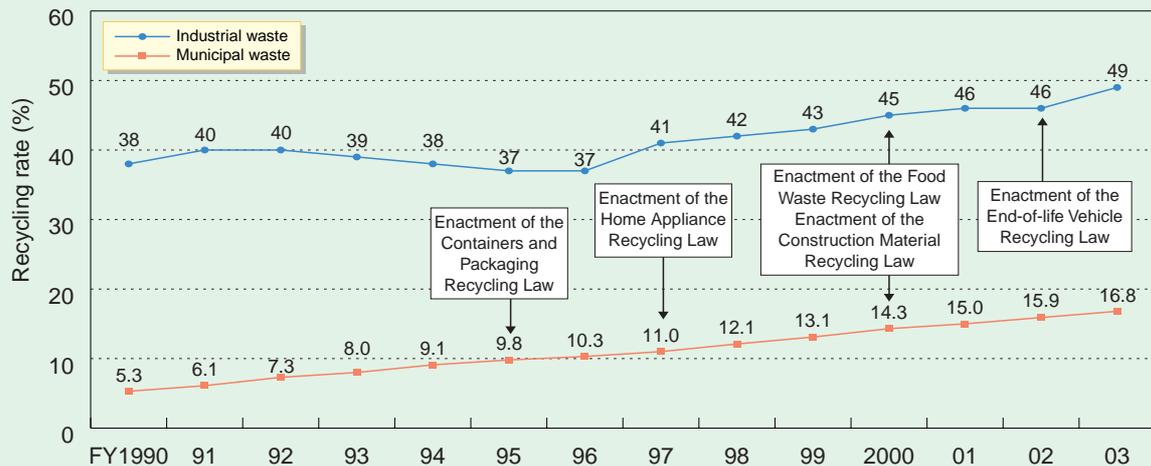


*The Method of calculating generated amount was changed in 1996.
Source: Ministry of the Environment

3.1.2. Changes in the recycling rate

The recycling rate for municipal waste has been rising steadily since FY1990. This trend is thought to have been largely influenced by a number of factors. Among them is the promotion of sorted waste collection by municipalities, based on the concept of sorting and recycling of municipal waste under the Waste Management Law revised in 1991. Another is the enactment of the Containers and Packaging Recycling Law in 1995. Meanwhile, while the recycling rate for industrial waste had declined slightly from FY1990 to FY1996, it has been rising steadily since FY1997.

Changes in the recycling rate

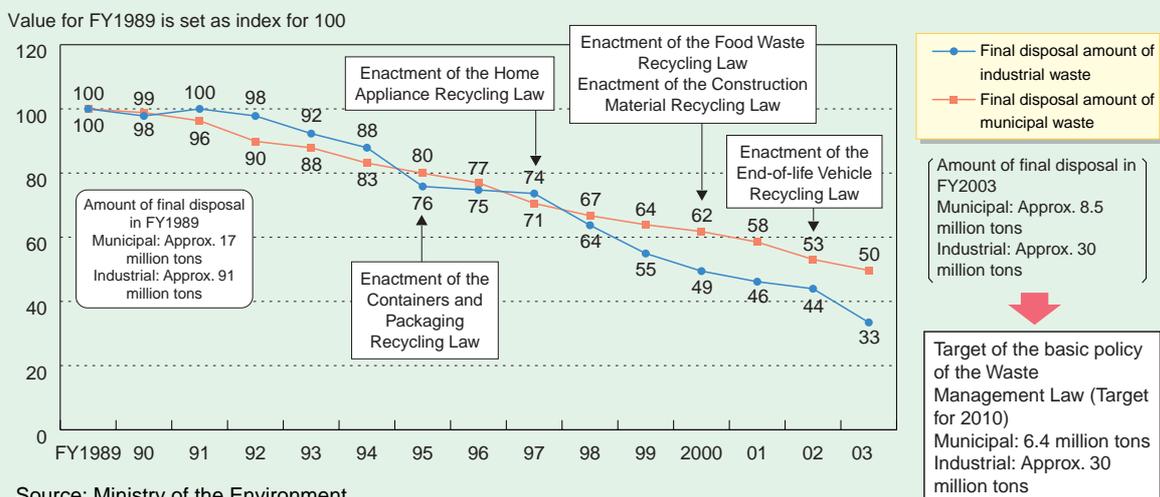


Source: Ministry of the Environment

3.1.3. Changes in final disposal amount

Efforts to reduce the final disposal amount of waste have made great progress over the past dozen years for both municipal waste and industrial waste. The final disposal amount for municipal waste in FY2003 was approximately 8.5 million tons; this is about half of the volume for FY1989, which was 17.0 million tons. Moreover, looking at industrial waste, the final disposal amount for FY2003 was approximately 30 million tons, which was approximately one-third of the volume in FY1989 (approximately 91 million tons).

Changes in amount of final disposal



Source: Ministry of the Environment

Amount of final disposal in FY2003
Municipal: Approx. 8.5 million tons
Industrial: Approx. 30 million tons

Target of the basic policy of the Waste Management Law (Target for 2010)
Municipal: 6.4 million tons
Industrial: Approx. 30 million tons

3.2. Framework and future targets for establishment of a sound material-cycle society

In Japan, a variety of frameworks have been prepared consistently based on the Fundamental Law for Establishing a Sound Material-Cycle Society (SMS). These include the Waste Management Law and various recycling laws. The government has been setting numerical targets through its Fundamental Plan for Establishing a Sound Material-Cycle Society (Fundamental SMS Plan) and making coherent efforts in order to effectively promote individual measures based on the plan.

3.2.1. Frameworks toward establishment of an SMS

Legal systems and basic fundamentals that are based on the Fundamental Law for Establishing an SMS

The Fundamental Law for Establishing an SMS provides a description of an SMS and sets waste generators' responsibility and extended producer responsibility as the basic concepts for measures. In addition, as directions toward realizing an SMS, the law sets up principles for cyclical use and disposal of circulative resources and establishes the obligations of concerned persons.

Targets under the Fundamental SMS Plan and the status of efforts to achieve them

Individual measures provided for under the Fundamental SMS plan are being implemented steadily following its approval by the Cabinet and report to the Diet in March 2001. The plan seeks to quantitatively ascertain the progress of activities by setting various numerical targets for material cycle flow (material flow) and efforts by stakeholders, setting FY2010 as the target fiscal year.

(1) Material flow indicators

Fundamental SMS plan establishes targets for three material-flow indicators: “input,” “output” and “cycle.”

