

## Part 2: Current Issues in Environmental Conservation and Formation of a Sound Material-Cycle Society, and Government Measures thereon

The following chapters from the White Paper on the Environment and the Sound Material-Cycle Society 2007 explain the current status of our efforts to establish environmentally sound resource cycles and the policy measures implemented during FY2006 for environmental conservation and the formation of a sound material-cycle society.

Chapter 1. Conservation of the Earth's Environment

Chapter 2. Conservation of the Atmospheric Environment

Chapter 3. Conservation of the Water, Soil, and Ground Environments

Chapter 4. Measures and Policies on the Material Circulation, including Waste and Recycling Measures

Chapter 5. Measures and Policies on the Assessment and Control of Environmental Risk of Chemical Substances.

Chapter 6. Conservation of the Natural Environment and Promoting Contact with Nature

Chapter 7. Basis of Various Measures, and Measures Facilitating the Participation of Various Actors and International Cooperation

### 1. Conservation of the Earth's Environment

#### (1) Global warming

Along with the expansion of human activities, massive, growing amounts of greenhouse gases such as carbon dioxide and methane are emitted into the atmosphere. In recent years, the greenhouse effect intensified by such increased emissions is threatening to cause excessive global warming.

According to the Working Group I contribution to the Fourth Assessment Report of the IPCC (Intergovernmental Panel on Climate Change), the global average surface temperature increased 0.74°C [0.56°C to 0.92 C] (1906 to 2005), and the total 20th-century global average sea level rise is estimated to be 17 [12 to 22] cm.

The report states that, "Warming of the climate system is unequivocal." and "Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentration."

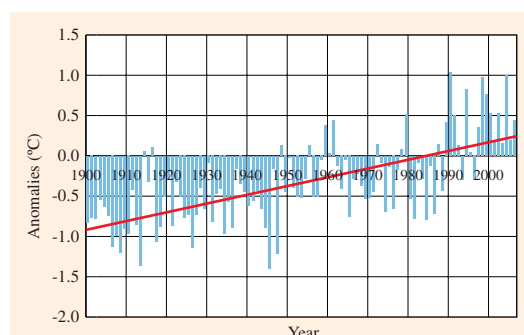
Based on multiple emission scenarios, with certain assumptions on worldwide economic growth, population, technological innovation, economic/energy structures and some other trends, the Report also makes estimates, that the projected average global

**Table 5-1: Impacts of Global Warming Observed in Recent Years**

Indicator	Observed changes
Global average surface temperature	<ul style="list-style-type: none"> <li>• 100-year linear trend (1906 to 2005) of 0.74°C</li> <li>• The linear warming trend over the last 50 years is nearly twice that for the last 100 years.</li> <li>• Eleven of the last twelve years (1995–2006) rank among the 12 warmest years in the instrumental record of global surface temperature (since 1850)</li> <li>• Average arctic temperatures increased at almost twice the global average rate in the past 100 years.</li> </ul>
Global mean sea level	<ul style="list-style-type: none"> <li>• The total 20th-century rise is estimated to be 0.17m.</li> <li>• The rate is about 3.1mm/year over 1993 to 2003</li> </ul>
Hot days/heat waves	More frequent
Cold night/frost	Less frequent
Heavy precipitation events	More frequent
Drought	More intense and longer droughts have been observed over wider areas since the 1970s, particularly in the tropics and subtropics
Glaciers and snow cover	Mountain glaciers and snow cover have declined on average in both hemispheres.

Source: Compiled by the Ministry of the Environment based on the report of Working Group I of the IPCC Fourth Assessment Report.

**Figure 5-1-1: Annual Surface Temperature Anomalies in Japan**



Note 1: The data is based on monthly mean temperatures data in Abashiri, Nemuro, Suttu, Yamagata, Ishinomaki, Fushiki (Takaoka City), Nagano, Mito, Iida, Choshi, Sakai, Hamada, Hikone, Miyazaki, Tadotsu, Naze and Ishigakijima

Note 2: An anomaly is deviation from normal (1971-2000 average of the 17 stations).

Note 3: A red line indicates a long-term trend.

Compiled by the Ministry of the Environment and based on the Japan Meteorological Agency data

surface temperature will increase by 1.1°C to 6.4°C at 2090-2099 relative to 1980-1999.

In addition, the Report states that the global warming tends to reduce land and ocean uptake of atmospheric carbon dioxide, increasing the fraction of anthropogenic emissions that remains in the atmosphere, along with a projection the climate-carbon cycle feedback induce more global average warming. And increasing atmospheric carbon dioxide concentrations will lead to increasing acidification of the ocean. Projections based on the report give reduction in the average global surface ocean pH between 0.14 to 0.35 units over the 21st century, adding to the present decrease of 0.1 units since pre-industrial times.

In Japan, the average temperature has risen by approximately 1°C during the 20th Century. Climate change will have significant impacts on ecosystems, agriculture, social infrastructure, and human health, possibly leading to drastic lifestyle changes.

To address this problem, the 3rd Conference of the Parties (COP3) to the UN Framework Convention on Climate Change (UNFCCC) (held in Kyoto in 1997) adopted the Kyoto Protocol which entered into force in February 2005. The Kyoto Protocol set reduction targets for the greenhouse gases emissions of developed countries in the commitment period from 2008 to 2012. The targets for the greenhouse gases emissions are based on the 1990 emissions level. Japan is obliged to reduce its greenhouse gas emissions by 6%.

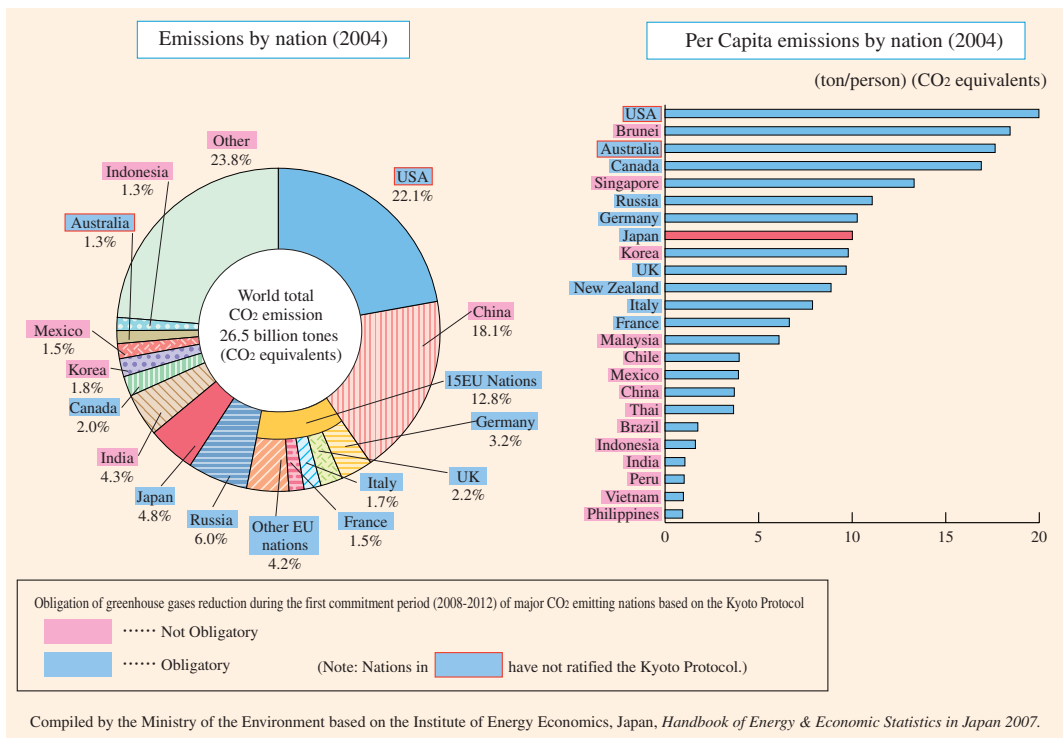
Also, during the twelfth session of the Conference of the Parties to the Convention (COP) and the second Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (COP/MOP2) both held in Nairobi, Kenya in November 2006, the parties agreed to hold the second review of the Kyoto Protocol at the time of the COP/MOP4 in 2008, and a work schedule for the review was also agreed upon.

Japan produces approximately 5% of the total world CO<sub>2</sub> emissions, which is the 4th largest in the world after the U.S.A. (about 23%), China (about 16%) and Russia (about 6%). Developed nations produce larger CO<sub>2</sub> emissions per capita than developing nations.

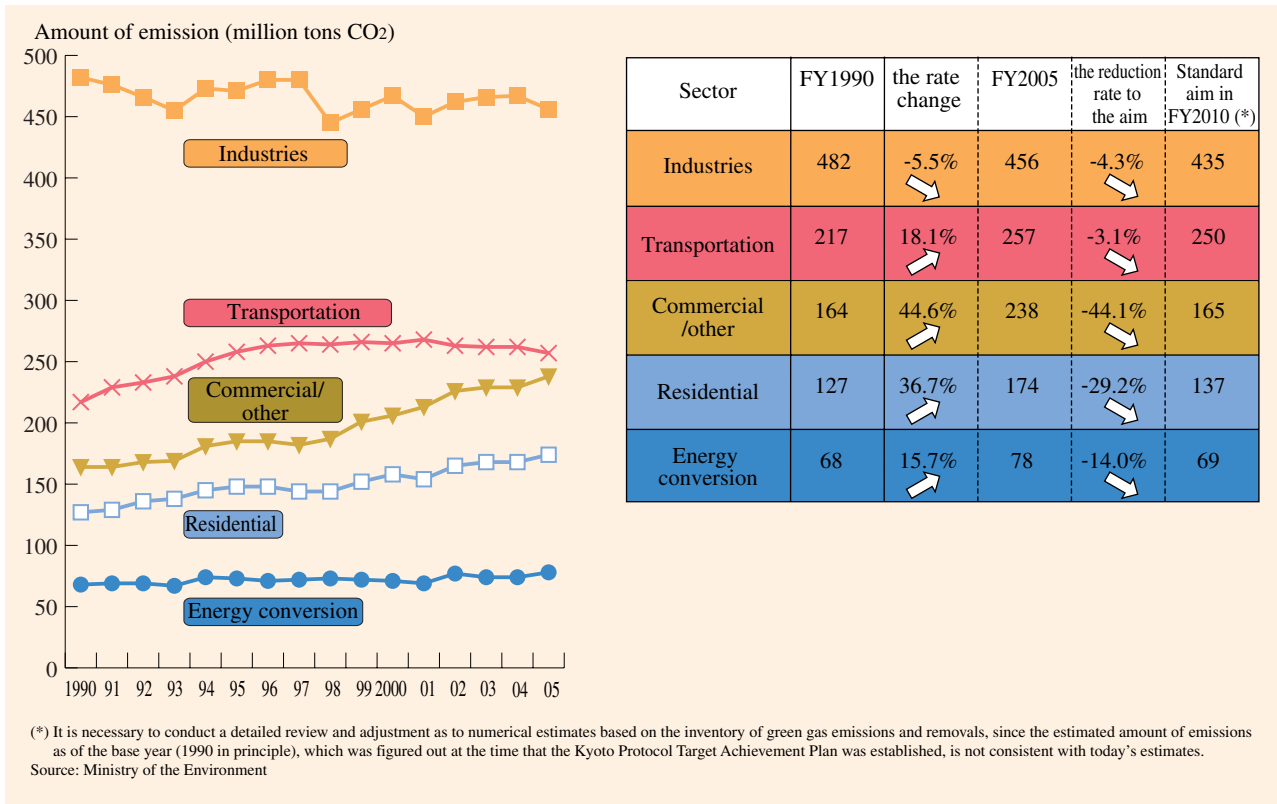
Japan emitted 1,360 million tons\* of greenhouse gases (hereinafter, figures marked with \* represent data for CO<sub>2</sub> equivalents) in FY2006, which was 7.8% higher than the total emissions of the base year (1,261 million tons\*) as stipulated in the Kyoto Protocol. Japan's greenhouse gas emissions were 0.2% lower than the preceding year. Compared to the base year level (1990 in principle), a breakdown by sectors shows that the emissions of greenhouse gases for the industrial sector had decreased by 5.5%, while that of the transport sector had increased by 18.1%, the commercial and other sectors had increased by 44.6%, and the residential sector had increased by 36.7%.

