

## Topic 2. Legislation and Government Policy Pertaining to Waste

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## 1 History of Waste Management in Japan

Amid the various steps toward establishing a modern society - namely improving public health, preserving living environments, and establishing a sound material-cycle society -, Japan has confronted many waste management-related problems associated with economic growth, industrialization, urbanization, and changing lifestyles among other factors, and on each occasion has established or amended legislation to support countermeasures to deal with these problems.

This section introduces the history of waste management during the modernization process, specifically how Japan dealt with issues and needs of times through legislation. This section also includes an overview of active legislation pertaining to waste management.

### 1.1 Changes in Social Conditions in Japan, and Issues and Legislation Pertaining to Waste Management

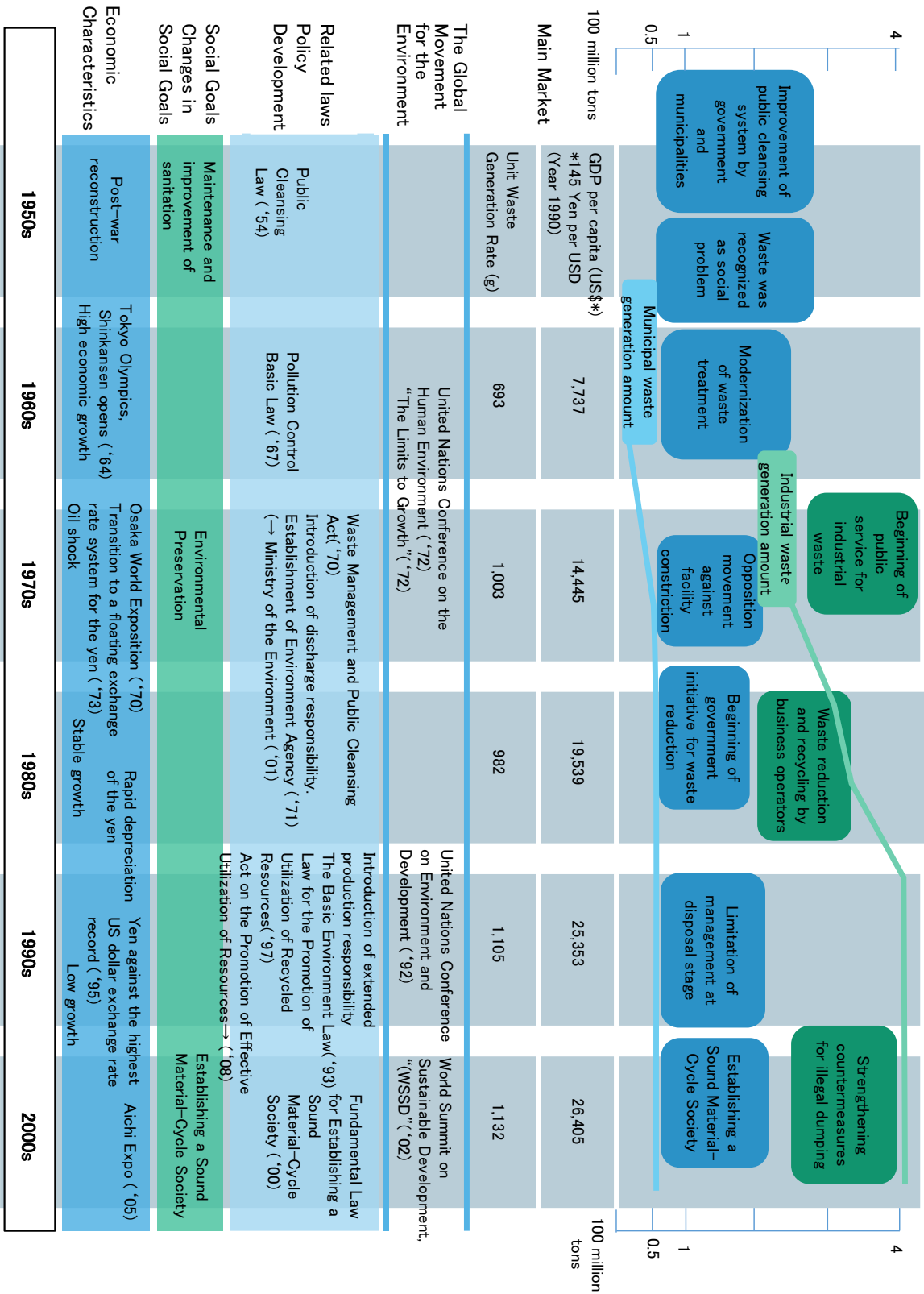
Japan has confronted many issues stemming from drastic changes in the lifestyles and on each occasion, Japan has established necessary countermeasures and legislations in an effort to resolve them, which has formed today’s modern society.

Since the late 19<sup>th</sup> century, the social environment in Japan has changed as modernization progresses, and residents’ lifestyles and living environments have changed accordingly. Although Japan has successfully created a highly convenient living society, it has also confronted many waste management-related issues from one era to the next. “Waste management” is also referred to as “waste treatment” in the law, and the two are synonymous.

**Table 2-1 Changes in the Social Situation in Japan and Issues and legislation Related to Waste Management**

Period	Major Issues	Laws Enacted
Post-war period to the 1950s	<ul style="list-style-type: none"> <li>Waste management for environmental sanitation</li> <li>Maintenance of a healthy and comfortable living environment</li> </ul>	<ul style="list-style-type: none"> <li>Public Cleansing Act (1954)</li> </ul>
1960s to 1970s	<ul style="list-style-type: none"> <li>Increase in the amount of industrial waste and emergence of pollution problems as a result of rapid economic growth</li> <li>Waste management for environmental protection</li> </ul>	<ul style="list-style-type: none"> <li>Act on Emergency Measures concerning the Development of Living Environment Facilities (1963)</li> <li>Waste Management Act (1970)</li> <li>Revision of the Waste Management Act (1976)</li> </ul>
1980s	<ul style="list-style-type: none"> <li>Promotion of the development of waste management facilities</li> <li>Environmental protection required for waste management</li> </ul>	<ul style="list-style-type: none"> <li>Wide-area Coastal Environment Development Center Act (1981)</li> <li>Private Sewerage System Act (Johkasho Law) (1983)</li> </ul>
1990s	<ul style="list-style-type: none"> <li>Waste generation control and recycling</li> <li>Establishment of various recycling systems</li> <li>Management of hazardous substances (including dioxins)</li> <li>Introduction of a proper waste management system to cope with diversification in the type and nature of waste</li> </ul>	<ul style="list-style-type: none"> <li>Revision of the Waste Management Act (1991)</li> <li>Act to Promote the Development of Specified Facilities for the Disposal of Industrial Waste (1992)</li> <li>Japanese Basel Act (1992)</li> <li>Basic Environment Act (1993)</li> <li>Containers and Packaging Recycling Act (1995)</li> <li>Revision of the Waste Management Act (1997)</li> <li>Home Appliance Recycling Act (1998)</li> <li>Act on Special Measures against Dioxins (1999)</li> </ul>
2000-	<ul style="list-style-type: none"> <li>Promotion of 3R measures aimed at the establishment of a sound material-cycle society</li> <li>Enhancement of industrial waste management</li> <li>Enhancement of illegal dumping regulations</li> </ul>	<ul style="list-style-type: none"> <li>Basic Act for Establishing a Sound Material-Cycle Society (2000)</li> <li>Construction Recycling Act (2000)</li> <li>Food Recycling Act (2000)</li> <li>Revision of the Waste Management Act (2000)</li> <li>Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes (2001)</li> <li>Automobile Recycling Act (2002)</li> <li>Act on Special Measures concerning Removal of Environmental Problems Caused by Specified Industrial Wastes (2003)</li> <li>Revision of the Waste Management Act (2003 to 2006, 2010)</li> <li>Small Home Appliance Recycling Act (2013)</li> <li>Revision of the Waste Management Act (2015, 2017, 2020)</li> <li>Plastic Resource Circulation Act (2022)</li> </ul>

Source: Ministry of the Environment “History and Current State of Waste Management in Japan” (2017)



Source: Based on the Ministry of the Environment “Japan’s Experience in Promotion of the 3Rs” (2005)

Figure 2-1 History of Waste Management in Japan

**(1) Japanese Society Prior to Modernization (up to the Early 19th Century)**

Prior to Japan's modernization in the mid-late 19th century, the country had very little contact with other countries, and its industrial structure was based on agriculture, mainly the rice cultivation. Rice, vegetables, and other crops were generally consumed where they were produced. Additionally, because farmers in rural areas collected and used kitchen waste, sewage, ash, and other valuable waste from cities to effectively complement and improve soil in rice and vegetable fields, cities formed strong relationships with surrounding rural areas, and zones for regional circulation were developed. Consequently, as kitchen waste and sewage did not remain in urban areas it was possible to create such sanitary urban environments with relatively few infectious diseases occurring.

During this era, important efforts were undertaken to establish a sound material-cycle society. In the absence of modern industrial activity, tradespeople made many things by hand, so people treasured what they had, and merchants not only reused things but also repaired them frequently.

Waste management during this era involved collection, transport, and disposal, and under the established system, officially certified contractors collected the waste, and private entities disposed of it in designated locations. Laws and regulations prohibited the dumping of waste outside designated locations, and efforts were made to convert land where waste was disposed of into new rice fields.

**(2) From the Advent of Modernization to the Assurance of Public Health (Late 19th Century and Early 20th Century)**

When the push towards modernization began amid changes to Japan's system of government in the late 19<sup>th</sup> century and early 20<sup>th</sup> century, people and goods moved around more freely, and an influx of Western culture inspired people to adopt Western lifestyles. This caused an increase in both the amount and types of waste generated, and unsanitary conditions began to appear in various places as people exhibited new behaviors such as disposing of waste in places like vacant land.

Additionally, the mismanagement of dumping site lead it to become the breeding grounds of flies, mosquitos, and mice, as well as the frequent exchange with foreign countries brought cholera, pestilence, and other infectious diseases from abroad, resulting in outbreaks that prompted recognition of the importance of properly managing waste dumping sites. In other words, the assurance of public health came to be recognized as a priority issue. In light of these circumstances, the *Waste Cleaning Act* was enacted in 1900 and the implementation of waste management service was made an obligation of the municipalities. The waste was either disposed by the waste generators themselves or collected and disposed of by private waste treatment companies. The act stipulated that waste should be incinerated as much as possible (Article 5 of the Enforcement Regulations of the *Waste Cleaning Act*), making incineration the standard method of waste disposal, but most waste was burned in the open. In 1933, 93% of the cities covered by the act (113 out of 122 cities) had at least one incinerator, and incineration accounted for about 50% of the total waste treatment in Japan. At the same time,

incineration technology was still in its infancy and incinerator performance was inadequate.

However, in 1941, with the outbreak of the Pacific War, the enforcement regulations were revised, and the mandatory incineration of waste was deleted, as it was considered incompatible with the effective use of resources. In wartime, material scarcity was very severe, and everything was being saved; waste was being reused, and resources were being recycled.

### (3) From the Establishment of a Modern Society to the Improvement of Public Health (1945 to the 1950s)

Japan underwent many transformations in the course of its reconstruction after World War II. Consequently, Japan's economy developed swiftly, and people moved to cities, causing a rapid increase in population density and requiring waste countermeasures in urban areas.

Additionally, the necessity of appropriate management of waste and sewage was not well understood during this era, and waste and sewage were regularly dumped in rivers, the ocean or



Source: Tokyo Metropolitan Government Bureau of Environment  
**Photo 2-1 Collecting Waste from Households (1957)**

in the open (at Open dump sites) causing the generation of populations of flies and mosquitoes to soar, the spread of infectious diseases, and occurrence of other public health problems. Furthermore, regarding waste management service, although the *Waste Cleaning Act* required municipalities to implement such services, the roles and responsibilities of the central government, prefectural governments, residents, and other relevant entities were unclear. Thus, cooperative relationships among the stakeholders were not sufficiently formed, and problems surrounding municipal waste grew more serious. In light of these circumstances, the *Public Cleansing Act* was enacted in 1954.