For “input,” considering the fact that natural resources, etc., utilized in the society lead to environmental burden both in their extraction and after products' disposal, and that the amount which can be extracted is finite, the “extent of minimizing the amount of natural resource input” can be seen as an important indicator towards the establishment of an SMS. A specific indicator here is “resource productivity,” which is determined by dividing GDP (gross domestic product) by the amount of natural resource input.

Next, for “output,” the indicator used is “final disposal amount” (amount of waste disposed in landfills), which is directly linked to the issue of increasing pressure on securing enough final waste disposal sites.

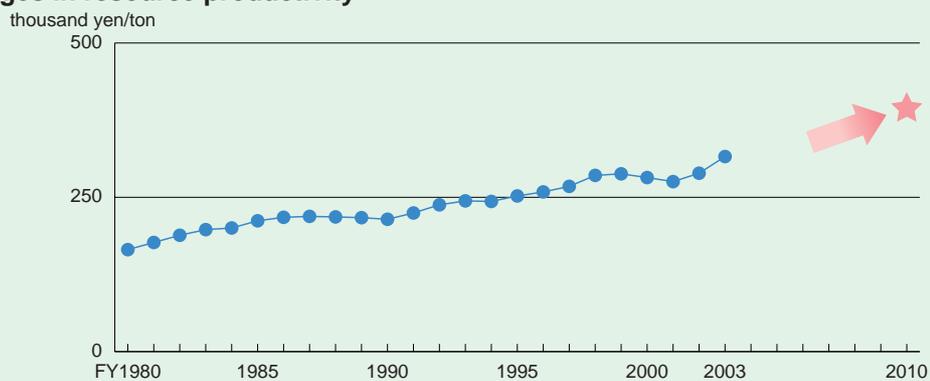
And finally, for “cycle,” “cyclical use rate” is incorporated as an indicator. The 3R approaches are important means of reducing the final disposal amount, and “cycle” is directly connected to these approaches. The “cyclical use rate” expresses the degree to which resources are used cyclically (“reused” or “recycled” in the Fundamental Law for Establishing a Sound Material-Cycle Society) among all resources consumed in society.

Numerical targets with a target year of FY2010 are set for each indicator. The following presents the status of how these targets are being achieved.

① **Resource productivity (GDP ÷ amount of natural resources, etc., invested)**

The resource productivity target for FY2010 is approximately 390,000 yen per ton (this is roughly twice the figure of FY1990 [approximately 210,000 yen per ton] and represents a roughly 40% improvement over FY2000 [for which the figure was approximately 280,000 yen per ton]). Resource productivity in FY2003 was 316,000 yen per ton.

Changes in resource productivity

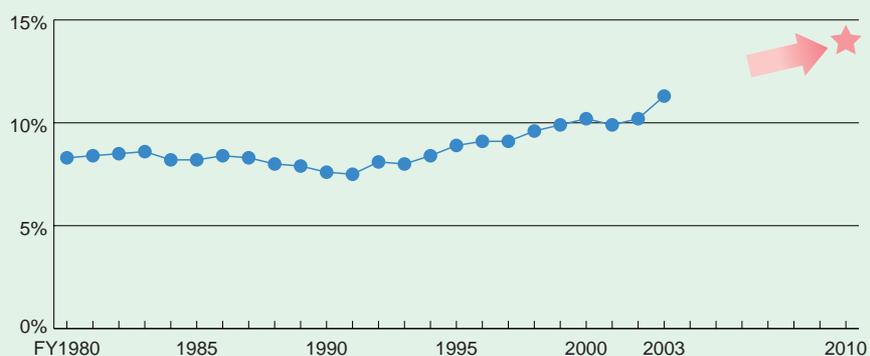


Source: Ministry of the Environment

② **Cyclical use rate (cyclical use amount ÷ [cyclical use amount + amount of natural resource input])**

The cyclical use rate target for FY2010 is approximately 14% (roughly 80% improved over the FY1990 figure [approximately 8%] and 40% improved over the figure for FY2000 [approximately 10%]). The cyclical use rate in FY2003 was 11.3%.

Changes in cyclical use rate

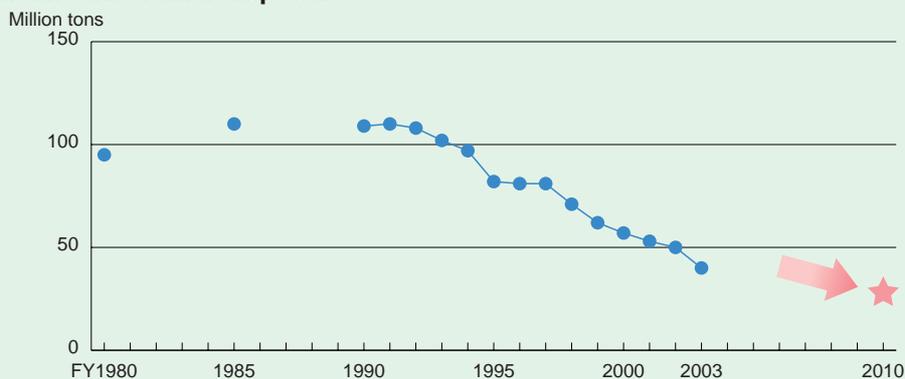


Source: Ministry of the Environment

③ **Final disposal amount (amount of waste landfill)**

The final disposal amount target for FY2010 is approximately 28 million tons (reduced roughly 75% from the FY1990 figure [approximately 110 million tons] and reduced roughly half from the figure for FY2000 [approximately 56 million tons]). The final disposal amount for FY2003 was approximately 40 million tons.

Changes in amount of final disposal



Source: Ministry of the Environment

(2) Approach indicators

The Fundamental SMS Plan establishes a variety of targets connected with efforts undertaken by stakeholders, such as those appearing in the following chart. Similar to material flow indicators, these indicators have FY2010 as their target year and gauge the progress of specific approaches taken by a range of stakeholders.