The Kyoto Protocol Achievement Plan, which was adopted by the Cabinet in April 2005, contains about sixty items of measures that collectively aim to attain the target of a 6% reduction in accordance with the Protocol and also support our continuous long-term efforts of reducing GHG emissions. In July 2006, the progress of those measures was assessed, and it was pointed out that

**Figure 5-1-2: CO<sub>2</sub> Emissions and Per Capita CO<sub>2</sub> Emissions by Nation**



**Figure 5-1-3: Changes in Energy-Originated Carbon Dioxide of Respective Sectors and the 2010 targets.**



further acceleration of the implementation of the measures would be necessary to ensure the thorough fulfillment of the Plan, although overall achievements through the implementation of the measures were positively evaluated at the same time.

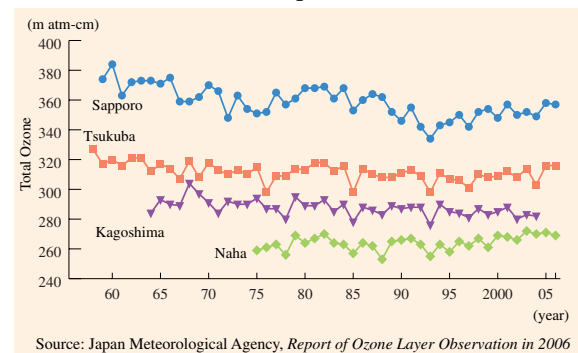
## (2) Depletion of the ozone layer

CFCs, halons and some other substances are found to have been depleting the ozone layer. There is concern that depletion of ozone layer may increase the amount of harmful ultraviolet radiation reaching the earth, leading to increased damage to human health such as skin cancer and cataracts, as well as hindered growth of plants and plankton.

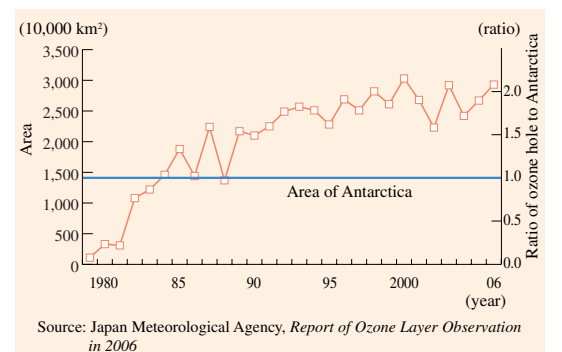
The ozone layer has been depleted, in particular in the 1980s, over the whole globe, except for the tropical areas. The total ozone over Japan also decreased, especially in the 1980s, but it has remained constant or slightly increased since the 1990s.

In 2006, the area of the ozone hole over Antarctica was found to be one of the largest. At present, no downward trend of the ozone hole area can be observed. The ozone layer over Antarctica is still in critical condition. Japan has controlled the production of ozone-depleting substances, in accordance with the Law Concerning the Protection of the Ozone Layer through the Control of Specified Substances and Other Measures. In Japan, recovery and destruction of fluorocarbons from end-of-life products are required by the Law for the Recycling of Specified Kinds of Home Appliances, the Law for Ensuring the Implementation of Recovery and Destruction of Fluorocarbons in Specified Products and the Law for the Recycling

**Figure 5-1-4: Changes in the Annual Average of Total Ozone over Japan**



**Figure 5-1-5: Changes in the Size of Ozone Hole over Antarctica**



of End-of-Life Vehicles. For the purpose of ensuring the recovery of fluorocarbons from commercial refrigerators and air conditioners, the Law for Ensuring the Implementation of Recovery and Destruction of Fluorocarbons in Specified Products was amended in June 2006.

### (3) Acid deposition and dust and sandstorms (DSS)

Acid deposition can produce various effects on the environment and living creatures such as trees or fish by increasing acidity in soil, lake and reservoir water, etc. Buildings, artificial constructions, and cultural assets can be affected by acid deposition.

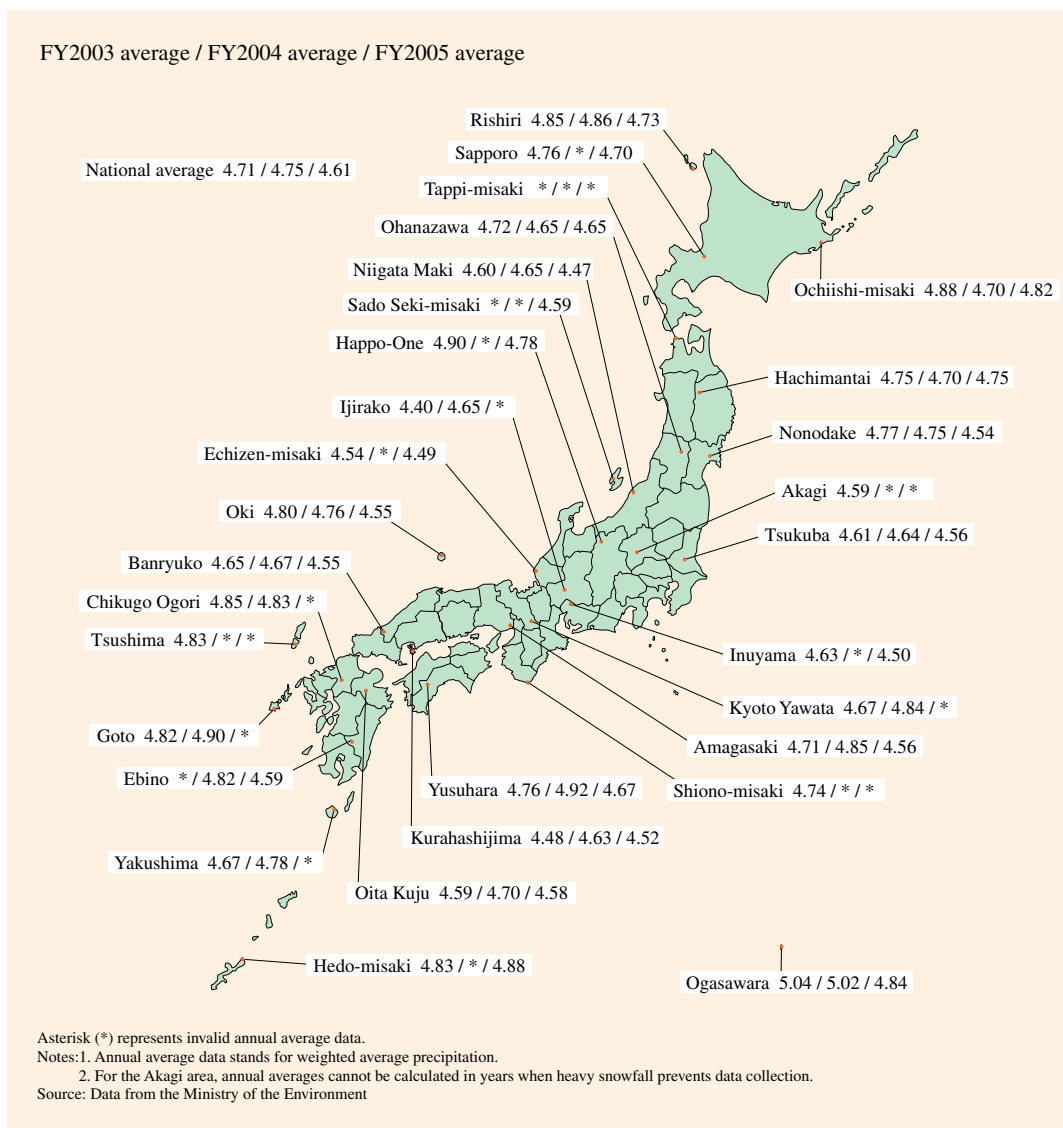
Japan has also had almost the same level of acid deposition as the Western nations that have suffered some damage. However, it is still unclear how acid deposition will impact on ecosystems in Japan. The effects of acid deposition may become apparent in the future, if Japan's acid deposition remains at the current level.

The Acid Deposition Monitoring Network in East Asia (EANET) became fully operational in FY2001. It is aiming to identify the state of acid deposition and its impacts on East Asia and to establish the framework for a regional cooperative approach to acid deposition problems.

In Japan, long-term monitoring of acid deposition is carried out to detect its effects as early as possible and to forecast its effects in the future.

In recent years, the dust and sandstorms (DSS) that blow over from China and Mongolia have increased their scale, and China,

**Figure 5-1-6: Levels of pH in Precipitation**



the Republic of Korea, Japan and other nations share a common interest in dealing with such enlarged DSS. In Japan, the government has introduced the high-level LIDAR (light detection and ranging) system to monitor DSS. In addition, China, Mongolia, Korea, Japan, the United Nations Environment Programme (UNEP), and some other international organizations are working together to explore effective measures to deal with DSS in the future.

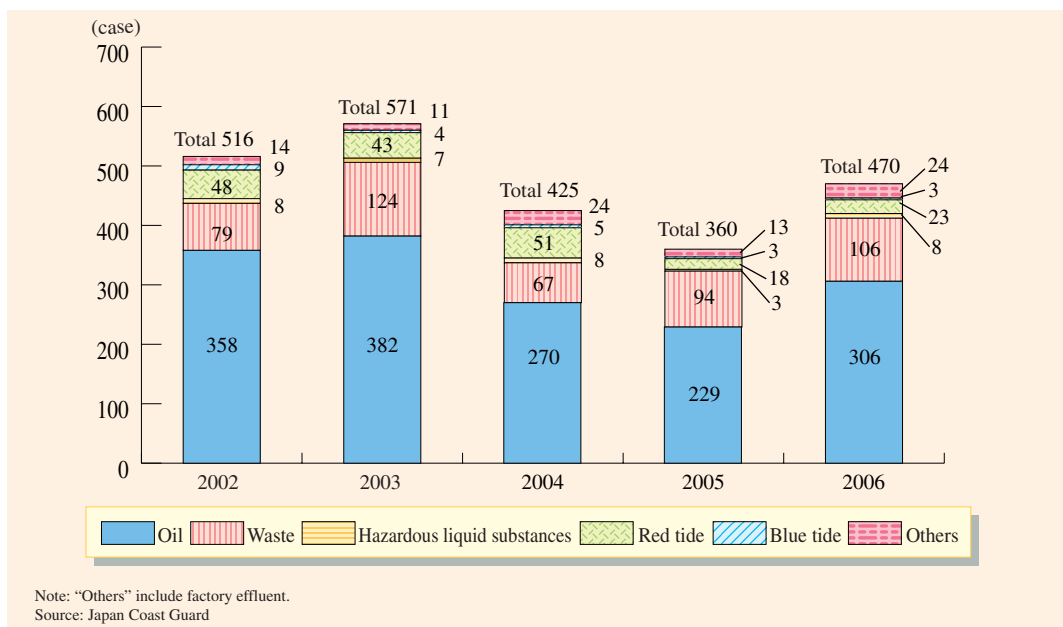
#### (4) Marine environment

For conservation of the marine environment, Japan is a state party to the London Convention, which regulates ocean dumping from vessels, and to the MARPOL 73/78 Convention, which prevents marine pollution caused by ships. In response to these conventions, Japan has taken domestic measures to prevent marine pollution.

In order to assess and monitor the conditions of the marine environment, Japan conducts marine environment monitoring programs, to systematically collect comprehensive data on water quality, bottom sediments, and aquatic organisms.

In terms of marine pollution caused by oil, waste and red tides, 470 cases were identified in 2006, an increase of 110 cases from the 2005 level.