The following are descriptions of problems with municipal waste during each stage of the waste management service.

### 1) Waste Collection and Transport

Primary waste collection from individual households was done manually with handcarts. Thus, collectors could only collect a limited amount of waste within a small range, and were unable to keep pace with the rapidly increasing amount of waste discharged. Additionally, the work of transferring waste from handcarts to motor vehicles to be transported to incineration plants and landfill sites



Source: Tokyo Metropolitan Government Bureau of Environment

**Photo 2-2 Bringing Waste to the Collection Point (1957)**

(Open dump sites) was done on streets and in other public places, causing public health problems such as waste scattering in the living environments.

### 2) Intermediate Treatment

Incineration operations were suspended during the war, and facilities were being restored, as the war damage had rendered many of them inoperable. On the other hand, the urban population, which had been drastically reduced due to the war rapidly grew. As a consequence, the amount of generated waste significantly increased and much of that waste was not being properly managed. Therefore, in 1954, the *Public Cleansing Act* was enacted in order to drastically solve the urban waste problem, and waste disposal was promoted mainly in urban areas.

### 3) Final Disposal

Waste was being transported to landfill sites without any incineration treatment. At the landfill sites soil cover application and other aspects of landfill management were not implemented properly. As a result of these conditions gases generated by the fermentation of kitchen waste and other organic waste caused many problems at the landfill sites such as spontaneous combustion, odors, and breeding of flies and other pests.

**(4) From Rapid Development on Route to Modernization (High Economic Growth)  
[Emergence of Pollution Problems and Efforts to Preserve Living Environments]  
(1960s and 1970s)**

As the postwar reconstruction drew to a close, Japan entered an era of rapid economic growth. Lifestyles changed substantially during this era as a result of developments stemming from the economic boom, including increasing incomes, the rapid diffusion of home appliances, and changing consumer behavior and methods of retail amid the emergence of supermarkets and convenience stores. Additionally, the swift expansion of business activities caused the amount of waste discharged to increase accordingly, and the development of an economic structure based on mass production and mass consumption further accelerated the increase and diversification of municipal waste.



Source: Tokyo Metropolitan Government

**Photo 2-3 Tokyo's Streetscapes Developing  
with Economic Growth (1967)**

Vigorous production activities also caused the rapid increase and diversification of waste discharged from factories. Different kinds of waste were discharged in the process of producing products; thus, waste grew increasingly diverse. Additionally, massive amounts of waste from construction were generated by urban development and other factors; the greater the level of industrial activity, the greater the amount of waste associated with industrial activities.

Furthermore, rapid industrialization associated with high economic growth caused pollution from organomercury, cadmium, and other harmful substances discharged from factories and other industrial locations, causing widespread health problems among local residents. Additionally, the proliferation of products made of plastic resulted in even greater amounts of waste. Plastic does not decompose; thus, it not only remains in the soil over the long term when it is dumped in landfills, but it also damages incinerators because it gives off intense heat and releases harmful substances when it is incinerated. For these and other reasons, plastic is a major factor in air pollution and other forms of contamination.

Confrontation with residents surfaced as many waste related problems associated with economic growth spread. In light of these circumstances, the *Waste Management and Public Cleansing Law (Waste Management Act)* was enacted in 1970.

The problems with municipal waste during each process of waste management service are described hereafter.



### 1) Waste Collection and Transport

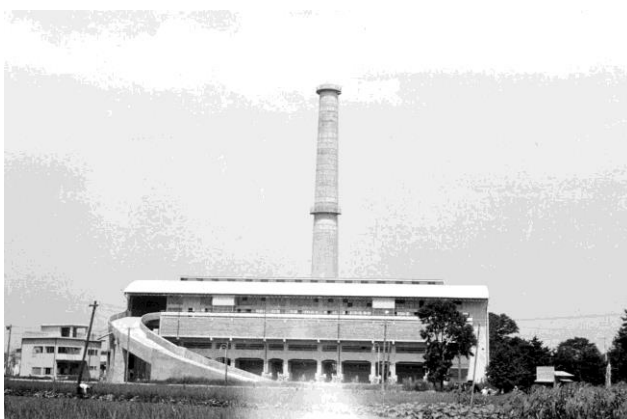
As changing lifestyles resulted in the generation of a large amount of diverse waste, especially in urban areas, efficient collection and transportation became an issue, and waste collection using collection vehicles was promoted.



Source: Tokyo Metropolitan Government Bureau of Environment  
**Photo 2-4 Vehicles at the Beginning of Collection by Vehicle**

### 2) Intermediate Treatment

The situation required assurance of sanitation and the establishment of incineration plants as a means for treating large amounts of waste. As pollution became a problem during the process of industrialization, incineration treatment required technology for properly treating massive amounts of diverse waste.



Source: Tokyo Metropolitan Government Bureau of Environment  
**Photo 2-5 The Incineration Plant was Undergoing a Technological Revolution (Shakuji Incineration Plant in Tokyo) (Completed in 1958)**

### 3) Final Disposal

Direct dumping into landfills was implemented alongside incineration treatment because the incineration waste treatment capacity alone was insufficient for the massive amounts of waste generated. Consequently, landfill sites had adverse effects on surrounding areas, such as generating odors, flies, and mosquitoes in large numbers and became major problems. Therefore, the situation required the establishment of facilities capable of proper disposal of the different types of disposal waste without impacting surrounding environments.

### **Worldwide Developments (1960s and 1970s)**

The problem of environmental destruction associated with economic growth became apparent throughout the world, mainly in advanced countries, which began to recognize the need for global-scale efforts to conserve the environment. In 1972, the first UN Conference on the Human Environment - a meeting of high-level government officials from around the world to discuss environmental problems - was held in Stockholm. At the conference, the Declaration of the United Nations Conference on the Human Environment and the Action Plan for the Human Environment, which recognize environmental problems as global-level issues shared by humankind, were adopted.

### **(5) From the Development of a Modern Prosperous Society to the Transition to a Sound Material-Cycle Society (1980s and early 1990s)**

Japan achieved high economic growth and developed into one of the world's major economic powers.

Although a modern society had been established and people had access to prosperous lifestyles, the pursuit of a more materially prosperous and highly convenient society gave way to economic activities based on mass production, mass consumption, and mass disposal.

Consequently, the price of achieving a consumption-oriented society was a persistently increasing amount of waste, and further diversification of types of waste amid an increasingly varied array of home appliances and other products resulting in waste that was difficult to treat properly. In particular, waste from plastic products increased amid an increase in single-use plastic products, expanded use of plastic containers and packaging, and the proliferation of plastic bottles.

The following are descriptions of problems with municipal waste during each process of waste management service.



Source: Tokyo Metropolitan Government Bureau of Environment  
**Photo 2-6 Collection Vehicle with Compaction Function (Compacter)**

### 1) Intermediate Treatment

Dioxins, which can potentially harm the human body, became a major issue throughout Japan. Given that incineration treatment plants are a source of dioxins, various institutions conducted research into dioxins. Legislation and regulations on dioxins countermeasures (the *Law Concerning Special Measures against Dioxins* (1999)) covering not only waste treatment plants, but also negative impacts on the general environment and the human body was established, and operators were expected to implement countermeasures based on the legislation and regulations.



Source: Tokyo Metropolitan Government Bureau of Environment

**Photo 2-7 Modern Waste Treatment Plant  
(Meguro Incineration Plant in Tokyo  
(Completed in 1991))**

### 2) Final Disposal

The rapid increase in waste caused a strain on the capacity of existing landfill sites, which became a major problem as existing landfill sites nationwide had less than 10 years before becoming full.

Additionally, illegal dumping of industrial waste became a serious issue. Although the *Waste Management Act* stipulates that waste-generating business operators are responsible for treatment of industrial waste, there were cases in which dishonest waste treatment operators illegally dumped industrial waste in pursuit of undue profits.

#### **Worldwide Developments (1980s and Early 1990s)**

To mark the 20<sup>th</sup> anniversary of the UN Conference on the Human Environment, the United Nations invited approximately 180 countries to participate in the UN Conference on Environment and Development in Rio de Janeiro in 1992. At the conference, the Rio Declaration on Environment and Development, which set out principles for sustainable development, was adopted, along with Agenda 21, the targeted action plan accompanying the declaration.

**(6) From the Maturation of a Modern Society to the Establishment of a Sound Material-Cycle Society (mid-1990s and 2000s)**

Japan had achieved economic development, as well as maturity in the areas of ensuring public health and methods and systems of proper treatment of waste. However, the situation called for Japan - which, despite its status as an industrial powerhouse, remained reliant on huge amounts of imports for lack of natural resources - to cease being a society based on mass production, mass consumption, and mass disposal, and instead to establish a sound material-cycle society that espouses a much more balanced utilization of raw materials and reduces the impacts on the environment. Additionally, the global community had come to expect the expansion of international cooperation focused on establishing sustainable societies.

In light of these circumstances, the *Basic Act for Establishing a Sound Material-Cycle Society* was enacted in 2000, along with several laws promoting recycling.

**Worldwide Developments (mid-1990s and 2000s)**

In the global community, in 1997, five years after the UN Conference on Environment and Development, a Special Session of the UN General Assembly was held in New York. At the special session, the Programme for the Further Implementation of Agenda 21 was adopted. Additionally, in 2000, Millennium Development Goals (MDGs) were adopted to set out common worldwide targets in the area of development. Furthermore, at the 2002 World Summit on Sustainable Development in Johannesburg, participants not only verified the level of achievement of Agenda 21, but they also broadly discussed various development issues in the global community - namely poverty, medical care, and education - as well as measures to achieve Millennium Development Goals in and beyond the area of the environment.

## 2 Legislation Pertaining to Waste Management

Japan has established important legislation to respond to changes in social conditions and issues and needs that emerged in each era, which include improving public health, implementing pollution countermeasures, and promoting proper treatment and recycling of waste.

This section introduces transition in legislation pertaining to waste management as well as the background, details of regulations, and other aspects of the legal structure and legislation.

### 2.1 Changes in Legislation Pertaining to Waste Management

#### (1) From Improving Public Health to Resolving Pollution Problems and Preserving Living Environments

Japan's basic law pertaining to waste management has changed from the *Waste Cleaning Act* to the *Public Cleansing Act*, and finally to the *Waste Management Act* based on the different roles required of waste management in different eras. The laws demonstrate Japan's transition from the era aiming to improve public health to a time when the focus is on preserving living environments.

The first law pertaining to waste was the *Waste Cleaning Act* (1900). In light of the subsequent worsening of public health problems caused by the rapid increase in municipal waste associated with postwar economic development and increasing urban population density, the *Public Cleansing Act* was enacted in 1954 for the purpose of improving public health, and the *Waste Cleaning Act* was repealed.

As Japan entered its period of high economic growth in the 1960s, the further increase and diversification of municipal waste, pollution caused by hazardous waste, and other social problems prompted the 1970 repeal of the *Public Cleansing Act* and concurrent enactment of the *Waste Management Act*. This concurrent act details requirements to conserve living environments in addition to improving public health as stated in the former *Public Cleansing Act*.

**Waste Cleaning Act (1900-1954)**

Purpose: An act with 11 articles, but no explicit purpose

Characteristics: Positioned waste collection and disposal as the responsibility of municipal governments.

**Public Cleansing Act (1954-1970)**

Purpose: To improve public health through the sanitary treatment of waste in order to clean living environments.

Characteristics: Sets out provisions under which the central and prefectural governments provide financial and technical assistance, obliges residents to cooperate with municipal waste collection and disposal efforts, and sets out other provisions in addition to existing municipal waste collection and disposal systems.

**Waste Management and Public Cleansing Law (since 1970) [Waste Management Act]**

Purpose: To preserve living environments and improve public health, mainly through waste minimization, but also by cleaning living environments and properly sorting, storing, collecting, transporting, recycling, treating, and disposing of waste.

Characteristics: Categorizes waste into two categories: industrial waste and municipal waste. Positions treatment of municipal waste as the responsibility of municipalities as in previous legislation, and positions treatment of industrial waste as the responsibility of waste-generating business operators.