Targets of indicators for efforts undertaken

Target year: FY2010

Classification	Indicator for efforts being undertaken	Target of indicators
Change in awareness and behavior a material-cycle society	Percentage of citizens who are aware of the need to reduce waste, use items in a way consistent with a sound material cycle, and engage in "green" purchasing	Approx. 90% (as determined by the results of surveys)
	Percentage of citizens who take concrete actions in these areas	Approx. 50% (as determined by the results of surveys)
Reduction in the amount of municipal waste	Amount of municipal waste generation per person per day by households (not including items that are recovered through recycling)	20% reduction compared to FY2000
	Amount of municipal waste generation businesses per day (not including items that are recovered through recycling)	
Reduction in amount of industrial waste	Amount of final disposal	75% reduction compared to FY1990
Promotion of "green" purchasing	Implementation of organized "green" purchasing	All local governments: 100% Listed companies*1 : Approx. 50% Non-listed companies*2 : Approx. 30% (as determined by the results of surveys)
Promotion of environmental management	Public disclosure of environmental reports	Listed companies: Approx. 50% Non-listed companies: Approx. 30% (as determined by the results of surveys)
	Implementation of environmental accounting	
Expansion of sound material-cycle society business markets	Scale of market Scale of employment	Double scale of 1997

Notes

1. Listed companies: Companies listed on the Tokyo, Osaka, or Nagoya Stock Exchanges (First Section or Second Section)
2. Non-listed companies: Companies or places of business having 500 or more employees and not listed on any of the exchanges listed in Note 1

Source: Ministry of the Environment

3.2.2. Future prospects based on current conditions

Since FY2004, the Subcommittee for the Planning of a Sound Material-Cycle Society of the Central Environmental Council (subcommittee chair: Professor Kazuhiko Takeuchi of the University of Tokyo Graduate School) has reviewed and arranged issues pertaining to the progress of policy measures conducted under the Fundamental SMS Plan each fiscal year, in order to ascertain recent progress and to reflect the discussion for future implementation. These reviews incorporate interviews with stakeholders that include the central government, local governments and businesses.

Status of each indicator

Major issues discussed in the most recent deliberations (FY2005) pertained to the material flow indicators. Although these indicators have been showing increases over the past few years, new innovations in the indicators will be required to evaluate recent and future trends. Moreover, it will be necessary to strengthen further the linkage between specific measures and indicators to determine to what extent the results of government measures and top-caliber business approaches are contributing.

About the indicators of efforts by stakeholders, a further issue involves how to promote shifts in citizens' lifestyles and how to tie these shifts to specific activities, such as efforts to reduce the amount of waste generated by each person, as steps toward establishing an SMS.

Future prospects

Reviewing approaches taken thus far, if, for example, GDP (which indicates economic development) and the amount of waste generated by each citizen are compared with 1975 standards, the per-capita GDP shows dramatic growth, while the amount of generated waste generated shows little change.



Furthermore, as for final disposal amount as was demonstrated previously, the amount of industrial waste has fallen by approximately one-third while that of municipal waste has fallen by one-half compared to 1989.

However, from the standpoint of further reducing the amount of waste generated, this situation is not desirable, and further efforts must be made to secure final disposal sites.

Section 3

ESTABLISHMENT OF AN INTERNATIONAL Sound MATERIAL-CYCLE SOCIETY AND JAPAN'S ROLE

Today, worldwide demand for resources is increasing amid the progressing globalization of economic activity. Thus, waste management and recycling measures have come to take on international aspects.

The current trend toward the establishment of an international Sound Material-Cycle Society (SMS) is centered on the “3Rs.” The origin of this trend can be found in the “3R Initiative” that was agreed upon in 2004. The initiative provides that the members of the G8 shall take the initiative in promoting the 3Rs and lays out directions for 3R approaches. Following up on this development, a Ministerial Conference on the 3R Initiative was held in Japan in 2005, through which G8 members and representatives from other countries began actual approaches in their respective countries based on this initiative. Moreover, the Senior Officials Meeting on the 3R Initiative was held in Japan in 2006 for the purpose of promoting further approaches through information exchange and other activities pertaining to recent progress.

Based on these developments, this section will examine the necessity of establishing an SMS not only in Japan but also internationally and provide the basic philosophies behind its structure as well as Japan's roles toward the establishment of such a society in East Asia.

Ministerial Conference on the 3R Initiative



Source: Ministry of the Environment

Senior Officials Meeting on the 3R Initiative



Source: Ministry of the Environment

1. International circumstances surrounding circulative resources

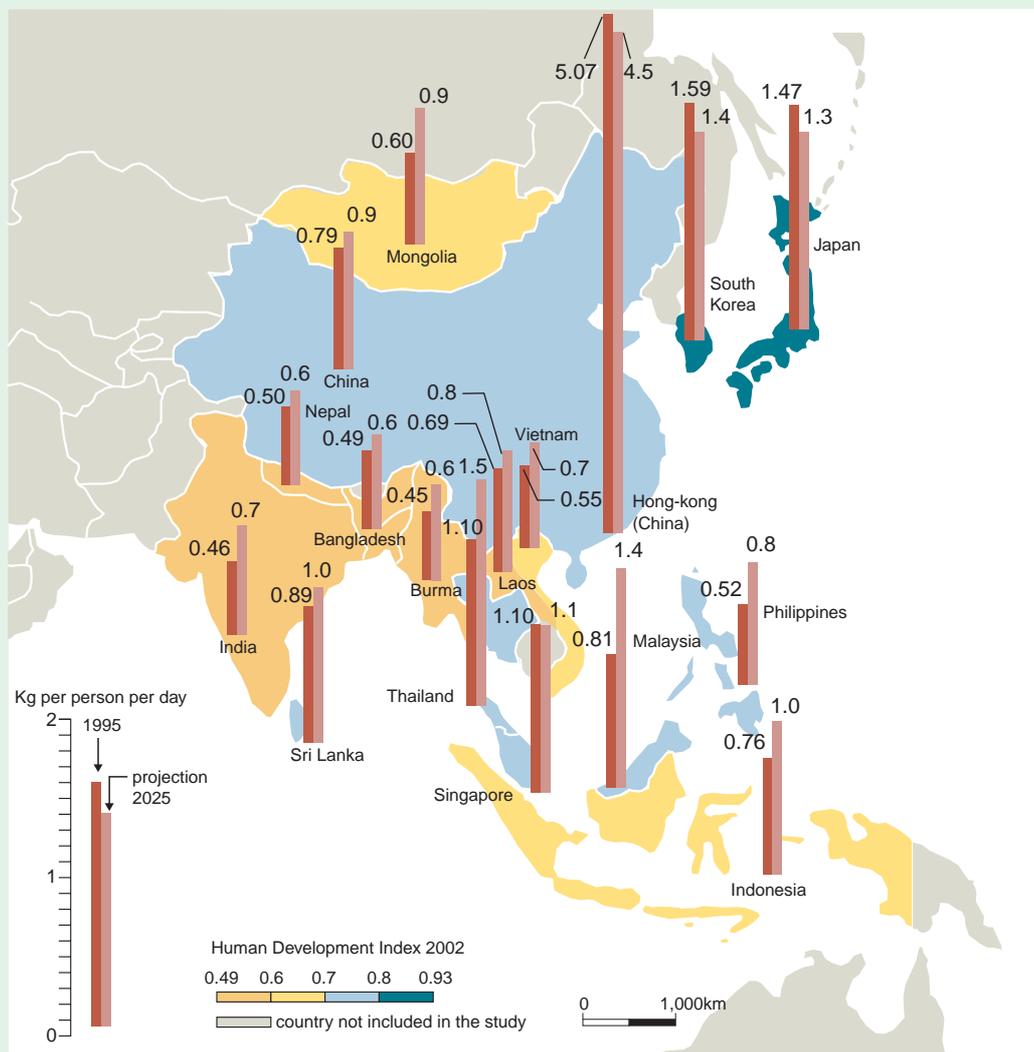
The amount of circulative resources generated is increasing at the global level due to international economic development and population growth, particularly in Asia. At the same time, the qualities of these resources are becoming more diverse. Moreover, international movement of circulative resources for recycling is increasing. There also exist concerns over environmental pollution and other problems related to these changes.