**Figure 5-1-7: Changes in the Number of Marine Pollution Cases Identified**



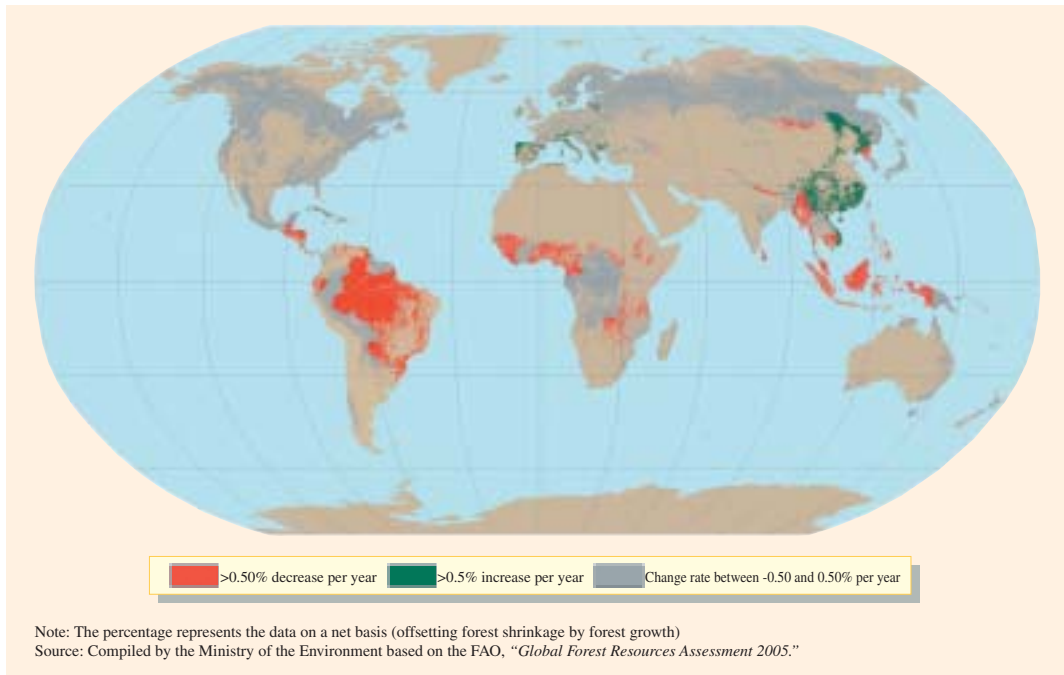
In response to the conclusion of the OPRC-HNS Protocol (Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances), which is going to enter into force in June 2007, the Marine Pollution and Disaster Prevention Law has been partially revised, and the National Plan on Preparedness and Response to Emergency Pollution Incidents by Oil or Other Hazardous Substances” has been newly established. Also, the High-level Inter-ministry Meeting on Marine Litter was organized to enhance control over drifting refuse and abandoned wastes washed seashore, and in March 2007 the conference released to the public a report on the current status, policy measures to be implemented by the national government and necessary efforts in the future regarding this issue.

#### (5) Forest and desertification

The world’s forests now occupy approximately 30% of the earth’s surface, having decreased about 7.32 million hectares per year on average from 2000 to 2005. Particularly, African, South American, and Southeast Asian from Asian region forests, where the tropical forests are located, have suffered a significant reduction in their size.

This significant reduction is caused by changes in land use to farmlands from forests, an increase in non-traditional, migratory slash-and-burn agriculture, overharvesting of firewood and charcoal, as well as illegal logging. In an effort to tackle this problem, the 41st session of the International Tropical Timber Organization (ITTO) adopted projects and actions to promote sustainable management of tropical forests.

**Figure 5-1-8: Changing Rate in the size of World Forests per a year (2000-2005)**



About one-quarter of all land areas in the world and about 1 billion people, accounting for one-sixth of the world's population, are affected by desertification. As background of this problem, there are factors such as poverty and population growth in developing nations. Therefore, international efforts are being made under the UN Convention to Combat Desertification (UNCCD).

## 2. Conservation of the Atmospheric Environment

### (1) Photochemical oxidant

Photochemical oxidants are the cause of photochemical smog, which causes eye and throat irritation and respiratory distress. In almost all regions throughout Japan, photochemical oxidants still exceed the environmental quality standard (EQS) (a one-hour value of 0.06 ppm or less).

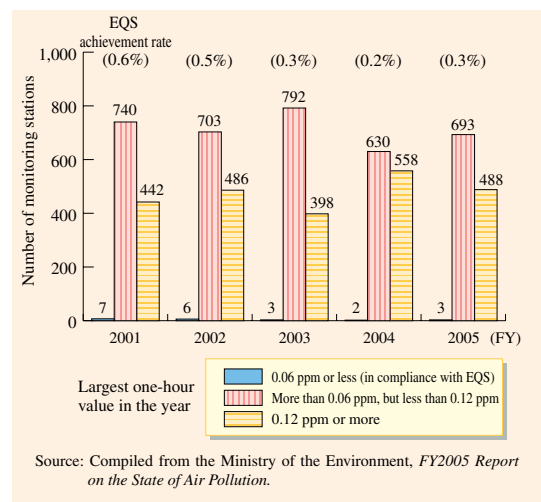
As one of the measures to combat photochemical oxidants, VOC-emitting firms have been required to submit notification of their VOC-emitting plants and comply with the emission criteria since April 2006. In accordance with the Air Pollution Control Law, Japan's regulatory authority has put in place tighter restrictions on VOC emitted from automobiles.

Through the Atmospheric Environmental Regional Observation System (nickname: Soramame-kun), the government collects on a real-time basis the nationwide atmospheric environment data measured at a prefectural level as well as the photochemical oxidant warning data, and makes these data available on the Internet.

### (2) Nitrogen oxide

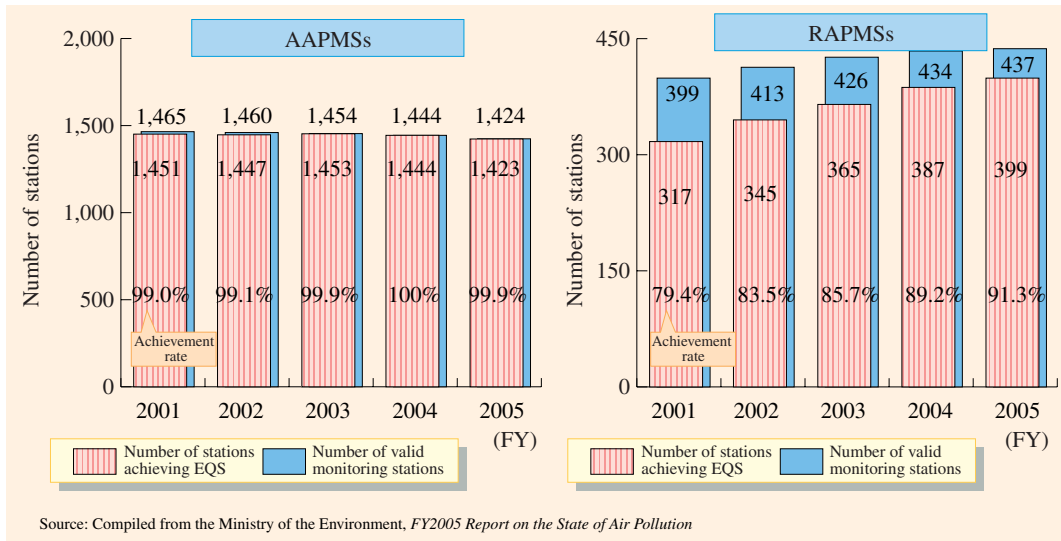
Nitrogen oxide (NO<sub>x</sub>) is generated mainly from stationary sources (such as factories) and mobile sources (such as motor vehicles). NO<sub>x</sub> contributes to photochemical oxidants, suspended particulate matter, and acid deposition. High concentrations of Nitrogen dioxide (NO<sub>2</sub>) may have a negative impact on health by causing irritation to the respiratory organs.

**Figure 5-2-1: Changes in the Number of Monitoring Stations by Photochemical Oxidant Concentration Level (AAPMSs and RAPMSs) (FY2001-2005)**





**Figure 5-2-2: Changes in Achievement of NO<sub>2</sub>-related EQS (FY2001-2005)**



Compared to the previous year, the achievement rates for the NO<sub>2</sub>-related EQSs were slightly improved in the roadside air pollution monitoring stations (RAPMSs) in FY2005. The achievement rate of the ambient air pollution monitoring stations (AAPMSs) was 99.9%, and that of the roadside air pollution monitoring stations (RAPMSs) was 91.3%.

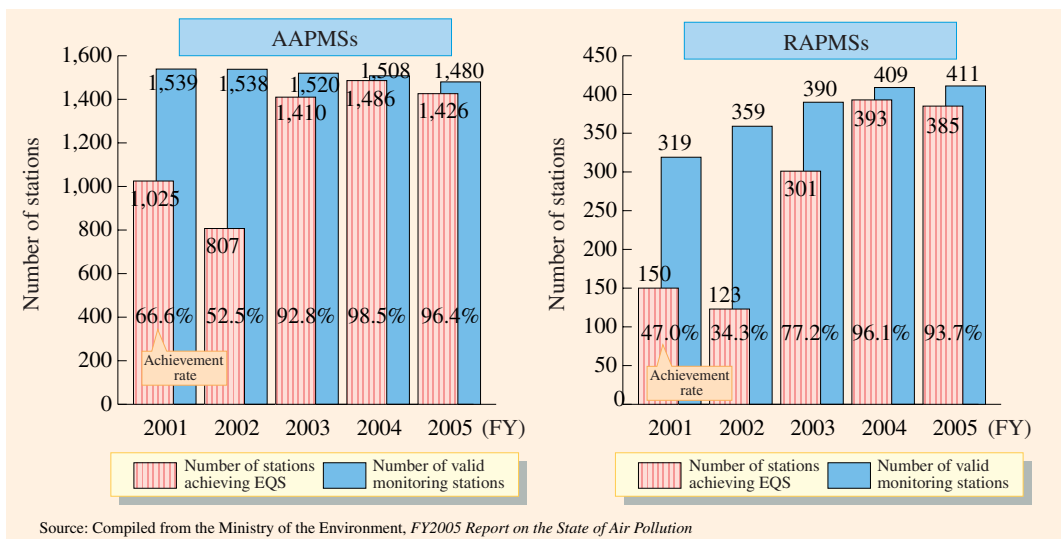
Source: Compiled from the Ministry of the Environment, FY2005 Report on the State of Air Pollution

### (3) Suspended particulate matter (SPM)

Suspended particulate matter (SPM), which floats in the air and has a diameter of 10µm or less, is classified into primary particles and secondary particles. Primary particles include soot and dust from factories, diesel exhaust particles (DEP) generated from diesel vehicles, and soil particles dispersed in the air. Secondary particles are formed in the atmosphere from gaseous substances such as nitrogen oxides (NO<sub>x</sub>). Because SPM is of a minute size, it stays in the air for a long time. An accumulation of SPM in high concentrations in the lungs or the trachea can have damaging effects on the respiratory system.

Regarding the current status of our efforts to satisfy the environmental quality standards (EQS) related to SPM, the achievement rate measured in the FY2005 was slightly lower than that of the previous year, both for ambient air-pollution monitoring stations (AAPMS) and roadside air-pollution monitoring stations (RAPMS).

**Figure 5-2-3: Changes in Achievement of SPM-related EQS (FY2001-2005)**



In addition, experts are carrying out research on fine particulate matter with a diameter of 2.5µm or less and diesel exhaust particles because analysts recently pointed out that these substances can have an adverse affect on human health.

**(4) Hazardous air pollutants**

Various hazardous air pollutant, though low in concentration, have been detected in the atmosphere, raising concerns about the health effects of long-term exposure.

In terms of the four substances that have EQSs in place, benzene’s observed value improved in FY2005, with 3.9% of monitoring stations recording data exceeding the EQS. As for the other three substances, all monitoring stations recorded data better than the applicable EQSs.

In order to mitigate the health risk attributable to hazardous air pollutants, guideline values of chloroform, 1,2-dichloroethane and 1,3-butadiene were newly established in FY2006 to join the four existing designated substances.

**(5) Measures against asbestos**

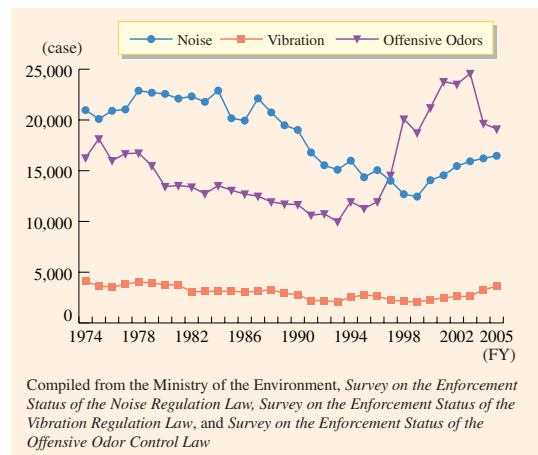
The Air Pollution Control Law provides a work standard for demolition and other works of fireproof buildings of certain sizes using spray-applied asbestos. In March 2006, this Law was partially revised to expand the scope of restricted construction materials and also to abolish the building-size exemptions applied to small-sized buildings, with the aim of strengthening the measures to prevent asbestos dispersal into the atmosphere and expand applications of the measures. Also, starting from October 2006, regulations on demolition and other works of the said buildings have expanded to newly bind equipment, fixtures, etc. in addition to buildings.