## (2) Establishing a Sound Material-Cycle Society

Japan had begun to shift the focus of its waste management from preserving living environments to establishing a sound material-cycle society. Accordingly, Japan amended the *Waste Management Act* and established many relevant laws and regulations with a focus on specific materials and products in an effort to improve recycling and reduce final disposal amounts.

In the 1970s, the social structure based on mass production, mass consumption, and mass disposal continued to progress as Japan sought greater material wealth. Consequently, the amount of waste generated continued to increase and the remaining capacity of landfill site was shortened. These and other problems made it necessary to concentrate efforts toward radical solutions. Given that the focus of policy had shifted to reducing amounts of waste generated and recycling, the *Waste Management Act* was amended. Furthermore, the *Basic Act for Establishing a Sound Material-Cycle Society* and other laws on recycling were enacted in due order, and a shift toward forming a sound material-cycle society was promoted.

### **Amendments to the Waste Management Act (1991)**

“Waste minimization” and “sorting and recycling” were added to the purpose of the act.

### **Law for the Promotion of Effective Utilization of Resources (1991)**

The law sets out regulations, most important of which are to create a system for business operators to collect and recycle waste voluntarily, and to mandate environmental consideration in product design and manufacturing, with the aim of ensuring the effective utilization of resources as well as reducing the generation of waste and conserving the environment.

### **Various Laws on Recycling (since 1995)**

Various laws on recycling were enacted to further promote recycling.

- Containers and Packaging Recycling Law (1995)
- Home Appliance Recycling Law (1998)
- Food Waste Recycling Law (2000)
- Construction Material Recycling Law (2000)
- End-of-Life Vehicles Recycling Law (2002)
- Small Home Appliance Recycling Act (2013)
- Plastic Resource Recycling Promotion Act (2022)

### **Basic Act for Establishing a Sound Material-Cycle Society (2000)**

The *Basic Act for Establishing a Sound Material-Cycle Society* was enacted to shift away from an economic system based on mass production, mass consumption, and mass disposal, and instead to promote the formation of a sound material-cycle society in which the 3Rs (Reduce, Reuse, Recycle) are implemented and proper waste disposal and treatment are ensured. The act clearly states the aims of a sound material-cycle society - namely limiting consumption of natural resources and reducing environmental impact - codifies the cyclical use of resources and the priority of waste treatment (in order of Reduce, Reuse, Recycle, Thermal Recovery, Proper Disposal), and otherwise sets out basic principles for establishing a sound material-cycle society. Additionally, the Fundamental Plan for Establishing a sound material-cycle society to be formulated under the law, sets out clear numerical targets for resource productivity (incoming materials), ratios of recycled resources to natural resources used (materials circulation), and final disposal amounts (outgoing waste) to earnestly drive forward the establishment of a sound material-cycle society.

## **2.2 Legal Structure Pertaining to Waste Management**

### **(1) Japan's Legal Structure Pertaining to Waste Management**

It is important to develop a legal framework that provides an institutional basis for the implementation of measures as well as a direction for improvement to address various issues. In Japan, the *Basic Act for Establishing a Sound Material-Cycle Society*, the *Waste Management Act*, and other laws pertaining to waste management were established based on the *Basic Environment Law*. Laws on recycling individual items have also been established to improve recycling.

The *Waste Management Act* - Japan's basic law of waste management - has been revised as appropriate to respond to the improper treatment of waste, illegal dumping, and other issues that appeared in each era. Establishing legislation is a key measure for resolving the issues Japan faces.

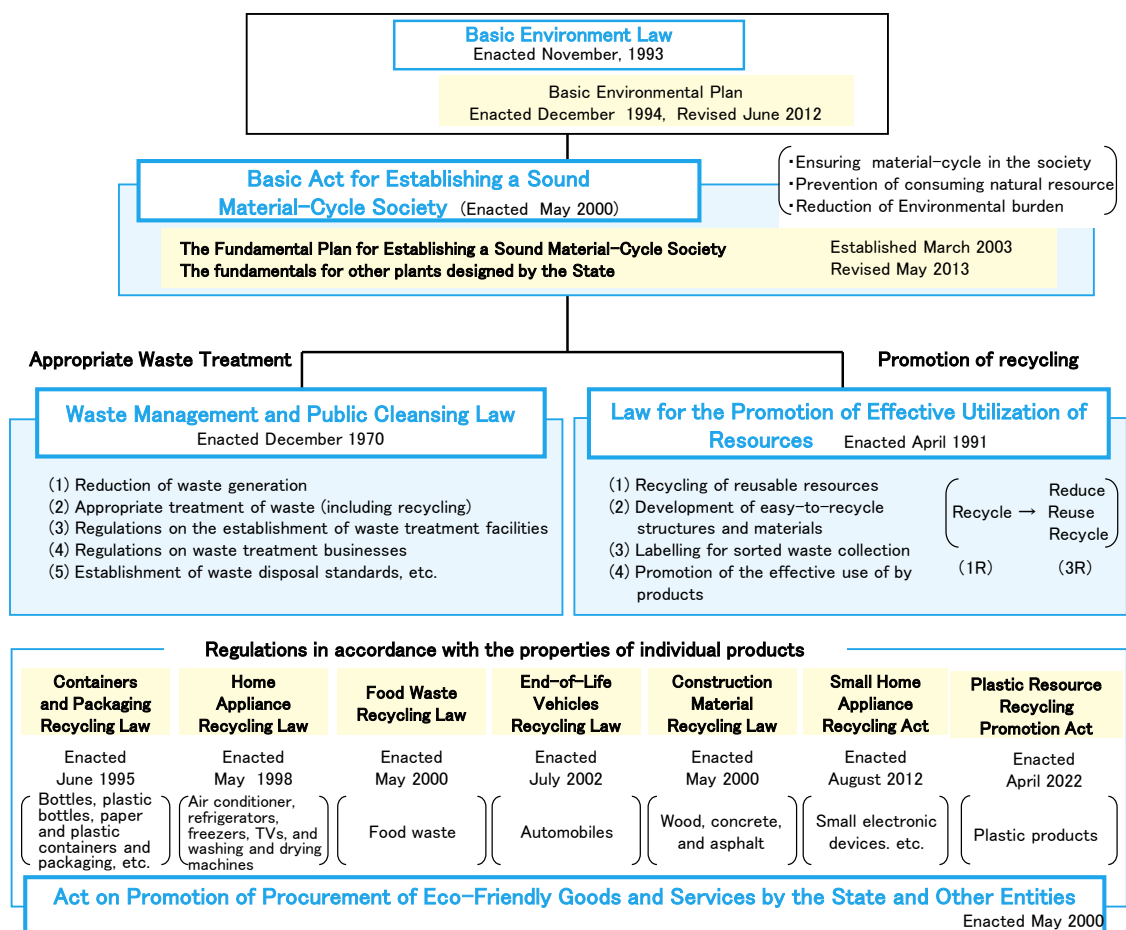
Various laws on recycling have been enacted in an effort to improve recycling and establish a sound material-cycle society, and also in response to the increasing severity of the strain on landfill sites. Laws and systems function effectively in part because these laws on recycling clearly state the roles and responsibilities of all relevant entities.

The legal laws and regulations pertaining to waste management was established to support the formation of a sound material-cycle society, and comprises the *Basic Act for Establishing a Sound Material-Cycle Society* - which sets out the basic philosophies and approaches to forming a sound material-cycle society based on the *Basic Environment Law*, which sets out the core elements of



environmental policies - and the individual laws that embody the acts.

Many laws have been established toward the formulation of a sound material-cycle society. The *Waste Management Act* aims to preserve living environments and improve public health through efforts such as waste minimization and proper treatment of waste. The *Law for the Promotion of Effective Utilization of Resources* (the *Effective Resource Utilization Promotion Act*) aims to ensure the effective utilization of resources, reduce the generation of waste, and conserve the environment. The seven laws on recycling were enacted to correspond to the properties of individual items. The *Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities* (the *Act on Promoting Green Purchasing*) aims to establish a society capable of sustainable development by having public agencies take the lead in promoting the procurement of products and services that help reduce environmental impact.



Source: Ministry of the Environment “History and Current State of Waste Management in Japan” (2014)

**Figure 2-2 Legal Framework for a Sound Material-Cycle Society**

## (2) Basic Act for Establishing a Sound Material-Cycle Society

### 1) Intent of the Act

The act is a basic framework for promoting the establishment of a sound material-cycle society that strives to limit resource consumption and reduce environmental impact by promoting the effective reuse and recycling of materials in all processes from production to distribution, consumption, and disposal.

### 2) Background

The amount of waste generated in Japan has remained at a high level since waste increased rapidly during the period of high economic growth; consequently, the strain on landfill sites, the rise in illegal dumping, the generation of hazardous waste in treatment processes, and more issues have become serious social problems. Therefore, there is an urgent need to shift away from an economy and society based on mass production, mass consumption, and mass disposal, and instead to form a sound material-cycle society in which the 3Rs (Reduce, Reuse, Recycle) are implemented and proper waste treatment and disposal are ensured.

The following shows data pertaining to waste management published in 2000, the year the act was enacted.

#### **State of Waste Management in 2000, the year the Basic Act for Establishing a Sound Material-Cycle Society was enacted**

##### **[1] Amount of waste generated remains at a high level**

→In the past several years, the amounts of municipal waste and industrial waste have respectively hovered at around 50 million tons and 400 million tons annually

##### **[2] Demand for further promotion of recycling**

→In FY1996, roughly 10% of municipal waste and roughly 42% of industrial waste was recycled

##### **[3] Difficulty finding sites for waste treatment plants and landfill sites**

→In FY1996, landfill sites for municipal waste and industrial waste had respectively 8.8 years and 3.1 years remaining, before becoming full

##### **[4] Rise in illegal dumping**

→In FY1998, 1,273 cases of illegal dumping were recorded, a 460% increase from FY1993

3) Overview

Name of act: Basic Act for Establishing a Sound Material-Cycle Society  
 Enacted: 2000  
 Purpose: To set out a basic framework for, and illuminate a path toward achieving a sound material-cycle society.  
 Overview of act: The act sets out basic principles (e.g., priority of policies) and responsibilities of relevant entities for the formation of a sound material-cycle society, and sets out basic matters for formulating the Fundamental Plan for Establishing a Sound Material-Cycle Society and for policy for formulating a sound material-cycle society, among other matters.

•Vision for a Sound Material-Cycle Society:

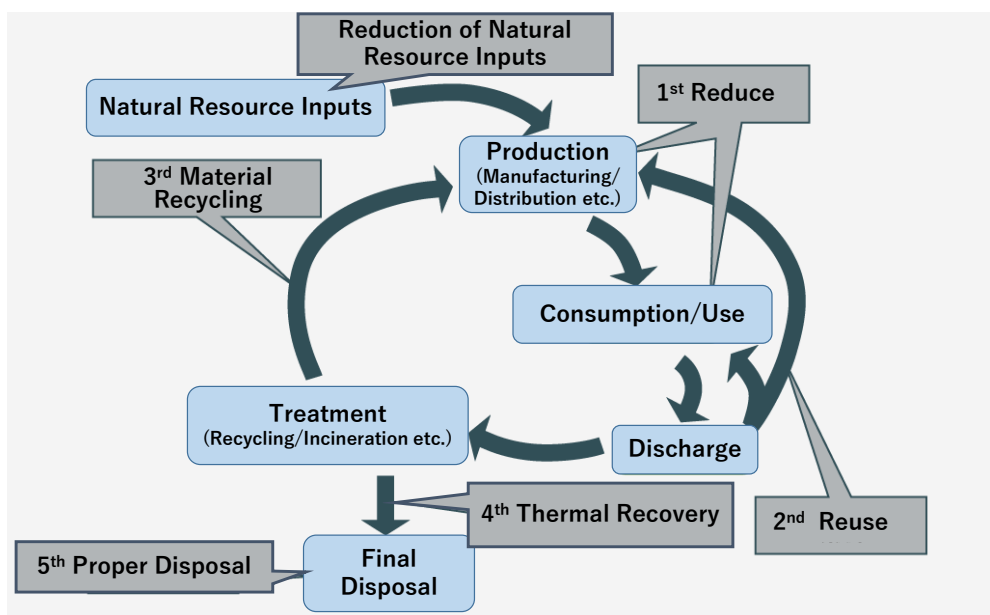
Promote the formation of a sound material-cycle society in which the consumption of natural resources and the impact on the environment are limited and reduced to the extent possible through the reduced generation of waste and the like, the cyclical reuse of circular resources, and the assurance of proper waste treatment and disposal.