1.1. Increase of waste generation and diversification of waste characteristics at an international level

At the Ministerial Conference on the 3R Initiative held in Japan in April of 2005, all participating countries stressed that the world is facing the issues of growing waste amounts and unsustainable waste management. According to forecasts prepared by Okayama University, the amount of waste generated around the world-which stands at 12.7 billion tons as of the year 2000-will grow to approximately 19.0 billion tons in 2025 and to approximately 27.0 tons in 2050. Asia, in particular, will see especially dramatic increases in the amount of waste generated.

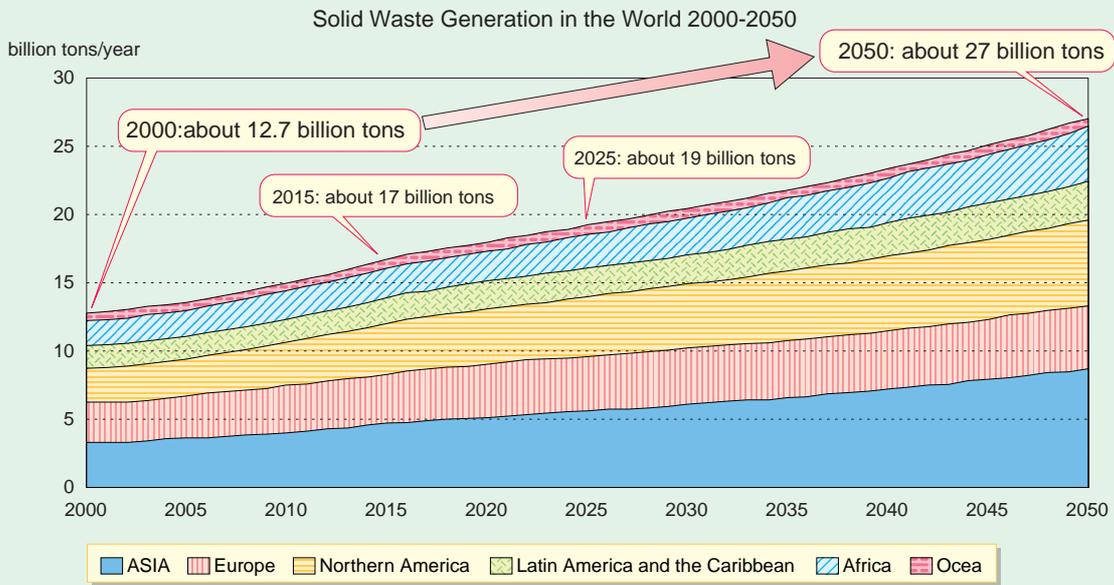
On a per-capita basis, the amount of waste generated in the East Asian countries is expected to increase substantially over the 30 years beginning from 1995 in countries other than Japan, South Korea, and Hong Kong.

Municipal solid waste generation amount per person per day and future predictions



Source: the Secretariat of the Basel Convention

Future predictions for global waste generation levels

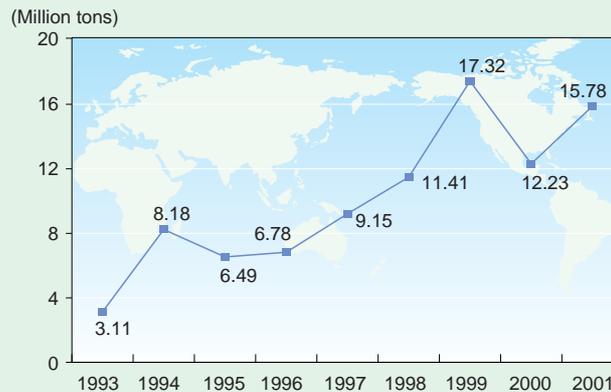


Source: Yoshizawa, Tanaka, et al. Research on estimation of the world waste generation amount and future prospects

1.2. Circulative resources moving across national borders

With regard to the transboundary movement of hazardous waste among countries that have ratified the Basel Convention, movement of such waste increased by more than five times during the eight years from 1993 to 2001.

Trend of transboundary movement of hazardous wastes

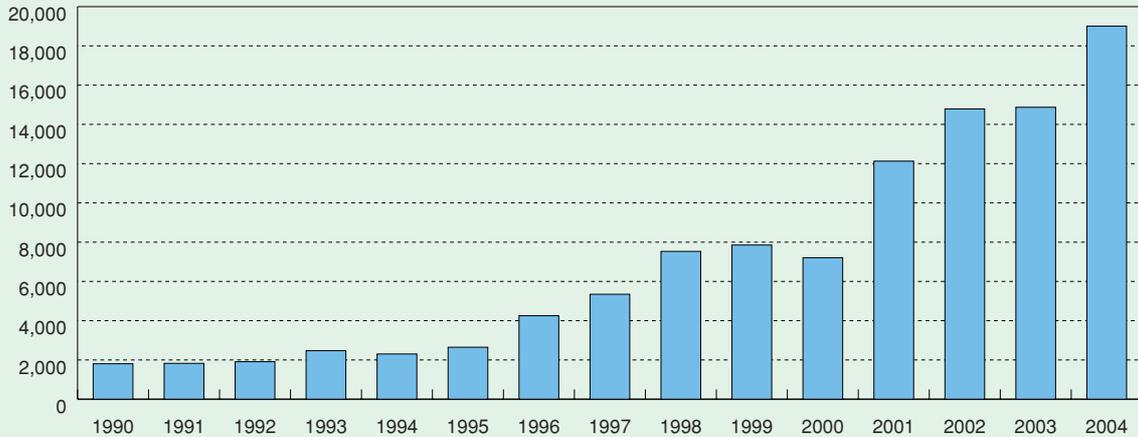


Source: the Secretariat of the Basel Convention

Moreover, the amount of circulative resources (iron and steel scrap, slag, wastepaper, etc.) exported from Japan increased by some 2.5 times during the five years between 2000 and 2004. The majority of the countries receiving these resources were located in East Asia. This trend is expected to continue into the future as rising demand for resources grows in line with rapid economic growth in Asia.