**(6) Noise, vibration, and offensive odors**

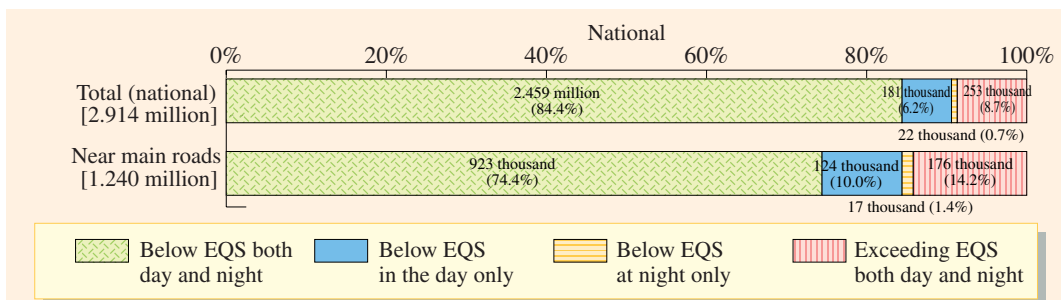
The number of complaints about noise and vibration has been gradually increasing over several years to 16,470 and 3,599 in FY2005. There were 19,114 complaints about offensive odors in FY2005, a decrease for the second consecutive year.

Out of the 2,914 thousand noise observation points (households) in residential areas nationwide, 456 thousand households (16%) exceeded the EQS either at day or night in FY2005. Out of the 1,240 thousand observation points (households) facing a main road, 317 thousand households (26%) exceeded the EQS either at day or night. With regard to aircraft noise, 73% of the observation points were within the EQSs satisfactory level in FY2005.

**Figure 5-2-4: Changes in the Number of Complaints against Noise, Vibration, and Offensive Odors (FY1974–2005)**



**Figure 5-2-5: Attainment of the EQS for Road-Facing Areas**



Notes: 1. The figures in parenthesis represent the number of households surveyed.  
 2. The total households may not correspond to the number of households surveyed due to rounding.  
 Source: Ministry of the Environment



## (7) Urban heat island phenomenon

“The heat island phenomenon” means that the air temperature at the city center is higher than that of the surrounding non-urban areas. This phenomenon results in an increase in the number of nights in which the minimum temperature is above 25 degree centigrade in summer. The increase in temperature by waste heat from air conditioners causes more demand for air conditioning and energy use.

According to the “Outline of the Policy Framework to Reduce Urban Heat Island Effects,” the government has promoted four major pillars of countermeasures against the heat island phenomenon: reduction of anthropogenic heat emission, improvement of the urban surface, improvement of urban structures, and improvement of lifestyles.

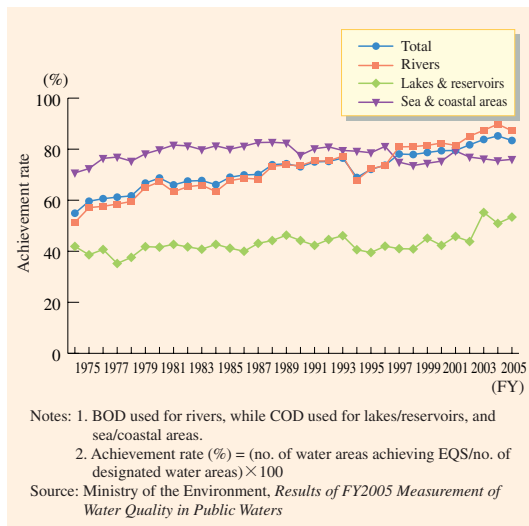
The government has also promoted the research and observation of the heat island phenomenon and its impact on the environment.

## 3. Conservation of the Water, Soil, and Ground Environment

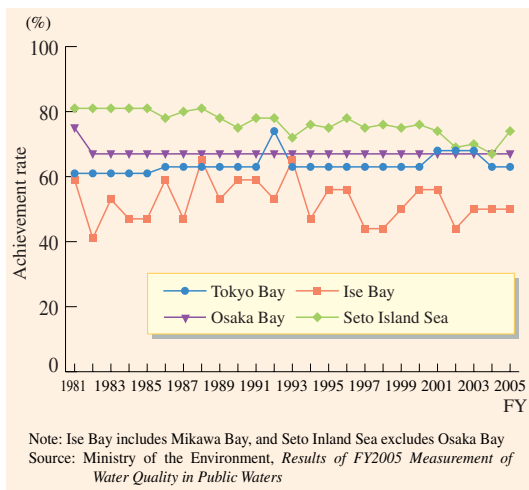
### (1) Water environment

According to the Results of FY2005 Measurement of Water Quality in Public Waters, the achievement level of the EQS for the protection of human health from substances, such as cadmium, was 99.1%. Standards set for protecting the living environment were achieved at slightly lower rates. The BOD (or COD) level is an EQS for the conservation of the living environment and is a typical

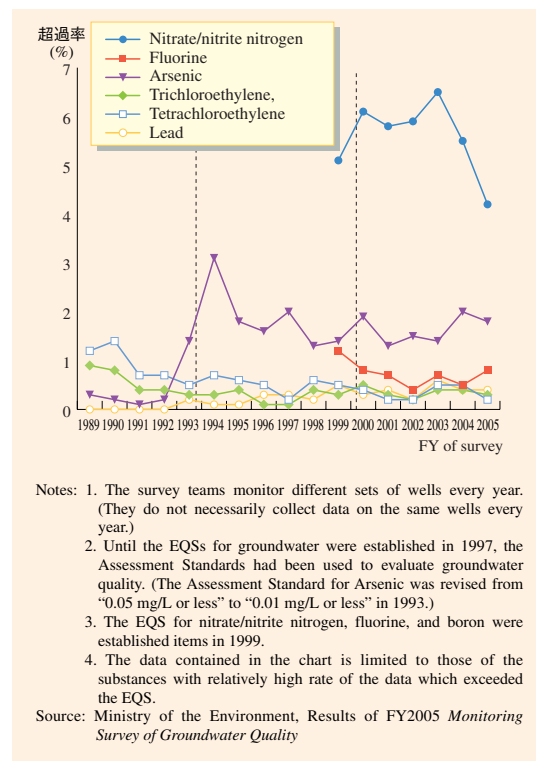
**Figure 5-3-1: Trends in EQS Achievement Rate (BOD or COD)**



**Figure 5-3-2: Trends in EQS Achievement Rate (COD) in Three Coastal Regions**



**Figure 5-3-3: Percentage of the Groundwater Monitored which Exceeded the EQS**



water-quality indicator for organic contamination. Its EQS achievement level remained at 83.4%. By water area, the achievement levels were 87.2% for rivers, 53.4% for lakes and reservoirs, and 76.0% for sea areas. In particular, achievement rates for enclosed water areas, such as lakes, reservoirs, inner bays, and inland seas were still low. In terms of COD, the achievement rates were 63.2% for Tokyo Bay, 50.0% for Ise Bay, and 73.5% for the Seto Inland Sea.

Regarding measures for lakes and reservoirs, the revised Law concerning Special Measures for the Conservation of Lake Water Quality came into force in April 2006. Also, the measures for addressing the issue of pollutant loads attributable to non-point pollution sources in farmlands, urban areas, etc. have been deliberated and the deliberation results are reflected in the report, “The Basic Policy on Basin Areas for the Improvement of Water Quality of Lakes and Reservoirs.” In addition, the sixth Basic Policy for Area-wide Total Pollutant Load Control has been established to promote further improvement of the water environment of enclosed water areas, wherein targets are set to be attained by FY2009.

According to the FY2005 Monitoring Survey of Groundwater Quality, 6.3% of the wells monitored exceeded the EQS (of one or more substances). Specifically, 4.2% of the total did not meet the EQS for nitrate-nitrogen or nitrite-nitrogen. Most of the wells were supposed to be polluted by farmland fertilization, livestock excreta, or domestic wastewater. Appropriate measures to prevent the pollution are necessary for the conservation of groundwater.

The “Inter-Ministry/Agency Coordination Committee for Building Sound Water Cycle” is pushing ahead with policy actions to provide a healthy water cycle by holding information/opinion exchange sessions, encouraging research activities, and serving as a coordinator of policy actions.

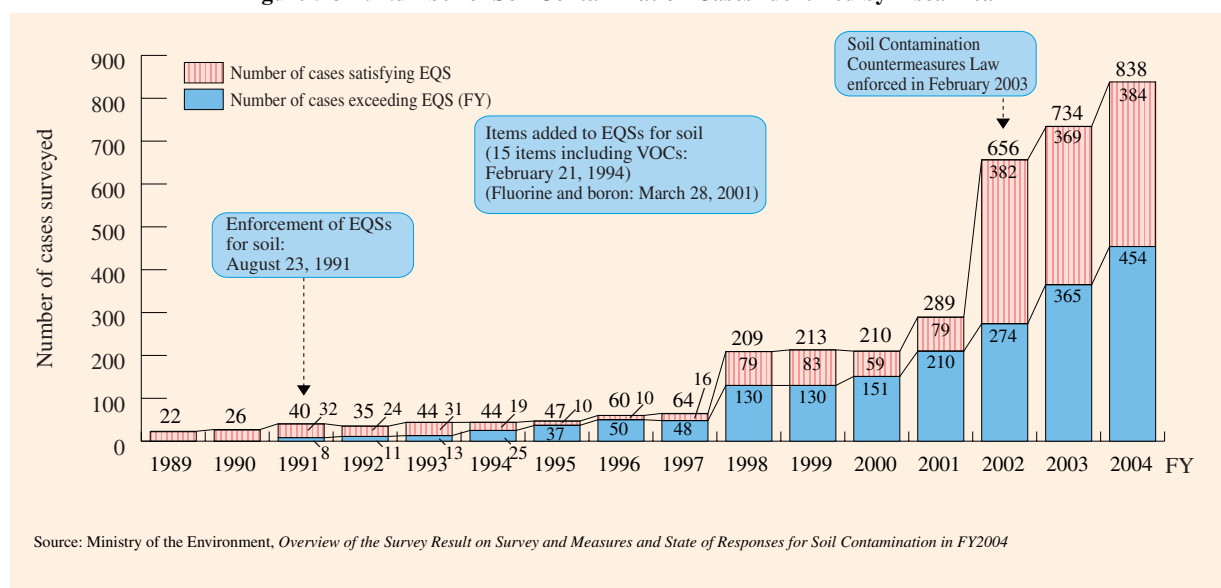
## (2) Soil contamination

Once soil is contaminated, it accumulates hazardous substances, perpetuating the state of pollution.

A larger number of soil contamination cases have been identified in urban areas as a result of redevelopment projects at former factory sites. In FY2004, the regulatory authority acknowledged 454 cases that exceed the EQS for Soil Contamination or Soil Contamination Countermeasures Law.

In order to address such soil contamination, the Ministry of the Environment is pushing ahead with appropriate countermeasures on soil contamination in accordance with the Soil Contamination Countermeasures Law, and conducted a survey, with the intention of establishing more comprehensive EQS that would regulate extensively of pollutants and exposure paths.