•Circular resources within the scope of the act:

With all waste - regardless of value - as the target of the act, the act positions the recyclable portion of waste as circular resources, and encourages the cyclical reuse of circular resources.

•Priority of policy:

Codified by the act: in order of Reduce, Reuse, Recycle, Thermal Recovery (Thermal Recovery), and Proper Disposal.



Source : Ministry of the Environment “Establishing a sound material-cycle society” (2010)

Figure 2-3 Sound Material-Cycle Society Schematic Diagram

- **EPR (Extended Producer Responsibility):**

The concept that producers are physically or economically responsible for their products in all processes from production and use to disposal and recycling. It encourages producers to develop and produce products that are less likely to be disposed of or are easily recycled.

Source: Basic Act for Establishing a Sound Material-Cycle Society (2000)

#### 4) Targets of the Act

The act defines the respective responsibilities of the central government, municipalities, business operators, and residents. In principle, the act describes the responsibilities of the central government (e.g. formulating the five-year Fundamental Plan for Establishing a Sound Material-Cycle Society), and also clarifies the waste-generating responsibilities of consumers, namely residents and businesses. The law further defines the waste management responsibilities of the producers through inclusion of “extended producer responsibility”; a level of responsibility imposed on producers that extends to the time when the products they produced have become waste after being used by the consumers.

### (3) Waste Management and Public Cleansing Law

The *Waste Management Act* was enacted in 1970 as a comprehensive revision of the *Public Cleansing Act*, which was intended to improve public health. The law is the core regulation for waste management, with the aim of protecting the living environments in addition to improving public health.

#### 1) Background

Cases involving contamination of the environment were occurring in major urban areas and elsewhere due to the discharge of massive amounts of industrial waste associated with factors such as expanded economic and social activity. However, treatment of such massive amounts had become too difficult under the existing *Public Cleansing Act*, which held municipalities responsible for waste treatment and did not set out clear provisions for industrial waste. Accordingly, the situation called for a full-scale revision of the *Public Cleansing Act*.

## 2) Overview

Name of law: Waste Management and Public Cleansing Law (Waste Management Act)  
 Enacted: 1970  
 (Amended: 1976, 1991, 1997, 2000, 2003, 2004, 2005, 2006, 2010, 2015, 2017, 2020)

Purpose: To preserve living environments and improve public health through waste minimization and proper waste treatment (e.g., transport, disposal, recycling) and maintaining cleanliness in living environments.

Overview of law: The act defines waste and sets out provisions for issuing licenses for waste treatment operators, licenses for constructing waste treatment plants, and waste treatment standards, among other matters.

**Table 2-2 Overview of Waste Management Act**

Definitions	Waste is garbage or unwanted matter in solid or liquid state (excluding radioactive substances)	
	Municipal waste	Industrial waste
	All waste other than industrial waste	Cinders, sludge, waste oil, waste plastics, and the like among waste generated in conjunction with business activities
Responsibility for treatment	Waste must be treated such that it presents no obstacles to the preservation of living environments, according to basic plans for municipal waste treatment formulated by municipalities.	Business operators must fulfill their responsibilities by themselves or by contracting a licensed operator.
Waste collection, transport, and treatment	Municipal mayor licensing system	Prefectural governor licensing system
	Licenses are granted when the capacities of plants and applicants satisfy the criteria, and when the details of applications comply with municipal waste treatment plans	Licenses are granted when the capacities of plants and applicants satisfy the criteria
	Municipal mayors (supervision) collect reports, conduct witnessed inspections, issue orders for improvement, issue orders to take measures, etc.	Prefectural governors (supervision) collect reports, conduct witnessed inspections, issue orders for improvement, issue orders to take measures, etc.
Treatment plants	Prefectural governor licensing system (however, notification required when municipalities construct plants)	Prefectural governor licensing system
	Licenses are granted when plans for construction fulfill technical standards, and when plans for construction and maintenance include proper consideration on preservation of the living environments of local communities	
	Prefectural governors (supervision) collect reports, conduct witnessed inspections, issue orders for improvement, issue orders to take measures, etc.	

Source: Waste Management and Public Cleansing Law (1970)

\*: In Japan, waste is defined as fitting into one of two broad categories: municipal waste or industrial waste. (Refer to “Topic 1-1.1 Definition and Categorization of Waste”)

### 3) Major Amendments

The *Waste Management Act* has been amended several times in order to consistently ensure the proper treatment and disposal of waste in light of many factors, including social circumstances conditions in a given era. The major amendments are as follows.

#### ■ Amendments Pertaining to Social Circumstances

1991 amendment: Large-scale illegal dumping and dioxin-related problems emerged amid factors such as the expansion of the economy and society based on mass production and mass consumption, an escalating appetite for consumption in pursuit of convenience, and changes in the industrial structure; consequently, the act was amended to clearly indicate minimization of waste, sorting and reuse of waste, and the like as the purpose of waste treatment.

At the time, roughly 2,000 waste incineration plants were in operation, giving rise to dioxin-related problems stemming from incineration. Additionally, given the limited land area available in Japan on which landfill sites can be feasibly developed, illegal dumping was occurring due to lack of landfill sites.

2010 amendment: A series of regulatory permits were issued to waste-generating business operators, and regulations were tightened, including requiring waste treatment operators to issue manifests.

The scope of eligibility for licenses to import waste was expanded to include companies which can contract out for proper treatment, in cases where importing waste would help them fulfill their social responsibilities and reduce environmental impact throughout Asia.

2015 amendment: In light of lessons and knowledge learned from disasters such as the Great East Japan Earthquake, the act was amended in an effort to expand measures for dealing with disaster waste to enable seamless responses for waste treatment in every stage from preparation during normal times to measures in the event of, and in the aftermath of large-scale disasters.

#### ■ Amendments Pertaining to Harmful Substances and Pollution Problems

1976 amendment: The act was amended to set out technical standards for constructing new landfill sites for waste.

1991 amendment: The act was amended in an effort to strengthen regulations pertaining to waste treatment operators and waste treatment plants.

2006 amendment: The act was amended to set out standards for treating waste including asbestos.

2010 amendment: The act was amended to oblige operators to publish information pertaining to plant maintenance in order to promote understanding of waste treatment plant safety.

#### ■ Amendments Pertaining to Industrial Waste

Amendments from 1991 to 2017: Made the manifest system more rigorous.

2010 amendment: Strengthened the system for recognizing excellent waste treatment operators.

Amendments from 1976 to 2010: Strengthened penal provisions for illegal dumping and the like.

Amendments from 1976 to 2017: Strengthened guidance and supervision, etc.

### (4) Effective Resource Utilization Promotion Act

#### 1) Background

Japan is not a natural resource-rich country, and resource depletion had become a global issue. In light of these and other factors, circumstances required the establishment of a sustainable circular economic system in which there is harmony between the environment and the economy after shifting away from the current economic and social system based on mass production, mass consumption, and mass disposal. Therefore, efforts to promote recycling by business operators became necessary in order to strengthen initiatives toward achieving the 3Rs.

#### 2) Overview

Name of act: Law for the Promotion of Effective Utilization of Resources  
(Effective Resource Utilization Promotion Act)

Enacted: 1991

Purpose: To comprehensively promote the reduction of the generation of byproducts and the like, the reuse of parts and the like, and the reuse of used products and the like as raw materials.

Overview of act: The act sets out priority matters for business operators, including 3R measures in the product manufacturing stage, 3R considerations in the product design stage, labeling for sorting and separate collection, and the establishment of systems for voluntary collection and recycling by manufacturers.

Targets: Lines of business and products for which designated 3R efforts are deemed necessary in Cabinet Orders (10 lines of business, 69 articles)

Source: Law for the Promotion of Effective Utilization of Resources (1991)

**3) Responsibilities of Relevant Entities****a. Business Operators**

- Rationalize the use of raw materials to reduce the generation of used articles and byproducts
- Promote the use of used articles and byproducts as recycled resources/parts

**b. Consumers**

- Use products for a long time
- Use products made with recycled resources or recycled parts
- Cooperate with sorting and separate collection
- Cooperate with measures implemented by the central government, municipalities and business operators

**c. Central Government**

- Implement measures to secure funding and the like
- Promote the use of recycled resources in items procurement and the like
- Promote science and technology
- Strive to seek the understanding of residents

**d. Municipalities**

- Promote the effective use of resources in line with the social and economic circumstances of individual areas

**(5) Containers and Packaging Recycling Law**

Refer to “Topic 3-3.4 (1) Containers and Packaging Recycling Law.”

**(6) Home Appliance Recycling Law**

Refer to “Topic 3-3.4 (2) Home Appliance Recycling Law”



## (7) Food Waste Recycling Law

The *Food Waste Recycling Law* promotes the recycling of food waste by setting out the roles and responsibilities of all relevant entities with a focus on food waste, an area where recycling efforts have not advanced, and sets out a new system for the promotion efforts.

### 1) Background

Food waste is discharged by food products manufacturers, food distributors, members of the food service industry, and individual households. In 1996, roughly 20 million tons of food waste was being discharged annually along with municipal waste and industrial waste, and food waste comprised roughly 30% of municipal waste.

Japanese businesses were throwing away massive amounts of food products in the manufacturing and distribution stages due in part to consumers' overemphasis on freshness, and consumers were leaving food uneaten. Despite the fact that food waste generated in this manner can be recycled as fertilizer, livestock feed, and the like, in reality large amounts of the food waste were disposed of without being used. Consequently, the strain on remaining landfill capacity and problems surrounding waste treatment grew more severe.

### 2) Overview

Name of law: Law for Promotion of Recycling and Related Activities for Treatment of Cyclical Food Resources (Food Waste Recycling Law)

Enacted: 2000

Amended: 2007, 2014

Purpose: To reduce the amount of food waste ultimately disposed of and promote the recycling of circular resources from food waste as fertilizer, livestock feed, and the like, through controlling and reducing the amount of food waste generated by business operators in food-related fields.

Overview of law: The law sets out basic matters pertaining to reduction in the generation amount of food waste and recycling and thermal recovery of the recyclable portion of food waste (circular resources from food waste) by all entities, in addition to requiring business operators involved in the manufacturing, wholesaling, or retailing of food products or in food service to take measures to promote the recycling of circular resources from food waste.

Target: Food waste (e.g., residue from the processes of manufacturing or processing food products, or preparing food, that cannot be used as food; food that is unsold or uneaten in the stages of distribution or consumption of food products)

Source: Law for Promotion of Recycling and Related Activities for Treatment of Cyclical Food Resources (2000)

### **3) Roles and Responsibilities for each Entity**

#### **a. Business Operators in Food-related Fields**

- Reduce the generation of food waste
- Make efforts to recycle circular resources from the food waste
- Implement thermal recovery during treatment of circular resources from food waste that cannot be recycled
- Make efforts to reduce the amount of food waste

#### **b. Residents**

- Reduce the generation of food waste by improving methods of purchasing food products and preparing food
- Promote recycling by using recycled products

#### **c. Central Government and Municipalities**

- Make efforts to secure necessary funding, gather information, conduct research and development, and the like
- Use education and public relations activities in pursuit of the understanding and cooperation of residents
- Make efforts to promote the recycling of circular resources from food waste in line with social and economic conditions

### **4) System for Recycling Food Waste**

The law established the following systems to promote recycling.

Registration system: A registration system for businesses that produce fertilizers and livestock feed using recycled food resources as raw materials.

Certification system: A system to certify plans for the implementation of recovery projects by related parties, the use of fertilizers and livestock feed obtained from recovery projects, and the use of agricultural, livestock, and fishery products produced by the use of the recovery projects' products.

## (8) Construction Material Recycling Law

The *Construction Material Recycling Law* was enacted as part of the effort to counter illegal dumping given that construction waste comprises most of illegally dumped waste, and also to promote the recycling of construction waste, which is relatively easy to recycle.