Quantities of circulative resources exported from Japan

(thousand tons)



Note: Circulative resources include waste plastics and slugs, etc.
Source: Documents of SMS planning division of the Central Environmental Council

1.3. Issues caused by increasing waste and transboundary movement of circulative resources

The situation regarding waste and circulative resources means that Japan is faced with a number of important issues.

The first issue involves the fact that, in terms of both finance and institutions, systems for appropriate treatment of waste cannot be prepared sufficiently to keep up with growing waste generation, diversification of waste characteristics, and increase of imports of circulative resources, particularly in developing countries. There are concerns that this situation will lead to environmental pollution. A related problem here is regulation of what is often called the “informal sector,” in which businesses that are not officially recognized handle waste.

View of a final disposal site in East Asia



Source: Ministry of the Environment

The second issue involves resource outflow due to the exporting of circulative resources and its impact on domestic waste management and recycling systems. Japan does not have any particular trade regulations pertaining to transboundary movement of non-hazardous wastes such as plastics. Consequently, the amount of such waste exported to China and other East Asian countries has been increasing in recent years. Such transboundary movement of circulative resources based on market principles leads to stagnation and hollowing-out of the domestic recycling industry. There are thus concerns that this will interfere with the stable maintenance and strengthening of Japan's domestic waste management and recycling systems, which the country has built over many years.

The third issue involves trade in used or recycled products. Used products — such as home appliances and vehicles — can be used cheaply in importing countries. While this practice on the one hand represents effective use of resources, but there are people who claim that, because such items become waste in a short period, it also includes an element of “transboundary movement of waste,” and this may interfere with industrial development in developing countries.

While it cannot be denied that such issues exist, transboundary movement of circulative resources may make reuse and recycling efforts cheaper and more efficient.

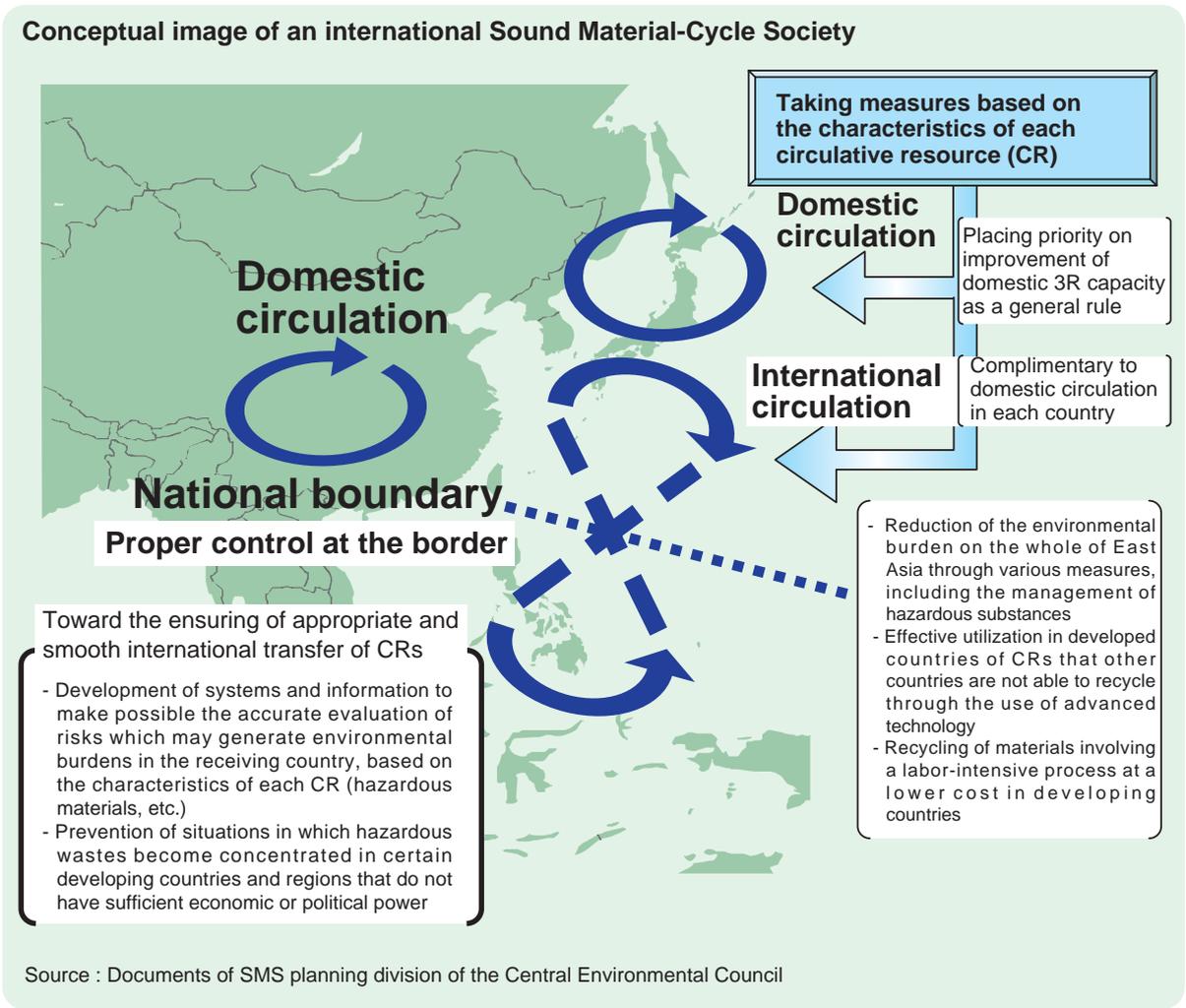
2. Establishment of an international SMS

In order to overcome global issues that surround waste and circulative resources, it is important to establish an SMS not only in Japan but internationally. This situation therefore demands that Japan make an active contribution to the international community even as Japan itself strives to attain such a society.