**Figure 5-3-4: Number of Soil Contamination Cases Identified by Fiscal Year**

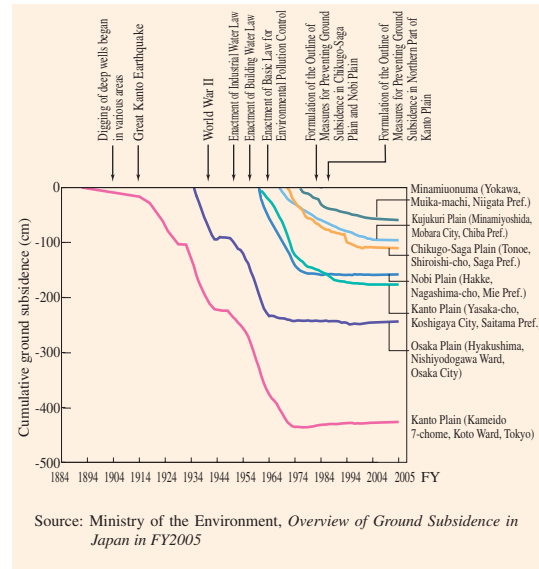


### (3) Ground subsidence

Ground subsidence is caused by excessive pumping of groundwater, which lowers the level of the groundwater and shrinks the clay layer. As of FY2005, 61 areas in 37 prefectures suffered ground subsidence. Restrictions on the pumping of groundwater and other measures have mitigated ground subsidence in Tokyo's 23 wards, Osaka City, and Nagoya City, where remarkable ground subsidence had occurred in the past.

However, ground subsidence still occurred in certain areas such as the South Uwonuma plain in Niigata Prefecture. Some areas that are lower than sea level due to ground subsidence may face the danger of huge damages caused by high tides or floods. For this reason, besides imposing restrictions on the pumping of groundwater, measures are being taken to deal with high tides and to build facilities to protect the coastline.

Figure 5-3-5: Changes in Ground Subsidence in Selected Areas



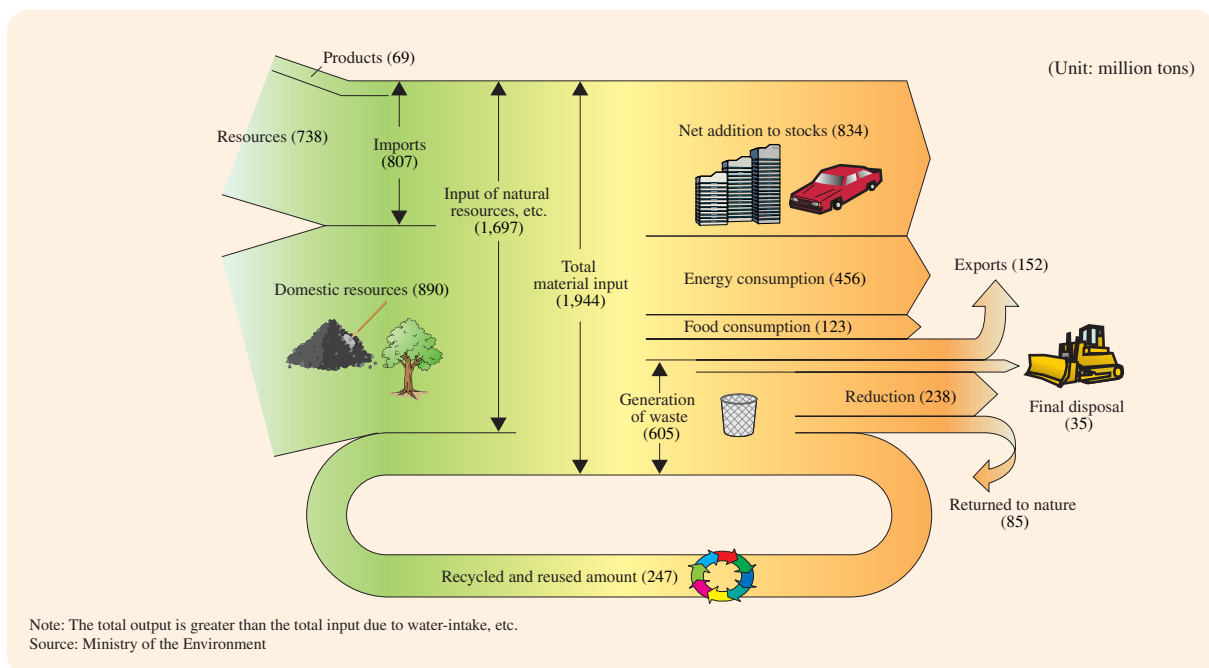
## 4. Measures and Policies on the Material Circulation, including Waste and Recycling Measures

### (1) Material flow in our country

In order to build a Sound Material-Cycle Society, it is important to understand, first and foremost, the current status of how much we collect, consume and discard resources.

An overview of the Material flow in our country as of FY2004 shows that the Total material input this year was 1.94 billion tons, about half (or 830 million tons) of which was stored in the form of buildings or social infrastructure. It is also shown that 150 million tons were exported to other countries in the form of products, etc., 460 million tons were converted to energy, and 610 million tons became wastes, etc. Of those wastes, 250 million tons were recycled, which accounts for only 12.7% of the Total material input. This data indicates that the issues of waste treatment, recycling and global warming come from structural and

Figure 5-4-1: Material Flow in Japan (FY2004)



fundamental problems of our society.

The Fundamental Plan for Establishing a Sound Material-Cycle Society, adopted by the Cabinet in March 2003, sets numerical targets of “input,” “recycling” and “output,” which respectively represent major indicators of the Material flow, with the aim of visualizing an appropriate structure of the

policy measures necessary to be implemented for reducing, reusing, recycling and disposal, and ensuring appropriate waste disposal respectively so as to ensure the well-balanced implementation of those measures for the formation of a Sound Material-Cycle Society.

**Table5-4: Targets to be Achieved by FY2010**

Indicators	Resource productivity	Recycle/reuse rate	Final disposal volume
Targets	About 390,000 yen per ton	About 14%	About 28 million tons

• **Resource productivity (=GDP/Input of natural resources, etc.)**

This indicator represents the performance of how resources efficiently produce benefits.

• **Recycle/reuse rate (=Recycled and reused amount / (Recycled and reused amount + Input of natural resources, etc.)**

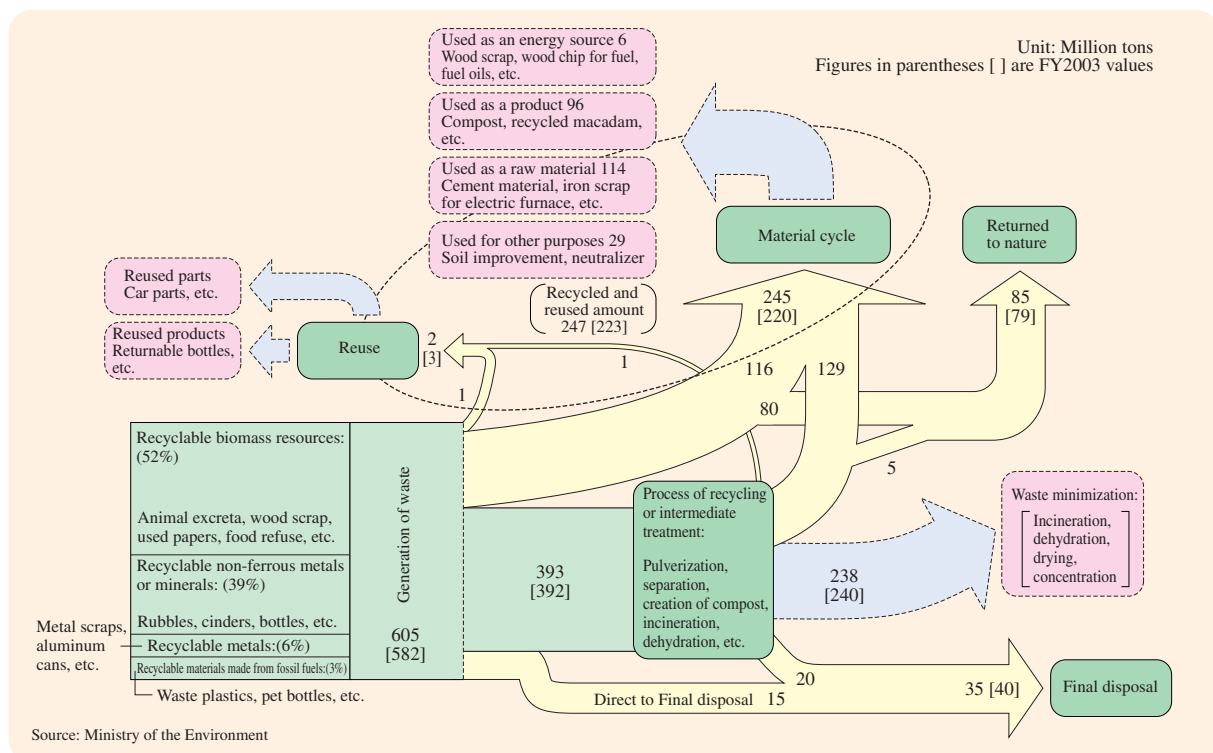
This indicator represents the proportion of how much of input resources are recycled or reused.

• **Final disposal volume**

This indicator represents the volume of wastes that go to landfills, and needs to be closely watched due to the current situation of the impending shortage of final waste disposal site.

The results of the third assessment of the progress of the Fundamental Plan for Establishing a Sound Material-Cycle Society show that “Resource productivity” was about 336,000 yen per ton during FY2004, up 60% from FY1990 from about 210,000 yen per ton and up 20% from FY2000 from about 280,000 yen per ton. The “recycling/reuse rate” during FY2004 was about 12.7%, up about 70% from FY1990 from about 8% and up about 30% from FY2000 from about 10%. The “Final disposal volume” during FY2004 was about 35 million tons, down about 69% from FY1990 from about 110 million tons and down about 38% from FY2000 from about 56 million tons.

**Figure5-4-2: Flow of Resource Recycling in Japan (FY2004)**



Thus, the indicators of the Material flow have been showing satisfactory values overall in recent years. If this tendency can be maintained, it is highly possible to achieve the targets by FY2010 as planned. However, we also see many undesirable statuses in the Material flow at present, including the high levels of “Total material input” and “Input of natural resources, etc.,” imbalance between input (resources, products, etc.) and output and the low level of “Recycled and reused amount.” In order for us to correct those undesirable statuses to accomplish the above-mentioned targets of the respective indicators, it is important to promote our 3R efforts.

Regarding the present status of our efforts of recycling and reuse (as of FY2004), a total of 605 million tons of wastes were generated annually, of which 247 millions entered into a material cycle including reuse and recycling, and 238 million tons were through waste-minimization procedures, including incineration and dehydration. Of the total amount recycled or reused, 2 million tons were reused, in the form of the reuse of returnable bottles for beer, milk, etc., the reuse of tires and other.

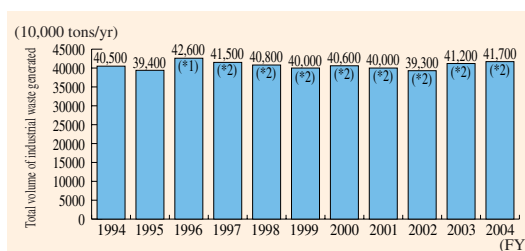
## (2) Current status of wastes generation

Since FY1989, Japan has been generating municipal solid waste at an annual volume of approximately 50 million tons or more. These annual volumes of municipal solid waste have been showing a continuous downward trend since FY2000. In FY2004, of all municipal solid waste, direct incineration accounted for 77.5%, while recycling accounted for 19.0%. The final volume disposed of at landfill sites was 8.09 million tons, a decrease of 360,000 tons from the previous year.

The total volume of industrial waste generated in Japan has also remained steady over the last few years. The volume was approximately 417 million tons in FY2004, up 1.3% from the previous fiscal year. Approximately 26 million tons was registered as final disposal volume in FY2004, registering a decrease of about 4 million tons from the previous fiscal year.