### 1) Background

In FY1995, fragments of concrete and asphalt-concrete, wood scraps, and other construction waste generated during construction work accounted for roughly 20% of all industrial waste discharged. Construction waste also comprised roughly 70% of all illegally dumped waste in FY1999.

Many buildings were updated during the 1960s in Japan, and the amount of construction waste increased accordingly. Factors such as the subsequent updating of even more buildings gave rise to an increase in construction waste; consequently, the strain on landfill sites, improper treatment and disposal, and other problems grew more severe.

### 2) Overview

Name of law: Construction Material Recycling Law

Enacted: 2000

Purpose: To promote the sorting and recycling of specified construction materials generated during demolition work and other forms of building construction

Overview of law: The law obliges contractors of construction projects of a certain scale or greater to separate waste materials during demolition, reuse or recycle these materials, and sets out contract procedures for the clients and contractors of the project, as well as other matters.

Targets: Specified construction materials (concrete, construction materials made from concrete and steel, wood, asphalt-concrete)

Source: Construction Material Recycling Law (2000)

### 3) Target Construction Projects

Building demolition: Floor area of 80 m<sup>2</sup> or greater

Building construction/expansion: Floor area of 500 m<sup>2</sup> or greater

Building repairs/renovations (e.g., remodeling): Contract amount of JPY 100 million or more

Other construction work pertaining to structures (e.g., civil engineering works): Contract amount of JPY 5 million or more

**(9) End-of-Life Vehicles Recycling Law**

See “Topic 3-3.4 (3) End-of-Life Vehicles Recycling Law”

**(10) Small Home Appliances Recycling Act**

The *Small Home Appliances Recycling Act* promotes the recycling of the recyclable metal content of small electronic devices by setting out the roles and responsibilities of all relevant entities with a focus on small devices that contain a large amount of recyclable metals. Additionally, the effective use of rare metals found in the devices has recently emerged as an important issue.

**1) Background**

Mobile phones, digital cameras, watches, hair dryers, and other small electronic appliances contain many useful metals such as iron, aluminum, copper, and precious metals; however, most of them were discharged as waste and collected by municipalities along with other municipal waste. The municipalities salvaged only some of the metals (e.g., iron, aluminum) from the used small electronic devices, and dumped the majority of that waste in landfills without recycling them.

Because small electronic devices also contain harmful metals such as lead, proper treatment is necessary; however, used devices were targeted by illegal junk collectors who were performing improper treatment and disposal both inside and outside Japan.

**2) Overview**

Name of act: Act on Promotion of Recycling of Small Waste Electrical and Electronic Equipment (Small Home Appliances Recycling Act)

Enacted: 2012

Purpose: To ensure the proper treatment of waste and the effective use of resources by taking measures to promote the recycling of used small electronic devices, given that a considerable portion of metals and other useful materials in the devices were disposed of without being recovered.

Overview of act: The act promotes the recycling of used small electronic devices without the need for waste treatment business licenses by allowing entities that engage in the business of recycling used small electronic devices to prepare recycling business plans and submit them to the competent minister for approval.

Targets: Computers, mobile phones, digital cameras, watches, hair dryers, and the like (designated by Cabinet Order as electronic equipment and other electrical machinery and appliances used by general consumers in their everyday lives that can be efficiently collected and transported when they become waste, and are in particular need of recycling)

Source: Act on Promotion of Recycling of Small Waste Electrical and Electronic Equipment (2012)

**3) Roles and Responsibilities for each Entity****a. General Consumers**

- Sort and discharge used small electronic devices
- Deliver to retailers contracted by either municipalities or certified business operators

**b. Municipalities**

- Separate collection of used small electronic devices
- Deliver to certified business operators

**c. Certified Business Operators**

- Accept used small electronic devices
- Recycle used small electronic devices

**d. Waste-generating Business Operators**

- Sort and discharge used small electronic devices
- Outsource treatment to certified business operators or entities capable of proper recycling

**e. Retailers**

- Cooperate with efficient collection from consumers through efforts such as setting up municipal collection boxes

**f. Manufacturers**

- Reduce the expense of recycling by finding design solutions and innovating with parts and raw materials
- Use materials obtained through recycling

**(11) Act on Promoting Green Procurement**

The *Act on Promoting Green Procurement* promotes the preferential purchasing of environmentally and socially conscious products and services toward the formation of a sound material-cycle society.

It is very important to raise awareness among the purchasers of products and services to be environmentally conscious in order to support and promote the environmental efforts of the providers of the products and services.

**1) Background**

Climate change, environmental pollution, resource depletion, insufficient waste treatment, and other environmental problems are caused by economic activity based on mass production, mass consumption, and mass disposal. Therefore, in order to effectively utilize limited resources and pass them on to the next generation, it is essential to re-examine how the economy and society should be, and to transform into a sound material-cycle society where sustainable development is possible.

The formation of a sound material-cycle society requires efforts from the suppliers of recycled products as well as efforts from consumers. In other words, it is necessary to promote green purchasing - thinking about the environment, carefully considering the necessity, selecting products and services with as little impact as possible on the environment, and preference in purchasing from business operators working to reduce environmental impact - when purchasing products and services. The hope is that green purchasing makes overall economic and social activity more environmentally friendly by changing the consumer behavior and encouraging suppliers to develop products and services with less environmental impact

**2) Overview**

Name of act: Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Act on Promoting Green Procurement)		
Enacted: 2000		
Purpose: To create and develop a market for products made from recycled resources and other products that help reduce environmental impact		
Overview of act: The act sets out provisions for the procurement of eco-friendly goods and services by the central government and other organizations (municipalities are obliged to make such efforts), and requires business operators and residents to select eco-friendly goods and services whenever possible.		
Targets: Specified procurement items (282 items in 22 sectors as of February 2021)		
1. Paper	9. Air conditioners, etc.	17. Other textile products
2. Stationery	10. Water warmers, etc.	18. Facilities
3. Office furniture, etc.	11. Illumination	19. Disaster stockpiling products
4. Imaging equipment, etc.	12. Automobiles, etc.	20. Public Works
5. Electronic computers, etc.	13. Fire extinguishers	21. Services
6. Office equipment, etc.	14. Uniforms, work clothes, etc.	22. Garbage bags, etc.
7. Mobile phones, etc.	15. Interior and bedding	
8. Home appliances	16. Work gloves	
Source: Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (2000)		

**3) Responsibilities of Relevant entities**

**a. Central Government**

- When procuring goods and services, the central government must make efforts to select eco-friendly goods and services while devoting attention to the proper use of budgets in order to promote a shift in demand toward eco-friendly goods and services.

**b. Municipalities**

- Municipalities shall endeavor to take measures to shift demand toward eco-friendly goods and services in line with the social and economic circumstances of individual areas.

**c. Business Operators and Residents**

- Business operators and residents shall make efforts to select eco-friendly goods and services whenever possible

### 3 Policies Pertaining to Waste Management

In Japan, the Ministry of the Environment has taken the lead in adopting important measures to respond to issues such as proper waste treatment, pollution control and efficient waste management.

This section introduces some of the key policies pertaining to waste management that have been effective in Japan.

#### 3.1 Standards and Guidelines for Proper Waste Treatment

The Ministry of the Environment has established technical standards and guidelines for waste treatment plants, landfill sites, and other facilities in line with the related laws in order to respond to pollution problems, implement proper waste treatment, and achieve other goals.

The standards and guidelines are both set out in laws and provided as requirements for municipalities to fulfill in order to obtain grants for developing facilities; therefore, nearly all facilities are planned and developed under the assumption that they must satisfy the standards and guidelines.

Japan has confronted many problems related to waste treatment plants and landfill sites, and has made efforts to resolve those problems using technical methods with technical and financial support from the Ministry of the Environment.

##### (1) Technical Standards in the Waste Management Act

It is essential to improve the safety and reliability of waste treatment when developing and operating waste treatment plants, and therefore the minimum technical standards that must be fulfilled in order to preserve living environments around the plants have been established. Standards for municipal waste treatment facilities such as incineration facilities, as well as other treatment plants are defined in the enforcement regulations of the *Waste Management Act*. The requirements for final disposal sites have been established in the Ministerial Orders covering the technical standards for final disposal sites for both types of municipal and industrial wastes (refer to Tables 2-3 through 2-5).

The standards for municipal waste treatment plants were established in 1971, and the standards for landfill sites were established in 1977, and were preconditions for receiving state subsidies until the new structure guidelines were formulated in 1979.

Additionally, the *Waste Management Act* and other legislation were amended to strengthen and clarify the technical standards in response to dioxins emissions and other social problems.



**Table 2-3 Technical Standards for Municipal Waste Treatment Plants**

No.	Description		
1	Safety in terms of structural strength		
2	Measures against corrosion		
3	Measures against the scattering of waste and emission of foul odors		
4	Measures against noise/vibrations		
5	Measures against water contamination		
6	Requirements for incinerator facilities	Waste feeders	
Combustion chamber conditions		At least 800°C	
		Retention for at least 2 seconds	
		Isolation from outside air	
		Auxiliary burner	
		Combustion air supply facilities	
Measuring/recording temperatures			
Cooling tower installation (200°C or lower)			
Measuring/recording temperatures inside dust collectors			
Exhaust gas treatment facilities			
Measuring/recording CO concentration			
Separation and storage of soot and bottom ash			
Ash removal facilities		Measures against scattering/spills	
		Ash melting conditions	Melting temperatures (melting point or above)
			Exhaust gas treatment facilities
	At least 1,000°C		
	Burning incineration residue	Measuring/recording temperatures	
		Exhaust gas treatment facilities	
Solid fuel storage facilities	Ignition prevention measures		
7	Requirements for wastewater treatment facilities		
8	Observance of treatment capacity		
9	Incinerator operation and maintenance conditions	Standardizing input waste	
Isolation from outside area/supply of fixed amounts of waste			
Combustion gas temperature (at least 800°C)			
Ignition loss (10% or less)			
Furnace startup method			
Furnace shutdown method			
Measuring/recording combustion gas temperatures			
Cooling towers (200°C or lower)			
Measuring/recording gas temperatures before entering dust collectors			
Soot removal			
CO concentration (100 ppm or less)			
Measuring/recording CO concentration			
Dioxins concentration (below regulatory limits)			
Measuring/recording dioxins concentration and amount/concentration of soot and smoke			
Exhaust gas treatment			
Treatment of exhaust gas treatment water			
Separating soot and incinerator ash			
Ash melting temperatures (melting point or above)			
Firing temperature (at least 1,000°C)			
Uniformity during cement solidification, chemical treatment			
Proper management of solid fuels			
Measures against fires			

No.	Description
10	Measures against mosquitoes, flies, etc.
11	Wastewater treatment
12	Function inspections, inspections of soot and smoke and water quality
13	Maintenance obligations
14	Retention of records (3 years)

Source: Ministry of Health and Welfare "Waste management and Public Cleansing Law Enforcement Regulations Article 4" (1971)

**Table 2-4 Technical Standards for Landfill Sites for Municipal Waste  
(From Article 1-1 of the Ministerial Order that Sets out Standards for Landfill Sites)**

No.	Item
1	Clarifying the scope of landfill sites and establishing perimeter enclosures to prevent entry
2	Installing notice boards and the like to indicate that the sites are landfill sites
3	Measures against landslides/subsidence
4	Measures against municipal waste spills
	Safety in terms of structural strength
	Measures against corrosion
5	Measures against contamination of public water areas/groundwater by leachate
6	Measures against surface water infiltration into landfill sites

Source: Prime Minister's Office and Ministry of Health and Welfare Ordinance No. 1 "Paragraph 1 of Article 1 of the Ministerial Ordinance Establishing Technical Standards for landfill" (1977)

**Table 2-5 Technical Standards for Operation and Maintenance of Landfill Sites for Municipal Waste  
(From Article 1-2 of the Ministerial Order that Sets out Standards for Landfill Sites)**

No.	Item
1	Measures against municipal waste scattering/spills
2	Measures against foul odors
3	Measures against fires
4	Measures against mice, mosquitoes, flies, and other pests
5	Clarifying the scope of landfill sites and establishing perimeter enclosures to prevent entry
6	Installing notice boards and the like indicating that sites are landfill sites
7	Scheduled inspections of retaining walls, etc.
8	Operating and Maintaining seepage control works
9	Scheduled inspections of seepage control works
10	Inspections of water quality
11	Measures against water quality deterioration
12	Measures against rainwater inflow
13	Operating and Maintaining regulating reservoirs
14	Operating and Maintaining leachate treatment facilities
15	Operating and Maintaining open channels and other facilities
16	Installing ventilation systems
17	Measures for landfill sites where landfill disposal has been completed
18	Measures for closed landfill sites
19	Measuring/recording remaining landfill capacity
20	Recording/storing data on types/amounts of municipal waste disposed in landfill sites and landfill site operation and maintenance

Source: Prime Minister's Office and Ministry of Health and Welfare Ordinance No. 1 "Paragraph 2 of Article 1 of the Ministerial Ordinance Establishing Technical Standards for landfill" (1977)

## (2) Performance Guidelines for Waste Treatment Plants

### 1) Incineration Plants

Structure Guidelines for Waste Treatment Plants were formulated in 1979 to serve as technical standards for the structure of plants to be developed under state subsidies. Additionally, in light of technological advances and other factors, the guidelines were revised in 1986, and commentary on the guidelines was published the following year by the Japan Waste Management Association.