2.1. Basic concept behind establishment of an international SMS

The Fundamental Law for Establishing a Sound Material-Cycle Society defines “SMS” as a society that is realized by reducing the generation of waste from products, suitably utilizing waste generated as resources whenever possible and appropriately disposing of waste that cannot be used in any way, thereby controlling consumption of natural resources and reducing the environmental load.

An “international” SMS can be viewed as a society incorporating this definition at the global scale. However, if the scope of movement of waste and cyclical materials is considered, it is thought to be appropriate to put geographical emphasis on East Asia, which is understood here as Japan, South Korea and China as well as the countries of Southeast Asia.



2.1.1. Establishing a domestic SMS

The 3R approaches, which seek to curb the generation of waste from products, use waste generated as resources whenever possible, and appropriately dispose of waste that cannot be used in any way, should first be implemented in each individual country. In order to achieve this, each country is expected to work to improve its ability to appropriately dispose of waste by means that include recycling and reuse within its borders.

2.1.2. Enhancing and reinforcing activities to prevent illegal import and export of waste

After each country has established an SMS to the best of its ability, contribution toward reducing environmental load across all of East Asia will be achieved by having waste and circulative resources that cannot be handled in one country effectively used or processed in other countries. In order to realize this kind of transboundary movement of waste and circulative resources, it will be important to manage these items appropriately. Particularly, it will necessary to enhance and reinforce activities to prevent illegal exports.

2.1.3. Facilitating import/export of circulative resources

On the conditions that efforts by each country to establish an SMS domestically are made and that illegal import/export of waste is prevented, it will be possible to promote the effective use of waste as resources through complementary transboundary movement of

circulative resources. In that case, such movement will lead to suitable prevention of environmental pollution as well as contribute to environmental preservation across East Asia as a whole.

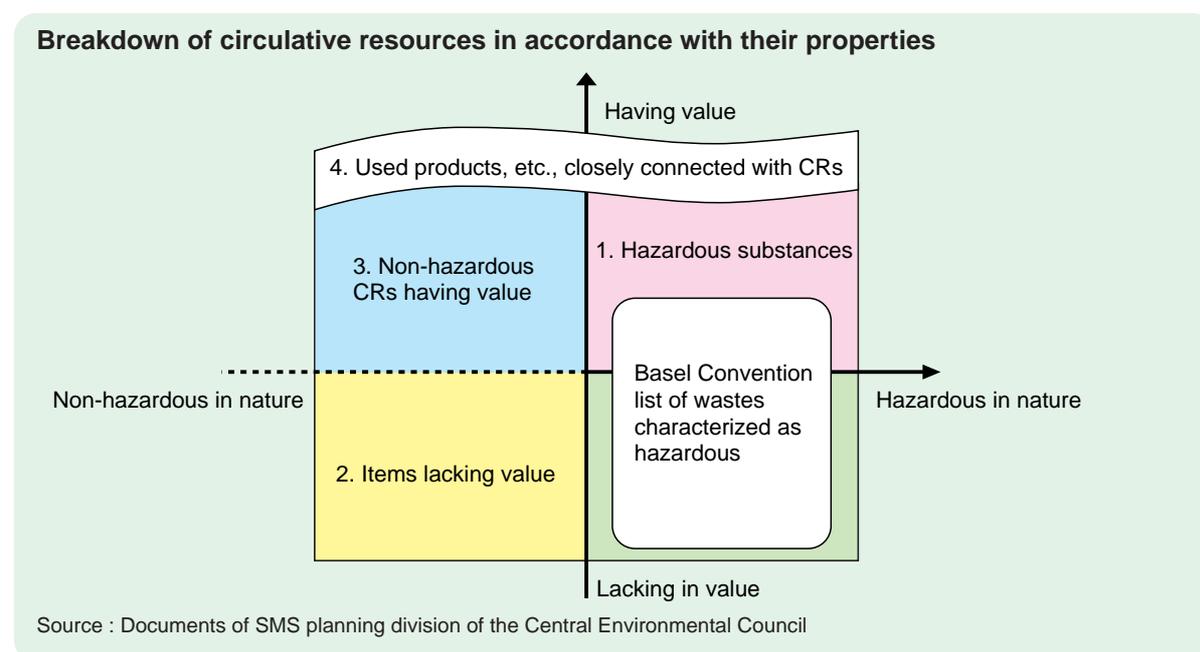
2.2. Responses that match the characteristics of circulative resources

Circulative resources require various means of handling. Thus, it is important to take a precise and reasonable approach to treat these resources based on their characteristics, such as economic value and environmental impact.

First, the treatment of hazardous things, such as hazardous waste under the regulations of the Basel Convention, should, in principle, be handled inside the country where the waste is generated. In the event that some hazardous waste cannot be properly treated in developing countries under current conditions and that it can be recycled through Japan's advanced recycling and treatment technologies, facilitating the import of such waste to Japan can be considered.

Next, valueless things (waste covered by the Waste Management Law) should, as a rule, be also treated inside the country where generated, since there are no economic incentives for their appropriate treatment. This applies even if the items do not contain hazardous substances. On the other hand, in cases where things are used as recyclable resources in the receiving country, even in the case of waste that has to be disposed of in landfill in Japan, efforts to facilitate the export of such items can be considered if their effective use as resources will certainly be promoted through their transboundary movement.

Finally, looking at used products and remanufactured goods, and in particular products that have the same safety and durability as ordinary products, contributions to the effective use of resources by promoting their reuse and recycling through international movement can be considered.



2.3. Formation of the East Asia Sound Material-Cycle Society Vision and Japan's role

At the Ministerial Conference on the 3R Initiative, Japan presented “Japan’s Action Plan for a World-Wide Sound Material-Cycle Society through the 3R Initiative” (also known as “Japan’s Action Plan to Promote Global Zero-Waste Societies”). Under this Action Plan, a “East Asia Sound Material-Cycle Society Vision” that can serve as a shared concept to promote the 3Rs in East Asia will be formulated by 2012. This Vision will serve as one form of international collaboration toward the international diffusion of zero-waste societies. Japan will need to play an important role in the formulation of this vision. The following are among the main approaches needed to fulfill this role.

2.3.1. Contribution to enhancing capacities in each country for cyclical use and disposal

In order to establish an SMS in each of the countries of East Asia, Japan will endeavor to realize an SMS domestically while also making a contribution to the improvement of East Asian countries’ capacities in terms of cyclical use and disposal of waste. Such cooperation will help them to appropriately treat waste and to promote the 3Rs. To achieve this, Japan will need to ascertain the needs of these countries through continuous policy dialogues using existing frameworks (such as the Tripartite Environment Ministers Meetings among China, Japan and Korea), while also cooperating to resolve the problems that each country is facing. One approach that can be considered here is sharing Japan’s accumulated experience in waste management and recycling policy as valuable information for East Asian countries.