Nationally there is a lack of disposal capacity, with final disposal

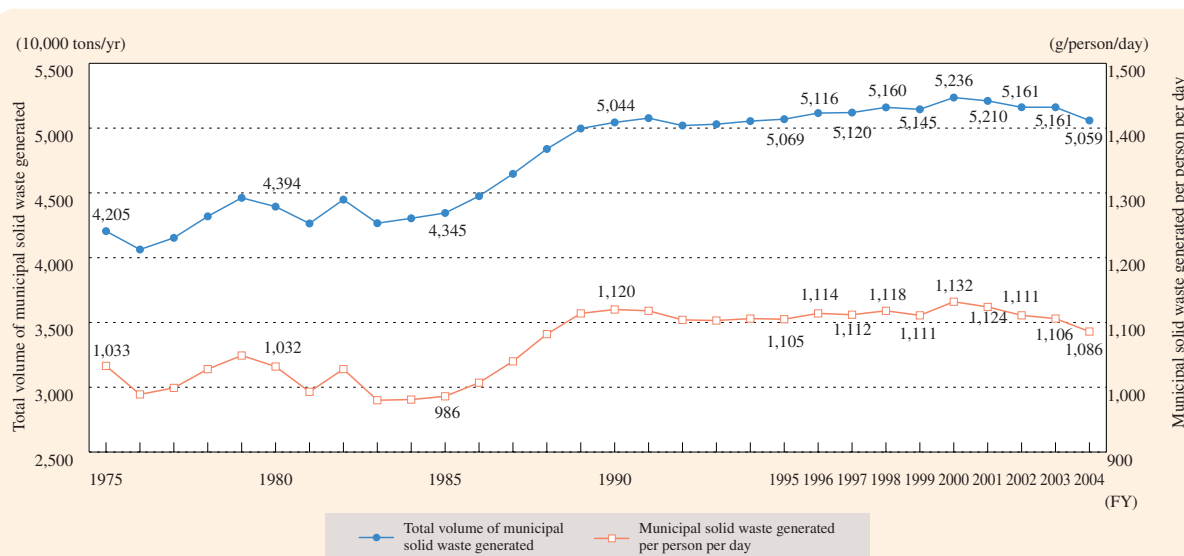
**Figure 5-4-3: Changes in the Volume of Industrial Waste Generated**



Notes: (\*1) The 1996 data indicate the waste volume in FY1996, as defined in the “Target of Waste Reduction” (government decision, September 28, 1999). In the “Target of Waste Reduction,” the government aims to achieve its targets at the latest in FY2010 based on the “Basic Policy for Dioxin Measures,” which was decided by the Ministerial Meeting on Anti-Dioxin Measures.  
 (\*2) The amount of waste from FY1997 onward was calculated using the same calculation approach as \*1 above.

Source: Compiled from the Ministry of the Environment, *State of the Generation and Treatment of Industrial Waste*

**Figure 5-4-4: Changes in Total Volume of Municipal Solid Wastes and Waste Volume Generated per Person per Day**



Notes: “Total volume of municipal solid waste generated” = “volume of wastes collected” + “volume of wastes directly brought in” + “self disposal volume” In accordance with the Waste Management and Public Cleansing Law, the government setup “Basic Guidelines for the Comprehensive and Systematic Promotion of Waste Reduction Measures and Other Appropriate Treatments.” According to these Basic Guidelines, total volume of municipal solid waste is defined as “total volume of municipal solid waste generated” less “self disposal volume” plus “recyclable waste volume collectible by groups.” The amount of municipal solid wastes (as defined above) stood at 53,380,000 tons in FY2004.

Source: Ministry of the Environment

sites having an average capacity of only another 7.2 years as of April 2005.

In FY2005 there were 558 cases of illegal dumping of industrial waste in Japan, continuing the downward trend of the consecutive two years.

### (3) Legislation and efforts to facilitate the formation of a Sound Material-Cycle Society

To solve these problems, the following measures have been promoted in line with the Fundamental Law for Establishing a Sound Material-Cycle Society: (i) reducing wastes; (ii) reusing end-of-life products and parts; (iii) recycling wastes as raw materials; (iv) recovering heat; and (v) appropriate disposal as final waste. In line with these basic principles, the Waste Management and Public Cleansing Law will be implemented as well as other recycling-related legislation.

In an effort to promote recycling, the Law for the Promotion of Sorted Collection and Recycling of Containers and Packaging was partially revised in June 2006, to introduce new mechanisms. This includes the practice of businesses to financially compensate municipal governments that contributed to the reduction of container or package waste by introducing effective measures or to the efficient recycling of containers and packages by introducing sophisticated methods of sorted collection. In response to this legislation, municipal governments have been promoting collaborative efforts with businesses to reduce container and package waste. For example, municipal governments carry out model projects such as a program to encourage shoppers to use their own bags instead of using stores' plastic bags and promote relevant education and publicity programs, and also enter into voluntary agreements with highly motivated businesses that introduce pioneering programs for facilitating waste reduction.

The Central Environment Council and the Council of Food, Agriculture and Rural Area Policies held meetings to jointly review and discuss existing systems under the Law for Promotion of Recycling and Related Activities for the Treatment of Cyclical Food Resources. Consequently, they submitted a bill, during the 166th Diet session, for the partial amendment of a law that proposes the introduction of strengthened guidance and supervision over food businesses and the expansion of the scope of special exemptions provided for by the Waste Management and Public Cleansing Law to apply to food businesses when their agricultural produce, stock farm products or marine products are using food refuse-originated fertilizers or feeds with the consent of the competent minister.

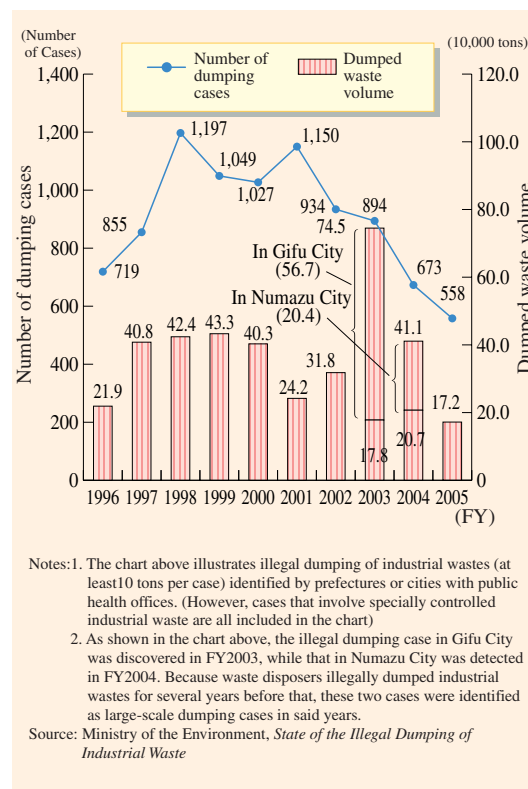
Also, in order to create an infrastructure that supports a Sound Material-Cycle Society, the improvements of waste-treatment facilities and recycling facilities are underway through the cooperation between the national and local governments and the use of subsidies, etc. designed to promote the formation of a Sound Material-Cycle Society.

In addition, for the purpose of promoting countermeasures against illegal dumping to ensure appropriate waste treatment, the governments have been making efforts to promote the wide utilization of the electronic manifest system, education for industrial waste-management contractors, proper, safe treatment of PCB (polychlorinated biphenyl) and development of toxicity-free treatment of asbestos-contained wastes.

### (4) International efforts

As part of efforts to globally promote the 3R initiative, the Asia 3R Conference was held in Tokyo in October 2006. Representatives from China, South Korea, Singapore, etc. got together to share the understanding of the significance of the Asia-wide promotion of 3R efforts and had active policy dialogues for further promotion of the 3R initiative.

**Figure 5-4-5: Trend of Illegal Dumping Cases and Illegally Dumped Waste Volume**





## 5. Measures and Policies on the Assessment and Control of the Environmental Risk of Chemical Substances

To prevent adverse environmental effects from the production, distribution, use, or disposal of the several tens of thousands of chemical substances that are traded in Japan, it is necessary to evaluate and properly address the risk that chemical substances could harm human health and the environment (environmental risks).

During FY2006, the 5th assessment report was issued, wherein five specific substances were designated as “candidates for detailed assessment,” with two for health risk and three for ecological risk.

In accordance with the Chemical Substances Control Law, the government controls new chemical substances that are manufactured or imported based on an evaluation of their biodegradability, bioaccumulation, and toxicity to human, plants and animals.

During FY2006, a total of 503 notifications on the manufacture or import of a new chemical substance were made (of which 219 were of low manufacture or import quantities), and pre-market evaluations were conducted for those notifications.

Japan has also implemented the PRTR (Pollutant Release and Transfer Register) system for chemical substances possibly harmful to human health or ecosystems. Under the PRTR system, businesses identify and report to the government the amount of chemical substances that are released to the environment or transferred as waste materials. The government then aggregates the data from businesses and publishes them together with the estimation of releases that are not reported to the government (e.g. household, transport, small businesses, etc). The fifth aggregate result was published in February 2007.

Figure 5-5-2: Changes over Time of Total Dioxin Emissions

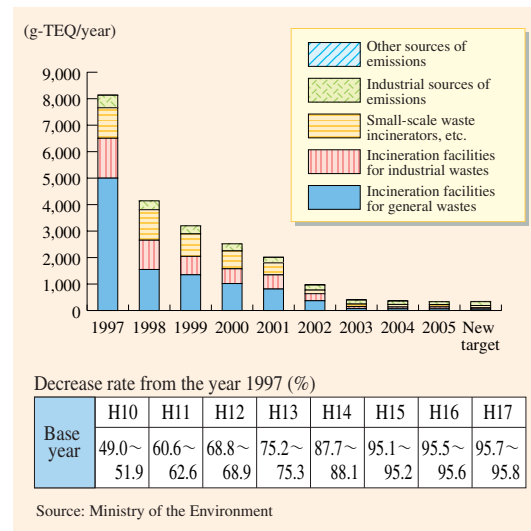


Figure 5-5-1: Outline of the Law concerning the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

- The aim of the Law is to prevent toxic chemical substances from the environmental pollutions.
- The prevention scheme is structured from two angles: evaluation and regulation.

**1. Evaluation**

A pre-market evaluation is supposed to be conducted on the production or import of any new chemical substances, for the purpose of evaluating the following:

- (1) Biodegradability,
- (2) Bio-accumulation, and
- (3) Toxicity to humans, animals and plants.

The evaluation is to be conducted rationally, taking into consideration the volume of production or import and the probability of the release to the environment.

**2. Regulation**

Regulations on the production, import or use are to be implemented according to characteristics of the chemical substance concerned, taking into consideration the results of the pre-market evaluation for new chemicals and the assessment for existing chemicals

Category	Regulatory measures
Class 1 Specified Chemical Substances (15 substances including PCB)	· Virtually ban on production, import or use in real terms
Class 2 Specified Chemical Substances (23 substances including trichloroethylene)	· Mandatory notification on planned and actual amounts of production or import · Restriction on the quantity to be produced or imported, as necessary · Required observation of technical guidelines as to treatment
Monitoring chemical substances (Class 1: 28 substances Class 2: 859 substances Class 3: 51 substances)	· Mandatory notification on actual amounts of production or import · Move to the category “specified chemical substance” according to the results of hazard assessment, risk evaluation, etc.