In response to subsequent pollution problems and other factors, the structure guidelines were eventually strengthened and clarified as technical standards in the *Waste Management Act*, and waste treatment technology became more diverse due to factors such as the development of new technologies; accordingly, in 1998, the structure guidelines were abolished, and new performance guidelines were formulated. The following is indicated in the general provisions of the performance guidelines.

#### I. General Provisions

Modern Japanese society is based on mass production and mass consumption, and the discharge of massive amounts of waste has created social problems, including increased environmental impact and strain on landfill sites. Additionally, as anxiety and distrust grew among residents of Japan, it has become extremely difficult to secure the waste treatment plants needed to properly treat the waste.

Therefore, in order to further preserve living environments, it is essential to develop waste treatment plants while promoting the minimization and recycling of waste and improving the safety and reliability of waste treatment.

From this perspective, the *Waste Management and Public Cleansing Law* has set out standards for the structure and operation and maintenance of waste treatment plants as the minimum technical standards that must be fulfilled in order to preserve living environments. Additionally, given that state subsidies firmly require the smooth promotion of advanced waste treatment based on the effective use of the government's financial resources, and considering the prompt introduction of new technologies, the following performance guidelines set out matters that waste treatment plants to be developed under state subsidies should have and methods for verifying the performance, in addition to matters set out in relevant laws and regulations.

Source: Ministry of the Environment "Performance Guidelines for Waste Treatment Facilities for Government-Subsidized Waste Treatment Facility Improvement Projects" (1998)

Table 2-6 shows matters pertaining to the performance of waste incineration plants. The matters are simpler than the structure guidelines, and require plants to have the capacity for stably sustaining the planned waste treatment and thermal recovery.

**Table 2-6 Performance Guidelines for Waste Incineration Plants  
(Matters Pertaining to Performance)**

Item	Description
Waste treatment capacity	Plants shall have the capacity to process waste in accordance with the planned quality and amount into incineration residue or solidified materials of the planned properties.
Properties of incineration residue	The ignition loss of incineration residue (excluding fly ash from dust collection) shall be no more than 5% in waste incineration plants that operate continuously, and no more than 7% in waste incineration plants that operate intermittently. However, this does not apply to carbonization plants.
Stable operation	Waste incineration plants that operate continuously shall have the capacity for continuous stable operation for at least 90 days per system. Waste incineration plants that operate intermittently shall have the capacity for stable operation for all planned working days over periods of at least 90 days per series.
Effective use of residual heat, etc.	At waste incineration plants that operate continuously, it shall be possible to generate electricity, supply heat outside the plants, and otherwise use residual heat and the like effectively.

Source: Ministry of the Environment "Performance Guidelines for Waste Treatment Facilities for Government-Subsidized Waste Treatment Facility Improvement Projects" (1998)

## 2) Landfill Sites

Guidelines for Landfill Sites for Waste were formulated in 1979 to serve as technical standards for the structures of landfills to be developed under state subsidies for final disposal sites. Additionally, in light of technological advances and other factors, the guidelines were revised in 1988, and commentary on the guidelines was published the following year by the Japan Waste Management Association.

In response to subsequent pollution problems and other factors, the structure guidelines were eventually strengthened and clarified as technical standards in the *Waste Management Act*. In light of this and other factors, in 2000, the structure guidelines were abolished, and new performance guidelines were formulated. The following is indicated in the general provisions of the performance guidelines.

**Article 1: General Provisions**

Given the importance of developing waste treatment plants while improving the safety and reliability of landfill sites for waste, the *Waste Management and Public Cleansing Law* has set out standards for the structure, maintenance, and decommissioning of waste treatment plants as the minimum technical standards that must be fulfilled in order to preserve living environments (hereinafter referred to as the “Ministerial Order on Standards”). Additionally, given the firm requirements of the smooth promotion of advanced waste treatment and consideration of prompt introduction of new technologies, these guidelines set out matters pertaining to the performance that landfill sites for municipal waste above the capacity specified in the Ministerial Order on Standards should have, and methods for verifying the performance.

Notably, in cases such as landfill disposal in bodies of water, the performance guidelines do not require the installation of equipment or facilities deemed unnecessary in the Ministerial Order on Standards.

Additionally, in order to make landfill sites highly safe and reliable, it is necessary not only to comply with these guidelines, but also to conduct site investigations in advance, and implement construction management, operation and maintenance, and the like appropriately.

Source: Ministry of the Environment “Guidelines for the Performance of Landfill Sites” (2000)

**3) Changes**

The standards for municipal waste treatment plants established in 1971, and the standards for landfill sites established in 1977, have been updated in line with advances in technologies and required technological levels. Table 2-7 shows changes in technical standards and performance guidelines.

**Table 2-7 Changes in Technical Standards and Performance Guidelines**

<b>Year</b>	<b>Incineration plants</b>	<b>Landfill sites</b>
1971	<i>Technical Standards</i> formulated	—
1977	—	<i>Technical Standards</i> formulated
1979	<i>Structure Guidelines for Waste Treatment Plants</i> formulated	<i>Guidelines for Landfill Sites for Waste</i> formulated
1986	<i>Structure Guidelines for Waste Treatment Plants</i> revised	—
1988	—	<i>Guidelines for Landfill Sites for Waste</i> revised
1998	<i>Performance Guidelines for Waste Treatment Plants</i> formulated	—
2000	—	<i>Performance Guidelines for Landfill Sites for Waste</i> formulated

**Column: Japan Waste Management Association**

The Japan Waste Management Association is a public interest incorporated association whose purpose is to contribute to the promotion of public benefit by preserving the living environment and improving public health for residents. The Japan Waste Management Association conducts surveys, research, and other activities necessary for the efficient operation of waste management services by municipalities and improvement of technology in order to smoothly promote waste management services nationwide. In addition to publishing technical books on waste management, such as planning and design guidelines for waste treatment facilities, the association convenes the National Conference on Urban Cleaning Research and Case Studies every year to exchange information and opinions on surveys, research, and other related topics.

The Japan Waste Management Association was founded in 1947 as the “Municipal Waste Management Association” and changed its name to the “The Japan Waste Management Association” in 1956. The association has been operating as a corporate juridical person approved by the Ministry of Health and Welfare (currently Ministry of Health, Labor and Welfare) since 1976 and became a public interest incorporated association in 2012. As of 2022, 388 municipalities and 147 associations are regular members of the association, which mainly conducts research and study, dissemination and awareness-raising, and technical guidance and consultation services related to the waste management service in order to assist the municipalities to implement efficient and smooth waste treatment services.

**3.2 Thermal Recovery**

Power generation and other forms of residual thermal utilization have long been implemented at waste incineration plants in Japan, but the low efficiency of power generation has been an issue; consequently, although residual thermal has been used for swimming pools and other community facilities in the vicinity of some waste incineration plants, most of the power is consumed within the plants. At present the utilization of energy from incineration power generation is promoted because of the enhanced caloric content of waste associated with changes in lifestyles, and the improvement in power generation efficiency brought about by technical innovations.

Incineration power generation is positioned as part of global warming countermeasures to realize a low-carbon society, because it can serve as a new energy source to replace fossil fuels on the strength of the effective use of resources by reusing waste.

Thermal recovery in the waste treatment process is positioned in the *Basic Act for Establishing a Sound Material-Cycle Society* as cyclical usage (thermal recovery), the first step after the 3Rs, and is widely promoted as a measure when reuse or recycling are not possible.

As the development of waste incineration plants for thermal recovery is eligible for subsidies for promoting the formation of a sound material-cycle society, the central government is providing financial support to promote the development of such facilities. Based on the relevant laws and regulations related to renewable energy as outlined hereafter, the use of recovered energy is being promoted by providing business support and promoting the use of new energy, and by ensuring stable sales of renewable energy obtained from waste.

### **(1) New Energy Act**

Name of act: Act on Special Measures Concerning the Promotion of New Energy Usage  
(New Energy Act)

Enacted: 1997

Purpose: To encourage residents of Japan to make efforts to use new energy, and to smoothly promote the use of new energy in order to contribute to ensuring a stable and appropriate supply of energy in line with economic and social environments in Japan and the rest of the world.

Overview of the act: The act requires consumers and business operators to make efforts to introduce new energy, and sets out measures for financial support for business operators that introduce new energy through investment subsidies for small and medium-sized enterprises and the like, with a focus on accelerating the introduction to the market of new energy that is ready for practical application but is held back by factors such as economic efficiency, and promoting further technology development with an eye on the long term.

Targets: The Cabinet Order has positioned photovoltaic power generation, wind power generation, clean energy vehicles, waste fuel production, waste power generation, waste thermal utilization, temperature difference energy, natural gas cogeneration, fuel cells, and solar thermal utilization as “new energy utilization.” Subsequent amendments have added biomass fuel power generation and thermal utilization, and snow and ice thermal utilization, and have excluded waste power generation from waste plastic.

Source: Act on Special Measures Concerning the Promotion of New Energy Usage (1997)

**(2) Feed-in Tariff (FIT) Act**

Name of act: Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities (FIT Act)

Enacted: 2011

Amended: 2016

Purpose: To promote the use of renewable energy sources as energy sources for electricity by taking special measures for the procurement of renewable electricity energy from electric power utilities in terms of price, duration, and other factors, in view of the increasing importance of using renewable energy sources as energy sources to ensure a stable and appropriate supply of energy in line with economic and social environments in Japan and the rest of the world and to reduce the environmental impact of supplying energy.

Overview of act: The act obliges electric power companies to respond to applications from renewable energy power producers for electricity supply agreements at the procurement price and duration set by the government. Additionally, in principle, the expenses incurred by electric utilities when purchasing electricity associated with the operation of the system will be widely borne by the public as taxes (surcharges).

Targets: Renewable energy sources (solar, wind, hydro, geothermal, biomass (plant- and animal-derived organic matter that can be used as an energy source), and excluding crude oil, petroleum gas, combustible natural gas and coal as well as products made from them)

Source: Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities (2011)

**3.3 Pollution Countermeasures (for Dioxins, etc.)**

In response to dioxins becoming a social problem, the Ministry of the Environment took the lead in establishing an investigative commission of experts to discuss countermeasures. Based on the experts' opinions, the relevant laws and regulations regarding the technical standards for plants, emission standards and environmental quality standards for the general environment were established and amended.

When pollution and other problems that threaten human life and health occur, the necessary laws are established and comprehensive countermeasures are implemented through technical and regulatory methods based on the results of the experts' investigations.