Furthermore, in order to realize SMSs in these countries, it will be necessary to formulate plans and visions for 3R approaches. Japan can achieve significant results toward this end by utilizing knowledge gained from its highly-developed technologies and systems to support the formation of such plans and visions. One example of assisted efforts is currently underway in Vietnam, where 3R promotion strategies at the national level are being formulated.

Moreover, Japan will assist in the development of human resources and organizations through existing technical cooperation and training schemes (such as those provided by the Japan International Cooperation Agency [JICA]) to ensure appropriate waste treatment and to promote 3R technologies and systems. In addition, it will be important to establish networks of researchers and experts for the sharing of scientific knowledge and technical information, which constitutes the foundation for planning and implementing of 3R policies. It will also be important to promote approaches by local governments, NGOs and NPOs, which will play important roles towards the creation of SMS.

This kind of support for developing countries is exemplified by “projects on the environmentally-sound management of e-waste in the Asia-Pacific region” that are being promoted under the Basel Convention. Lead and other hazardous substances are included in waste generated from electronic and electrical appliances (e-waste), which include discarded home appliances, such as televisions, personal computers, and refrigerators. Despite this,

the amount of e-waste generated has been increasing in recent years, as have imports/exports of e-waste for the purpose of recycling and disposal. The projects under the Basel Convention have aimed for the environmentally-sound management of this e-waste. In November of 2005, a workshop, as a kickoff to these projects, was held in Tokyo under the joint sponsorship primarily by the Ministry of the Environment of Japan and the Secretariat of the Basel Convention. This workshop featured discussions on information sharing and country-specific projects pertaining to e-waste and resulted in an agreement on an action plan for project implementation.

2.3.2. Approaches toward the prevention of illegal imports/exports of circulative resources

Next, approaches to prevent illegal imports and exports of such circulative resources including hazardous waste are required. Such approaches include five factors: 1) improved efforts to ascertain and analyze international trends involving circulative resources, 2) clarification of regulated goods, 3) improvement of traceability, 4) enhancement of networks for the prevention of illegal imports and exports and 5) protection of Japan's intellectual property rights. Japan will thus need to make an international contribution by implementing policy measures as mentioned below.

For example, in order to ascertain and analyze recent international trends surrounding circulative resources, one possibility is the study of more effective frameworks that can identify used appliances and circulative resources for recycling by developing international goods codes under the Harmonized Commodity Description and Coding System currently used in import/export management.

Moreover, activities to ensure appropriate importing and exporting of individual goods are required. When clarifying regulated goods, one specific activity could be to formulate guidelines for narrowing gaps in criteria among countries on items regulated under the Basel Convention. And, in order to increase traceability, it will be necessary to study the sharing of electronic data on movement, storage, recycling, and disposal of circulative resources among East Asian countries as well as the construction of a system for region-wide management.

Japan proposed the “Asian Network for the Prevention of the Illegal Transboundary Movement of Hazardous Wastes” in 2005 and is currently promoting efforts to prevent illegal imports and exports in collaboration with Asian countries and others. In the future, it will be necessary to enhance and expand these approaches further. At the same time, Japan will need to raise Japanese businesses' awareness regarding the problem of encroachment of intellectual property rights so that Japan's highly advanced waste management and recycling technologies are not illegally infringed upon overseas.

2.3.3. Approaches to facilitate imports and exports of circulative resources

Given the fact that differences exist with regard to how each country views hazardous waste identified under the Basel Convention, approaches toward facilitating the import and export of circulative resources could include the construction of an international data-

base of hazardous waste to be shared throughout Asia as well as a study on reducing trade barriers against remanufactured goods with a view to positive impacts on preservation of the environment. At the Ministerial Conference on the 3R Initiative, the importance of sharing experiences between developed and developing countries and of establishing common criteria was recognized for distinguishing regulated waste from wastes that will become circulative resources for recycling.

Furthermore, using its highly developed 3R technologies, Japan will need to study policy measures for trade facilitation that contribute to environmental preservation, including measures regarding the acceptance of hazardous circulative resources that cannot be appropriately treated in developing countries. Such approaches should be based on the standpoints of promoting the 3Rs internationally, reducing environmental load in the entire Asian region and the preservation of Japan's scarce valuable resources.

It should be mentioned that the promotion of the abovementioned approaches will require full understanding of needs in developing countries, consideration of impacts on domestic waste treatment and recycling systems, and consistency with the global trade system under the World Trade Organization (WTO) and the Economic Partnership Agreement, etc. Furthermore, it is thought that approaches toward establishment of both domestic and international SMSs can be further enhanced through synergetic effects from policy measures in other areas of environmental policy, such as measures to mitigate climate change.

3. Promoting the 3R Initiative

The 3R Initiative—an environmental initiative proposed by Japan—also serves as a guidepost for the establishment of SMSs at both the domestic and international levels. The 3R Initiative was presented to the G8 Sea Island Summit of June 2004 by Prime Minister Junichiro Koizumi, where it was approved as a new G8 initiative.

A ministerial meeting for the commencement of the 3R Initiative (Chair: Minister of the Environment of Japan Yuriko Koike) gained the participation of ministers and other officials from 19 countries including the members of the G8 and the European Commission as well as the representatives of four relevant international organizations. Held in Tokyo in April 2005, the meeting resulted in an agreement to enhance and strengthen further the 3R approaches under international cooperation.

Based on these developments, a senior officials meeting was held from March 6 to 8 of 2006, as a follow-up meeting to the 3R Initiative. Held in Tokyo, the meeting was sponsored by the Government of Japan. The meeting was attended by the heads of concerned departments and other government officials from 20 countries, including members of the G8 and the European Commission as well as seven international organizations. The meeting assisted in enhancing information sharing through presentations by each country and agency on its efforts to promote the 3Rs (see attached table) as well as examples of good practices undertaken since the Ministerial Conference on the 3R Initiative.

Policy measures in Japan recognized as good 3R practices at the Senior Officials Meeting on the 3R Initiative can be exemplified by the electronic manifest system for industrial waste management implemented, efforts to prepare legal systems on the 3Rs and recycling, the incorporation of extended producer responsibility and the setting of clear targets for waste reduction and recycling. It was pointed out that the keys to promoting these approaches include comprehensive efforts that cover both the upstream side (at the stage of manufacturing design and manufacturing) and the downstream side (at the stage of waste treatment and disposal), efforts to recycle and recover heat, and frameworks for effective and appropriate cost sharing for the 3Rs. It was further noted that the 3Rs can be integrated into the concept of environmentally-sound material management.