Note: The number of substances mentioned above is as of the end of March 2007.  
Source: Ministry of Health, Labour and Welfare, Ministry of Economy, Trade and Industry and Ministry of the Environment

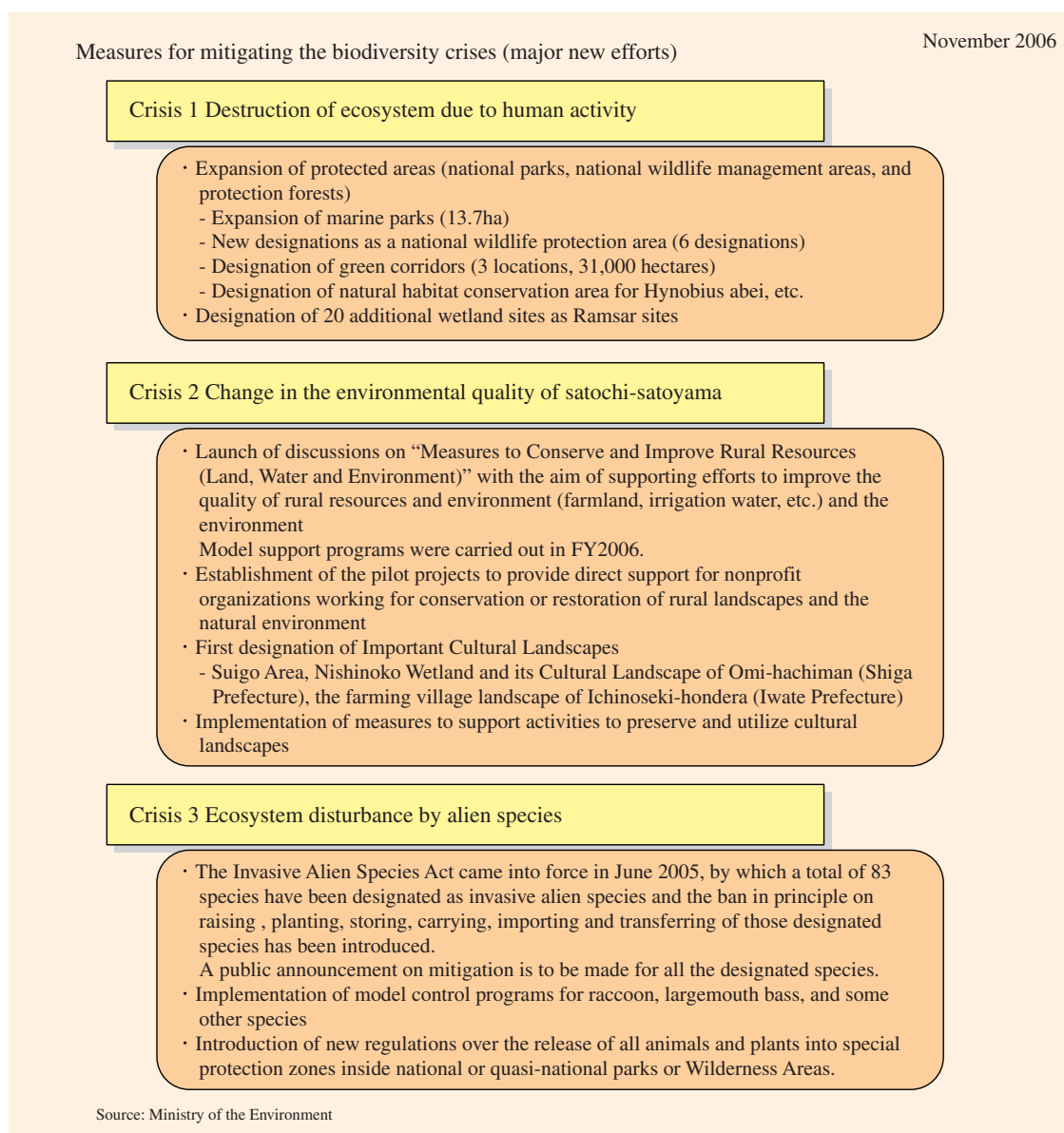
In 2004, Japan successfully achieved its reduction target for emission of dioxins. The ministry also amended the reduction plan in 2005, with the aim of achieving a 15% reduction from the 2003 level in 2010 at the latest. It is estimated that the total emission of dioxins in 2005 was 13% less than that in 2003.

With regard to policy actions on poison gas bombs in Japan, the government ministries, in line with Cabinet approval on June 6, 2003 and the Cabinet decision on December 16, 2003, are working together to conduct an environment survey and treatment with the intention of preventing possible damage from defunct Imperial Japanese Army/Navy gas bombs. In addition, the Poison Gas Information Center, established by the Ministry of the Environment, collects relevant information on an ongoing basis and distributes such information and general guidance to citizens.

## 6. Conservation of the Natural Environment and Promoting Contact with Nature

The 4th review on implementation of the National Biodiversity Strategy of Japan was conducted in FY2006, and the results of the review were reported to the Central Environment Council. Since the strategy is supposed to be revised after five years following its establishment, meetings of experts for the review have been held since August 2006 to clarify important points at issue for improving the Strategy.

**Figure 5-6-1: Outline of Newly Implemented Policy Actions for Addressing Biodiversity Crisis (Fourth review on implementation of the strategy)**



**Table 5-6: Threatened Wildlife of Japan (Species Listed in the Red List)**

(as of December 2006)

	Taxonomical group	Species assessed	Extinct	Extinct in the wild	Threatened species			Near threatened	Data deficient	Threatened local population	Total number of species listed
					Critically endangered + Endangered		Vulnerable				
					Category 1A	Category 1B					
Animals	Mammals	approx. 200	4	0	48		16	16	9	12	89
					32	12					
	Birds	approx. 700	13	1	92		39	18	17	2	143
					53	21					
	Reptiles	98	0	0	31		18	17	5	3	56
					13	3					
	Amphibians	62	0	0	21		11	14	1	0	36
					10	1					
	Brackish water and freshwater fish	approx. 300	3	0	76		18	12	5	12	108
				58	29	29					
Insects	approx. 30,000	2	0	171		82	161	88	3	425	
				89							
Land/freshwater mollusks	approx. 1,000	25	0	251		165	201	71	5	553	
				86							
Spiders/crustaceans	approx. 4,200	0	1	56		39	40	39	0	136	
				17							
Subtotal for animals			47	2	746		388	479	234	38	1546
				358							
Plants	Vascular plants	approx. 7,000	20	5	1,665		621	145	52	-	1,887
					1,044	564					
	Bryophytes	approx. 1,800	0	0	180		70	4	54	-	238
					110						
	Algae	approx. 5,500	5	1	41		6	24	0	-	71
				35							
Lichen	approx. 1,000	3	0	45		23	17	17	-	82	
				22							
Fungi	approx. 16,500	27	1	63		10	-	-	-	91	
				53							
Subtotal of plants			55	7	1,994		730	190	123	-	2,369
				1,264							
Total			102	9	2,740		1,118	669	357	38	3,915
				1,622							

Notes: 1. Data on the assessed animal species (including subspecies) were derived from the Environment Agency, Checklist of Japanese Species of Wildlife 1993, 1995, and 1998.

2. Data on the vascular plants (including subspecies) were gathered by the Japanese Society for Plants Systematics.

3. Data on the species of bryophytes, algae, lichen, and fungi (including subspecies) were derived from Ministry of the Environment surveys.

4. Bars (-) mean incomplete assessment.

The categories are considered as follows:

Extinct: Species that are extinct in Japan

Extinct in the wild: Species that are known only to survive in captivity or in cultivation

Critically endangered + Endangered: Species in danger of extinction

Vulnerable: Species facing increasing danger of extinction

Near threatened: Species with weak foundation for survival

Threatened local population: Population of a species that is isolated in an area and has high possibility of extinction.

Source: Ministry of the Environment

Based on the World Conservation Union (IUNC)-classified Red List of Threatened Species, which shows endangered species at risk of extinction in different ranks, the Japanese government has published the Red Data Book, which is a detailed Japan version covering all endangered species as of FY2006. Also, the review of the listed species was conducted for necessary revisions for four categories, including birds. According to the Red Data Book, reflecting the results of the said review, the ratio of threatened species on the verge of extinction in Japan is slightly more than 30% for reptiles and amphibians, slightly more than 20% for mammals, brackish water or freshwater fish and vascular plants, and slightly more than 10% for birds.

Furthermore, 73 species have been designated as national endangered species of wild fauna and flora pursuant to the Law for the Conservation of Endangered Species of Wild Fauna and Flora, including 4 species of mammals, 39 species of birds, 5 species of insects, and 19 species of plants.

Comprehensive reviews have been conducted over the zoning of park areas as well as park plans of national and quasi-national parks. As a result, an access-control district has been designated for the first time (for Yoshino-Kumano National Park). Also, Kuchinoerabujima Island has been incorporated into the park areas of the Kirishima-Yaku National Park. In addition, nine animal species have been designated as species subject to capturing permission in special zones, for the purpose of strengthening capturing controls.

In accordance with the Invasive Alien Species Act, three species, including *Bombus terrestris*, have been newly added to the list of designated invasive alien species, resulting in the list now having a total of 83 species.

The Wildlife Protection and Proper Hunting Law has been partially amended to review some hunting regulations. For example, some of the special exemptions as to hunting designated species in temporary hunting prohibited areas have been approved and the hunting license has been reconstituted to divide the license of “netting and trapping” into the “netting” license and the “trapping” license. Also, for the purpose of improving the quality of habitats in wildlife protection areas, institutional development of nature conservation programs has been implemented.

In response to the recent frequent appearances of wild bears in human habitations, the manual for preparedness for appearances of wild bears was published in March 2007, for the purpose of promoting measures to discourage wild bears from coming to human habitations, reduce damages to be caused by wild bears and appropriate management of wild bears.

A survey on wild birds was conducted in response to the outbreak of a highly pathogenic avian influenza that started in January

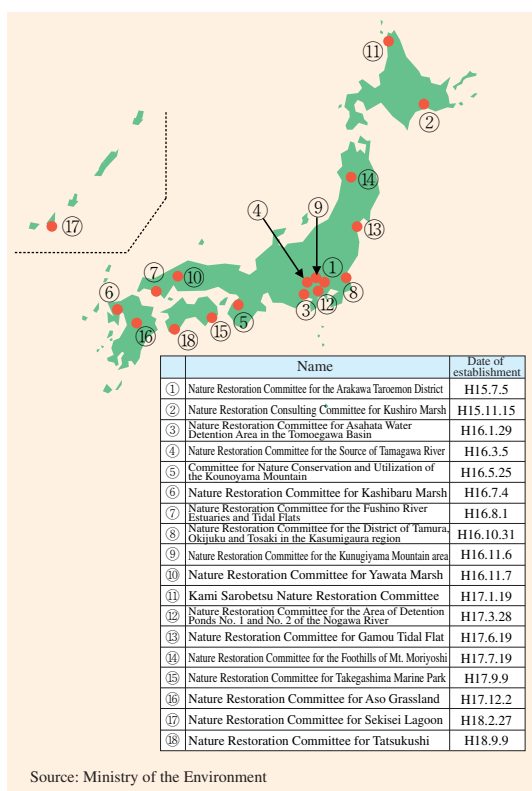
2007. Through the on-site investigation carried out by government staff and specialists as an emergency measure, the inhabitation status of wild birds and the status of their infection with influenza were examined.

Under the Law for the Promotion of Nature Restoration, 18 new Nature Restoration Committees have been established as of the end of March 2007, initiating efforts toward nature restoration.

As part of the efforts to promote international cooperation for securing biodiversity, Japan chaired the International Tropical Marine Ecosystems Management Symposium and the ICRI General Meeting as a host country of the International Coral Reef Initiative (ICRI) in October 2006. Also, to promote further international cooperation in migratory waterbird conservation across the Asia-Pacific region, the Japanese and Australian governments jointly took the initiative to establish Partnership for the East Asian-Australasian Flyway in November 2006. Also, in January 2007, it was approved by the Cabinet that Japan would file its candidacy for host of the 10th Conference of the Parties to the Convention on Biological Diversity.

For the purpose of developing people’s love of nature, their respect for interpersonal relationships and their understanding of the significance of harmonizing with nature, programs to encourage people to communicate with nature have been promoted.

**Figure 5-6-2: Locations of the Nature Restoration Committees Nationwide**



Source: Ministry of the Environment

They include national campaigns at natural parks and “Junior Park Ranger” that events for children to give them the opportunity to get many experiences from the park ranger. Also, in order to promote “ecotourism,” the government has continued to carry out the following five promotional policies: Ecotourism Charter, Ecotourism Promotion Manual, Ecotour Comprehensive, Ecotourism Awards and Model Projects. In addition, forums and nationwide seminars have been held.

Recently, people’s interest in hot spring and their needs have been growing and diversified. This trend has invited various emerging issues, including people’s increased claim for correct information on the assay of hot springs. In response to such tendency, a bill for the partial amendment of the Hot Springs Law was submitted to the 166th Diet session. The bill proposes to bind hot spring business operators to periodic evaluations of assay of their hot spring water notify evaluation results to users.

Regarding the welfare and proper management of pets, the fundamental guidelines for breeding, feeding and keeping of experimental animals have been established, and the basic policy for comprehensive promotion of the measures to welfare and proper management of pets has been also established. In addition, for the purpose of promoting the appropriate transfer or return of abandoned or stray animals captured by prefectural governments, etc., the database networking system (internet website for searching for stray animals or pet adoptions) has been launched.

## 7. Basis of Various Measures, and Measures Facilitating the Participation of Various Actors and International Cooperation

### (1) Expenditure for environmental conservation

The total amount of the FY2007 expenditures for environmental conservation is 2.949 trillion yen, down 1.8% or 39.3 billion yen from the previous year’s budget.