Dioxins became a major social issue in the wake of research results showing that they have adverse effects on the environment and human health. In response, measures such as limiting dioxins emitted from the stacks (chimneys) of incineration plants and improvements to waste incineration plants have



been promoted based on Guidelines for the Prevention of Dioxins Emission from Waste Treatment. These guidelines were compiled starting in 1997 by a commission investigating measures to reduce dioxins during waste treatment. Amendments were then made to the *Air Pollution Control Act* and the *Waste Management Act*. Basic Guidelines for the Promotion of Dioxins Countermeasures were formulated at the ministerial conference on countermeasures against dioxins held on March 30, 1999. The government has been promoting these countermeasures, including drastically lowering dioxin emissions.

On July, 1999, the *Law Concerning Special Measures against Dioxins* was enacted to remove dioxins from the environment and prevent pollution of the environment by dioxins. The law sets out principal standards for measures pertaining to dioxins as well as countermeasures for contaminated soil (for more details on dioxin-related problems, refer to Topic 5-3: Dioxins Problems).

Accordingly, as a result of the development of technology for countermeasures, the improvement of incineration plants, and the strengthening of regulations, dioxins emissions from waste incineration plants decreased about 99% from 1997 to 2011.

Name of law: Law Concerning Special Measures against Dioxins
Enacted: 1999
Purpose: To set out standards to serve as the basis for measures pertaining to dioxins, necessary regulations, soil contamination countermeasures, and more in order to remove dioxins from the environment and prevent pollution of the environment by dioxins which are substances that may have a serious impact on human life and health.
Target: Dioxins (polychlorinated dibenzofurans, polychlorinated dibenzo-para-dioxins, coplanar polychlorinated biphenyls)
Source: Law concerning Special Measures against Dioxins (1999)

### 3.4 Inter-Municipal Waste Disposal

Against a backdrop that includes the need to secure a certain scale of treatment capacity to promote efficient and proper waste treatment, dioxins countermeasures, and waste power generation, Japan has promoted inter-municipal waste disposal as a national policy, and has achieved a certain degree of success.

In the past several years, depopulation has made it increasingly difficult for municipalities to implement waste treatment on their own; thus, inter-municipal waste disposal is being considered as a measure to ensure sustainable and proper treatment into the future as well as stable waste management over the medium to long terms.

When considering the introduction of inter-municipal waste disposal, it is crucial to take into account that the content of the plan and framework must be beneficial to all the participating entities and that the issues can be resolved.

Waste management is an inherent obligation of each municipality, with each municipality being responsible for waste management in its own region. On the other hand, some municipalities may find it difficult or inefficient to fulfill their waste management responsibilities on their own due to their locations, population sizes, industrial structures, or other regional characteristics. For such municipalities, an exception is allowed to form a partial-affairs association or wide area union to assume responsibility for waste treatment in a wider area. Under this idea, inter-municipal waste disposal refers to the joint provision of waste management services by multiple municipalities, and the central government issued notifications to prefectural governments in 1997 and 2019 to promote the broadening and consolidation of waste treatment (for an overview of inter-municipal waste treatment plans, refer to Topic 1-2.3 (3) Inter-Municipal Waste Treatment Plan). Summaries of the notifications are as follows.

#### (1) Summary of the 1997 Notification

##### 1) Background

In order to promote proper waste treatment, the situation required responses to; developing incineration facilities above a certain size (100 ton/day) and efficiently use waste heat generated from the facilities, the difficulty of securing landfill sites associated with factors such as increasing amounts of waste generated, the growing need for recycling, and the need for dioxins countermeasures and other advanced environmental conservation measures.

## 2) The Need for Inter-Municipal Waste Disposal

Plans for inter-municipal waste disposal are considered based on the following needs.

**Table 2-8 Needs of Inter-Municipal Waste Disposal (1997 Notification)**

No.	Need	Summary
1	Reduce dioxins	Increasing the scale of incineration plants will make it possible to develop facilities with low dioxins emissions.
2	Promote material recycling	Expanding target waste collection areas will help promote material recycling and reduce amounts of waste incinerated.
3	Promote thermal recycle	Developing larger plants will enable efficient residual thermal utilization at waste incineration plants, helping promote thermal recycle.
4	Measures to secure landfill sites	Efforts to secure landfill sites serving wider areas.
5	Reduce the cost of public services	Consolidating waste treatment plants and expanding treatment areas will help reduce the cost of public services.

Source: Ministry of the Environment “Inter-municipal plan for waste treatment” (Number 173) (1997)

## (2) Summary of the 2019 Notification

### 1) Background

After the 1997 notification was issued, all prefectural governments formulated inter-municipal waste disposal plans and promoted efforts toward wide-area and consolidation of waste treatment. However, the circumstances surrounding waste treatment in Japan had changed substantially in the two-plus decades since the 1997 notification.

In order to ensure sustainable and proper treatment into the future, it was necessary to reconsider what constitutes stable, efficient waste treatment systems over the medium and long term in light of present and future factors such as social circumstances.

### 2) Purpose

To formulate plans for wide-area and consolidation for ensuring sustainable and proper treatment to serve as the basis for promoting the establishment of stable and efficient waste treatment systems.

### 3) The Need for Wide-Area and Consolidation

Plans for inter-municipal waste disposal are considered based on the following needs.

**Table 2-9 Needs of Inter-Municipal Waste Disposal (2019 Notification)**

No.	Need	Overview
1	Ensure sustainable and proper treatment	Developing waste incineration plants and streamlining operation and maintenance will help ensure sustainable and proper treatment in terms of securing finances and personnel.
2	Promote climate change countermeasures	Promoting not only energy savings but also improvements in power generation efficiency and thermal utilization rates at waste incineration plants will help reduce energy consumption throughout waste treatment systems as well as greenhouse gas emissions.
3	Promote waste recycling and biomass utilization	Collecting organic waste across broad areas yields the necessary amounts for material and energy use, helping promote biomass utilization.
4	Strengthen disaster countermeasures	Establishing waste treatment systems that serve broad areas and using waste incineration plants as local disaster risk reduction centers provides independent, decentralized supplies of electricity, heat, and more during disasters.
5	Create new value for communities	Efficiently recovering waste energy can allow incineration plants to function as local energy centers.

Source: Ministry of the Environment “Inter-municipal expansion of waste treatment and consolidation of waste treatment facilities to ensure sustainable and appropriate treatment” (Number 1903293) (2019)

### (3) Outcomes of Inter-Municipal Waste Disposal

Table 2-10 lists the outcomes of inter-municipal waste disposal. Comparing FY 1998 to FY 2017, the number of waste incineration plants has decreased by 40% and the average capacity of the plants has increased from 109 ton/day to 164 ton/day. In addition, a significant reduction in total dioxins emissions has been achieved. Thus, inter-municipal waste disposal in Japan has been successful in reducing dioxins emissions effectively by promoting efficiency in waste treatment through consolidating facilities into larger-scale facilities.

**Table 2-10 Outcomes of Inter-Municipal Waste Disposal**

Item	FY1998	FY2017	Outcome
Number of waste incineration plants	1,769	1,103	Roughly 40% reduction
Plants treating at least 100 ton/day	550 (Roughly 30% of the total)	593 (Roughly 50% of the total)	Expansion of plant scale
Average plant capacity	109 ton/day	164 ton/day	
Dioxins emissions	1,550 g-TEQ/year	22 g-TEQ/year	Achieved target of 33g-TEQ/year

\*TEQ: Toxicity Equivalency Quantity

Source: Ministry of the Environment “Prepared based on *Guidance on Inter-municipal and Consolidation*” (2020)

**(4) Issues in Inter-Municipal Waste Disposal**

Although the central government’s notifications have advanced inter-municipal waste disposal and produced some outcomes, there are also cases in which inter-municipal waste disposal has not progressed. According to the results of a survey conducted by the Ministry of the Environment to municipalities, the reasons for this lack of progress can be broadly classified into the three categories as shown in Table 2-11. It is important to sort out and verify the advantages and disadvantages of inter-municipal waste disposal in advance, and to evaluate efficiency, personnel, funding, and other aspects of waste collection and transport, plant operation and management, etc.

**Table 2-11 Examples of Reasons for Lack of Progress in Wide-Area and Consolidation**

Reason for lack of progress in wide-area/consolidation	Percentage of responses	Detailed description
Advantages to wide-area/consolidation deemed to be too few	3/12 (25%)	Few advantages in terms of cost (e.g., increase in plant development costs associated with purchasing land for developing waste treatment plants serving wide-areas, increase in waste collection and transport costs associated with longer collection and transport distances)
		Little incentive to implement wide-area/consolidation (subsidies for promoting the formation of a sound material-cycle society are granted even for infrastructure life extension and developing disaster-resilient waste treatment plants)
		Consolidation of facilities creates difficulty sustaining waste treatment operations when plants shut down during disasters
		Waste becomes difficult to collect and transport during wide-area/consolidation if areas subject to wide-area/consolidation are too large
Coordination between municipalities is difficult	7/12 (58%)	Difficulty coordinating the timing of waste treatment plant development (particularly when consolidated facilities are scheduled to go into service at different times)
		Difficulty coordinating waste treatment methods (particularly when different municipalities presently deploy different waste treatment methods)
		Changes in waste policy when new municipal mayors take office
		Changes in waste policy when municipalities merge
		Difficulty coordinating potential sites for plant construction
		Difficulty coordinating cost-sharing
		Difficulty coordinating sorted waste categories
Difficulty coordinating waste collection days		
Difficulty coordinating with residents	2/12 (17%)	Difficulty gaining residents’ understanding for increasing transport distances for direct receiving
		Difficulty getting residents’ understanding for consolidating treatment of waste from different municipalities to a single location

Source: Ministry of the Environment “Guidance on Inter-municipal and Consolidation” (2020)

## Column: Osaka Bay Phoenix Project



### 1. Background

Ongoing high-density land use in inland areas of the Kinki region (Population: roughly 20 million, Area: roughly 27,000 km<sup>2</sup>) has made it difficult to secure landfill sites. Under these circumstances, the Osaka Bay Phoenix Project was planned and implemented to fulfill two social demands: proper waste treatment and urban revitalization.

The project, which was funded by local governments and port authorities in the Kinki region, sought to create landfills in Osaka Bay as a means of final disposal of waste from the major urban areas of the region, and to use the reclaimed land to improve the functions of ports and harbors.



Source: Osaka Bay Regional Offshore Environmental Improvement Center  
"Osaka Bay Side Phoenix Project" (2021)

**Photo 2-8 Reclaimed Land off Kobe Coast**

### 2. Purpose

- (1) To preserve living environments in the Osaka Bay region through proper landfill disposal of waste generated in the broad target areas of the region.
- (2) To contribute to the balanced development of the region through the orderly improvement of ports and harbors by using the land created by the landfills.

### 3. Plan Overview

Under the Osaka Bay Phoenix Project, four landfill sites were established in Osaka Bay to accept waste generated across a wide-area - 171 municipalities in six prefectures in the Kinki region.

The following advantages and disadvantages of inter-municipal waste disposal, and important points to remember when introducing and sustaining inter-municipal waste disposal are

offered as lessons learned from implementing the Osaka Bay Phoenix Project (results of interviews with Osaka Bay Regional Offshore Environmental Improvement Center and others).



Source: Osaka Bay Regional Offshore Environmental Improvement Center  
"Osaka Bay Side Phoenix Project" (2021)

**Photo 2-9 Reclaimed Land off Izumiotsu Coast**

**Advantages of Inter-municipal Waste Disposal**

- Consolidating waste treatment and disposal streamlines plant development and operation.
- The larger the scale of the plant, the more economically efficient it becomes, i.e., advantages of economies of scale.
- Plants can be operated more consistently over longer periods of time after inter-municipal waste disposal.

**Disadvantages of Inter-municipal Waste Disposal**

- Decision-making takes more time because there are more stakeholders.
- Awareness of the need to secure remaining landfill capacity and new landfill sites could weaken because plants can be operated more consistently over longer periods of time.
- Risks that were not initially envisioned (including changes in social circumstances) could arise because plants can be operated over longer periods of time.

**Important Points to Remember when Introducing Inter-municipal Waste Disposal**

- There should be no major differences between waste management policies and efforts within the participating municipalities.  
(For example, it feels fairer when there are no disparities between required resident cooperation toward waste reduction or burden for the expense of waste treatment when charges are introduced.)
- Wide-area should cover municipalities with strong social unity. (Unity and acceptance are easier to achieve when stakeholders have shared understanding and awareness.)