As can be seen in these approaches being taken by countries and international organizations, momentum to promote the 3Rs is increasing in international society, with other countries and organizations showing appreciation for this Initiative launched by Japan. In the run-up to 2008, when it hosts the G8 summit, Japan will continue to advance the 3Rs by enhancing and reinforcing its domestic 3R policy, while at the same time playing a leading role regarding the 3Rs at the international level.

Table : Current situation of 3R activities in participated Countries in the Senior Officials Meeting on the 3R Initiative

Country	Current Situation of 3R Activities
Brazil	A draft bill on a National Solid Waste Policy containing 3R components is currently under consideration by the National Congress. The challenges standing out in particular are developing segregated waste collection systems and recycling products and wastes and ensuring environmentally sound waste disposal.
Canada	Responsibility for waste management is shared among all levels of government. 3R-related initiatives are integrated with broader national goals for increased competitiveness, enhanced well-being, and a well-preserved natural environment.
China	China has been promoting policies blending market promotion, regulatory control and public participation for the development of a circular economy, with cleaner production and waste management integrated into legislation. Progress has been made in pilot projects at the industrial level, industrial demo-parks and construction of circular economy pilot provinces and cities.
European Commission	The European Union has set a framework for national governments on (1) the sustainable use of resources, (2) waste prevention, (3) recycling, (4) eco-design, and (5) eco-innovation. The EC, together with UNEP, plans to establish an international panel on the sustainable use of natural resources.
France	France developed specific measures on waste prevention mainly based on an EPR scheme. The National Plan for Waste Prevention was adopted in February 2004. As a point of this Plan, a campaign has been promoted to give practical and accessible examples to the public.
Germany	German waste policy emphasizes two points, source separation and extended producer responsibility. Enforcement of a landfill ban for untreated wastes began in June 2005. Germany's waste management policies also have significant linkages with climate change-related issues. Along with sustainable materials management, Germany highly emphasizes materials and energy recovery.
India	Policies and strategies are designed to resolve conflicts arising between developmental and environmental goals. The draft National Environment Policy of 2005, which incorporates the concept of the 3Rs, is currently under consideration.
Indonesia	Major issues regarding waste include a lack of awareness, limited budgets, a lack of compliance, and limited access to waste treatment facilities for micro, small and medium enterprises (MSMEs). A coherent national strategy is seen as essential to enhance coordination, synergy, efficiency and effectiveness.
Italy	Separated collection has steadily improved; there are dramatic regional differences within the country. Italy was able to meet the EU 2002 objectives in achieving packaging recycling for glass, paper, steel, aluminum, wood, and plastic; EU 2008 objectives are already almost achieved; the partnership with enterprises in the packaging consortia represents an interesting best practice regarding the 3Rs and producer responsibility.
Japan	Japan has made substantial progress in achieving greater recycling rates while reducing its final disposal amount and its dioxin emissions. Japan has carried out several initiatives to promote the 3Rs such as the establishment of grants at the local level, amendment of the "Containers and Packaging Recycling Law," and launching a multistakeholder forum for the promotion of 3R activities.
Malaysia	"The National Recycling Programme 2000" was launched in 2000. "The National Strategic Plan for Solid Waste Management 2005" is currently being finalized. Waste minimization is recognized as one of the priorities in Malaysia. Strategies are built on three pillars: enhancement of awareness, strengthening of partnerships and development of institutions.
Mexico	In 2006, regulations were enacted to facilitate implementation of a general law on the 3Rs adopted in 2004. Activities implemented over the previous year include (1) a Crusade for Cleaning Mexico program, (2) a management plan for used oil to ensure environmentally sound management, (3) use of hazardous wastes in cement kilns, (4) PET recycling, with new facilities processing PET to produce fiber and plastic woods, and (5) recovery of dust from the smelting industry.
Philippines	"The Ecological Solid Waste Management Act" specifies the following activities: (1) achievement of a recycling rate of 25% or above by 2006 and increasing thereafter, (2) segregation at source and collection, (3) establishment of material recovery facilities, (4) eco-labeling, (5) green procurement.
Republic of Korea	The following have promoted a sound material-cycle economy: (1) volume-based waste collection, (2) EPR, implemented with mandatory targets for product recovery and recycling, (3) regulations for promoting recycling of construction waste, (4) reduction of food waste, implemented through an NGO campaign.
Russian Federation	Waste minimization is important. Russia has made progress in waste utilization from weapons, bio-mass utilization, waste incineration and energy recovery. 3R will be an important element of the G8 process and will contribute to improving energy efficiency.
Singapore	Singapore's strategy towards Zero Landfill and Zero Waste includes (1) volume reduction through incineration, (2) promotion of recycling in industry and in the community, (3) the reduction of waste going to landfills and (4) promotion of reusable bags to reduce usage of plastic bags and introduction of a packaging agreement.
South Africa	A waste management bill is currently under development. The South African government has promoted various 3R-related measures over the past year, including encouraging EPR, establishing a national recycling forum, promoting cleaner production, expanding industrial waste exchanges between generators and recyclers, and enhancing integrated waste management.
Thailand	Thailand has developed a national integrated waste management plan. 3R activities have progressed substantially among industries, NGOs, and civil society. Various international technical cooperation programs are being implemented. Thailand has several good practices addressing the 3Rs, including take-back schemes for end-of-life products, waste exchange programs and a green purchasing network.
United Kingdom	The UK is reviewing its waste strategy of 2000. The government has set statutory performance standards for composting and recycling, introduced a landfill allowance trading scheme, set up an independent body to promote markets for recyclables and enacted a landfill tax for industrial waste.
United States of America	The USA is promoting the elimination of barriers impeding the trade of remanufactured products, local, state and federal recycling programs, renewable and clean energy technologies, and collaboration with industry, NGOs, and international organizations. U.S. commitments towards the 3R Initiative include partnerships with industry targeting specific waste streams.
Viet Nam	The Law on Environmental Protection addresses the import of scrap materials, economic instruments including preferential taxation, technology transfer and promotion of environmental industry. "The National Strategy for Environmental Protection" set various targets for 2010 and 2020. The National 3R Strategy is being developed in collaboration with JICA, UNCRD, IGES/Ministry of Environment of Japan and ADB.

Source : Compiled by the Ministry of the Environment from the documents of Senior Officials Meeting on the 3R Initiative



Stop Global Warming

Team minus 6%

Ministry of the Environment
Planning Division Waste Management and Recycling Department

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