### (2) Policy measures of the central government

For the purpose of clarifying the direction of Japan’s environmental measures to be implemented inside and outside the country and promoting comprehensive discussions on the “Becoming a Leading Environmental Nation Strategy in the 21st Century: Japan’s Strategy for a Sustainable Society,” which shows guidelines for Japan’s role in the world for the formation of effective international frameworks, the strategy has been organized.

Third Basic Environment Plan, decided upon by the Cabinet in April 2006, explains basic visions of Japan’s environmental measures into the future. It emphasizes the significance of “Integrated Improvements of the Environment, Economy and Society.” The Plan also defines ten policy programs in priority fields, wherein the utilization of actual indicators relevant to respective measures as well as the comprehensive environmental indicators have been determined.

### (3) Environmental impact assessment

“Strategic Environmental Assessment (SEA)” is a procedure to weave environmental consideration into policies and plans which provide the framework for respective projects, for the purpose of avoiding, minimizing, or mitigating any possible material adverse impacts of each project on the environment. The Guidelines for the Introduction of Strategic Environmental Assessment have been established, which show common procedures and evaluation methods of SEA for the higher-level plans, those whose location, size, etc. are under consideration.

Also, for the purpose of ensuring appropriate and thorough Environmental Impact Assessment (EIA) implementations, project proponents and local governments have been fully informed of the ministerial ordinances formulated for each type of subjected project revised in FY2006, on the basis of March 2005 revisions made to the Basic Guidelines for EIA.

In accordance with the Environmental Impact Assessment Law, the environmental impact assessment procedures were started for

**Table 5-7-1: List of the Expenditures for Environmental Conservation by Field**

(Unit: million yen)

Field	Budget as of FY2006	Budget for FY2007	Increase/decrease from the previous year
1. Conservation of the geoenvironment	460,130	491,158	31,029
2. Conservation of the atmospheric environment	303,577	279,711	△ 23,866
3. Conservation of the water, soil, and ground environments	818,302	819,504	1,202
4. Measures for appropriate waste treatment and recycling	144,209	132,112	△ 12,097
5. Measures on chemical substances	12,338	9,819	△ 2,518
6. Conservation of the natural environment and promotion of people’s contact with the nature	317,416	285,056	△ 32,360
7. Supporting programs for respective policy measures	78,237	77,575	△ 662
<b>Total</b>	<b>2,134,207</b>	<b>2,094,935</b>	<b>△ 39,272</b>

Note 1: The above figures include special accounts.

2: The figures shown above are exclusive of the budgets which are yet to be allotted to specific programs.

3: The figures by field are all rounded off and therefore do not necessarily add up to the totals.

Source: Ministry of the Environment

**Table 5-7-2: Status of Environmental Impact Assessment Procedures in Accordance with the Environmental Impact Assessment Law**

(As of the end of March 2007)

	Road	Dam, etc	Railway	Airport	Power station	Disposal site	Reclamation	Area development	Total
Procedures started	71 (49)	6 (6)	13 (9)	8 (8)	41 (29)	5 (4)	10 (7)	20 (11)	169 (119)
Underway	22 (22)	3 (3)	1 (0)	1 (1)	9 (9)	2 (2)	3 (2)	5 (4)	45 (42)
Procedures completed	40 (19)	3 (3)	10 (7)	7 (7)	29 (17)	3 (2)	7 (5)	12 (5)	107 (62)
Procedures discontinued	9 (8)	—	2 (2)	—	3 (3)	—	—	3 (2)	17 (15)
Opinion of the Minister of the Environment	44 (23)	3 (3)	10 (7)	7 (7)	31 (19)	—	—	14 (6)	109 (65)

\*1: Figures in ( ) show the number of cases conducted under the Law from the start of procedure. When two projects are implemented together, it is counted as one.

\*2: The figures include replies without any special comments. The Minister of the Environment is supposed to give opinions only when the national government issues license or other required approval.

Source: Ministry of the Environment

8 projects, and completed for 13 projects in FY2006. Through these procedures, environmental considerations were included in the process of establishing social infrastructure.

#### (4) Relief programs for victims of Minamata disease and asbestos-caused health damages

##### a. Minamata disease

The certification of Minamata disease is conducted in accordance with the Law concerning Compensation and Prevention of Pollution-related Health Damages. The total number of certified patients is 2,958 people as of the end of March 2007, of which 897 are alive. Those certified patients receive compensations directly from companies responsible for the disease through compensation agreements.

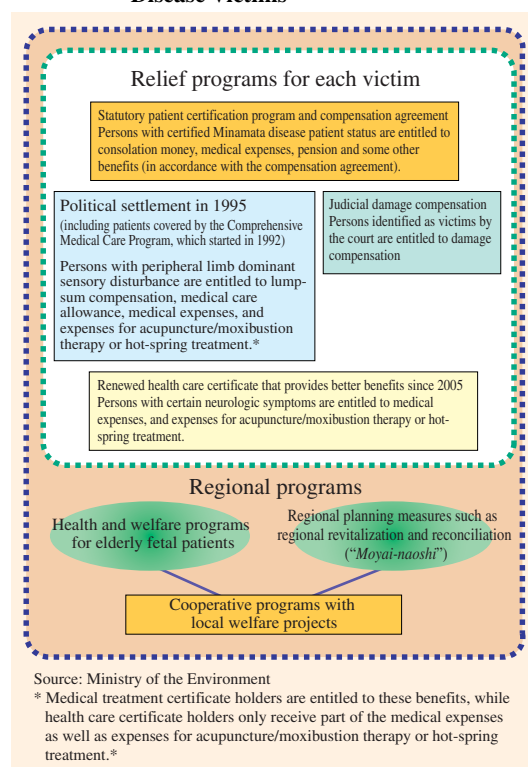
Since FY1992, the Program concerning Comprehensive Measures of Minamata Disease has been carried out, and medical care programs, such as financial compensation of medical care expenses, are being operated under the program. Also, in response to the political settlement of this issue in 1995, the government has resumed to accept applications for benefits under the medical care programs. In May 1996, a total of ten pending lawsuits for state redress were withdrawn. In October 2004, the Supreme Court upheld the Osaka High Court verdict on the Kansai lawsuit, ruling that the government and Kumamoto prefectural government are responsible for the failure to prevent the spread of Minamata disease after January 1960.

In April 2005, prior to the 50th anniversary in 2006 of the official acknowledgement of Minamata disease, the government announced “Future Minamata Disease Countermeasures”, which consist of the measure to expand medical care programs, taking into consideration the aging of patients, the measure to assist victims including congenital patients in participating in social activities, and the measure for regional revitalization; and the government has been implementing those measures.

During the meeting for discussion on the Minamata disease issues held in September 2006, the committee presented recommendations including the proposal for the establishment of the risk management scheme for “security of life” and the development of “model areas having advanced environmental and welfare programs.”

Also, in response to the increasing number of claims for relief benefits, the project team for the Minamata disease issue was organized within the ruling parties in May 2006, and the team has been promoting deliberations.

**Figure 5-7: Outline of Relief Programs for Minamata Disease Victims**





**Table 5-7-3: Timeline of Key Events related to Minamata Disease**

May	1956	Minamata disease was officially acknowledged.
March	1959	Two laws concerning water quality and regulation came into force.
May	1965	Niigata Minamata disease was officially acknowledged.
June	1967	The first lawsuit was filed by Niigata Minamata disease victims. (The plaintiff won the case in September 1971 (final verdict).)
September	1968	The Ministry of Health and Welfare and Technology Agency announced their collective view that Minamata disease was caused by methyl mercury compounds discharged from Chisso Co., Ltd. and Showa Denko Co., Ltd.
June	1969	The first lawsuit of Kumamoto Minamata disease was filed. (The plaintiff won the case in March 1973 (final verdict).)
December	1969	Law concerning the Relief of Pollution-related Health Damage came into force.
July	1973	Compensation agreement was concluded between Chisso and litigation group patients. (Compensation agreement between Showa Denko and patients was concluded in June of the same year.)
September	1974	Law concerning Compensation and Prevention of Pollution-related Health Damages came into force.
November	1991	Central Council for Environmental Pollution Control submitted a report, "Desirable Relief Programs to Be Implemented in the Future for Minamata Disease Patients".
September	1995	Three ruling parties finalized the report, "Political Settlement of Minamata Disease". (Final Remedies)
December	1995	"Countermeasures of Minamata Disease" was adopted by the Cabinet.
May	1996	Ten pending lawsuits for state redress were withdrawn (except the Kansai lawsuit).
October	2004	The Supreme Court handed down the final verdict over the Kansai lawsuit. (The final verdict held the national government and Kumamoto prefectural government responsible.)
April	2005	Ministry of the Environment announced "Future Minamata Disease Countermeasures".
May	2005	40th anniversary of official acknowledgment of Niigata Minamata disease
May	2006	50th anniversary of official acknowledgement of Minamata disease

Source: Ministry of the Environment

## b. Asbestos-caused health damages

As of the end of FY2006, the government has received a total of 3,925 applications for relief benefits under the Act on Asbestos Health Damage Relief, of which 2,389 were officially certified for the benefits, 281 were not certified and 387 were withdrawn.

## (5) Making progress with environmental education and education for sustainable development

In accordance with the Law concerning the Enhancement of Willingness for Environmental Conservation and Promotion of Environmental Education and the basic policy based on the Law, the program for promoting the utilization of outside human resources, such as specialists from non-profit organizations, has been carried out, where those specialists teach at classes for integrated study at schools. Projects using those outside specialists are to be registered, and the information on those registered projects is released to the public through the Internet. To promote "the United Nations Decade of Education for Sustainable Development," three key programs in the early stage of the Decade in Japan, including dissemination of the concept of ESD, implementation in communities, and programs at higher education, have been carried out, based on Japan's Action Plan of the Decade.

## (6) Efforts for achieving a more environmentally friendly socioeconomic structure

Another idea is to impose economic costs in an attempt to reduce environmental burdens. Possible policy approaches would include suppressing waste generation as well as controlling carbon dioxide emissions to prevent global warming. To identify appropriate policy approaches, the government conducted a research project to survey and collect data on foreign best practices and examine possible positive effects that these policies would have on environmental conservation or the national economy.

The "Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities" aims at encouraging a demand shift to eco-friendly goods (goods and services with low environmental loads) by promoting procurement of eco-friendly goods in the public sector (the national government, independent administrative institutes, and public organizations) and actively providing environmental information. In line with these basic policies, the national government and other public sector organizations established their FY2006 eco-friendly goods procurement plans and promoted procurement of eco-friendly goods based on their own plans.

In response to the recent tendency of increased emphasis of corporate social responsibilities in promoting environmental protection, the Meeting for Promoting the Awareness on the issue of Environment and Finance was organized in April 2006, where a report "Toward the Increase of the Environmentally Conscious Money Flow" was issued.

The estimated size of the market and the employment of environmental businesses in Japan as of 2005 is about 44.1 trillion yen

and about 1.026 million employees respectively. When other businesses that have the potential to spur consumers' environmentally conscious behaviors, which lead to demand ("environment-induced businesses"), are added to the above, the total market size is about 58.3 trillion yen and the employed population is about 1.372 million.

### **(7) International policy measures**

In an effort to address global environmental issues, the government has been promoting the following: (1) supporting programs for activities of international organizations, (2) involvement in multilateral negotiations for international treaties or protocols, (3) cooperation with other countries, and (4) assistance of developing countries and regions.

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○ **Measures on Environmental Conservation to be Implemented in FY2007**

○ **Measures on Formation of a Sound Material-Cycle Society to be Implemented in FY2007**

The Quality of the Environment in Japan 2006 (White Paper) reports the measures on environmental conservation and formation of a Sound Material-Cycle Society to be implemented in FY2007.

Chapter 1: Conservation of the Earth's Environment

Chapter 2: Conservation of the Atmospheric Environment

Chapter 3: Conservation of the Water, Soil, and Ground Environments

Chapter 4: Measures and Policies Related to the Material Circulation, including Waste and Recycling Measures

Chapter 5: Measures and Policies on the Assessment and Control of Environmental Risk of Chemical Substances

Chapter 6: Conservation of the Natural Environment and Promoting Contact with Nature

Chapter 7: Basis of Various Measures, and Measures Facilitating the Participation of Various Actors and International Cooperation