**Important Points to Remember when Sustaining Inter-municipal Waste Disposal**

- Continue to hold briefings for local interest parties to sustain both the consensus reached between them and stakeholders' understanding.
- Modify the system in response to changes in social circumstances.



**Photo 2-10 Ship to Transport Waste**  
(The roof is closed after departure to prevent waste scattering)



**Photo 2-11 Transfer of Waste from Ship to Truck**  
(Reclaimed Land off Osaka Coast)

Source: Yachiyo Engineering Co., Ltd.



**Photo 2-12 The Dumping of Waste into the Landfill  
(Reclaimed Land off Osaka Coast)**



**Photo 2-13 Water Treatment Facilities Installed in the Landfill (Reclaimed Land off Osaka Coast)**

Source: Yachiyo Engineering Co., Ltd.

### 3.5 3R Promotion

In order to reduce consumption of natural resources and minimize waste, Japan has long engaged in efforts related to the 3Rs, including reducing waste, reusing unwanted articles, sorting recyclables, and group collection (voluntary resource collection systems run by local residents and others). Furthermore, amid a growing awareness of the importance of establishing a society capable of sustainable development, efforts toward establishing a sound material-cycle society have been promoted, namely through the enactment of the *Basic Act for Establishing a Sound Material-Cycle Society* in 2000.

Under these circumstances, Japan drafted the 3R Initiative in 2004. Since then, efforts to promote the 3Rs have been enhanced inside and outside Japan, and Japan has shared its wealth of knowledge and experience with 3Rs activities with many other countries in an effort to spearhead the formation of a global-scale sound material-cycle society.

#### (1) The 3R Initiative

Japan drafted the 3R Initiative with the aim of establishing a sound material-cycle society through the 3Rs (reducing the generation of waste (Reduce), reusing waste (Reuse), and recycling waste (Recycle)) based on the recognition that the 3Rs - which initiate to promote the effective use of resources to achieve a balance between the environment and the economy - will become even more important in the future.



## (2) Initiatives at G7/G8 Summits

The 3R Action Plan was adopted at the G8 summit held in Sea Island, Georgia, USA in June 2004. In response to the adoption of the plan, the 3R Initiative was formally launched at the 3R Initiative Cabinet Ministers Meeting held in Tokyo in April 2005.

3R Action Plan	1. Promote a 3R shift for economically viable waste
	2. Reduce barriers to the international distribution of recycled materials and products
	3. Encourage cooperation among governments, the private sector, NGOs, and other stakeholders
	4. Promote science and technology adapted to the 3Rs
	5. Develop human resources and cooperate with developing countries

The G8 Summit held in Saint Petersburg, Russia in July 2006 confirmed the commitment to optimize resource recycling based on the 3R Initiative and the idea of setting targets, as appropriate considering resource productivity. The 3R Action Plan also appeared on the agendas of subsequent summits, including the G8 Summit held in Toyako, Hokkaido, Japan in 2008, and the G7 Summit held in Schloss Elmau in Bavaria, Germany in 2015.

These discussions and activities over many years formed the foundation of the G7 Common Vision to Enhance Resource Efficiency and Promote the 3Rs and the Toyama Framework on Material Cycles - a proposal of ambitious actions by G7 countries - which were adopted at the G7 Toyama Environment Ministers' Meeting in May 2016. The G7 Ise-Shima Leaders' Declaration contains a pledge to support the Toyama Framework. G7 Common Vision to Enhance Resource Efficiency and Promote the 3Rs and ambitious actions are shown in Table 2-12.

**Table 2-12 G7 Common Vision to Enhance Resource Efficiency and Promote the 3Rs and Ambitious Actions**

<b>G7 Common Vision to Enhance Resource Efficiency and Promote the 3Rs</b>	
<ul style="list-style-type: none"> <li>✓ Our common goal is to achieve a society in which resources, including stock resources, are used efficiently and sustainably over the entire life cycle by reducing the consumption of natural resources and promoting the use of recycled materials and renewable resources in order to keep them within the environmental capacity of the Earth, while respecting the relevant concepts and approaches.</li> <li>✓ Such a society will not only provide solutions to the problems of waste and resources, but also create a sustainable low-carbon society in harmony with nature that can generate employment, enhance competitiveness, and achieve green growth.</li> </ul>	
<b>Ambitious Actions by G7 Countries</b>	
Goal 1: Leading domestic policies for resource efficiency and the 3Rs	<ul style="list-style-type: none"> <li>✓ Comprehensive integration and promotion of policies on resource efficiency and the 3Rs, climate change, extreme weather events, harmful substances, disaster waste, natural environment conservation, and more.</li> <li>✓ In addition to regulatory approaches, use of voluntary initiatives by business operators and the like</li> <li>✓ Proper treatment and recycling of disaster waste, development of disaster-resilient waste treatment plants, etc.</li> <li>✓ Cooperation among various local entities (symbiosis between industry and local communities), consumer measures</li> </ul>
Goal 2: Promotion of global resource efficiency and the 3Rs	<ul style="list-style-type: none"> <li>✓ Share best practices, the best available technology (BAT), and useful lessons with other countries through the G7 alliance and other organizations</li> <li>✓ Support for capacity building for resource efficiency and resource circulation policies in developing countries</li> <li>✓ Support for countries and regions experiencing major natural disasters</li> <li>✓ Encourage proactive efforts in upstream industries to reuse and recycle, including the use of renewable resources</li> </ul>
Goal 3: Steady and transparent follow-up	<ul style="list-style-type: none"> <li>✓ Establish a transparent follow-up process domestically including sharing of calculation methods, indicators, and the results of reviews.</li> <li>✓ Continue to share progress, challenges and lessons learned on implementation of the Framework, through workshops and other fora.</li> </ul>

Source: Ministry of the Environment Website “G7/G8 initiatives on 3Rs and resource efficiency”  
[http://www.env.go.jp/recycle/circul/3r\\_g7g8.html](http://www.env.go.jp/recycle/circul/3r_g7g8.html) (accessed January 22, 2022)

### (3) Promotion of the 3Rs in Asia

In 2006 and 2008, Japan held the Asia 3R Conference, an administrative-level meeting for Asian countries to share information on the 3Rs. Additionally, in November 2009, the Regional 3R Forum in Asia and the Pacific was established as a further development of the Asia 3R Conference. The objectives of the forum include promoting high-level policy dialogue on the 3Rs, promoting support for the implementation of 3R-related projects in Asian countries, sharing systems, technologies, and other information useful for the promotion of 3Rs, and creating a network among stakeholders.

The forum has been held regularly since the first meeting in Tokyo in November 2009, and has been hosted by the Japanese Ministry of the Environment, among others.

**Table 2-13 Regional 3R Forum in Asia and the Pacific**

No.	Date	Host country	Participants	Theme
1 <sup>st</sup>	November 2009	Japan	15 Asian countries	Adoption of the Tokyo 3R Declaration on the Establishment of the Asia 3R Promotion Forum
2 <sup>nd</sup>	October 2010	Malaysia	22 Asian and Pacific island countries	3Rs for a Green Economy and a sound material-cycle society
3 <sup>rd</sup>	October 2011	Singapore	23 Asian and Pacific island countries	Technology Transfer to Promote the 3Rs: Adaptation, Implementation, and Expansion of Proper Technologies
4 <sup>th</sup>	March 2013	Vietnam	31 countries in the Asia-Pacific region	Future 3R Efforts Based on the “Future We Want” Rio +20 Outcome Document
5 <sup>th</sup>	February 2014	Indonesia	33 countries (ASEAN, Pacific island countries, East Asia, South Asia, etc.)	Framework for Multilayered Coordination and Cooperation as a Foundation for 3R Promotion in the Asia-Pacific Region
6 <sup>th</sup>	August 2015	Maldives	39 countries (ASEAN, Pacific island countries, East Asia, South Asia, etc.)	3R Industry: The Course of Next-Generation 3R for Resource-Efficient Societies and Sustainable Tourism Development in the Asia-Pacific Region
7 <sup>th</sup>	November 2016	Australia	41 countries (Asian countries, Pacific island countries, etc.)	Advances in the 3Rs and Resource Efficiency for the Sustainable Development Agenda 2030
8 <sup>th</sup>	April 2018	India	41 countries (Asian countries, Pacific island countries, etc.)	Achieving Clean Water, Land, and Air through the 3Rs and Resource Efficiency: Vision for the 21st Century in the Asia-Pacific Region
9 <sup>th</sup>	March 2019	Thailand	Roughly 40 countries (Asian countries, Pacific island countries, etc.)	The 3Rs as a Means of Achieving Self-Sufficient Economies: Implications for Sustainable Development Goals
10 <sup>th</sup>	November-December 2020	Webinar format	30 countries (Asian countries, Pacific island countries, etc.)	Promoting a Circular Economy in the Asia-Pacific Region to Achieve the SDGs during the COVID-19 Pandemic

\*: The name of the forum was changed to “3R and Circular Economy Promotion Forum in Asia and the Pacific” at the 10th meeting.

Source: Ministry of the Environment Regional 3R Forum in Asia and Pacific Website “Regional 3R Forum in Asia and the Pacific” <https://www.env.go.jp/recycle/3r/en/index.html> (accessed January 19, 2022)

### Column: The Regional 3R Forum in Asia and the Pacific

The Regional 3R Forum in Asia and the Pacific was first held in Tokyo in 2009 under the joint sponsorship of the Ministry of the Environment of Japan and the United Nations Centre for Regional Development (UNCRD) (its original name was “Asia 3R Promotion Forum”). Since then, a total of 10 international meetings have been held in Malaysia, Vietnam, Indonesia, Australia, India, Thailand, and other countries. With 39 participating countries at present and the adoption of the Hanoi 3R Declaration (2013) and the Bangkok 3R Declaration (2019), the 3Rs are gaining momentum in the Asia-Pacific region every year.

At the first meeting of the Asia 3R Promotion Forum held in Tokyo in 2009 (pictured on the right), representatives and experts from 15 Asian countries (including ministers) and 16 international organizations participated, and the Tokyo 3R Declaration on the Establishment of the Asia 3R Promotion Forum was adopted.



The objectives of the forum are to promote high-level policy dialogue on the 3Rs; to promote dialogue and collaboration among countries, international organizations, and aid agencies for the implementation of 3R projects; to share 3R best practices, methods, technologies, and policy tools; to strengthen networks among central and local governments, experts, and other stakeholders; and to disseminate national 3R strategies. Each meeting of the forum has been attended by a wide range of stakeholders.

Notably, the Institute for Global Environmental Strategies (IGES), which participates in the forum as a policy advisor, has highlighted that “although the formation of legal systems is progressing, steady expansion of policy implementation capacity and institutional and technological infrastructure that meets local needs are expected”, and has identified the following matters pertaining to 3R promotion in developing countries.

#### **System and Governance**

- Establish a formal waste collection and treatment mechanism for waste and circular resources
- Build the capacities of local governments to reliably enforce regulations
- Specify policy priorities and directionality in addition to financial support from central

governments

- Follow up on policy implementation and continuously review plans
- Establish the roles and responsibilities of relevant people in order to achieve goals

#### **Development of Recycling Industry Infrastructure**

- Promote technological and industrial infrastructure that ensures environmental management
- Develop social infrastructure as well as technologies and industries in line with actual conditions
- Develop an excellent recycling industry with scale and capital strength

#### **Nurturing the Market for Waste Recovery and Reuse**

- Prevent end-of-life products from being sent through inappropriate, even if inexpensive, treatment methods based solely on their economic value or value as resources
- Shift from recycling for cost recovery to sustainable resource circulation
- Recognize the need to change the demand coordination mechanism that relies solely on the market

The 3Rs are being deployed in developing countries around the world through JICA's training programs and technical cooperation projects, including the forum described earlier. To promote the 3Rs in developing countries, it is necessary to develop an understanding of the social and economic conditions of each country and city before coordinating with industry organizations and other stakeholders, drafting practical policies that take into account the issues described previously, and promoting them effectively.